

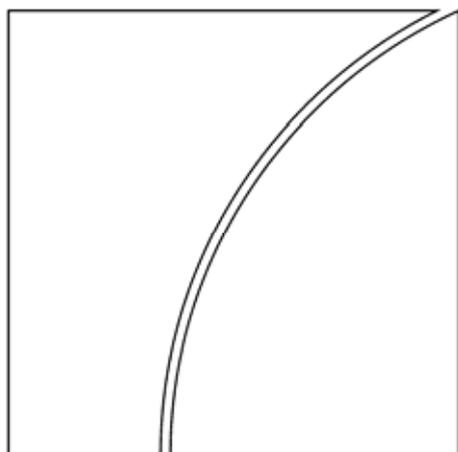


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# Asian bond markets: issues and prospects



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# The development of Asian bond markets<sup>1</sup>

Barry Eichengreen

## 1. The problem

The 1997-98 crisis in Asia prompted considerable rethinking of the role of financial markets in the region's economic development. Banks had long been at the centre of Asian financial systems. For a set of late-developing economies with urgent needs for financial intermediation, banking systems were easier to get up and running. Governments could supply the equity capital and in some cases the managerial talent. Close cooperation between banks and governments allowed the authorities to influence the flow of funds - ideally, to ensure that finance flowed towards sectors that were the locus of productivity spillovers and generators of export revenues. Large corporations in need of funding for expensive investment projects that might require a lengthy incubation period could be confident of a stable source of external finance.

Up to the mid-1990s this bank-centred financial system was one of the foundation stones of East Asian economic growth. The crisis that followed then revealed that this form of financial organisation also had serious weaknesses. The short maturity of bank loans meant that when confidence was disturbed, as happened in 1997-98, what had once been a set of patient lenders might not be so patient any more. Seeing their funding decline, banks might call in their loans, subjecting their borrowers to a painful credit crunch. Moreover, with the opening of capital accounts, banks might be in a favoured position to access foreign funds, not least because of the perception that their obligations were guaranteed by the public sector. They aggressively extended their intermediation role by borrowing offshore and onlending the proceeds to domestic customers. Generally, the tenor of these foreign credits was even shorter than that of the banks' own loans, exposing them to a maturity mismatch that might cause serious problems if confidence was shaken. Since most foreign funds were denominated in dollars, euros or yen, the banks were exposed to either a dangerous currency risk if they onlent in local currency or an equally serious credit risk if they onlent in those same foreign currencies. Meanwhile, deregulation allowed banks to take on additional risks using techniques with which supervisors found it difficult to keep pace. And insofar as the banks had allowed themselves to be utilised as instrumentalities of the government's industrial policies, they anticipated help from the official sector in the event of difficulties. Thus, the moral hazard inevitably associated with the existence of a financial safety net appears to have been particularly pervasive in the Asian case.

This episode of financial turmoil led to the restructuring of banking systems and to efforts at upgrading their supervision and regulation. But it also created an awareness of the need for better diversified debt markets and specifically for bond markets to supplement the availability of bank finance. Bank and bond finance have different advantages. Bonds and securitised finance generally are thought to have better risk-sharing characteristics. Risks can be more efficiently diversified when they are spread across a large number of individual security holders. This spreading of risks and the existence of liquid secondary markets in standardised securities encourages creditors to make long-term commitments and allows debtors to borrow for extended periods of time.

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<sup>1</sup> Revised, November 2004.

Banks, in contrast, have a comparative advantage in the information-impacted segment of the economy. They invest in building dedicated monitoring technologies. (This is one way of thinking about what distinguishes banks from other financial market participants.) Consequently they are well placed to identify and lend to small, recently established enterprises about which public information is scarce. In addition, by pooling the deposits of households and firms with non-synchronised demands for liquidity, they are able to provide maturity transformation services for small savers reluctant to lock up their funds for extended periods. As concentrated stakeholders, they contribute to effective corporate governance and are prepared to incur the costs of litigation when legal recourse is required.

The point is not that banks or bond markets are better; there is little systematic evidence of the unconditional superiority of one financial form over the other. Rather, there is a growing body of evidence that countries benefit from well diversified financial systems with a role for both well regulated banks and well functioning securities markets.<sup>2</sup> Banks have a comparative advantage in providing external finance to smaller, younger firms operating in information-impacted segments of the economy, while securities markets, including debt markets, do the job more efficiently for large, well established companies. Similarly, banks and securities markets are subject to different risks. Hence, in financial structure, as in other areas, diversification may help an economy attain a superior position on the frontier of feasible risk-return trade-offs. That is, the existence of a well diversified financial system, with a role for both banks and securities markets, should be conducive both to an efficient allocation of resources compatible with sustainable medium-term economic growth and to financial stability - and specifically to minimisation of the risk of late 1990s-style financial crises.

## 2. The policy response

It is in this context that recent efforts to foster the development of Asian bond markets should be understood. These efforts have focused on the development of a more robust and efficient market infrastructure at the national and regional levels. Among the prominent initiatives in this area is the Asian Bond Market Initiative (ABMI) of the ASEAN+3 countries.<sup>3</sup> As endorsed by ASEAN+3 finance ministers at their August 2003 meeting in Manila, the ABMI takes as its goal the development of more robust and efficient primary and secondary markets. To this end ASEAN+3 has established working groups concerned with the creation of standardised debt instruments, the establishment of rating agencies, the provision of technical assistance, foreign exchange transactions and settlement issues, credit guarantee mechanisms, and the role of multilateral development banks, foreign government agencies and Asian multinational corporations in issuing in local markets and local currencies.

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<sup>2</sup> See Demirgüç-Kunt and Levine (1996, 2001).

<sup>3</sup> The members of ASEAN are Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam; the “plus 3” countries are Japan, Korea and China. Another initiative deserving of mention is the APEC Regional Bond Market Initiative agreed to by the APEC Finance Ministers’ Process (FMP). The FMP was established following the 1997 financial crisis to provide a forum for the exchange of views and information on regional financial developments and to cooperatively pursue programmes for the promotion of financial sector development and liberalisation. In 2002 APEC finance ministers then agreed to a second policy initiative on the development of securitisation and credit guarantee markets, which aims at using high-level policy dialogues and expert panels to identify impediments to the development of these markets. For details see [www.apec.org](http://www.apec.org), and in particular [www.apec.org/apec/ministerial\\_statements/sector\\_ministerial/finance/2003\\_finance/annex.html](http://www.apec.org/apec/ministerial_statements/sector_ministerial/finance/2003_finance/annex.html).

These working groups can be seen as mechanisms for sharing information and providing technical assistance about best practice in fostering and regulating bond markets. They can be seen as working towards the establishment of benchmarks for the development of market infrastructure against which national policy and practice can be assessed. Private sector practice has shown such benchmarks to be an effective focal point for reform.<sup>4</sup> The working groups may thus function as a source of peer pressure for governments to move more quickly in the direction of creating active and liquid bond markets than they might otherwise, something that is desirable insofar as the official sector often enjoys privileged access to bank finance and therefore faces a moral hazard of its own.

Other initiatives seek to remove the obstacles to the development of a pan-Asian bond market. They seek to encourage Asian investors to build regional bond portfolios by removing obstacles to cross-border capital flows and by harmonising the regulations, withholding tax provisions, accounting practices, rating conventions and clearing and settlement systems that pose obstacles to foreign participation in regional bond markets. These initiatives respond to the perception that the small size of Asian bond markets is part of what limits their liquidity, efficiency and growth. To be attractive for investors, a bond market must operate at a certain minimum efficient scale. Otherwise market participants will not be able to acquire or dispose of their holdings without moving prices.<sup>5</sup> Small markets with a limited number of participants may also create scope for strategic behaviour by competitors and counterparties to deter entry and participation by other investors.<sup>6</sup> There may exist significant scale efficiency effects in clearing and settlement, payment system data processing, trading operations, firm-specific information processing activities (such as listing), and even regulation.<sup>7</sup> In addition, a small market may not be able to develop liquidity in the full range of marketable instruments, including the derivative instruments needed by investors to hedge market risk, which in turn may deter participation.<sup>8</sup> For all these reasons, small countries may find it difficult to develop deep and liquid bond markets. Securing foreign participation through the removal of impediments to cross-border issuance and investment is in turn a potential way around this problem.

The most prominent initiative in this area the Asian Bond Fund created by the Executives' Meeting of East Asia-Pacific Central Banks (EMEAP).<sup>9</sup> Launched in June 2003, the Asian Bond Fund (ABF) had an initial size of US\$1 billion. It invests in a basket of US dollar-denominated bonds issued by Asian sovereign and quasi-sovereign issuers in EMEAP countries other than Japan, Australia and New Zealand. It is managed by the Bank for International Settlements and supervised by an EMEAP Oversight Committee. A second Asian Bond Fund, under discussion at the time of writing, is to include investments in bond denominated in regional currencies issued by sovereigns, quasi-sovereigns and creditworthy

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<sup>4</sup> The use of benchmarking to generate peer pressure for reform is a widespread private sector practice. It is also used by the European Union as part of its method of "open cooperation". See Wyplosz (2004).

<sup>5</sup> McCauley and Remolona (2000) provide evidence on the relationship between market size and liquidity, as measured by inter alia bid-ask spreads and market turnover.

<sup>6</sup> Mohanty (2001) cites a number of real-world instances where such behaviour has been evident in small and even medium-sized markets.

<sup>7</sup> For evidence on this see Hancock et al (1999), Saloner and Shepard (1995), Malkamaki (1999) and Bossone et al (2001).

<sup>8</sup> See Turner and Van't dack (1996).

<sup>9</sup> EMEAP is a forum of central banks and monetary authorities in the East Asia-Pacific region with 11 members: Australia, China, Hong Kong SAR, Indonesia, Japan, Korea, Malaysia, New Zealand, the Philippines, Singapore and Thailand.

companies.<sup>10</sup> By encouraging the reinvestment of central bank reserves in the qualifying bond markets and securities of the region, the ABF initiative can be seen as helping to augment the installed base of local securities holdings and thus overcome the problem of inadequate scale. More generally this initiative can be seen as one of a set of measures designed to foster the development of a deep and liquid bond market at the regional level.

### 3. Dilemmas

There is an almost instinctual tendency on the part of economists to applaud such efforts, given the compelling nature of the arguments for developing more active bond markets to round out Asia's bank-dominated financial systems. But there is also a dilemma. In reality what we are talking about is capital account convertibility, and capital account convertibility in advance of the development of regional financial markets. This, of course, is the opposite of what most of us thought that we had learned from the Asian crisis about the right time at which to liberalise the capital account. One of the key lessons of the Asian crisis is that it is important to have strong, diversified and well developed domestic financial markets, including by implication bond markets, before liberalising the capital account. If financial markets are underdeveloped, market discipline will be weak, and banks and firms will be prone to overborrow. Capital account liberalisation will then cause funds to flow in through the banking system. Cheap funding will encourage the banks to expand their loan portfolios, resulting in a decline in the average quality of loan projects. Maturity mismatches will be accentuated if banks use this short-term finance to fund long-term loans, and currency mismatches will result either for the banks (if they lend in local currency) or their customers (if their loans are denominated in foreign currency but the borrowers are active in the production of non-traded goods - as in the case of construction firms). If the flow of foreign capital then turns around, the whole financial edifice can come crashing down. The Asian crisis is a stark reminder of the havoc that can be wreaked by this combination of circumstances.

Thus, macroeconomists will insist that governments should not proceed with capital account liberalisation unless they have first made progress in developing local bond markets. And market participants will insist that countries cannot have local bond market development unless they first have open capital accounts. Lee Hsien Loong, Deputy Prime Minister of Singapore and head of that country's Monetary Authority, put the point well in an address given in 2002: "There is a trade-off between tightening up the capital account, and developing the bond markets. Measures to restrict offshore foreign currency trading have been effective, in so far as reducing or eliminating offshore markets is concerned. But these safeguards come at a cost - they also hinder the development of capital markets, especially the bond markets. Size and liquidity are essential attributes for a market to attract international interest. Already in size and liquidity, we clearly lag behind our counterparts in the West. If Asian markets are fragmented and unable to grow, they risk being ignored by global investors."<sup>11</sup>

Thus, Asia would seem to be in a classic Catch-22 situation. Without removing capital controls, attempting to foster domestic bond markets can be an uphill fight. Yet trying to win it by removing restrictions on the ability of residents and foreigners to invest across borders

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<sup>10</sup> The stated purpose of ABF2 is to encourage the development of index bond funds in regional markets and to act as a catalyst for the improvement of domestic bond markets and for greater harmonisation of bond market infrastructure and legal, regulatory and tax arrangements across the region. For details, see [www.emeap.org/press/15apr04.htm](http://www.emeap.org/press/15apr04.htm).

<sup>11</sup> I owe this quote to Dwor-Frecaut (2003).

could be a risky strategy. It is widely recognised that these trade-offs are implicit in efforts to build domestic bond markets by removing capital controls.<sup>12</sup> What is less well understood is that even seemingly benign steps like harmonising regulations and taxation, or creating an Asian rating agency (or a common standard for national rating agencies), or using central bank reserves to jump-start private cross-border investment are the equivalent of capital account liberalisation in the sense that they too would work to encourage cross-border capital flows. This is their intent, and it would certainly be their effect. And these measures create risks - as well as conflicting with the conventional wisdom regarding sequencing - insofar as they encourage capital mobility first and only produce stronger markets later.

The positive message is that governments should proceed with all due speed to strengthen market infrastructure at the national level: more efficient clearing and settlement systems, more efficient information provision and assessment (through inter alia the establishment of disclosure requirements for issuers and the creation of rating agencies), stronger creditor rights and the development of benchmark assets and yield curves. Even small countries can make progress in this direction, although they may have to forgo some of the cost savings associated with the scale efficiency effects enumerated above. They can also overcome some of the disadvantages of small market capitalisation by consolidating the public debt and overfunding their fiscal needs.<sup>13</sup> One reading of European experience from the 1950s to the 1980s is that, through the dedicated pursuit of such measures, reasonably robust and liquid markets in debt securities can be created.<sup>14</sup> At that point it becomes safe to remove residual capital controls, as Europe did in the 1990s, and to encourage market participants to build pan-regional portfolios.

This perspective suggests that Asian countries, especially lower-income Asian countries with a less developed financial infrastructure, should proceed cautiously with capital account liberalisation. It suggests that a relatively small Asian Bond Fund (recall that an ABF-I funded to the tune of US\$1 billion compares with regional bond markets with a market capitalisation of some US\$1.5 trillion) is appropriate in that it does not put the cart before the horse. That is, it does not commit Asian central banks to large amounts of cross-border portfolio investment before a stronger market infrastructure is in place. It suggests that efforts to foster the development of bond markets should focus, in the first instance, on measures to strengthen the market infrastructure at the national level and not on measures to harmonise and integrate those market structures, thereby encouraging cross-border capital flows, per se. Measures to harmonise and integrate institutions and regulations should come later, once those stronger market structures are in place.

The other issue raised by Europe's experience in creating a regional bond market is the role of the exchange rate. In Europe, the elimination of currency risk by the creation of the euro strongly stimulated the development of regional bond markets. This is evident in the dramatic increase in corporate bond issuance, speculative grade issuance in particular, following the irrevocable locking of exchange rates in 1999, and in the adoption of the 10-year German government bond as the benchmark issue for the region.<sup>15</sup> This experience suggests that an

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<sup>12</sup> The econometric results in Eichengreen and Luengnaruemitchai (in this volume) are consistent with this emphasis, in that they find a number of alternative measures of capital controls to be negatively associated with domestic bond market capitalisation in a panel of data for 41 countries.

<sup>13</sup> See McCauley (2003).

<sup>14</sup> Wyplosz (2001) advances this position.

<sup>15</sup> In the first year of the euro, the value of euro-denominated corporate bond issues more than tripled, and the share of corporate bond issues accounted for by speculative (sub-investment grade) issues rose from 4% to 15%. Corporations were able to place unprecedentedly large issues on European markets; see Detken and Hartmann (2000). These extraordinary early growth rates have now tailed off a bit, but the rate of growth of issuance of debt securities by non-financial corporations continues to outrun the growth of their other sources

exchange rate regime that minimises currency risk can lend strong stimulus to the development of regional bond markets by encouraging investors to build pan-regional portfolios, thereby enhancing market liquidity and in turn inducing additional issuance and investment. The paper by Barry Eichengreen and Pipat Luengnaruemitchai in this volume provides further support for this association between exchange rate stability and bond market capitalisation.

For Asia, these facts again create something of a dilemma. Another widely drawn lesson of the Asian crisis is that countries should gravitate towards more flexible exchange rate regimes in order to limit crisis risk and be able to better tailor domestic money and credit conditions to local needs. Moreover, the presumption that Asian countries will continue to move down the road towards capital account convertibility reinforces the argument for greater exchange rate flexibility, insofar as moving to managed flexibility is an essential precondition for full capital account liberalisation.<sup>16</sup> Hence, the exchange rate regime consistent with financial stability in the short run may not be conducive to bond market development in the longer run.

The severity of this problem is not entirely clear. The observation that countries with more stable exchange rates have better capitalised bond markets is based on an all-else-equal comparison. In practice, everything else may not be equal. In particular, macroeconomic policies that minimise currency risk by holding exchange rates stable may heighten credit risk by encouraging banks, firms and governments to borrow more freely, thereby exposing them to financial distress when cyclical conditions deteriorate. Robert McCauley and Guorong Jiang (2004) find a closer conformance of bond yields across countries with flexible exchange rates. One interpretation is that credit risk is even more important than currency risk in driving a wedge between national markets and that in countries where the bulk of debt is domestic currency denominated these two forms of risk are negatively correlated. If this is right, then greater exchange rate flexibility may not in the end be an impediment to bond market development.

The other solution, also suggested by European experience, is monetary unification to reconcile the desire for exchange rate stability with the reality of capital account convertibility, along with stronger financial market institutions and regulation to prevent overborrowing and avoid unnecessary credit risk. From this point of view the Chiang Mai Initiative for swap lines and other financial supports, ongoing discussions of a collective currency peg and initiatives to foster the development of bond markets are of a piece. That is to say, these various efforts to further economic and financial development and cooperation at the regional level are complementary to one another. The problem is that the time horizon relevant to these different initiatives is not the same. While furthering the development of bond markets is an urgent task that should be advanced now in order to foster growth and buttress financial stability, monetary unification is a long-run objective that presupposes a significantly more extensive political commitment.<sup>17</sup>

The other question in this context is whether Asia is the right level at which to pursue these objectives. A positive answer is generally presupposed in discussions of exchange rate stabilisation and monetary unification. There is both the European precedent and the fact of rapidly growing intraregional trade and foreign investment linkages, heavily centred on

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of finance. This enhanced access of euro-denominated corporate debt markets helped to finance a wave of mergers and acquisitions which in turn promises to strengthen Europe's corporate sector.

<sup>16</sup> See for example Fischer (2003).

<sup>17</sup> This is something that is acknowledged even by the proponents. Thus Mallet (2004), in describing discussions at the 2004 Asian Development Bank meetings for achieving currency union in Asia, reports that "economists and bankers say a common east Asian currency would take two or three decades."

China. But it is not clear that a positive answer is appropriate in discussions of bond market development. There already exist well developed global securities markets into which Asian countries can link, as emphasised by Robert McCauley and Yung Chul Park in their contribution to this volume. Many of the large issuers and large investors - multilateral institutions, foreign government agencies and multinational corporations alike - whose participation in local markets is desired are headquartered outside Asia. Harmonising institutions and policies across Asian countries is not the most obvious way of encouraging their participation; better would be to harmonise institutions and regulations with those prevailing in global markets. Even if the answer to the question of whether Asian countries should attempt to integrate into global or regional bond markets is not obvious, that question should at least be asked.

#### **4. The papers that follow**

The papers that follow shed additional light on a number of these issues. In keeping with the thematic structure of this introduction, I review these papers in a somewhat different order than they appear below.

Atsushi Takeuchi's paper sets the stage by describing the rationale for the development of deeper and more liquid bond markets, the progress that has been made to date and the obstacles going forward. As the author notes, the size of local bond markets in Asia, as measured by the volume of issuance, has more than doubled since 1998. However, secondary markets remain relatively illiquid, and foreign participation, in particular, is disappointing. Takeuchi highlights capital controls, taxation, the difficulty of cross-border clearing and settlement, and the limited availability of hedging instruments as obstacles to greater participation by nonresidents.

Barry Eichengreen and Pipat Luengnaruemitchai further set the stage by using multiple regression and cross-country comparisons to analyse the obstacles to the development of Asian bond markets. While a variety of alternative explanations have been offered in the past, Eichengreen and Luengnaruemitchai show that bond market undercapitalisation in Asia is in fact a phenomenon with multiple causes. To some extent the problem is one of minimum efficient scale: smaller countries find it more difficult to develop well capitalised bond markets (even when capitalisation is measured relative to GDP). But market size is not the entire problem. In addition, corruption and low bureaucratic quality, which are signs of unreliable securities market regulation, and the failure of countries to follow internationally recognised accounting and disclosure standards have slowed the development of debt markets. Macroeconomic policy, for its part, appears to have played both a supporting and impeding role. On the one hand, Asia's strong fiscal balances, while admirable on other grounds, have not been conducive to the growth of government bond markets. At the same time, there is little evidence that the small size of public debt markets is a serious obstacle to corporate bond market development. And the stability of exchange rates in the region appears, if anything, to have encouraged bond market development.

Robert McCauley, in his paper, builds on the observation that small countries find it difficult to achieve the minimum efficient scale required for a deep and efficient bond market. He notes that the sterilisation operations engaged in by Asian central banks in the process of accumulating international reserves have provided an opportunity to get a larger installed base of public debt securities into the market. The problem is that the market has been segmented into government debt and central bank debt. McCauley therefore recommends consolidating this debt into a uniform set of securities by "overfunding" the fiscal deficit (issuing more government debt securities than needed to fund the deficit, and purchasing central bank bills in return). Finance ministries may be reluctant to permit the de facto issuance of additional government debt as a device for mopping up excess liquidity; among

other things, doing so is likely to undermine their control of the public debt market. But they still may wish to consider this alternative if they attach priority to the creation of a liquid domestic market in public debt.

Kee-Hong Bae, Warren Bailey and Young-Sup Yun look more closely at the issue of foreign participation, analysing data gathered by the IMF for 165 countries on the holdings of local bonds by foreign investors. They find that measures of property rights protection similar to those analysed by Eichengreen and Luengnaruemitchai - corruption, risk of expropriation of private property and the risk that contracts may be repudiated - are the most influential determinants of foreign participation. By comparison, they find little evidence of a role for macroeconomic variables like inflation, interest rates and the volatility of growth. This reinforces the message that countries seeking to develop their bond markets, and specifically to encourage foreign participation, should focus on building investment-friendly institutions. Atsushi Taneuchi, in a companion paper, examines these same issues and in addition characterises the obstacles to non-resident issuance. Compared to Bae, Bailey and Yun, he puts more emphasis on statutory restrictions such as capital controls, the opacity and lack of uniformity of withholding tax regimes, and the absence of adequate instruments for hedging interest rate and currency exposures.

Martin Hohensee and Kyungjik Lee pursue the problem of hedging instruments, both those traded on futures exchanges and over-the-counter interest rate derivatives such as interest rate swaps and options. They show that Hong Kong and Singapore, two of the leading bond markets in the region, also have the most advanced derivatives markets - a fact that is surely not coincidental. It is impossible to imagine the development of the relevant hedging markets absent the growth of the underlying bond market, for without trading in the underlying bonds there would be nothing on which to base the swaps and options in question. The growth of hedging markets in Hong Kong and Singapore thus reflects the success of these centres in growing their local bond markets. But it also reflects a transparent and flexible regulatory regime, which provides market participants the opportunity and the incentive to engage in derivative transactions. While other Asian countries have launched their own derivatives markets, these remain relatively illiquid. This suggests that markets in the relevant hedging instruments tend to develop as a natural by-product of bond market development, although their growth can also be fostered by putting in place a transparent, market-friendly regulatory regime.

The case for developing local bond markets is strongest to the extent that the resulting issues are long in tenor and denominated in local currency, thereby helping to relieve the double mismatch problem. David Fernandez and Simon Klassen focus on the currency mismatch aspect, analysing the choice of currency by East Asian bond issuers. In contrast to Eichengreen and Luengnaruemitchai, they argue for the existence of strong spillovers between the sovereign and corporate segments of the market. They conclude that sovereign issuance has played a catalytic role in the genesis of regional bond markets, this despite the constraints resulting from the traditionally strong fiscal stance of Asian governments. Since the Asian crisis, however, sovereign issuance has soared, and corporate issues have followed in its train. Indeed, as the authors emphasise, corporate issuance has been the most rapidly growing segment of Asian bond markets in the last five years. The constraint on the further growth of the corporate market, they suggest, is not so much inadequate supply as inadequate demand - or at least a mismatch in the structure of supply and demand. High-grade corporates have either ample retained earnings or easy access to equity finance; hence much of the potential supply of corporate bonds is from sub-investment grade credits. The demand, from institutional investors in particular, is however for investment grade debt securities (given restrictive covenants, regulations, etc). One potential solution to this problem is the development of structured products that allow investors to unpack credit risk from other characteristics of debt securities. While the market in structured products is growing as well, Fernandez and Klassen suggest that Asian financial institutions, which are

potential suppliers of such products, need to develop further their expertise and involvement in this area.

Another potential way of addressing this supply-demand imbalance is the provision of credit guarantees. Gyutaeg Oh and Jaeha Park argue that the most important constraint on the development of local currency bond markets is not weakness of creditor rights, imperfections in the rating function or the absence of a pan-Asian clearing and settlement system, but the absence of credit guarantees. The underlying constraint to bond market development in the region, they argue, is the mismatch between the credit quality of potential issuers (which is often speculative grade) and the credit quality required by provident funds, insurance companies and other institutions (which, as noted, are often required or prefer to limit their holdings to investment grade securities). Guarantees against credit and political risk could bridge this gap, Oh and Park argue: they would guarantee a high rating for issuers, facilitate the securitisation of outstanding debts, broaden the investor base and improve marketability by limiting the danger of downgrades. To this end the authors propose the creation of either public-private partnerships or multilateral institutions to provide guarantees for qualifying Asian issuers. The question here is why, if there is a demand for such insurance, private agencies have not sprung up to screen potential customers and provide this service at a price. And if the answer is that there exist distortions preventing the market from doing this job, then there is still the danger that the public provision of guarantees will only reintroduce in another guise the moral hazard problem that arose in the 1990s as a result of the commercial banks' implicit guarantees.

One model for Asian countries seeking to develop their bond markets is Japan, which has a large and highly liquid debt market. Fumiaki Nishi and Alexander Vergus consider the history, structure and prospects of this market. They show that government debt dominates the Japanese market, not surprisingly given the large budget deficits run by the government in the 1990s in the effort to jump-start a deflation-ridden economy.<sup>18</sup> Their conclusion is that the Japanese corporate bond market has developed relatively slowly due to the long-standing dominance of Japanese banks over the country's corporate finance. In this sense Japan is not a reassuring precedent for other Asian countries, which similarly inherit financial systems heavily dominated by commercial banks.

Japan also provides lessons, as Nishi and Vergus shows, for Asian countries seeking to encourage foreign participation in their local bond markets. The first yen-denominated bond publicly offered by a non-resident issuer in the domestic market was issued by the Asian Development Bank in 1970. This was followed by sovereign issues by Singapore in 1976 and the Korea Development Bank in 1978. As controls on non-resident issuance in yen were gradually relaxed, a variety of foreign corporate issuers followed, creating the so-called "Samurai market".<sup>19</sup> However, the development of the Samurai market has been relatively slow, a disappointing record that the authors attribute the onerous regulations and registration requirements imposed by the Japanese authorities - and that might be best avoided by other Asian governments.

The remaining papers consider challenges for the development of market infrastructure, a task that emerges from these analyses as a key step for countries seeking to foster local bond markets. Kate Kisselev and Frank Packer consider the rating function, focusing on the

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<sup>18</sup> In fact, large-scale government bond issuance started already in the second half of the 1980s, and Nishi and Vergus trace the development of the Tokyo market back to this period.

<sup>19</sup> There may be a more general lesson here for Asia's less developed countries - and for the Asian Development Bank. Non-resident issuance often starts with the international financial institutions. In addition to creating a local currency benchmark asset and stimulating liquidity, such issuance provides an instrument that local issuers tapping foreign currency bond markets can use to swap out of their foreign currency exposures, limiting the currency mismatch problem.

rating of local currency bonds. Transparent and efficient ratings are essential to creating a broad and diversified customer base for local currency bonds. But, as Kisselev and Packer show, local currency sovereign bonds often receive very different ratings than the foreign currency issues of the same governments. Rating agencies tend to give higher ratings to local currency issues on the grounds that the sovereign may find it easier to raise domestic currency denominated resources in times of stress. (In extremis they can always print money.) Corruption appears to be important for explaining these rating gaps: the greater perceived corruption, the smaller the rating advantage to local currency bonds. In addition, countries with higher investment rates, and therefore, presumably, superior growth prospects, receive more favourable ratings for their domestic currency bonds, relative to their foreign currency counterparts. There are also important differences between S&P and Moody's in how they calibrate this rating gap, suggesting that the market still has some way to go in arriving at a standard methodology for rating local currency bonds.

One response to dissatisfaction with the global rating agencies is to develop local counterparts. The performance of local rating agencies, one or more of which now exists in most Asian countries, is analysed by Daekeun Park and Changyong Rhee. Park and Rhee argue for standardising the rating systems used by these agencies and creating a pan-Asian settlement system as a way of fostering the development of a pan-regional bond market. Their case for local agencies is based on local knowledge and on the observation that global agencies like S&P, Moody's and Fitch do not find it worthwhile to provide ratings for the multitude of small local issuers that comprise the most rapidly growing segment of Asian borrowing. Unfortunately, local agencies in different countries follow incompatible practices, assigning government bonds the highest credit ratings and rating other entities' ratings below that sovereign ceiling. Since sovereign creditworthiness differs across countries, this renders ratings of corporate creditworthiness incomparable. Harmonising practices and abandoning the sovereign ceiling would help, but this is easier said than done.<sup>20</sup>

Park and Rhee also consider whether the underprovision of clearing, settlement and depository services is an obstacle to the development of regional bond markets. They compare the advantages of clearing and settling cross-border transactions using local agents, global custodians and cross-border settlement systems operated by international central securities depositories (ICSDs) like Euroclear and Clearstream. Local custodians must be hired in each relevant market, and the quality of their services varies. Global custodians essentially do little more than arrange local custodians for their clients. ICSDs avoid this duplication and quality variation but have limited coverage in Asia, partly because of regulatory restrictions on financial transactions in various Asian countries. In addition, time zone differences mean that Euroclear and Clearstream do not provide real-time clearing for many Asian transactions. Park and Rhee argue for the creation of an Asian clearing and settlement system to rectify these problems. The question is whether creating a new system is really necessary or whether existing networks like Euroclear would provide an expanding range of services if Asian countries simply relaxed regulatory restrictions on financial transactions and the volume of bond market turnover increased.

Frank Braeckevelt also finds much to criticise in these areas, describing Asia's clearing and settlement infrastructure as opaque and fragmented. But he does not find that infrastructure is the principal barrier to the development of efficient bond markets in Asia; despite their fragmentation, existing clearing and settlement systems operate relatively well. Rather, the principal barriers to the development of regional bond markets, Braeckevelt concludes, are capital controls that limit the participation of foreign investors, along with factors limiting market liquidity such as the absence of incentives for Asian institutions to actively manage

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<sup>20</sup> In any case, it is not clear that local rating agencies provide a meaningful alternative to global agencies, since in practice they are often affiliated with those global agencies, which are also among their major shareholders.

their portfolios. This is consistent with the view that clearing and settlement issues, rather than requiring the development of an Asian clearing system, could be resolved by relaxing regulatory restrictions and encouraging additional market liquidity and turnover.

Finally, the paper by Bernhard Eschweiler analyses the role played by supervision and regulation in the development of Asian bond markets. Eschweiler finds that supervision and regulation in the region increasingly resemble global practices, in both structure and content. At the same time, there is considerable variation within Asia in the quality of regulation, Hong Kong and Singapore being the only countries that are fully compliant with global standards and best practices. Where other Asian countries tend to fall down is not so much in the design of regulation as in its enforcement, reflecting weaknesses in legal systems and creditor rights. Eschweiler concludes that the fastest route to developing bond markets in Asia is not through efforts to harmonise market rules and regulations but rather through the adoption and implementation of global best practices at the national level.

Given this variety of viewpoints and conclusions, it will be evident that there is less than complete consensus on the priority actions that should be taken to effectively foster the development of bond markets in Asia. If there is one thing on which observers agree, it is Eichengreen and Luengnaruemitchai's point that the slow growth of Asian bond markets is a problem with multiple dimensions whose solution requires multiple interventions: strengthening creditor rights, building stronger market infrastructure, improving regulatory design and enforcement, and removing the capital controls and tax measures that limit foreign issuance and investor participation - while adapting macroeconomic policies, including the exchange rate regime, to the reality of financial integration. The small scale of many Asian economies and financial markets also remains a barrier to the development of deep and liquid local markets at the national level; on this too there is agreement, although there is no consensus, at least yet, on whether this means that priority should be attached to harmonising bond market rules, integrating clearing and settlement systems, and creating pan-Asian standards for rating agencies so that market growth can proceed at the regional rather than the national level. Clearly, there is no shortage of positive steps that can be taken to promote the development of Asian bond markets. The key task going forward is to identify which such measures should be priorities.

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# For the advent of a promising and sound Asian bond market

Tae-Shin Kwon

## Introduction

Good morning, distinguished guests, ladies and gentlemen! Let me first thank the President of Korea University, Dr Yoon Dae Euh, for the invitation to participate in this very important conference, and also the organisers for their efforts in hosting this occasion. It is my great honour to have this opportunity to address such a distinguished group of experts and practitioners from government, academia, financial markets and international organisations.

What policies should we adopt to further develop the Asian bond market? All Asian countries already share a common understanding of the significance of developing a regional bond market and have embarked on efforts towards this end. Now it is appropriate for us to evaluate past performance and elaborate future direction. In this context, I believe strongly that this conference is very timely and meaningful.

## Why is a regional bond market so important?

There has been wide recognition that the Asian financial crisis broke out due to two major reasons: first, excessive reliance on bank-intermediated financing, and second, foreign short-term financing leading to mismatches in currency and maturity. Regrettably, many borrowers in this region still have only limited access to long-term local currency financing. For this reason, how to develop the local currency bond markets has recently become one of the hottest policy issues in the region.

Another reason for developing the Asian bond market is the need to recycle accumulated capital directly back into the region. Although Asian countries have replenished their foreign exchange reserves substantially since the financial crisis, most of the funds have been invested in the developed markets, including the United States and Europe, and only later flowed back into the region in the form of foreign currency denominated loans, purchases of equities, and foreign direct investments. This situation needs to change.

It is sad to note that there is hardly any demand for local currency bonds from cross-border investors. In this regard, we have to create investment products that are of interest to regional investors. All things considered, regional borrowers will remain dependent on the international financial markets to a large extent until the Asian bond market is well established.

Therefore, the policymakers and economists in the region have reached a consensus on the need to promote the regional bond market in order to obtain the following benefits. The first and most important is that an advanced bond market would allow Asian countries to prevent the recurrence of financial crises as well as facilitating the recycling of regional savings. The Asian financial crisis taught this region a hard lesson: that the development of a strong and deep Asian bond market is an essential element in ensuring that long-term, local currency funds are available for investment in the region. In addition, bond market development would help to narrow the gap between capital markets in advanced and emerging market economies, and also to achieve better balanced capital markets within the region. The more advanced emerging economy bond markets become, the more efficient regional capital

markets will be as a whole. And this, in turn, will raise the efficiency and growth potential of the region's economies.

I'd like to make clear that deeper and better balanced capital markets provide a shared benefit to all economies, serving as more reliable and stable sources of financing. Moreover, they bring additional benefits for both issuers and investors, such as transparent accounting practices, well educated financial experts and various types of financial instruments. Such improvements would undoubtedly bring about a virtuous circle of prosperity all over the continent.

## **What has been done so far?**

Against this background, each of the Asian economies has made tremendous efforts with a view to promoting bond markets at both national and regional level. For instance, the Korean government has undertaken significant financial sector reforms at unprecedented speed since the Asian crisis, and introduced a series of important measures for the advancement of the country's capital market. Notably, Korea has successfully developed its securitisation and credit guarantee market through asset-backed security (ABS) schemes.

We have also launched a regional financial cooperation project - the Asian Bond Market Initiative - aimed at developing the bond market through various forums such as APEC, ASEAN+3 and EMEAP. Under these regional groups, a number of concrete steps are being taken to complement individual country efforts to develop the bond market. For example, APEC and ASEAN+3 are focusing on the supply side of the bond market. That is to say, they are mainly studying ways to provide high grade bonds for investors. In the meantime, EMEAP is attending to the demand side by establishing an Asian Bond Fund with members' foreign reserves for the purpose of securing regional demand for bonds.

These regional initiatives are historic and unprecedented. Through these forums, the region's policymakers have maintained regular dialogue and discussion for the last couple of years. In addition, a number of seminars and symposiums like today's conference have been organised to foster the exchange of views and knowledge to be shared among academics, think tanks and the private sector.

Over the course of studies and discussions, Asian countries have reached an agreement that establishing bond market infrastructures, such as a credit guarantee mechanism and settlement and credit rating systems, is essential for regional bond markets to prosper. As a result, six working groups have been established and are currently addressing these issues on a voluntary basis under the Asian Bond Market Initiative. There has already been substantial progress in the drive to set up this bond market infrastructure. I believe that we will see tangible outcomes in the near future.

## **Future challenges**

Despite much endeavour and many achievements to date, we have yet to overcome many challenges. We have stored up a vast number of ideas and suggestions from numerous studies and meetings on this issue. It is now time for individual countries to take practical steps in a more comprehensive and well organised manner. At this moment, we need to pay more attention to how to create an attractive financial market for domestic and overseas investors alike.

To this end, first of all, financial reform and liberalisation initiatives need to maintain their momentum in each economy. In addition, we must create highly competitive financial institutions within the region to prepare for any unexpected financial market vulnerability. By

doing so, we can strengthen our financial markets and also afford regional market participants more opportunities to invest in fully qualified bonds equivalent to those issued by western countries.

Second, we should seek advancement and harmony simultaneously in the regulatory and supervisory systems of Asian economies by developing advanced transaction regulations and a more transparent accounting and disclosure system. This, in turn, would enable investors to minimise liquidity and credit risk.

It is true that one size does not fit all. However, there are many common denominators that exist in well functioning regulatory and supervisory systems. In this context, we should endeavour to harmonise regulations for the protection of investors' interests, which will lead to a more active regional bond market.

Third, we should accelerate the already extensive efforts to develop market infrastructure. Solid market infrastructure is the basis for a promising and sound bond market. Therefore, we should focus more on setting up efficient settlement and credit rating systems, strengthening institutional investors and improving risk management techniques.

Meanwhile, the so-called credit quality gap between advanced and emerging market economies is also a major impediment to the development of regional bond markets. To bridge this gap, we should make better use of securitisation and credit guarantees, which I know is one of this conference's primary subjects. From our experience, I am sure that the combination of securitisation and credit enhancement mechanisms will serve as a model for the Asian bond market and reduce the gap between borrowers' credit standing and investors' requirements.

Korea is keen to contribute to the further development of local currency bond markets in the region by drawing on the experience gained in developing the country's bond market and ABS market after the financial crisis. Finally, we should offer further technical assistance and advice to emerging market economies in the region. Although many technical assistance programmes are available, our hard-earned experience can be put at the service of these economies more efficiently.

It would be in every regional country's interest to lessen the trials and errors of emerging market economies in the process of strengthening their bond markets, and at the same time the developed economies would be able to secure new markets.

## **Conclusion**

The question of whether bond market development will be in vain or will become a stepping stone for sustainable economic growth wholly depends on our future attitude. Building on the efforts and progress made so far, member economies have to continuously cooperate with each other to secure our common goal of developing sound and efficient bond markets in the region. I can assure you that the Korean government will spare no effort in achieving our goal, the advent of a promising and sound Asian bond market.

## Asian financial cooperation as seen from Europe

Gunter D Baer

It is a great pleasure for me to attend this conference, jointly organised by Korea University and the BIS. We at the BIS have organised conferences with monetary institutions in the region, including the State Administration of Foreign Exchange in Beijing and the Bank of Thailand in Bangkok, but this is the first with an academic institution in the region. We take this opportunity to salute Korea University on its 100th anniversary and to wish it well in its next century. As Seoul aspires to become a hub for Northeast Asia, Korea's world-class centres of learning will come into their own.

We meet in this splendid academic environment to discuss a practical and topical subject. The work to be reported and commented on here is certainly of great relevance to a matter that is enjoying high priority on the agenda of Asian policymakers, namely promoting the development of Asian bond markets.

In fact, I am convinced that steps to promote the Asian bond market have the potential to make a contribution to monetary and financial cooperation in Asia that goes beyond simply deepening and enhancing the efficiency of today's bond markets. Let me explain what I have in mind by looking at Asian monetary cooperation through the European rear-view mirror. In doing so, I will first make some broad-brush comparisons between Asian and European developments and then present some observations on the forces that, in my mind, have driven the process of cooperation in Europe - leaving it to you to decide whether a similar development could be expected in Asia.

At the risk of oversimplifying, there are at least two developments that are prompting closer monetary cooperation in Asia even as they did in Europe. The first is a marked increase in trade integration across the region, accompanied by the emergence of poles of economic growth independent of US demand and by a growing awareness of vulnerability to exchange rate changes.

In Europe, this process was partly the result and partly the cause of closer monetary cooperation. And I am proud to say that the BIS, in offering technical and meeting-related support, played an important role in this process. Without going into detail, let me illustrate this with a couple of examples. Between 1950 and 1958 the European Payments Union used the BIS as an agent to permit the multilateralisation of bilateral surpluses and deficits in Europe, thus preparing the ground for a return to current account convertibility. In the Treaty of Rome of 1958 the European Community established the Monetary Committee, composed of very senior central bank and finance ministry officials. And in 1964 the European central banks set up the Committee of Governors as their central forum for cooperation. This Committee met for 30 years at the BIS - until a new European institution was established in Frankfurt.

In Asia the response to growing regional integration broadly paralleled the European development. Regional central bank forums were launched, such as SEANZA (in 1957) and SEACEN (formally in 1982), to promote joint training and research. EMEAP started in 1991, operating first at Deputy Governor and later at Governor level, and soon established working groups in three financial areas of particular concern to central banks. In fact, these groups complemented those which had been in existence at the BIS for many years.

The second common trend in the development of monetary cooperation in Asia and Europe was the impact of crises on the building of institutional arrangements. In Europe, the shock of the collapse of the Bretton Woods system and the beginning of generalised floating prompted the creation of the so-called narrow margins arrangement, better known as the

“snake”, supported by the European Monetary Cooperation Fund (EMCF), which settled intervention balances and provided short-term balance of payments support. Incidentally, this Fund existed more on paper - all operations were performed by the BIS acting as agent. Still, the record of these early efforts at monetary and exchange rate stability was pretty chequered, as inflation differentials necessitated parity changes and/or forced countries to opt out of the system.

The shock of the foreign exchange and banking crisis in Asia in 1997-98 also initiated steps towards building firmer institutional structures - though not necessarily of the kind set up in Europe. The main strategy for building defences against currency crises was to increase the availability of reserves, either through swap lines as agreed by ASEAN+3 under the Chiang Mai Initiative, or simply by bolstering reserves as a kind of self-insurance. A different and, in its multilateral character, potentially far-reaching institutional measure was EMEAP's launching last June of the Asian Bond Fund (ABF) in dollar-denominated instruments, aimed at promoting the development of a regional bond market. It was recognised that a dollar-denominated fund was the art of the possible rather than the desideratum. Accordingly, active discussions are now under way to add a second ABF in domestic currency. An extremely significant and multipronged approach to improving the underlying financial structure is being pursued in parallel by ASEAN+3.

These developments in monetary cooperation pertain mainly to the past, with Asia lagging behind Europe, where such cooperation led in 1999 to the creation of a single currency and a common central bank. Naturally, this gives rise to the speculative question of whether developments in Asia will take the same turn, that is, follow the European path. Since we at the BIS do not speculate, I can neatly sidestep this question. However, having been closely involved for many years in the process of European monetary cooperation, I can highlight some of the forces that were instrumental in reaching the goal of monetary unification. Then I shall leave it to you to infer what this could mean for future monetary cooperation in Asia.

Let me start with two more principal observations. The first is that the move towards monetary union in Europe was foremost a political process. Without the political will and impetus, monetary and financial integration at today's level could not have happened.

Having said this, my second principal observation is that the political objective of monetary union would also not have been achieved without the active part played by the financial authorities and, in particular, the central banks. Just to remind you, the breakthrough in moving to monetary union was based on a blueprint of how to realise monetary union (the Delors Report of 1989) presented by a group of central bank Governors.

But, in addition to these points, I would identify at least three lessons to be drawn from the process of monetary cooperation in Europe.

First, financing arrangements such as short-term swaps or medium-term balance of payments loans (as granted by the EMCF and the European Community during the first phase of the exchange rate mechanism) have frequently been cited as an important prerequisite for the success of the exchange rate arrangements. I doubt that their contribution in terms of providing financial resources was really decisive, but I recognise that these mechanisms were sometimes of enormous psychological and tactical importance for coming to an agreement in the negotiations.

Second, institutional aspects matter. European experience, however, suggests that big institutional structures are not necessary for success - at least not until the moment that responsibility for policy is transferred to a new, common institution. In fact, the process of European central bank cooperation relied for decades on a very small permanent secretariat, working independently under the roof of the BIS.

Third, there is nothing better than an operational framework to promote and focus monetary cooperation. Such a framework could be a swap arrangement requiring accounting and settlement services, or it could be an ABF or some form of exchange rate mechanism. What

matters is that any such arrangement makes it necessary to meet, to exchange views and to take decisions in common. This in turn builds knowledge and mutual trust, which provide the basis for getting through difficult moments in more ambitious cooperative undertakings.

Let me conclude with these observations and, as I said earlier, I leave it to you to judge to what extent they are relevant for the process of Asian monetary cooperation. In one respect, however, I am certain the discussions held here between researchers and policymakers form part of the grand tradition of promoting monetary cooperation. On that note, I wish you all a challenging and fruitful exchange of views at this conference.

# Developing the bond market(s) of East Asia: global, regional or national?

Robert N McCauley and Yung-Chul Park<sup>1</sup>

The various initiatives to develop Asian bond markets tend to draw on a shared analysis of the Asian crisis of 1997-98. It is generally agreed that the mismatch between foreign currency debt and domestic currency cash flows, on the one hand, and short-term debt and long-term investments, on the other, left Asian firms and banks vulnerable to changing evaluations of creditworthiness and to exchange rate depreciation. More controversial is a related argument, which gained force as East Asia, excluding Japan, moved into a substantial current account surplus after the crisis. Asia is thought to be missing an opportunity if its savings flow into global capital markets only to be reinvested in some measure in the region at higher yields and at the discretion of global investors.<sup>2</sup> The development of a regional bond market or domestic bond markets is promoted to make financial structures more resilient, to diversify sources of financing and to increase the asset menu for investment in Asia.

Discussion of means to promote bond market development in East Asia can lose clarity owing to the very different images of the desired outcome held by the participants. In particular, some participants envision the creation of a regional market in which borrowers from around the region obtain funding in regional currencies from regional investors. Others envision improvement to the markets in which predominantly domestic borrowers meet predominantly domestic investors. For the sake of completeness and of drawing distinctions as boldly as possible, it is also worthwhile to consider a third image, namely that of globalised financial markets in which East Asian borrowers and investors participate as relatively small players.

This paper first defines terms and proceeds to sketch out these three alternative paths: global, regional and national. It then considers where markets currently stand, recognising that reality cuts across the neat ideal types sketched. Next, policies proposed to develop bond markets are lined up with the different images. Finally, we conclude with our own views on the preferred image.

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<sup>1</sup> The authors are grateful to Clifford Dammers, Guorong Jiang, Malcolm Knight, Francis Lau, Bob Rankin and Philip Wooldridge for drawing various points to our attention and to Christian Dembierment, Denis Pêtre and Swapan-Kumar Pradhan for statistical assistance. Any errors remain those of the authors. Views expressed are those of the authors and not the Bank for International Settlements.

<sup>2</sup> This is not the place to analyse these widely shared presumptions in depth. Suffice it to say that Korea's sizeable bond market before the crisis did not prevent a crisis. Moreover, it is not clear, at least at the aggregate level, that Korea suffered a currency mismatch problem. Bond market development can only keep East Asian savings in East Asia on a *net* basis if it increases domestic investment or consumption, leading to higher absorption and narrow current account surpluses. Gross flows are another matter. For development of the currency mismatch question, the prospects for narrower current accounts and two-way capital flows, respectively, see Cho and McCauley (2003), Park (2004) and McCauley (2003a).

## 1. Defining terms

Asian bonds are defined by residence of issuer. They are interest bearing obligations of Asian governments, financial institutions or corporations, wherever marketed and in whatever currency of denomination.

Bond markets can be classified according to residence of issuer, targeted investors and currency of denomination. For instance, the BIS international securities data cover everything but issues by residents targeted at resident investors denominated in domestic currency (Table 1). Issues by non-residents targeted at resident investors and denominated in domestic currency are part of the foreign bond markets, which go by various colourful names (yankee for United States; samurai for Japan; bulldog for the United Kingdom). Offshore (or “euro” in the old sense) markets involve targeting investors with bonds not denominated in their domestic currency.

Table 1  
**Classification of BIS securities statistics**

|                                    | Issues by residents                    | Issues by non-residents                           |
|------------------------------------|----------------------------------------|---------------------------------------------------|
| In domestic currency               |                                        |                                                   |
| Targeted at resident investors     | Domestic                               | International (foreign: yankee, samurai, bulldog) |
| Targeted at non-resident investors | International (offshore or euromarket) | International (offshore or euromarket)            |
| In foreign currency                | International                          | International                                     |

Source: BIS (2003a), p 14.

Our approach to defining global, regional and national or domestic markets relies primarily on the “who’s who” of issuers and investors and to a lesser extent on currency of denomination. Thus, global markets require broad international participation on the sell and the buy side, but can, conceptually at least, operate in as few as one or as many as all of the world’s currencies. A regional bond market would be defined primarily as one that brings together issuers and investors from a region, and secondarily as one that uses the currencies of the region. Finally, domestic bond markets feature mostly domestic issuers and investors, although foreign investors may play a more or less important role, while the currency of choice is the local currency.

We fine-tune our definitions of global, regional and national or domestic markets to East Asia and play down the distinction between onshore and offshore markets. Global bond markets would mostly feature dollar or euro bonds underwritten in London, placed in Asia and Europe and housed in Euroclear or Clearstream, as well as truly global bonds, which are also SEC-registered, offered simultaneously offshore and in the United States and housed in both the offshore depositories and the US Depository Trust Company.<sup>3</sup> Yen issues by Asian borrowers are taken to be examples of regional bonds whether they are legally sold offshore (relative to Japan) as euroyen bonds, onshore as samurai bonds or onshore as private placements. Issues by Asian borrowers non-resident in Hong Kong SAR or Singapore denominated in Hong Kong or Singapore dollars (foreign bonds rather than offshore bonds) are also termed regional bonds. It should be clear, therefore, that we consider that there are potentially several regional bond markets in East Asia. Further, one can imagine domestic regulations or withholding taxes

<sup>3</sup> As well as the near-global bonds, underwritten offshore and placed in the United States under the SEC Rule 144a.

favouring Thai or Korean borrowers selling Thai baht or Korean won bonds in Tokyo or Hong Kong. Such an offshore market would also count as a regional bond market, owing to issuers and investors sharing East Asian residence and the use of a regional currency.

## 2. Global bond markets

East Asian issuers and investors could integrate themselves into global bond markets. Global markets require cosmopolitan participation of issuers and investors, but could function with one or many currencies. At one extreme, global markets might operate with only one currency, or only with major currencies like dollar, euro and yen. At the other extreme, global markets might be very accepting of different currencies.

### Global bond market integration with few currencies

The extreme of one or few currencies would maximise the liquidity of bonds issued by East Asian issuers and the liquidity of bonds bought by East Asian investors. With well developed derivatives markets, issuers could swap the proceeds of their bond issues back into domestic currencies; similarly, investors could contract asset swaps to transform bonds denominated in major currencies into domestic currency assets.

The example of Canada is more to the point than that of any emerging market. When the issuers from an emerging market borrow in major currencies, the presumption is often made that they have no choice. That is, it is assumed that international investors, and perhaps domestic investors as well, will not buy bonds denominated in the home currency. Controversy attaches to whether this is a result, as it were, of natal curse (“original sin”) or is rather the reaction of investors to a history of variable inflation and less subtle violations of creditors’ rights. With Canada, by contrast, there is obviously a choice, although that choice has increasingly favoured the greenback rather than the loony.

Canadian corporations’ bond issues show an evolution to this first version of globalised markets. In the mid-1970s, Canadian firms denominated 80% of their bonds in the home currency. This proportion declined over the next 10 years, but recovered as Canadian firms sold Canadian dollar bonds in the eurobond market (moving from the domestic bond market to the global bond market in the second sense). This offshore demand for Canadian dollar bonds was associated with the higher interest rates on Canadian dollar bonds than on US dollar bonds at the time. As Canadian interest rates converged to US interest rate levels in the 1990s, the offshore demand dropped off and the Canadian dollar share started to fall again. By 2001, Canadian firms used the US dollar as much as the Canadian dollar to denominate their bonds.

It might be thought that the Canadian corporate sector’s use of the US dollar to denominate its bonds merely reflects the general level of the Canadian economy’s integration with the US economy, and thus the general use of the US dollar by Canadian households and firms. It is important to recognise, however, that the predominant role of the US dollar in the bond market *stands out as an exception* (Murray and Powell (2002)). Canadian holdings of dollars amount to no more than 10% of Canadian holdings of cash or money, and no more than 20% of bank loans or institutional portfolios. Canadian companies denominate their bonds, but not their bank loans, in US dollars because that way their bonds can find a wider market and thus fetch higher prices. To some extent, this wider market depends on differences on the buy and sell side in the readiness to use the derivatives markets. Thus, some managers of US dollar portfolios are not prepared to swap Canadian dollars into US dollars,<sup>4</sup> while the large Canadian

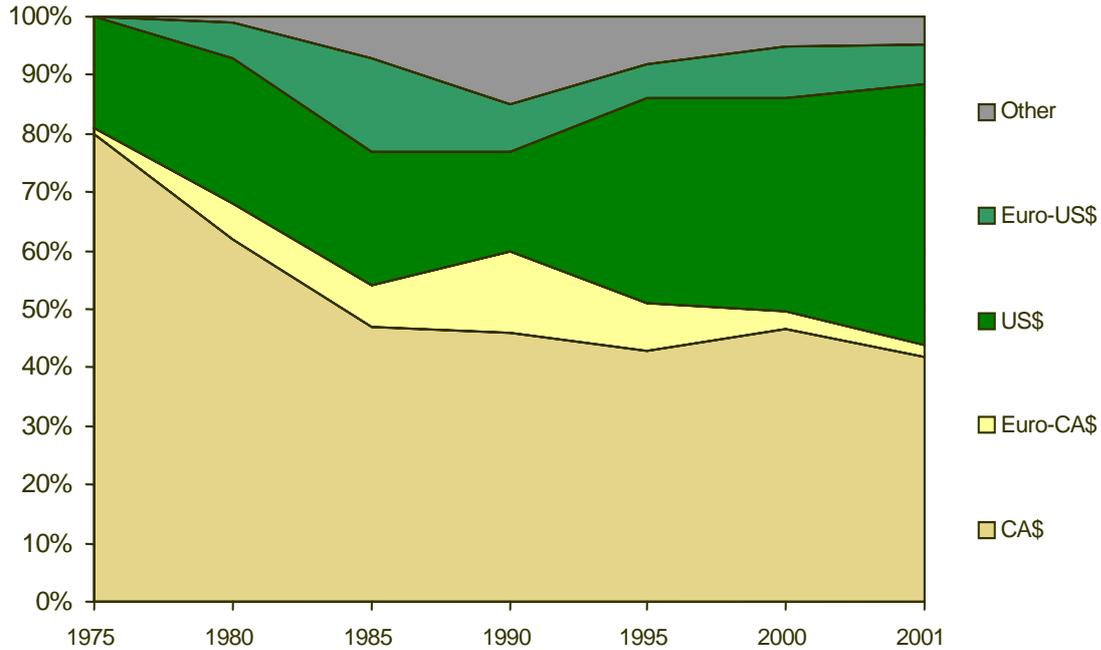
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<sup>4</sup> In the bank loan market, the major investors, namely banks, are in the swap business, while the smaller firms that rely on bank loans are less ready to manage a swap book.

firms that sell US dollar bonds could all be presumed to be prepared to swap out of the US dollar liabilities into Canadian dollar liabilities to achieve a desired currency mix of liabilities. In addition, the tilt towards the US dollar bond market by Canadian firms would enable their bonds to gain value from the greater depth, breadth and liquidity of US dollar markets, including the superior interest rate hedging and dealer financing capacities in the US dollar.

Graph 1

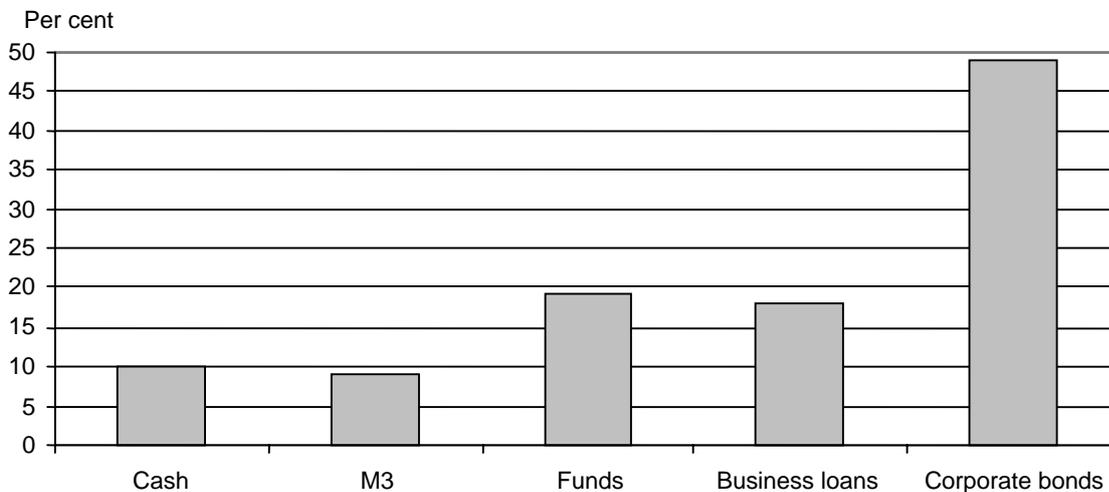
**Currency denomination of bonds issued by Canadian corporations**



Source: Bank of Canada.

Graph 2

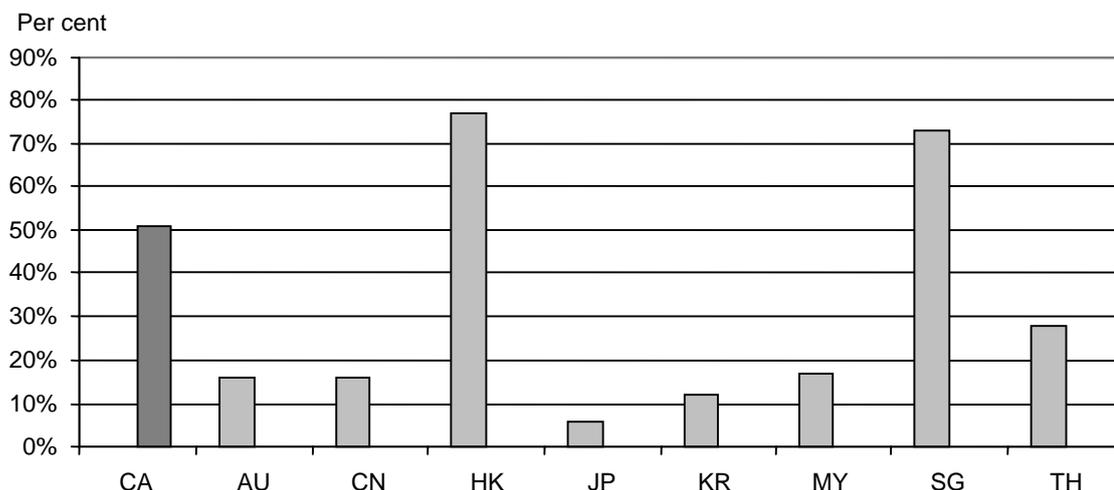
**US dollar share of Canadian assets/liabilities**



Source: Murray and Powell (2002).

The Canadian corporate sector's integration into the global dollar bond market is matched in East Asia by firms in Hong Kong and Singapore. In part, this reflects the importance of multinational firms headquartered in the two city economies, such as Hutchison Whampoa, which in 2003 built up a single dollar bond to the size of \$4 billion. Relying on a different source of data, Fernandez and Klassen (2004) find that Philippine firms denominate the bulk of their bonds in the dollar.

Graph 3  
International share of corporate debt securities



Source: *BIS Quarterly Review*, Tables 12C and 16B, data for September 2003.

One can see aspects of this global vision at work in the market for East Asian dollar bonds. Thus it is widely thought that one of the largest holders of the Republic of Korea's 2013 dollar bond is an insurance company connected to one of the largest chaebol in Korea. It is thought to have bought the dollar paper and to have swapped the dollar cash flows for Korean won cash flows, thereby matching its liabilities to its policyholders.

Proponents of the global image of bond market development for East Asia would readily acknowledge that cross-currency hedging markets need to develop further. Only then could it be assumed that firms can sell dollar bonds and hedge into domestic currency liabilities, and institutional investors can buy dollar bonds and hedge into domestic currency assets. In the face of capital controls, non-resident equity investors and multinational firms have contributed to the development of non-deliverable forward foreign exchange markets in the region (Ma et al (2004)). More to the point are the longer-term cross-currency swap markets, which allow the hedging of whole streams of cash flows stretching over years. These tend to have been small at the time of the last comprehensive measurement, in April 2001, although they have generally grown since (Table 2).

Table 2  
Cross-currency swap markets: daily turnover in millions of US dollars

|      | AU  | CN | HK    | IN      | ID | JP    | KR  | MY | NZ  | PH         | SG         | TW    | TH    | CA  | EU    |
|------|-----|----|-------|---------|----|-------|-----|----|-----|------------|------------|-------|-------|-----|-------|
| 2001 | 510 | 0  | 285   | 1       | 13 | 1,969 | 46  | 0  | 101 | 2          | 18         | 21    | 11    | 361 | 2,190 |
| 2003 | na  | 0  | 30-50 | 250-300 | 0  | na    | 100 | 0  | na  | "Volatile" | "Volatile" | 20-30 | 15-20 | na  | na    |

Sources: Hohensee and Lee (2006) for 2003; BIS (2002), pp 78-81 for 2001.

## Global bond market integration with many currencies

There is another, more inclusive image of global bond markets. Instead of a duopoly or oligopoly of currencies, the international bond market can be conceived of as an open competition among currencies. Currencies from East Asia and the Pacific could be, and to some extent are, integrated into this global bond marketplace. The euro has surpassed the dollar in this market and, taken together, the two currencies represent about 85% of outstanding international bonds - close to a duopoly in practice (Graph 4). Sterling represents the next biggest currency sector, with 7% of outstanding bonds. Taken together, currencies of East Asia and the Pacific (broken out on the right-hand side) amount to \$650 billion in international bonds, about 6% of the total of over \$11 trillion. Of these, the Japanese yen represents the largest part (about three quarters of the regional total), with 4% of outstanding international bonds. The Australian dollar, Hong Kong dollar, Singapore dollar and New Zealand dollar bonds follow. There is a small New Taiwan dollar segment as well, while a few equity-linked capital issues for Thai banks were denominated in Thai baht and sold to international investors. All in all, five or six of the EMEAP economies have a presence in the international bond market.

The international bond markets have shown a willingness to accept peripheral or “exotic” currencies, especially when these offer higher yields to compensate for lack of familiarity, greater perceived exchange rate risk and often lower liquidity. Thus, higher coupon payments have characterised the so-called dollar bloc currencies (the Canadian, Australian and New Zealand dollars) when these have sold well. The process of monetary unification in Europe led to “convergence plays” on the Finnish markka, Irish pound, Portuguese escudo, Spanish peseta, Italian lira and, most recently, the Greek drachma. This same thinking now warms investors to Polish zloty and Czech koruna bonds (Table 3). In contrast, investors interested in Hungarian forint bonds have had to enter the domestic market and buy government bonds.

Table 3

### Minor currency bonds outstanding in the international bond market, end-2003

Billions of US dollars

|                  |      |                    |     |
|------------------|------|--------------------|-----|
| Argentine peso   | 0.9  | Singapore dollar   | 9.4 |
| Czech koruna     | 8.0  | South African rand | 9.3 |
| Hong Kong dollar | 45.6 | New Taiwan dollar  | 4.0 |
| Polish zloty     | 5.2  | Thai baht          | 1.7 |

Source: BIS.

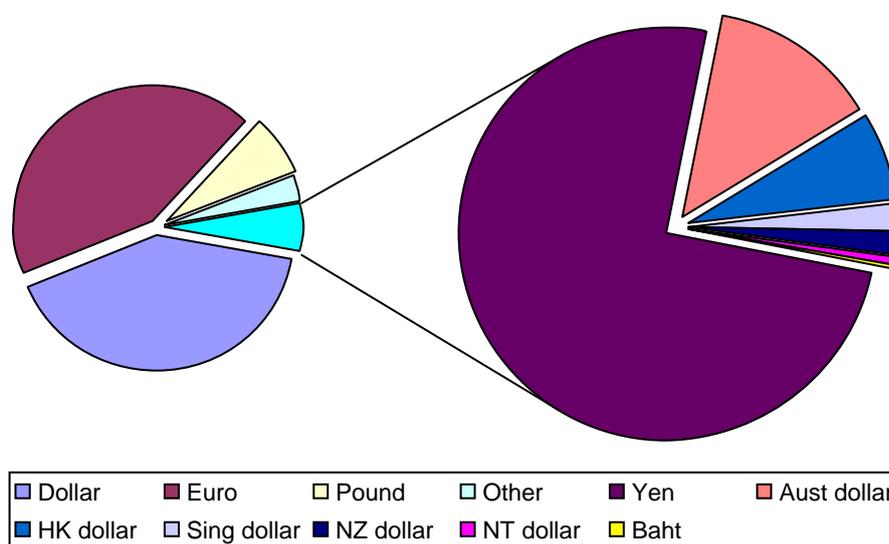
Outside Europe, foreign investors have had their choice between buying South African rand bonds in the international bond market and buying the government bonds in the domestic market. Chile and Mexico have not allowed their bonds denominated in their respective pesos to be sold in international markets.

A common element in the dollar bloc, peripheral European and other issues is a higher coupon than that available on bonds denominated in major currencies. One could argue, in fact, that, although all of the currency sectors listed in Table 3 satisfy the BIS definition of international bonds, the relatively low-coupon Hong Kong dollar, Singapore dollar and New Taiwan dollar bonds have not been widely marketed outside the three economies. If wider demand in the international bond market does indeed depend on attractive coupons, then the higher-coupon, moderate-inflation currencies of East Asia may have the best shot at international portfolios. In particular, the Korean won, Philippine peso and Indonesian rupiah

in East Asia, and Indian rupee bonds in South Asia, could meet with the greatest demand. The acceptance of such bonds to investors in global offshore markets has not been tested to date owing to the unwillingness of domestic authorities to permit them.

Graph 4

**Currency composition of the international bond market**



### 3. Regional bond market

In a regional bond market, governments, banks and companies in the region would tap institutional investors, banks, mutual funds and individuals in the region. There is a strong feeling in East Asia that the region has never achieved what Europe had before the euro. As Donald Tsang, Hong Kong's then Financial Secretary, asked rhetorically, "How is that we in Asia have never been able to replicate the eurobond market success in this part of the world?" (Tsang (1998)). We interpret the reference to have been to European issuers' selling bonds denominated in European currencies largely to European buyers. This section first gives an example of an East Asian issuer tapping regional portfolios in a regional currency. Then the truth of Tsang's observation is demonstrated in terms of currency sectors. This section then considers whether there are important regional elements in the international dollar bond market and, more narrowly, in the international market for Australian dollar bonds.

#### KAL bond issue

An example of an Asian firm tapping a regional bond market is provided by the Korean Air Lines issue in 2003. Given Korea's proximity to Japan and the flow of tourists from Japan to Korea, Korean Air has a regular flow of yen receipts from travel agents in Japan. By pooling these cash flows, and adding a credit enhancement from the Korea Development Bank, a yen-denominated bond could be issued that met the quality demands of Japanese investors.

#### Regional issuers in regional currencies: Europe versus Asia

It is well known that the introduction of the euro has helped to encourage European issuance in the new currency, and led to rapid growth of the euro bond market. Part of this growth has been in the international bond segment, and has led the euro sector to overtake the dollar sector (Graph 4 above). The relevance of all these observations for East Asia is at best distant, since few foresee the introduction of a common currency in East Asia for a generation.

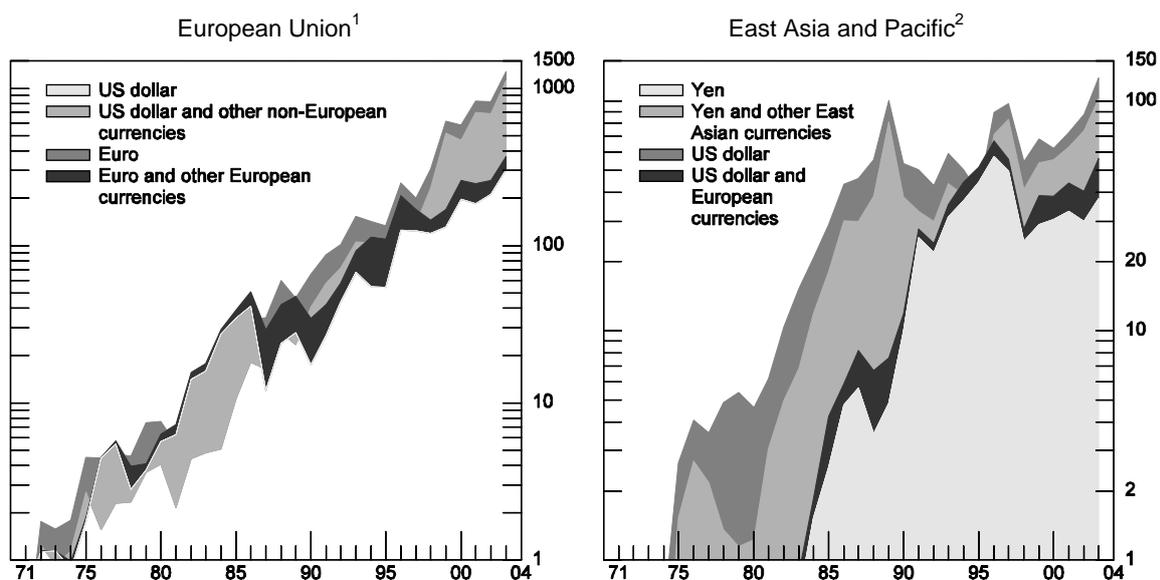
Of greater relevance is the record of the international bond market before the introduction of the euro. Scrolling back 10 years, what role did the Deutsche mark, its surrogates (like the Dutch guilder, Danish krone or ECU), and its immediate competitors like the French franc and others, play in the meeting the international financing needs of European governments, banks and corporations?

Looking at the left-hand panel of Graph 5, it is clear that the euro's predecessor currencies played a predominant role in the international bond offerings of European (defined here as current EU) borrowers. To be sure, dollar issues figure importantly, but since at least five years before the euro, its predecessor currencies have accounted for more issuance than the dollar. The regional element is even larger when the share of sterling bonds is taken into account.

The right-hand panel tells a very different story. Issuance by East Asian governments, banks and corporations in the international bond market is overwhelmingly dollar-denominated. Regulation, buy-side characteristics and exchange rate management have all played roles in preventing Asia's currencies from posing tougher competition to the dollar.

To begin with, the authorities in important Asian countries have not been prepared to accept non-resident issues targeted at resident investors or offshore issues in their currencies. In the case of Singapore, foreign issuers have been allowed to sell Singapore dollar bonds, but only to swap the proceeds into foreign currency. Thus, a multinational company with operations in Indonesia, the Philippines and Thailand that found the Singapore dollar an attractive currency to borrow in, both because of its movement with regional currencies and because of the low interest rate, might be able to access the Singapore dollar bond market, but not hold liabilities in the Singapore dollar at the end of the day. Regulation in the form of Japanese-language registration requirements has also made especially opportunistic issuance in the yen difficult.

Graph 5  
**Announced international bonds and notes issuance by nationality and currency**  
 In billions of US dollars  
 (semi-logarithmic scales)



<sup>1</sup> European Union refers to the current membership. Euro is the euro or its predecessor currencies. <sup>2</sup> Comprises Australia, China, Hong Kong SAR, India, Indonesia, Japan, Korea, Malaysia, New Zealand, the Philippines, Singapore, Taiwan (China) and Thailand.

Sources: Dealogic; Euroclear; ISMA; Thomson Financial Securities Data; BIS.

Nishi and Vergus (2004) emphasise the risk appetite of Japanese investors, and this factor, unlike regulation which has only eased over time, can explain why East Asian issuance in yen has not regained the levels reached before the Asian crisis (while that in the dollar has). Japanese investors are increasingly prepared to run currency risk, otherwise there would not be such an active market for Australian dollar paper there. When it comes to credit risk, however, Japanese investors' own recent domestic financial history has not well prepared them to accept it. Moreover, they feel burned by their experience with domestic high-yield issuers like Mycal and more so with foreign high-yield, high-risk issuers like Argentina. Thus, while a below investment grade issuer like the Republic of the Philippines, or even investment grade Federation of Malaysia, have tapped the dollar and euro segments of the international bond market, they have not sold much in the way of yen bonds. The yen bond market is also limited by the risk appetites of Japanese institutional investors. With rare exceptions like the leasing group Orix, Japanese institutional investors, like Japanese households, have been more willing to take on currency risk than credit risk in external investments. To be fair, as argued by Remolona and Schrijvers (2003), starting with a low-risk portfolio, yield enhancement through acceptance of credit risk is inherently a trickier proposition than yield enhancement through acceptance of foreign exchange risk. Because of the fat left tail of the distribution of returns on risky bonds, diversification requires very broad portfolios (which are particularly hard for a bond-picking household to assemble).

Exchange rate management may also play a role in the limited development of an Asian regional bond market. Regional currencies have tracked the yen only to a limited extent, at least until recently. This means that from the perspective of issuers worried about the possibility of their liabilities blowing up, selling yen bonds may have posed greater exchange rate risk than selling dollar bonds. The contrast with Europe would be that after the onset of generalised floating in 1973, a number of European currencies shared much of the Deutsche mark's movements against the dollar, thereby reducing the risk of governments' and corporations' mark borrowing. Nevertheless, Schmidt (2004) has argued that the yen markets have missed an opportunity in recent years insofar as regional currencies, especially the Korean won, have shared much of the yen's movements against the dollar.

Exchange rate management also bears on the attractiveness of the Hong Kong dollar as a currency to denominate bonds. Typically, there is a premium of long-term Hong Kong dollar yields over US dollar yields, in part reflecting currency risk and in part reflecting liquidity. To pay more for a Hong Kong dollar bond than a US dollar bond thus requires a view on the Hong Kong dollar. Thus, most international issuance of Hong Kong dollar bonds has been either opportunistic (that is, driven by profitable opportunities to swap the proceeds) or for funding assets in Hong Kong.

### **Regional elements in international bond markets**

There may be important regional elements in the global bond markets as they concern East Asia and the Pacific.<sup>5</sup> One regional element in the international bond market is the placement of international Australian dollar bonds in Japan among retail investors. Another, broader regional element may be a regional bias in the investor base for US dollar bonds sold by East Asian borrowers.

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<sup>5</sup> Above, it was argued that the Canadian corporate sector had integrated its bonds into global capital markets, progressively eschewing the Canadian dollar in favour of issuing bonds into the broader, deeper and more liquid US dollar market. This was taken to be a case of embracing the global bond market. From another perspective, this is a case of regionalism in bond markets, since many US buy-side investors' portfolio guidelines or restrictions would treat Canadian issuers the same as US issuers. What is on one view a strong case of globalisation, might therefore on another view seem to be a case of regionalism within global markets.

### ***Uridashi market***

As explained in the paper in this conference by Nishi and Vergus (2004), Japanese securities houses market Australian dollar bonds formally issued as international bonds to Japanese households. Since the household buyers are averse to credit risk, if not currency risk, the issuers of the bonds are mostly very high-quality governments or agencies from outside Australia. They are opportunistic issuers looking only for cheap funding when measured against US dollar Libor or Euribor. Through the swap market, their liabilities ultimately are taken on by Australian banks or firms financing assets in Australia. While complicated, the essence of the transactions is the willingness of Japanese households to take on the currency risk of the Australian dollar in exchange for a decent coupon. And what is clear is that these bonds require an ongoing investment in providing information to Japanese households by the Japanese securities firms.

Is it possible to imagine this same marketing being applied to the sale of, say, Korean won bonds to Japanese households? While Korea does not possess Australia's aura of a vacation and honeymoon destination, it has had another advantage in recent years. As noted above, the won has shared a considerable, albeit varying, part of the yen's movements against the dollar. A Japanese investor in a won bond would have experienced less volatility in the value of their holdings compared to an investment in a US dollar bond. Were such a co-movement to persist it would favour the development of Japanese demand for won bonds. Indeed, the relative stability of the won in terms of yen led Korean companies, reportedly small and medium-sized enterprises with little in the way of yen cash flows, to build up \$7 billion in yen debt from Korean banks in 2002.<sup>6</sup>

### ***A regional bias in investment in US dollar bonds issued by Asian borrowers?***

A question has arisen whether Asian buyers figure disproportionately among investors in US dollar bonds issued by East Asian governments and corporations. Market participants have coined the term "Asian bid" to describe this asserted clientele, which is used to explain the spreads of such bonds or their stability (Fernandez and Li (2002), Woods (2002), Schmidt (2004)). McCauley et al (2002) consulted the trade press for reports of the placement of dollar- and euro-denominated bonds of East Asian issuers and reported that almost half were placed in Asia. Eichengreen and Park (2003) question whether there is anything more to the Asian bid than home country investors' buying dollar bonds.

There is agreement that there is home bias. For instance, Korean banks and institutional investors are reported to be important holders of the Republic's and Korean Development Bank's dollar bonds; Philippine banks match their US dollar deposits with the shorter-dated Philippine government dollar bonds; and Chinese banks are reported to be important holders of Chinese dollar bonds.

The question is whether, in addition to home bias, there is substantial regional bias. Eichengreen and Park show that during the period covered by McCauley et al, Japanese holdings of Asian bonds (presumably mostly dollar-denominated) actually fell in dollar amounts. They ask, if not Japanese investors, then who are the Asian investors with a regional taste in bond buying? Moreover, they argue that Asian investors do not plausibly have any informational advantage in buying Asian bonds and that, given the similarity of economic structure and business cycles, Asian investors cannot sensibly diversify by buying Asian dollar bonds.

The issue will not be resolved here. The Box reviews the evidence from the BIS banking data and from the IMF's portfolio capital survey in 2002. Substantial holdings of Asian bonds in

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<sup>6</sup> See Financial Supervisory Service (2002).

Hong Kong or Singapore leave open the question of the ultimate beneficial owner (eg an Indonesian bank branch there holding an Indonesian bond or a French-owned insurer there holding a Korean bond). There remains room for diverging interpretations of the data on cross-border holdings of Asian bonds in Asia.

### **Regional bond market: a summary**

To conclude, although Asia enjoys more than one financial centre featuring the issuance of bonds by non-resident borrowers, the yen, the Hong Kong dollar and the Singapore dollar have not to date attracted a large share of the offshore issuance from the region. Unlike the EU countries in the years before the introduction of the euro, the international dollar market still captures most of the offshore issuance of bonds by regional borrowers.

A variety of factors seem to be responsible for the relatively small role of existing regional bond markets in the international fund-raising of regional borrowers. Regulation used to limit access to the yen market by lower-rated borrowers and still imposes some costs. At this point, however, it is probably the aversion of Japanese investors to credit risk which poses the larger hurdle to regional issuance. Regulation does limit the ability of all foreign issuers to arrange Singapore dollar liabilities, while the currency board system in Hong Kong makes Hong Kong dollar funding generally unattractive to international borrowers.

While there may be important regional currents in the flow of funds in the US and Australian dollar global bond markets, our overall result is that the regional bond markets to date have only offered limited funding options. Thus, we turn to the national markets, without having found a very solid alternative to them in the existing regional markets.

#### **Box**

#### **Cross-border holdings of Asian bonds: banks and all investors**

Robert N McCauley and Patrick McGuire

While there is broad agreement among policymakers in East Asia that further financial integration in the region would be desirable, no such consensus has emerged regarding the proper understanding of the current extent of such integration. Market-based analysts highlight the importance of the "Asian bid" - that is, a disproportionate representation of regional buyers - in the primary and secondary market for dollar bonds issued by East Asian governments, banks and firms.<sup>1</sup> This view has been challenged, however, by reference to official Japanese data on holdings of bonds by Japanese residents, which suggest low and declining holdings of the obligations of Asian issuers.

This box consults two sources of evidence to shed light on the extent of the regional bias in holdings of international bonds issued by East Asian borrowers. First, the BIS international banking data report banks' cross-border claims that take the form of bonds, providing country detail and a time series perspective. Banks are natural buyers of bonds, especially those of relatively short maturity or those bearing floating interest rates, but represent just one investor segment. Second, the IMF portfolio survey of securities holdings provides broader coverage of the investor base, capturing institutional investors as well as banks, but represents only a snapshot at end-2002. The IMF data are in principle universal, while the BIS reporting area does not include all the important Asian economies.

#### **BIS international banking data**

Even as a means to profile a single segment of investor demand, the BIS data are limited by the reporting area, which does not include some important economies in East Asia (BIS (2003b)). In

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<sup>1</sup> See Schmidt, 2004.

Box (cont)

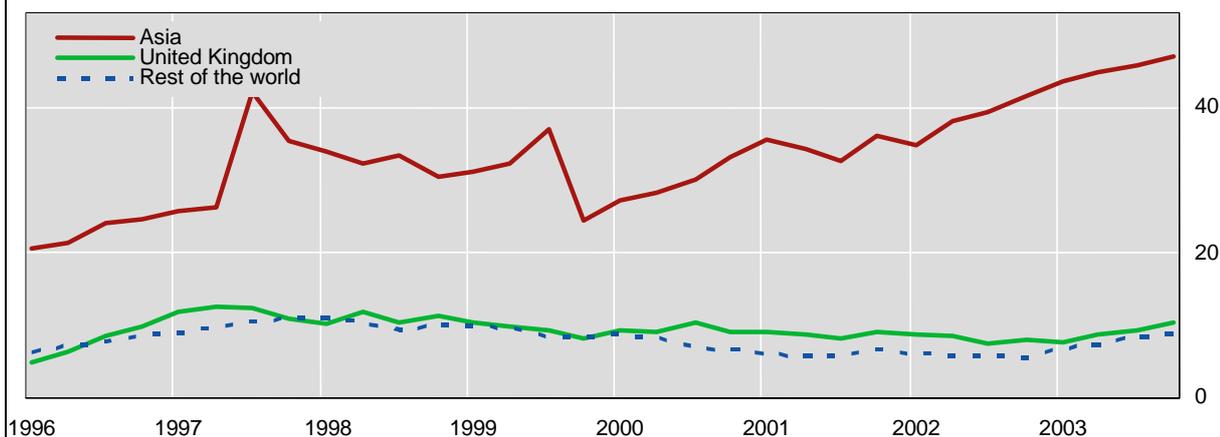
### Cross-border holdings of Asian bonds: banks and all investors

particular, while Hong Kong SAR, Japan and Singapore are long-time reporters, Australia and Taiwan (China) have joined only recently. Yet to participate are China, Korea, Malaysia and Thailand. Thus, Asian holdings of Asian bonds as measured by the BIS data will be smaller than the actual amount insofar as banks in these latter countries hold bonds issued by their neighbours. The data include both international bonds and domestic securities held offshore, for instance a Hong Kong bank's holdings of a Korean treasury bond (which are, judging by Korean flow of funds data, very small).<sup>2</sup>

The BIS banking data do suggest a regional bias in holdings of Asian bonds by Asian banks. This conclusion emerges from two findings. First, as of the fourth quarter of 2003 BIS area banks held an estimated \$66 billion in bonds issued by borrowers from Asia excluding Japan.<sup>3</sup> In terms of country composition, the largest holdings are vis-à-vis Singapore and Korea (as suggested by the BIS data on international bonds issued by Asia excluding Japan). Second, an estimated two thirds of these bonds are held in Asia, including Hong Kong, Japan, Singapore and Taiwan (see the graph below). About half the rest are held by banks in the United Kingdom.<sup>4</sup> Holdings of Asian bonds by reporting banks in Asia were squeezed by the combination of regional banks' loss of access to international interbank markets during the period of the Japan premium and the Asian crisis, but have risen since late 1999.

### Estimated holdings of Asian bonds by BIS area banks

In billions of US dollars



### IMF portfolio survey

The IMF survey of cross-border portfolio holdings of bonds provides a matrix of holdings for East Asia and allows these holdings to be put into a global context (Bae et al (2006)). It shows holdings of long-term debt securities at the end of 2002 and includes both foreign currency and local currency bonds. These data need to be interpreted with some care because the decomposition by country is often not complete.

<sup>2</sup> The data also include some holdings of short-term paper, such as certificates of deposit, that are not relevant to the question under discussion.

<sup>3</sup> Asia excluding Japan includes Hong Kong, Singapore and Macao, typically classified as offshore centres by the BIS.

<sup>4</sup> The country composition of Hong Kong banks' bond holdings is estimated using the composition of loans, and bond holdings are estimated for Japan and Singapore from country by country data on non-loan claims.

## Box (cont)

**Cross-border holdings of Asian bonds: banks and all investors**

The data indicate an uneven but in aggregate high degree of regional bias in bond holdings across Asia excluding Japan. Asia excluding Japan holds over half (51.3%) the bonds issued by borrowers in that area (last row of the table). In the first column of the table, for instance, investors in Hong Kong put 12.8% of their international bond portfolio into Asian bonds, and, given the size of their aggregate portfolio, they account for a high share (7%) of international holdings of such bonds. Excluding Japanese bonds, Hong Kong holds 16% of global holdings of Asian bonds. Singapore puts a higher fraction of its overall international bond portfolio in Asian bonds, but, given its portfolio size, accounts for a smaller share (13.9%) of global holdings of Asia excluding Japan's bonds. These portfolio data support the hypothesis of a regional bias.

It turns out that the largest foreign investor in the region, Japan, does not show an Asian bias. While Japan's holdings of Asian bonds amount to more than Hong Kong's or Singapore's holdings (last row of the table), they are very small from the Japanese perspective. Of the grand total of \$7.7 trillion in cross-border bond investment captured by the survey, Asian bonds amount to about \$225 billion (about 3%), of which Japanese bonds account for around two thirds (\$160 billion). Global holdings of bonds from Asia excluding Japan thus amount to approximately 1% of holdings. Japan's holdings of bonds from Asia excluding Japan are also around 1%, which is about par. Despite the scale of the Japanese portfolio and the country's proximity, therefore, Japan has no disproportionate holdings of Asian bonds. In contrast, with double digit percentage weights on Asian bonds, investors in Hong Kong, Indonesia, Korea, Macao (where the currency board vis-à-vis the Hong Kong dollar must play a role), Malaysia and Singapore do favour regional bonds. Given the scale of holdings, the regional bias derives mostly from the behaviour of portfolio managers in Hong Kong and Singapore. The result of a neutral Japanese weight, on the one hand, and regional bias elsewhere in the region, on the other, is the high fractions of internationally held bonds of Asia excluding Japan to be found in Asia (Table A, last column).

Table A  
**Cross-border investment in bonds, end-2002**

In millions of US dollars

| Invested in:                              | Investment from: |      |           |       |       |      |       |        |       | Total from Asia | Total in Asia | Asia share <sup>1</sup> |
|-------------------------------------------|------------------|------|-----------|-------|-------|------|-------|--------|-------|-----------------|---------------|-------------------------|
|                                           | HK               | ID   | JP        | KR    | MO    | MY   | PH    | SG     | TH    |                 |               |                         |
| China                                     | 1,232            | ...  | 578       | 38    | 15    | ...  | 2     | 416    | –     | 2,281           | 3,430         | 67                      |
| Hong Kong SAR                             | ...              | 57   | 1,137     | 455   | 521   | 40   | 58    | 1,653  | 20    | 3,941           | 7,208         | 55                      |
| India                                     | ...              | ...  | 159       | 47    | 8     | 1    | ...   | 241    | –     | 456             | 788           | 58                      |
| Indonesia                                 | ...              | ...  | 49        | 78    | ...   | 1    | 4     | 869    | –     | 1,001           | 2,462         | 41                      |
| Japan                                     | 5,351            | ...  | –         | 29    | 21    | ...  | 5     | 3,828  | –     | 9,234           | 159,937       | 6                       |
| Korea                                     | 4,202            | ...  | 5,348     | ...   | 23    | 51   | 15    | 2,586  | –     | 12,225          | 25,015        | 49                      |
| Macao SAR                                 | ...              | ...  | –         | ...   | ...   | ...  | ...   | ...    | –     | 0               | 1             | 0                       |
| Malaysia                                  | 2,085            | 3    | 1,823     | 332   | 3     | ...  | 9     | 1,830  | –     | 6,085           | 8,844         | 69                      |
| Philippines                               | ...              | 5    | 1,389     | 81    | ...   | 4    | ...   | 595    | –     | 2,074           | 7,805         | 27                      |
| Singapore                                 | 1,842            | 23   | 680       | 144   | 31    | 41   | 23    | ...    | –     | 2,784           | 6,451         | 43                      |
| Taiwan, China                             | 674              | ...  | 46        | ...   | 13    | ...  | 7     | 333    | –     | 1,073           | 1,372         | 78                      |
| Thailand                                  | 447              | ...  | 550       | 24    | ...   | 1    | ...   | 542    | –     | 1,564           | 1,895         | 83                      |
| Total in Asia                             | 15,833           | 88   | 11,759    | 1,228 | 635   | 139  | 123   | 12,893 | 20    | 42,718          | 225,208       | 19                      |
| Total investment                          | 123,528          | 703  | 1,135,519 | 9,608 | 2,637 | 471  | 1,553 | 52,830 | 1,344 | 1,328,193       | 7,733,214     | 17                      |
| Asia share <sup>1</sup>                   | 12.8             | 12.5 | 1.0       | 12.8  | 24.1  | 29.5 | 7.9   | 24.4   | 1.5   | 3.2             | 2.9           | .                       |
| Share of inv in Asia <sup>1</sup>         | 7.0              | 0.0  | 5.2       | 0.5   | 0.3   | 0.1  | 0.1   | 5.7    | 0.0   | 19.0            | .             | .                       |
| Share of inv in Asia excl JP <sup>1</sup> | 16.1             | 0.1  | 18.0      | 1.8   | 0.9   | 0.2  | 0.2   | 13.9   | 0.0   | 51.3            | .             | .                       |

<sup>1</sup> In per cent.

Source: IMF.

Box (cont)

### **Cross-border holdings of Asian bonds: banks and all investors**

It can still be asked: who are the beneficial owners of the bonds held in the financial centres of Hong Kong and Singapore? To the extent that they are held at branches of banks headquartered outside the region, one could question whether there really is a regional bias. Whether institutional investors like insurance companies and pension funds would hold bonds in these centres to fund liabilities to retirees and policyholders outside the region is another issue.

Based on the data reviewed, it can be said that a disproportionate share of cross-border holdings of bonds issued by East Asian borrowers is held in bank and institutional portfolios located in East Asia. Whether the ultimate beneficial ownership of these securities, in some sense, is likewise concentrated in Asia remains an open question.

## **4. National bond markets**

A third image for bond market development is the improvement of the working of the existing national bond markets. This image calls for many markets, not one global or regional market, to be developed.

In the wake of the Asian crisis, and given deliberate attempts in places to increase issuance, these markets have reached substantial size, aggregating \$1.2 trillion across East Asia excluding Japan (Jiang and McCauley (2004)). Even if one accepts HSBC's definition of an investable universe of bonds, one still is confronted with an aggregate size of \$270 billion, and this does not (yet) include China and Indonesia. This is considerably larger than the stock of dollar-denominated Asian bonds and even a larger multiple of outstanding yen-denominated Asian bonds. While these markets could no doubt be larger (Eichengreen and Luengnaruemitchai (2004)), the size of the local bond markets alone should give one pause when considering proposals that would ignore the development of national markets in favour of regional markets.

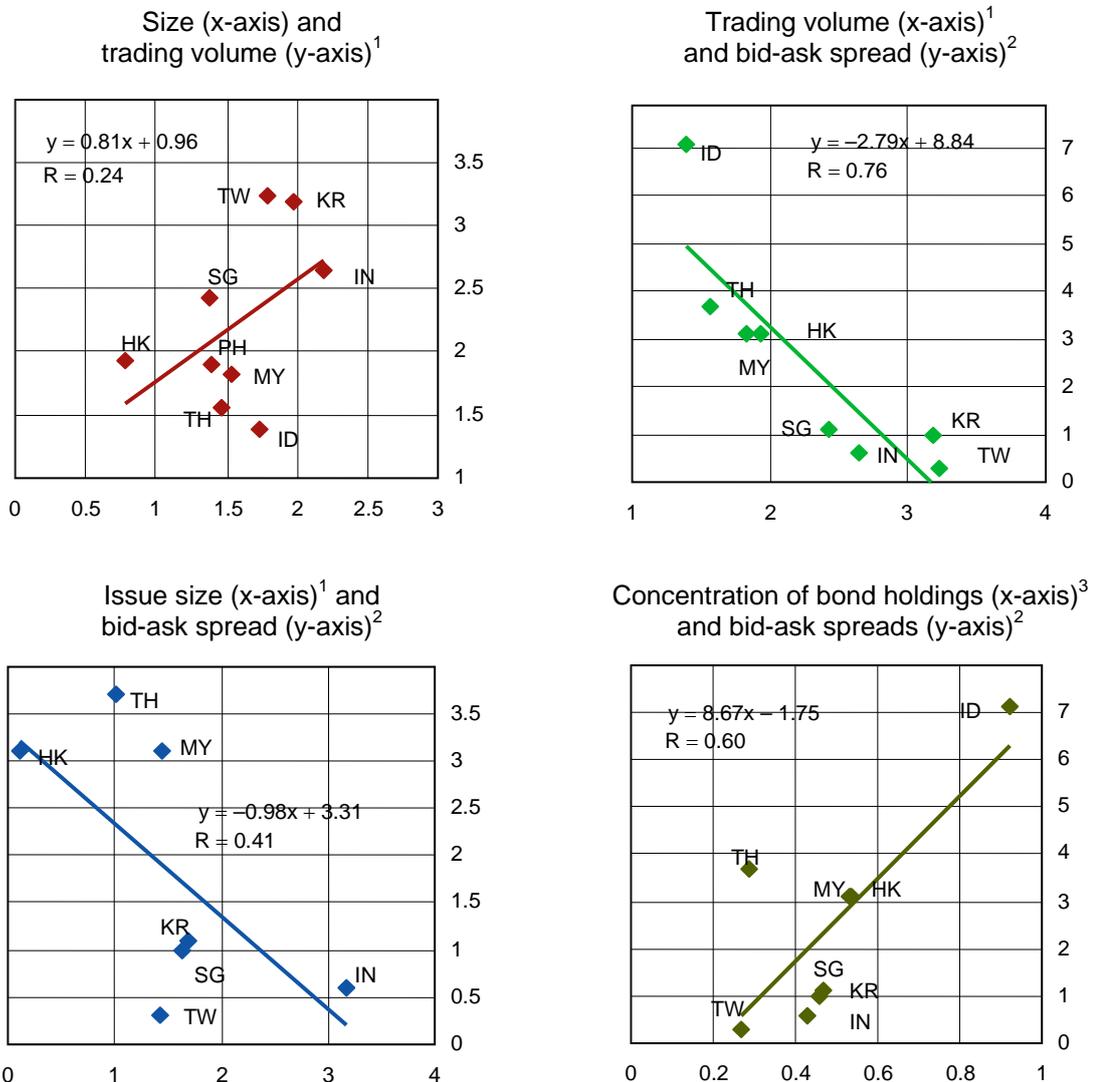
This hesitation only increases when one considers that these national markets suffer to varying degrees from a lack of liquidity and a lack of investor diversity. One finding that holds across G10 government bond markets is that size matters for liquidity (McCauley and Remolona (2000)). That is, the larger the outstanding bonds, the higher the transactions volume and the narrower the bid-ask spread. This result holds across the local economies as well, although it appears to be weaker partly because of the developmental efforts of Hong Kong and Singapore (Graph 6). To be sure, other factors, such as the concentration of issuance in particular issues and the breadth of financing markets, make a difference. The implication of the importance of size for liquidity, however, is that global or regional issuance, particularly by the benchmark issuer, the government, comes at an opportunity cost. Every billion dollars of bonds sold abroad are bonds that will not contribute to the liquidity of the domestic market.

The lack of investor diversity is also related to liquidity. Lack of a diverse investor base tends to make a bond market one-sided, with all the players at times attempting to adjust their portfolios in the same direction. In particular, a predominance of buy-and-hold investors can leave the secondary markets quite inactive. Even if the market has more active accounts, they may, like the Korean investment trust companies or the Thai bond mutual funds, be hit simultaneously with liquidity pressure, leading liquidity to dry up and prices to gap. It appears that a lack of diversity, as measured by the Herfindahl index of the concentration of bond holding, is related to the bid-ask measure of liquidity (Graph 6).

Graph 6

**Liquidity in East Asian bond markets**

Size, trading, issue size and concentration



<sup>1</sup> In billions of US dollars; in logs. <sup>2</sup> In basis points. <sup>3</sup> Herfindahl-Hirschman index.

Sources: Barclays Capital; Bloomberg; Deutsche Bank; HSBC; BIS calculations.

One way of diversifying the investor bases in national bond markets is to open them up to foreign investors, but efforts to develop a regional market could actually hold back such an opening. In Korea, for instance, while about 40% of the equity market is foreign-owned, only 0.4% of the government bond market is foreign-held. Why this is so is not clear: Takeuchi (2004) considers the impediments to foreign investment in national bond markets and McCauley (2004) considers the costs and benefits of doing so. It is sometimes proposed that an easy way to get around these impediments might be to issue bonds offshore in a regional bond market. But this would not really bring foreign investors into the domestic bond market. The next time that investment trust companies or bond mutual funds suffered heavy withdrawals, there would still be no bid from foreign investors who could see a buying opportunity in the temporary liquidity pressure on selected institutions.

## 5. Images of bond market development and policies

This section considers the mapping between images of bond market development and policies that have been proposed to accelerate bond market development in Asia. Different intentions imply different policies.

### Policies for the global bond market

Recall that we sketched out two versions of global bond market development, one with a narrow range of currencies and another with a wide range. Somewhat different policy considerations apply for each.

The first version of global bond market development, which emphasises the network externalities of a currency oligopoly of dollar and euro, would at first blush seem unacceptable to many observers in the region, because it would apparently not respond to a central lesson of the Asian crisis. That is, while reliance on dollar or euro bond funding would perhaps minimise liquidity risks, it would involve firms in the region mismatching projects generating local currency cash flows with debt requiring foreign currency payments. In short, integration into the dollar and euro bond markets might address the maturity mismatch problem but would seem to leave the currency mismatch problem dangerously unaddressed.

Proponents of this version of the global bond market development path might respond, however, that derivatives markets could transform dollar assets and liabilities into local currency exposures. After all, the Canadian example is not really a case of mismatch of currency obligations and receipts. Well developed currency swap markets allow Canadian firms to transform their US dollar obligations back into Canadian dollars. Against this, it might be argued that such hedging markets are developed to varying extents in the region (BIS (2002), Hohensee and Lee (2004)). Those who embrace this image of global bond market development, therefore, would need to consider the means for governments to encourage, or at least allow, the development of cross-currency swaps.

Some would argue that even this global approach needs healthy national bond markets. Recently, the Australian Treasury considered whether to repay all of the Commonwealth's bonds denominated in Australian dollars. As noted above, Australian firms and banks enjoy access to Australian dollar fixed and floating rate finance through the global (and regional) bond market, both directly and through currency swaps. Should the central price discovery mechanism in the Australian dollar bond market, the nexus of cash government bonds, repurchase markets and 10-year futures be allowed to wither? The overwhelming answer during the government's consultation was no. To market participants, it was not clear that the currency and interest rate swap markets could function successfully, in both normal and stressed markets, as the central price discovery mechanism, that is, in the absence of a base of pricing of government bonds. In the end, Australia (2003) decided to retain its domestic government bond market, even if there were no funding need.<sup>7</sup>

Regarding the many-currency version of global bond market development, its implied policy agenda would be regulatory change that would permit the issuance of bonds denominated in Asian currencies in London, New York or Tokyo. As discussed in Eschweiler (2004), this would be quite a programme. Like the first image of global bond market development, this second version, it might be argued, requires national bond market development as a base for the pricing of bonds denominated in local currency, even if they are to be sold abroad.

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<sup>7</sup> See McCauley (2002) for a discussion (now moot) of whether global fixed income markets could function without US Treasury debt.

## **Policies for a regional bond market**

Policies to promote regional bond market development include those on the sell side, those on the buy side and infrastructure. Consider each in turn.

Just as integration of new, Asian currency sectors into the global bond market would require the authorities to permit offshore use of their currencies, so, too, any widening of regional bond markets from the status quo of the yen would require regulatory change. The European experience suggests that the regional development occurred on a wider base than the Deutsche mark alone, over which the German authorities continued to exercise control. Hybrid currencies like the ECU served as ways around that control.

On the buy side as well, a genuinely regional market would require investment from a number of countries. Many large portfolios in the region, national pension or provident funds, for instance, have barely started their external diversification. When they are permitted to diversify externally, the global dollar and euro markets are among the natural first steps. In Thailand recently, the Bank of Thailand has authorised external investment of selected portfolios. In these authorisations, it is reported, some amounts are earmarked for investment in regional bonds. Thus, there are opportunities in the process of opening up fixed income portfolios to external investment for channelling funds into regional markets. Analytically, the question is whether such regional allocations come at the expense of global investment, or are in addition to them, as policymakers accelerate the opening in the pursuit of regional bond market development.

Many observers take three policy initiatives for infrastructure to advance regional bond market development as a package. In particular, they see a regional credit guarantee agency, a regional bond rating facility and a regional clearing and settlement capacity all as pieces of infrastructure needed for regional bond market development (Oh and Park (2006), Park and Rhee (2006)).

From our perspective, the regional credit guarantee agency is less specific to a particular image of bond market development. A regional credit guarantee agency could support the credit of borrowers from the region in accessing global, regional or domestic markets. For example, the Electricity Generating Authority of Thailand obtained World Bank guarantees for the principal and the next interest payment of a 10-year bond (Schmidt (2004, pp 49-50)). The bond was denominated in dollars and sold in the global market. To take another example, the Korean Air Lines deal described above used a Korean Development Bank credit enhancement to access the regional market in Tokyo. To take still another example, the Hong Kong Mortgage Corporation (a wholly owned subsidiary of the Hong Kong Monetary Authority), promotes mortgage securitisation in the territory with guarantees. Substitute a regional credit rating agency for the World Bank, the official Korean guarantor or the Hong Kong Mortgage Corporation, and it is apparent that a regional credit guarantee agency could serve any of the three images of bond market development.

Proposals for a regional rating agency or a regional clearing capacity, by contrast, strike us as specific to the image of regional bond market development. Global rating agencies already exist, and are increasingly targeting domestic bond markets with ratings specific to them (Packer (2003), Kisselev and Packer (2006)). National rating agencies also already exist. Similarly, a regional clearing capacity would sit between the global clearing capacity of Euroclear and Clearstream, on the one hand, and national clearing operations, on the other (Braeckvelt (2006)).

## **Policies for domestic bond markets**

Policies for domestic bond market development in general, or for domestic government bond market development in particular, have been reviewed in a number of forums (APEC (1999), CGFS (1999)).

One aspect of developing domestic bond markets is opening them up to foreign investment. As argued above, foreign investment makes for a more diverse base of investors, even if the inward capital flow is not needed given current balance of payments surpluses in the region. The reason for the low levels of inward investment in local bond markets is not clear, and Takeuchi (2006) surveys market writings to identify the most important impediments to foreign investment.

## 6. Conclusions

We recommend that emphasis be placed on the third image of bond market development for Asia. That is, national bond markets should be developed with a view to integrating them with global markets at some stage. Even if one embraces the image of a global bond market, development of the national markets would probably be necessary under current circumstances.

The impulse to regional development can contribute to national bond market development by bringing politically acceptable peer pressure to bear. The process of discussing the circumstances under which there could be more regional investment in domestic bond markets may raise the political salience of policy changes that will make domestic bond markets more friendly to foreign investors. The announcement by Thailand of an intended waiver of withholding tax on coupon interest paid to foreigners, which took place at the time of an international conference on Asian bond market development in Bangkok in October 2003, may be a case in point.

One might ask why peer pressure could accomplish what market pressure has failed to do. One answer is that market pressure has not been very strong because underlying balance of payments positions mean that most countries do not need the foreign capital. When countries in the region were running deficits, eg in the pre-crisis period in Thailand, there were a large current account deficit and a real funding need, but no government bonds. Now there are government bonds, but no particular need for additional capital inflows. It might be noted in this connection that the United States repealed its withholding tax on non-resident holdings of bonds only once a large current account deficit opened up in the mid-1980s. Moreover, market pressure is subject to the interpretation that market participants are arguing their narrow interests - to gain access to new revenue sources in domestic bond markets - rather than the national interest. This interpretation of self-interested advice in part reflects the memory of 1997-98. In contrast, peer pressure is less subject to the interpretation that advice to make markets more investor-friendly is self-interested. Finally, peer pressure may be more effective when it is collective.

Care must be taken that measures taken to develop regional bond markets do not slow the development of domestic bond markets: the Korean Air Line deal provides an example of a very sensible regional issue using both securitisation of cash flows and guarantees to meet the high demand for credit quality of the Japanese investor base. A less sensible example would be further duplication of ABF1 - of course, not in the works - which could encourage dollar issuance by borrowers in the region at the expense of domestic market growth. Another untoward example would be the sale of government bonds offshore as part of an effort to develop regional markets. In particular, Kingdom of Thailand baht bonds might be underwritten and sold in Tokyo. As argued above, however, liquidity divided is liquidity lost. Every baht bond not traded in Bangkok would be one less bond that could be repurchased there or that could form part of a benchmark bond there, making the domestic market that much smaller and less liquid. In addition, in political economy terms, the easy option of offshore issuance may militate against removing domestic impediments.

Similarly, care must be taken that infrastructure development for the region proves both consistent with eventual global integration and financially self-sustainable. We have argued

above that a regional credit guarantee agency could serve the goal of domestic bond market development as well as regional bond market development. The ambition to bring small and medium-sized enterprise liabilities to the bond market must be informed by an analysis of losses on such programmes in recent years in Japan, Korea and Hong Kong (Jiang (2004)). Otherwise such an effort cannot be sustained. Similarly, it is easier to extend guarantees to highly leveraged firms not enjoying investment grade ratings than it is to ensure the revolving nature of the guarantees and capital supporting them. The view that Asia is stuck with a mismatch between the credit ratings that investors desire and the credit ratings that its companies are assigned is underpinned by a very partial view of corporate finances. The example of PCCW in Hong Kong, which started as a leveraged buyout of the local telephone company but is now managing its finances to achieve an A rating, reminds us that, within limits, corporate credit ratings are choice variables of corporate management.

Regional initiatives for a rating agency and clearing system are structurally more risky in their dependence on an image of regional bond market development. A regional rating agency will ultimately have to pass the test of being at least a point of reference for investors from outside the region. In other words, its establishment needs to anticipate the integration of bond markets in the region into global markets. By its nature, a regional clearing system must ultimately be hooked up with national systems on one side and global ones like Euroclear and Clearstream on the other.

Since this conference is being held in Korea to mark the hundredth anniversary of Korea University, perhaps we could end with a success criterion for national bond market development for Korea: instead of two orders of magnitude difference between foreign ownership of bonds and stocks in Korea, just one order of magnitude. That is, the Korean bond market might better have 4% foreign ownership than its present level of 0.4%.

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# Why doesn't Asia have bigger bond markets?

Barry Eichengreen and Pipat Luengnaruemitchai<sup>1</sup>

## 1. Introduction

The 1997-98 financial crisis highlighted the problem of bond market underdevelopment in Asia. The small size and slow growth of regional bond markets, many observers noted, left corporate borrowers excessively dependent on bank finance. Given the short tenor of bank loans, a shock to confidence left Asian economies vulnerable to a disruptive credit crunch. Since banks denominated many of their loans in foreign currency, exchange rate depreciation resulted in serious balance sheet damage and thrust highly leveraged corporations into bankruptcy.

Analysts argued further that Asia's heavy dependence on banks increased the weight of political and economic connections in resource allocation. Banks and the companies to which they lent were linked by family control. Banks were used by the authorities to extend preferential credit to firms favoured on political or developmental grounds. Financial institutions carrying out these tasks came to be seen as too big and politically important to fail, and the guarantees they consequently enjoyed weakened market discipline over their lending.

The lesson drawn was that Asian countries need better diversified financial systems, and specifically deep and liquid bond markets, to supplement their banking systems. Better diversified financial markets would reduce financial fragility and enhance the efficiency of capital allocation. The development of bond markets would lengthen the tenor of debt and facilitate the placement of domestic currency bonds, limiting maturity mismatches on corporate balance sheets. Corporations would be encouraged to disclose more information and follow internationally recognised accounting practices, strengthening corporate governance. Borrowers would be distanced from lenders, anonymous and decentralised bond markets being hard to influence, and markets would be better insulated from governments, limiting moral hazard and political interference.

The problem of Asia's underdeveloped bond markets was known to close observers, of course, even before the 1997-98 crisis. In some cases the absence of bond markets complicated efforts to finance large infrastructure projects, and enterprises with a high minimum efficient scale found it hard to meet their financial needs.<sup>2</sup> In principle they could borrow from a syndicate of banks which could securitise their loans, but securitisation was costly and difficult in the absence of a bond market. Banks therefore found it hard to diversify risk created by their acquisition of concentrated stakes in the large enterprises that were their leading customers. And the development of other financial instruments was limited by the absence of bond markets on which to base forwards, futures and more exotic derivatives

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<sup>1</sup> We thank Nancy Brune and Geoffrey Garrett for help with data and Robert McCauley and Ric Deverell for helpful comments.

<sup>2</sup> Infrastructure finance was a particular problem with regard to the privatisation of electricity supply, telecommunications and transportation services in Asian countries. More generally, securing adequate finance often required diluting corporate control by issuing equity or giving banks representation on corporate boards. Since owners saw the dilution of control as unattractive, dynamic enterprises sometimes found it difficult to access external finance.

contracts.<sup>3</sup> These problems were not specific to Asia, to be sure, but they seemed to manifest themselves there in particularly dramatic ways.

Coincident with the Asian crisis, contributions to the theoretical literature explained how countries benefit from well diversified financial systems (see eg Boot and Thakor (1997)). Equity finance encourages risk-taking, since holders of equity stakes share in supernormal returns while their losses are truncated on the downside, whereas debt holders, who do not share in exceptional profits, encourage risk aversion; a well diversified financial system therefore facilitates risk management. Banks have a comparative advantage in providing external finance to smaller, younger firms which typically operate in information-impacted segments of the economy, while securities markets do the job most efficiently for large, well established companies.

Thus, as early as 1995, before the Asian crisis, the World Bank had issued studies recommending that Asian countries accelerate bond market development (see eg Dalla et al (1995)). The crisis then directed additional attention to the problem. The 17 Asian governments participating in the Asia Cooperation Dialogue at that time set up a Working Group on Financial Cooperation to establish guidelines for the development of Asian bond markets. APEC finance ministers agreed on a comprehensive approach to developing sound and sustainable regional bond markets, including credit guarantees and markets in a variety of new products (bonds denominated in a basket of Asian currencies being the most attractive candidate). ASEAN+3 established a Study Group on Capital Market Development and Cooperation under the leadership of Thailand, Japan, Korea and Singapore.

The most prominent of these responses was a proposal to use the international reserves of Asian central banks to encourage the development of regional bond markets. The Asian Bond Fund (ABF) was launched by EMEAP in June 2003, and its members committed to investing USD 1 billion of the region's international reserves in Asian sovereign and quasi-sovereign dollar bonds.<sup>4</sup>

The question is whether this use of central bank reserves will have the desired effect. Perhaps, but some critics of this use of central bank reserves will object that other factors - improved regulation, enhanced transparency, stronger investor protection and stable macroeconomic policies - are more important for the development of deep and liquid bond markets.<sup>5</sup> In their view these fundamentals, and not the allocation of some small fraction of the reserves of regional central banks to local debt securities, should be the focus of efforts to develop Asian bond markets.

This uncertainty about what initiatives are most urgently needed to promote Asian bond markets reflects our incomplete understanding of why those markets are underdeveloped in the first place.<sup>6</sup> This paper therefore considers the historical, structural, institutional and

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<sup>3</sup> Herring and Chatusripitak (2000) observe that it may still be possible, despite the absence of these markets, to tailor forwards, futures and derivatives contracts to the needs of individual customers, but doing so can be costly, limiting the use of such instruments.

<sup>4</sup> Some of the proposal's initiators had envisaged utilising 1% of the international reserves of Asian central banks, which would have amounted to USD 12 billion, purchasing domestic currency as well as dollar bonds, and investing in corporate as well as government securities. At the time of writing, EMEAP is discussing a second Asian bond fund that might be larger in size and would invest in high-grade domestic currency issues.

<sup>5</sup> See Fernandez and Klassen (2003).

<sup>6</sup> While earlier studies touched on the issue, none of them, so far as we know, has analysed it systematically. Burger and Warnock (2003, 2004) are the studies closest in spirit to our own, but they consider only long-term bonds (not also the short-term bonds considered here) and a subset of the potential determinants of local market issuance. Claessens et al (2003) consider both domestic and foreign currency denominated issues, but they limit their analysis to government bonds, putting aside the determinants of corporate bond market growth. Eichengreen et al (2002) consider corporate as well as government issues, but they too are

macroeconomic determinants of bond market development in a cross section of developing and developed economies. Section 2 presents an overview of bond markets in emerging Asia with comparisons to other regions. Sections 3 and 4 enumerate the hypotheses that have been described to explain bond market underdevelopment. Sections 5 and 6 present our regression analysis. Section 7 draws out the implications for the development of Asian bond markets.

The results confirm that small size and fragmentation are part of the explanation for the underdevelopment of Asia's bond markets, but only part. In addition, corruption, poor regulatory quality and failure to compel firms to follow internationally recognised accounting standards have slowed the development of private debt markets. Countries with competitive, well capitalised banking systems also have larger bond markets (both public and private), suggesting the existence of complementarities between banking and bond market development.

This suggests that, in order to promote the development of bond markets, governments need to encourage adherence to internationally recognised accounting standards and enhance the reliability of regulation and contract enforcement. They should distance themselves from the lending operations of banks in order to accentuate the complementarities between banking and bond market development. Through this combination of policies, our results suggest, Asian countries could acquire bond markets as liquid and well capitalised as those of other regions.

## 2. Overview

Table 1 describes the stock of external finance in various economies at the end of 2001. For emerging Asia, bond market capitalisation (the sum of corporate, financial institution and public sector issues) was 45% of GDP; this was actually higher than the average for all emerging markets, at 39%, if lower than that for developed economies, at 139%. Note that we include here only domestic currency bonds issued by residents and targeted to local investors.<sup>7</sup> At this level of aggregation, Asia is not behind Latin America or emerging central Europe in terms of bond market development, although it is considerably behind the developed economies, and in particular the United States.<sup>8</sup>

These regional aggregates disguise considerable variation across countries. Corporate bond market capitalisation is 50% of GDP in Malaysia and 28% in Korea but only 5% in Thailand.<sup>9</sup> Financial institutions are important for bond issuance in Hong Kong SAR, Korea and Singapore, but less so in China and Malaysia. They figure hardly at all in external finance in Thailand.

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concerned with currency denomination, not market capitalisation. Domowitz et al (2000) and Hale (2003) analyse the choice between bank and bond finance, but they analyse international bonds and bank loan syndications, not their domestic counterparts.

<sup>7</sup> For more discussion of our measure of bond market capitalisation, see Section 4 below.

<sup>8</sup> The picture is not much different when we distinguish between bond issues by non-financial corporations, financial institutions and governments. Public issues are slightly less important in emerging Asia than in other emerging markets, reflecting the traditionally strong fiscal position of Asian governments, while issues by corporations and financial institutions are slightly more important in emerging Asia than elsewhere.

<sup>9</sup> These aggregates need to be interpreted cautiously; in some cases they may tell us less about the scale and health of the bond market than might be naively supposed. Thus, in the Korean case, a considerable fraction of bond market capitalisation is in the form of asset-backed securities in which the government and its agencies have absorbed the risky junior tranche that accounts for the majority of the outstanding stock.

Table 2 compares the relative importance of bonds, bank loans and equity markets in domestic external finance outstanding at the end of 2001.<sup>10</sup> In terms of the composition of external finance, Asia relies less on bond markets than other emerging market regions; the share of bonds is a bit more than half that of Latin America and emerging central Europe. Again, these generalisations disguise considerable variation across countries. For well known historical reasons, the banking sector is particularly important for external finance in China, Korea and Thailand. The stock market is important only in Hong Kong, Malaysia and Singapore, where the authorities have aggressively promoted it. The bond market is the least important of the three sources of finance in virtually every country (the exception being Thailand, where it is approximately the same size as the stock market). Bonds are least important in total external finance in Hong Kong and most important in Malaysia and Korea.

The preceding data are for stocks; flows may offer a clearer picture of recent trends. According to Table 3, new domestic bank loans were 10% of GDP in emerging Asia in 2001 but only 4% of GDP for the emerging markets as a whole. Domestic bond flotations, in contrast, amounted to 12% of GDP in 2001 for emerging markets as a whole but only 8% in Asia.

In sum, this overview confirms that emerging Asia relies less on bonds and more on banks than other emerging markets, and very much less on bonds and very much more on banks than developed economies. Recent data suggest that these distinctive characteristics of Asian financial systems are not growing noticeably less pronounced; in some cases the opposite may be true.

### 3. Hypotheses

Five broad hypotheses have been advanced to explain the underdevelopment of Asian bond markets. One is the region's history. Banks have dominated Asian financial markets for many years. Once upon a time there may have been good reasons for their dominance. Imperfections in the information and contracting environment gave a strong comparative advantage to bank intermediation, while governments found banks to be convenient vehicles for advancing their industrial policies. But although these circumstances have now changed, banks retain their "first mover" advantage. Markets, institutions and social conventions have adapted to the dominance of bank intermediation. Examples of that adaptation include the importance of family connections and state involvement in financial relationships. As a result, bonds may face an uphill battle when seeking to acquire market share.

A second hypothesis emphasises structural characteristics of the region's economies. Small countries presumably find it more difficult to develop bond markets insofar as liquid securities markets have a certain minimum efficient scale. Endowment theories suggest that the geographical environment shapes the long-standing institutions that influence financial development. The strength of bondholder protections may depend on a country's legal tradition (see La Porta (1998)). Not all of these structural characteristics are impervious to change, but even the most malleable of them may be difficult to change quickly.

A third hypothesis focuses on the developmental stage of the region's economies. Compared to the economies of western Europe and North America, most Asian countries have

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<sup>10</sup> Strictly speaking, total external finance (that is, financing from outside the corporation, excluding retained earnings and depreciation) would also include credit provided by foreign sources, for which we lack information. To avoid double-counting, we exclude bonds issued by financial institutions from this comparison. Including them makes little difference for the comparisons with which we are concerned in this paper. The main effect is to further increase the value of bond market capitalisation in the advanced economies.

undergone the transition to modern economic growth relatively recently. Some are still poor. At the core of this situation is the underdevelopment of market-supporting institutions, including the institutions needed to support financial markets. From this perspective, Asian financial markets are underdeveloped because of the unreliability of contract enforcement and uncertainty of investor rights that are characteristic of less developed economies. These are problems that economies presumably grow out of, though how quickly they do so depends on country-specific circumstances.

A fourth hypothesis focuses on the structure and management of the financial system. This explanation considers, inter alia, the intensity of competition among financial institutions, the quality of prudential supervision and regulation, the existence of a well defined yield curve, the absence of institutional investors and rating agencies, and the adequacy of trading, settlement and clearing systems.<sup>11</sup>

Fifth and finally are macroeconomic policies. The currency risk created by flexible exchange rates may limit the market for domestic currency denominated securities. Domestic interest rate volatility may make it unattractive to hold long-term debt securities. Such instability may be a serious impediment to bond market development. Finally, controls on capital flows, such as those limiting the ability of foreigners to purchase domestic capital and money market securities or to repatriate their interest earnings and principal, may discourage foreign participation in domestic markets and rob those markets of liquidity.

#### 4. Empirical implications

We now turn from broad hypotheses to empirical implications, illustrating our points with information for 41 economies. The data are for all economies for which the BIS reports estimates of domestic bond market capitalisation.<sup>12</sup> Hence, the sample is not limited to Asia. But neither are questions about the development of bond markets limited to Asia. In analysing the determinants of bond market development we seek to take advantage of the information content of a wide cross section of economies. The variables that we use to operationalise our five hypotheses are shown in Table 4.<sup>13</sup>

**Economic size.** Small countries may lack the minimum efficient scale needed for deep and liquid bond markets.<sup>14</sup> The amount of money that can be raised by issuing on the local

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<sup>11</sup> Independent agencies that rate corporate issuers provide information that should help to attract a large base of active investors into the bond market. While some Asian countries have independent rating agencies (Malaysia, for example, has two), others do not. A large population of institutional investors is important for creating a demand for domestic bonds (Schinasi and Smith (1998)). Conversely, heavy regulation of mutual funds may prevent fund managers from actively participating in corporate bond markets. Finally, it has been argued that the absence of well developed clearing, settlement and trading systems have rendered some Asian bond markets illiquid and unattractive (Trairatvorakul (2001)).

<sup>12</sup> The BIS compiles these data from national sources, and attempts to eliminate international debt securities from its estimates of domestic bond market capitalisation. Capitalisation is only one measure of bond market development, of course; turnover is another obviously relevant dimension. But only capitalisation is available for a broad cross section of countries. Previous studies (eg McCauley and Remolona (2000)) suggest that capitalisation and turnover on domestic bond markets are strongly if imperfectly correlated.

<sup>13</sup> Information on data sources can be found in the appendix.

<sup>14</sup> Eichengreen et al (2002) provide evidence that small size is similarly the most robust determinant of the inability of emerging markets to borrow abroad in their own currencies ("original sin"). Here the obvious explanation is that countries whose debt issuance is small have trouble getting international investors to add securities denominated in "exotic" currencies to their investment portfolios. This will be the case when the increase in management costs is constant but the diversification benefits decline with each additional currency. This is probably an appropriate point at which to discuss how domestic bond market development

market may be too small to attract multinational corporations and other potential foreign issuers. The market may be too small to justify inclusion in the global bond market indices constructed by the leading investment banks, in which case there will be no demand to hold local securities in order to track the index. Markets in small issues may be characterised by price volatility as buyers and sellers enter and exit. Similarly, it may be difficult to put on and take off positions without being noticed. There being fixed costs of learning about the performance characteristics of an issue, investing in small issues may not be attractive for portfolio managers, who will consequently demand a yield premium in order to do so.<sup>15</sup> And if adverse selection is present, it may be that no premium will create a demand. A bivariate scatter plot of bond market development (measured as domestic bond market capitalisation as a share of GDP, averaged over the 1990s) and country size (GDP at purchasing power parity (PPP), also averaged over the 1990s) shows a weakly positive relationship between the two variables (Figure 1).<sup>16</sup>

**Natural openness.** Entrenched interests will seek to prevent their advantaged position from being undermined by market competition. Banks, for example, will attempt to prevent their dominant market share from being eroded by competition from securities markets. But entrenched interests will be less able to insist on policies that suppress competing sources of supply when the economy is exposed to international competition. This is Rajan and Zingales' (2001) explanation for why more open economies do less to suppress securities markets. That said, Figure 2 does not suggest a particularly strong relationship between openness, measured as the ratio of exports to GDP, and bond market development.

**Legal system.** Legal traditions differ in the priority they attach to protecting minority investors. La Porta et al (1998) predict that common law systems in the British tradition, which offer stronger investor protection than systems in the French civil law tradition, should promote the development of financial markets. But the same legal traditions may not affect all aspects of financial development equally. Where investor rights are weak, savers may prefer investing through banks rather than bonds since politically well connected banks are better able to enforce their claims (Sharma (2000)). Systems with weak investor rights may also encourage creditors to demand assets with seniority (bonds rather than stocks).<sup>17</sup>

**Geographical/disease endowments.** Endowment theories suggest that environmental factors shape long-standing institutions influencing financial development. Authors like Beck et al (2002) argue that countries with less favourable geographical and disease environments should have less developed financial markets. They present evidence that endowments (measured by settler mortality or distance from the equator) are correlated with financial

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relates to original sin. In principle, domestic bond market development is a route to solving this problem. As domestic markets gain scale and liquidity, foreign participation will be easier to attract, both because those local currency markets will become easier to enter and exit (transaction costs will decline) and because they will constitute a greater share of the global portfolio (diversification benefits may increase). In practice, however, this route to "redemption" appears to work only very slowly. Data in Burger and Warnock (2004) indicate that as of 2001 US residents held only USD 2.5 billion bonds issued by emerging markets, whereas emerging markets had more than USD 1.6 trillion of local currency bonds outstanding (and more than USD 2.2 trillion of total bonds outstanding). In other words, while foreign participation in local bond markets has attracted much comment, as a quantitative phenomenon it remains inconsequential.

<sup>15</sup> This phenomenon is familiar in the context of foreign bond issues; see Eichengreen and Mody (2000).

<sup>16</sup> All variables are similarly measured as averages for the 1990s in the scatter plots that follow, except where expressly noted otherwise.

<sup>17</sup> La Porta et al (1998), when reporting a positive correlation between debt/GNP and common law legal tradition, define debt as the sum of corporate bonds and bank loans. Beck et al (2002) consider financial intermediary credits to the private sector divided by GDP. Thus, neither set of authors addresses the impact on bond markets that is our concern here.

intermediary and stock market development. Figure 3 suggests the existence of a positive relationship between distance from the equator and bond market development.

**Riskiness of the investment environment.** Bonds are a way for investors to limit risk. It follows that entities issuing bonds are generally of higher credit quality than those issuing equity claims (Harwood (2000)). In some countries, however, there may be a dearth of high-quality issuers with proven business models and records of financial probity. Consistent with this idea, Figure 4 suggests that bond market capitalisation rises as investment risk declines.

**Law and order.** Countries with more reliable law enforcement are more attractive to investors. Figure 5 confirms the existence of a positive relationship between the size of bond markets and the *International Country Risk Guide* (ICRG) measure of law and order. To the extent that corruption undermines law enforcement, corruption and bond market development should be negatively correlated. Figure 6 is consistent with this hypothesis (since, on the ICRG scale utilised here, a higher score indicates a lower level of corruption).

**Weak corporate governance and transparency.** If corporate governance is weak, managers will be able to enrich themselves at the expense of holders of debt and equity claims. If banks enjoying long-term relationships with borrowers have a comparative advantage in detecting and correcting insider abuses, savers may prefer to invest via banks rather than securities markets. Lenders will also prefer banks to bond markets where transparency is low, since banks have a comparative advantage in information-impacted markets (Diamond (1991), Hale (2003)). In support of this hypothesis, Figure 7 shows that the quality of accounting standards is positively associated with bond market development.

**Developmental stage of the economy.** There are a number of reasons why economic development and bond market development go hand in hand. Less developed countries have volatile investment environments and heavy government involvement in commercial activity. Often they have weak creditor rights, inadequate transparency and poor corporate governance. GDP per capita can be thought of as capturing these aspects of underdevelopment insofar as they are not already absorbed by our other explanatory variables. Figure 8 is consistent with the notion that economic development and bond market development are positively associated.<sup>18</sup>

**Size of the banking system.** Banks and bond markets compete in providing external finance; in some circumstances, well developed banking systems may succeed in depriving bonds of market share. At the same time, banks serve as dealers and market-makers, whose presence is needed for the development of a liquid and well functioning bond market.<sup>19</sup> Figure 9 suggests that the complementarities dominate - that, on balance, banking systems and bond markets develop together.

**Banking concentration.** Benston (1994), Schinasi and Smith (1998), Smith (1998) and Rajan and Zingales (2003) suggest that banks with market power may attempt to stifle the development of securities markets by setting loan and deposit rates strategically or use moral suasion to discourage public placements by firms with which they have relationships. That said, Figure 10, which juxtaposes banking sector concentration against bond market development, does not show a particularly strong relationship between the two variables.

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<sup>18</sup> It suggests that bond markets are less developed than levels of per capita GDP and a broader sample of national experiences would predict in, inter alia, Hong Kong SAR, Singapore and Japan, while they are rather better developed in Malaysia.

<sup>19</sup> See Harwood (2000) and Hawkins (2002). In many countries, regulators require that bond business be done in a separately capitalised subsidiary, although such firewalls may be more apparent than real. At the same time, dealers need a diversified and active investor base with which to buy and sell; they cannot simply trade among themselves. Without such a base, dealing will not be profitable. One suspects, therefore, that dealers are not so much a precondition for bond market development as a corollary.

**Absence of public sector funding needs.** The development of a government securities market “helps promote a class of dynamic, profitable fixed-income dealers” (Harwood (2000)). In addition, an active and liquid corporate bond market requires a benchmark yield curve on the basis of which risky credits can be conveniently priced.<sup>20</sup> That yield curve is typically constructed from a suite of outstanding treasury securities, requiring governments to issue a range of maturities on a regular schedule. If a government has modest funding requirements, there may be little need to develop an active and liquid bond market and little regular issuance to maintain a well defined yield curve.<sup>21</sup> Figure 11 is consistent with the existence of a positive relationship between private and public sector bond market capitalisation.<sup>22</sup>

**Poor regulatory enforcement.** Investors will be reluctant to take positions in markets characterised by opportunistic participants and delivery risk, problems that regulation is designed to mitigate. Elements of an adequate regulatory framework include disclosure standards, penalties for accountants and auditors providing false information, and sanctions for insider trading and market manipulation. Equally important is the clear and consistent implementation of regulations. Figure 12 shows that bureaucratic quality is positively correlated with bond market development.<sup>23</sup>

**Interest rate variability.** Where interest rates are variable, investors will have little appetite for long-term fixed rate notes, since there is significant risk that the purchasing power of such assets will be eroded. Investors’ limited appetite for long-term bonds may thus limit the demand for securitised debt. In addition, high levels of interest rate volatility may be an indication of inadequate market liquidity, insofar as returns are affected by the entrance or exit of a few buyers and sellers from the market. Figure 13 illustrates the negative relationship between nominal interest rate volatility and bond market development.

**Level of interest rates.** Since few firms can service debts when interest rates are high, high rates tend to have a depressing impact on issuance. It follows, as shown in Figure 14, that countries with high interest rates show signs of having poorly capitalised bond markets.

**Exchange rate regime.** It is argued (by eg Goldstein (1998)) that pegged exchange rates encourage foreign investors to underestimate the risks of lending to banks and corporations,

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<sup>20</sup> Schinasi and Smith (1998) note other advantages of the existence of a benchmark issue: since they are liquid, benchmark assets are widely used in repo markets and are typically usable as collateral for a wide range of other financial contracts.

<sup>21</sup> It is in principle possible for governments without ongoing funding needs to circumvent this constraint by overfunding the fiscal deficit (issuing more debt than strictly necessary, rolling it over as it matures, and depositing the resulting cash surplus with the central bank, which allows the central bank to retire its sterilisation bonds, thereby unifying the public sector bond market); see McCauley (2003). Thus, despite not running current budget deficits, the Hong Kong Monetary Authority has been able to create a liquid market in Exchange Fund Paper (EFP), with a 10-year yield curve, even in the absence of current government budget deficits. EFP was introduced in 1990 with the issuance of 91-day bills, followed by 182- and 364-day bills in 1990 and 1991, two- and three-year notes in 1993, five-year notes in 1994, seven-year notes in 1995 and finally 10-year notes in 1996. The outstanding stock of EFP is more than HKD 100 billion, or more than 8% of GDP, and more than 20% of total debt instruments. It is issued through competitive tender bids, was listed on the stock exchange in 1999 to enhance liquidity, and can be used as collateral for trading stock options and futures. Taiwan, China financed a significant part of its National Development Plan starting in 1991 through bond issuance, using a US Treasury bond-type auction system (Lynch (2001)). Similarly, despite limited public funding needs, the government of Singapore decided in 1998 to increase the issuance of government securities, especially longer-term bonds of benchmark size, and in May 2000 it introduced a repo facility for primary dealers.

<sup>22</sup> Note that the variable on the vertical axis, private market capitalisation, is different from that in the other figures.

<sup>23</sup> Using simple tabulations, Domowitz et al (2000) similarly find that the share of domestic finance accounted for by bonds in emerging markets rises with the quality of accounting standards.

and that the resulting foreign competition may slow the development of domestic intermediation. From this point of view, greater exchange rate flexibility should encourage the development of domestic bond markets (as argued by, *inter alia*, World Bank (2003)). Of course, to the extent that foreign participation is valuable for the growth and development of domestic markets, discouraging the participation of international investors by introducing additional risk into the market may not produce the desired result.<sup>24</sup> In fact, countries with fixed exchange rate regimes do not appear to have bigger bond markets (Figure 15). Figure 16, however, is consistent with the view that stable exchange rates are conducive to bond market development.

## 5. Multivariate analysis

We now test the importance of these factors using a multivariate regression analysis of annual data from 1990 to 2001. The dependent variable, as in the scatter plots, is bond market capitalisation as a share of GDP. Recall that this measure includes only domestic currency bonds issued by residents and targeted to local investors.<sup>25</sup>

All equations are estimated using panel generalised least squares (GLS) with corrections for heteroskedasticity and panel-specific autocorrelation. We start in Table 5 with preliminary regressions exploring the importance of, alternately, historical, structural, financial, developmental and macroeconomic factors. Definitive hypothesis tests, of course, require considering all five categories of explanation simultaneously. We do so in the final column of the table.

The first three columns show the effects of structural characteristics of countries. Consistent with earlier arguments, country size and openness are positively related to bond market development. Distance from the equator, a proxy for endowment theories, similarly enters with its expected positive sign.<sup>26</sup> But where previous studies have shown that English common-law legal tradition favours equity market development and bank intermediation, the same does not appear to be true of bond markets. It may be that stronger investor rights encourage investors to attach less importance to seniority and to substitute equity for debt securities.<sup>27</sup> Overall, these results lend support to structural explanations for bond market development.

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<sup>24</sup> There is also the possibility that the correlation reflects causality running in the other direction, from the existence of a large domestic financial market to the willingness of countries to countenance additional exchange rate variability (Calvo and Reinhart (2002)).

<sup>25</sup> Thus, a limitation of our analysis is that we do not have information on foreign currency denominated issues or issues by non-residents denominated in local currency targeted to resident investors. We also do not know what share of the domestic currency issues we include are interest rate or exchange rate indexed. Note that our measure excludes issues denominated in foreign currency, issues by non-residents, and issues by residents targeted to non-residents, all of which are counted as international securities, as they presumably should be.

<sup>26</sup> It is not possible to use settler mortality rates in an analysis of Asian bond markets, since relatively few Asian countries were colonised by the European powers, and settler mortality estimates (and logic) are based on data for and the experience of one-time colonies.

<sup>27</sup> However, the coefficient on this variable is significantly different from zero in only one of the two equations in which it is included. Adding dummy variables for other legal origins does not alter these findings. For example, when we add French legal origin, the new variable enters positively (and significantly), while English legal origin continues to enter negatively and significantly. Since the French civil law tradition is associated with relatively weak investor rights, the opposite signs on the two variables are consistent with the explanation in the text.

These regressions also include a dummy variable for Asia, which we interpret as reflecting aspects of the region's history not captured by other variables. The negative coefficient on this variable supports historical explanations for the undercapitalisation of the region's bond markets.<sup>28</sup>

The specification in column 4 considers proxies for the developmental stage of the economy: the safety of the investment environment (predictability of contract enforcement, danger of expropriation), an index of the reliability of law enforcement, and per capita GDP as a summary measure of development. While per capita GDP has its expected positive coefficient, investment risk and law and order (which are scaled so that higher values indicate a more stable investment environment) enter with negative signs. We will return to these variables below.

Columns 5 and 6 consider governance and regulation of the corporate and financial sectors. Column 5 shows that countries which have better rankings on the ICRG's measure of corruption and which adhere to international accounting standards (which is likely to enhance the effectiveness of corporate governance) have larger bond markets.<sup>29</sup> Column 6 shows that countries ranking higher in terms of bureaucratic quality have larger bond markets, which we interpret in terms of the efficiency and reliability of regulation. Similarly, countries with better developed banking sectors have better developed bond markets - bank and bond market intermediation appear to be complements rather than substitutes. On the other hand, countries with more concentrated banking systems appear to have smaller bond markets, consistent with arguments suggesting that banks with market power may use it to discourage bond flotations. Again, we will return to these findings below.

Column 7 considers macroeconomic factors. While the volatility of interest rates is not significant, their level, as measured by the interbank rate minus Libor, suggests that higher interest rates are associated with smaller bond markets.<sup>30</sup> The coefficient on the volatility of changes in exchange rates is marginally significant, although it is, surprisingly, positive. Finally, the capital controls dummy (where a value of one indicates an open capital account) suggests that controls slow bond market development.<sup>31</sup> As we show below, this last result is the one that turns out to be robust.

Column 8 considers the entire range of hypotheses.<sup>32</sup> It suggests that no single class of factors is wholly responsible for the underdevelopment of Asian bond markets; rather, the present state of affairs reflects a confluence of influences. Structure and inheritance matter: the size of the economy, its openness, its location, and the origin of its legal system all

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<sup>28</sup> Note that the coefficient predictably becomes smaller in absolute value the more other independent variables are included in the specification.

<sup>29</sup> This is consistent with results in Burger and Warnock (2004) suggesting that countries with stronger institutions have larger domestic bond markets.

<sup>30</sup> Domowitz et al (2000) similarly provide evidence that countries with higher rates of inflation issue less domestic debt and more equity.

<sup>31</sup> A variety of alternative measures of capital controls point in the same direction. Thus, in addition to the binary ("IMF-style") open or closed measure, we experimented with Brune et al's (2003) measure, which ranges from zero to nine depending on how many of the nine categories of capital account restrictions a country has in place. We looked separately at capital account openness for inflows and outflows. We also looked separately at controls on inflows and outflows pertaining to capital and money market securities. In virtually all cases we obtained the same positive and statistically significant coefficient on controls when using the specification in column 7.

<sup>32</sup> Adding all of the explanatory variables substantially reduces the number of observations (from 475 in the full sample to 284 in column 8). However, the observations from countries in Asia remain well represented. While accounting for 22% of the observations in the full sample, they account for 25% of the observations in column 8.

influence bond market capitalisation. Factors like these may be difficult to change, although some of them, such as the handicap of small size, may be overcome through initiatives like the Asian Bond Fund. In addition, adherence to internationally recognised accounting standards and the size and concentration of the banking sector are important for bond market capitalisation. These are policy variables; our results thus suggest that countries can accelerate the development of their bond markets by improving the quality and reliability of regulation, requiring corporations to adhere to internationally recognised accounting standards, and encouraging competition in financial intermediation. In addition, there is a role for macroeconomic policy: both the level of interest rates and the presence or absence of capital controls matter in the consolidated specification.

At first blush, a number of the results are anomalous or at least counter-intuitive. Thus, we appear to find that interest rate volatility is good for bond market development. At the same time, there is little evidence of a relationship between exchange rate volatility and bond market development. We will have more to say about these counter-intuitive results below.

Note also that when we add direct measures of institutions - such as bureaucratic quality, corruption, law and order, and the investment profile - the effect of per capita GDP washes out. This is not inconsistent with explanations for bond market growth emphasising the developmental stage of the economy, but it suggests that the effects of economic development and underdevelopment operate through the aforementioned institutional channels.

We looked further at the robustness of the positive association of bank and bond market development, which runs contrary to some popular arguments, and which is likely to be controversial. We also regressed non-public bond market capitalisation on bank credit to the private sector as a share of GDP, adding the entire vector of controls.<sup>33</sup> Excluding public sector bonds and considering only bank credit to the private sector avoids the possibility that the positive association between the two variables is simply picking up liquidity requirements and other policies forcing the banking sector to hold government bonds - and the greater ability of the government to compel such behaviour in countries where the banking system is relatively large. In this alternative specification the coefficient on bank credit continues to enter with a positive coefficient and differs from zero at the 99% confidence level.

Finally, note that the dummy variable for Asia continues to matter statistically and economically. Its effect is large: the coefficient of  $-17$  suggests that Asian bond markets are 17% smaller as a share of GDP than their counterparts in countries with comparable characteristics in other parts of the world. One interpretation of this is that the development of bond markets continues to be held back by Asia's history and current circumstances in ways that are not fully captured by the other explanatory variables. We will revisit this finding below.

An eclectic set of policy implications would seem to flow from these findings. The Asian Bond Fund and the removal of capital account restrictions may help domestic bond market development by relaxing the constraint of small market size, although such policies may be a mixed blessing insofar as capital account liberalisation prior to domestic market development poses risks as well as promising rewards. But market size is far from the entire problem. In addition, governments seeking to promote domestic bond markets must require adherence to international accounting standards by security issuing firms and encourage growth and competition in banking so as to maximise the complementarities between banking system and bond market development. They should adopt stable macroeconomic policies to make it attractive to hold domestic currency denominated debt instruments.

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<sup>33</sup> In further regressions not reported here.

Even if they take these steps, the results of this section suggest, Asian governments still should not expect to succeed in developing bond markets with the depth and liquidity characteristic of continental Europe and the English-speaking economies, due to the extent to which the region's markets, institutions and social conventions have adapted to the dominance of bank intermediation. This is undoubtedly the most controversial conclusion seeming to emerge from the present section. It is important, therefore, to subject it to further analysis.

## 6. Adding fiscal policy

We subjected our results to a variety of robustness checks. We dropped influential observations. The results were robust to these changes. We limited the sample to the period before the Asian crisis to test for structural breaks. The results were again very similar.<sup>34</sup>

The one sensitivity test that did make an important difference was adding fiscal policy.<sup>35</sup> We measured this in three ways: as the public debt/GDP ratio, as the past year's budget balance as a percentage of GDP, and as a three-year moving average of past budget balances. The last of these alternatives is probably preferable, since the budget balance in a single year will tend to be dominated by transient factors, while public indebtedness is likely to have a spuriously strong coefficient given that the public debt is itself a major component of bond market capitalisation.

The results in the first three columns of Table 6 confirm that fiscal policy is important for overall bond market development.<sup>36</sup> Stronger fiscal balances are negatively associated with bond market capitalisation. The coefficient in the third column reinforces our trepidation about using the public debt ratio in that the coefficient is almost exactly unity. We do not consider this measure further in what follows.

Adding past budget balances has a number of other effects. We now obtain a significantly negative coefficient on exchange rate volatility. Higher interest rates continue to be obstacles to more rapid bond market development. An earlier anomaly, that greater interest rate volatility is associated with faster bond market development, is now evident in only one of the three specifications.<sup>37</sup>

Adding past budget deficits also eliminates previously significant coefficients on the investment profile, accounting standards and bureaucratic quality, while strengthening (at least in some cases) the effects of corruption and rule of law.<sup>38</sup> In the case of the investment profile, this is reassuring, since the previous result anomalously suggested that safer investment environments are associated with less well developed bond markets.<sup>39</sup> The now

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<sup>34</sup> The main differences were that the corruption and law and order variables became significant (lower levels of corruption and more reliable law enforcement were associated with larger bond markets), while distance from the equator and domestic credit provided by the banking sector lost their significance.

<sup>35</sup> Asian governments have tended to run surpluses, with a few prominent exceptions, and this otherwise admirable behaviour may have stymied the development of bond markets (for reasons explained above).

<sup>36</sup> The observations here are only about half the number in the full sample. However, Asian economies are still well represented: they account for 21% of the reduced sample.

<sup>37</sup> As we will see shortly, disaggregating public and private debt makes this anomaly disappear entirely.

<sup>38</sup> To be precise, accounting standards are significant in column 1, where the three-year average of the fiscal balance is included, but not in column 2, where an alternative measure of fiscal policy is used.

<sup>39</sup> Table 4 shows that there is a positive correlation between the strength of fiscal policy and the quality/safety of the investment environment, which may explain this result.

greater importance of corruption and rule of law is also reassuring. However, the loss of significance of bureaucratic quality and accounting standards is less reassuring; at face value this suggests that financial transparency and the quality and reliability of regulation are not so important after all. At a minimum, it suggests that it is hard to distinguish the effects of transparency, regulation and fiscal policy.

But when one distinguishes public debt from private debt (debt issued by both non-financial corporations and financial institutions), one finds that budget deficits are a significant determinant of public debt market capitalisation (columns 6 and 7) but not private debt market capitalisation (columns 4 and 5). In other words, while governments that run deficits have significantly more public debt (as a matter of definition), public sector deficits do not appear to encourage private debt issuance. That there is no net effect is unsurprising given arguments that a history of strong fiscal policies is both good and bad for private debt markets. (It creates a more stable investment environment, but complicates the creation of a well defined yield curve and slows the development of a class of dynamic fixed income dealers.)<sup>40</sup>

Note, further, that in the regressions for private debt the coefficients on accounting standards regain their significance even through fiscal policy is still included.<sup>41</sup> In contrast, they are insignificant in the equations for public debt. The same is true for corruption and bureaucratic quality. Thus, while institutional characteristics and regulatory practices like accounting standards, corruption and bureaucratic quality matter for private debt market capitalisation, they evidently matter less for public debt market capitalisation.<sup>42</sup>

Another difference introduced by disaggregating public and private debt has to do with the relationship between banking systems and bond markets. Earlier, when considering total debt, we found evidence that both the size and concentration of the banking sector matter (positively and negatively respectively).<sup>43</sup> Disaggregating reveals that the size of the banking system matters mainly for the capitalisation of private debt markets - in other words, there is evidence of complementarities between the development of banking and the development of private debt markets. In contrast, banking system concentration is negatively associated with public debt. Readers familiar with Asia's economic and financial history will conjecture that in countries with concentrated banking systems the government was able to use the banks as agents for its industrial policy, channelling private savings towards favoured industries and activities, whereas in countries with atomistic banking systems less subject to manipulation, direct government expenditures were required for these purposes.

We also find, upon disaggregating public and private debt, that the earlier evidence of a positive relationship between interest rate volatility and bond market development disappears. In contrast, the level of interest rates and the stability of the exchange rate continue to matter, as before, for both private and public debt.

Finally, analysing public and private debt separately reveals that the significance of capital controls derives from their impact on the volume of public debt. Evidently, governments that

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<sup>40</sup> To put the point the other way, chronic deficits create an ample supply of sovereign securities from which to construct a benchmark yield curve but at the same time crowd out private debt issues (McCauley and Remolona (2000)). Our results suggest that these two effects roughly cancel each other out.

<sup>41</sup> Corruption and bureaucratic quality are not significant in the regression for public debt, except in one case where the coefficient on bureaucratic quality is marginally significant at the 90% level, and there it counter-intuitively enters with a negative sign.

<sup>42</sup> This explains the unstable pattern of coefficients when total debt is considered and measures of fiscal policy are added or dropped.

<sup>43</sup> However, the evidence that the size of the banking system is important was much weaker when we included measures of fiscal policy.

open the capital account are better able to fund themselves, whether by selling debt to foreigners or owing to credibility effects. Of course, we know from the Asian crisis that to fund government deficits in this way before putting the other prerequisites for capital account liberalisation in place can be a risky business. And the insignificance of both capital account openness and past deficits for private bond market capitalisation suggests that any benefits for corporate bond market development are at best indirect.

Note that adding a measure of past fiscal policies eliminates the previously negative coefficient on the dummy variable for Asia in the equations for total debt. This is true whether fiscal policy is measured as the past year's deficit or as a moving average of past deficits. Moreover, the coefficient on Asia is now positive, not negative, including in column 3, where past fiscal policy is measured by the public debt and the coefficient is significantly different from zero (columns 1-3). Once we control for the traditionally strong fiscal stance of Asian countries, in other words, there is no longer support for the notion that their bond markets are smaller than can be explained by their economic characteristics and policies.<sup>44</sup>

## 7. Conclusions

Asia's underdeveloped bond markets and dependence on bank finance have attracted concern since before the crisis of 1997-98. The result has been a host of official responses, ranging from reports by the multilateral financial institutions on the importance of reliable contract enforcement, strengthened prudential regulation and improved market infrastructure to the Asian Bond Fund funded by EMEAP central banks. But it remains uncertain whether these initiatives will succeed in surmounting the fundamental obstacles to bond market development in the region, since there has been little systematic analysis of the nature of those obstacles. This is a gap that the present paper seeks to fill.

We find that the slow development of local bond markets is a phenomenon with multiple dimensions. To some extent the problem is one of minimum efficient scale: larger countries have better capitalised bond markets when capitalisation is measured relative to GDP.<sup>45</sup> But market size is not the entire problem. In addition, the failure of countries to adhere to internationally recognised accounting standards has slowed the development of private debt markets. Corruption and low bureaucratic quality, which are signs of unreliable securities market regulation, work in the same direction. Countries with competitive, well capitalised banking systems, on the other hand, have larger bond markets.

Macroeconomic policy appears to have played both a supporting and impeding role. On the one hand, Asia's strong fiscal balances, while admirable on other grounds, have not been conducive to the growth of government bond markets. Fortunately, there is little evidence that the small size of public debt markets is an insurmountable obstacle to corporate bond market development. On the other hand, the stability of exchange rates in the region appears, if anything, to have encouraged bond market development.

Over time, markets, institutions and social conventions have adapted to the status quo, which in the case of Asia is the dominance of bank finance. Some may worry that, as a result

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<sup>44</sup> Indeed, when we limit our attention to private debt (columns 4 and 5), both estimates of the Asia dummy are significantly greater than zero. For public debt, the sign of the coefficient on the Asia dummy is sensitive to how fiscal policy is measured, and it is never significant at the 95% confidence level.

<sup>45</sup> In addition to being supported by our empirical results, this fact is evident in Europe's experience, where the advent of the euro has relaxed the constraint of market size at the national level and greatly enhanced the liquidity of the bond markets, the corporate bond market in particular.

of this inheritance, Asian countries will not be able to develop bond markets as efficient and well capitalised as those of the advanced industrial countries. In this respect our results are reassuring: they suggest that the region's structural characteristics and macroeconomic and financial policies account fully for differences in bond market development between Asia and the rest of the world. Once one controls for these characteristics and policies, in other words, there is no residual "Asia effect".

One obstacle that the region must overcome in order to accelerate this process is the legacy of capital controls. The evidence is strong that capital controls discourage foreign participation in domestic bond markets and that they discourage bond market development more generally. But we also know, not least from the Asian crisis, that capital account liberalisation is only prudent when domestic financial markets are already deep, liquid and robust. Here, obviously, is a dilemma. Capital account liberalisation makes sense only when domestic market development is sufficiently advanced, but developing domestic financial markets is harder when the capital account remains fully or partly closed. There is no easy way of finessing this problem.<sup>46</sup> The only solution is to work harder at strengthening market regulation, market infrastructure and the other domestic preconditions for the development of local bond markets before giving that process a further push by finally opening the capital account.

## Data appendix

The data set covers the period 1990-2001 at an annual frequency. Sample economies are Argentina, Australia, Austria, Belgium, Brazil, Canada, Chile, China, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hong Kong SAR, Hungary, Iceland, India, Ireland, Italy, Korea, Japan, Malaysia, Mexico, the Netherlands, New Zealand, Norway, Peru, the Philippines, Poland, Portugal, Russia, Singapore, South Africa, Spain, Sweden, Switzerland, Thailand, Turkey, the United Kingdom and the United States.

### Domestic debt securities

Domestic debt securities are taken from Table 16A of the BIS domestic and international securities statistics, which are regularly published in the annex tables of the *BIS Quarterly Review*. The series are accessible at <http://www.bis.org/statistics/secstats.htm>.

### Interbank interest rates

Interbank rates are taken from online provider Global Financial Data. Twelve-month interbank rates are used wherever they are available. When 12-month rates are not available, shorter rates are used, and where shorter rates are not available, we use the monthly average of daily overnight interbank rates.

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<sup>46</sup> In particular, harmonising market regulations and withholding tax regimes or creating a pan-Asian payment and settlement system with the goal of encouraging more cross-border investment in the region and thereby producing deeper and more liquid markets would be tantamount to encouraging more capital flows and thus equivalent to early capital account liberalisation. In other words, doing so would promote market development but also heighten crisis risk, which is the very dilemma referred to in the text (Eichengreen (2004)).

## Exchange rates

Exchange rates are end-month (local currency per US dollar) from line AE in *International Financial Statistics*.

## Institutional variables

Measures of government stability, investment profile, law and order, corruption and bureaucratic quality are from *the International Country Risk Guide*:

**Investment profile** is an assessment of factors affecting the risk to direct investment. The risk rating assigned is the sum of three subcomponents, each with a maximum score of four points and a minimum score of zero points. A score of four points equates to very low risk and a score of zero points to very high risk. The subcomponents are:

- Contract viability/expropriation
- Profit repatriation
- Payment delays

**Law and order** are assessed separately, with each subcomponent comprising zero to three points. The law subcomponent is an assessment of the strength and impartiality of the legal system, while the order subcomponent is an assessment of popular observance of the law. A higher score indicates better law and order.

**Corruption** is an assessment of corruption within the political system. The index ranges from zero to six, where a higher score means a lower degree of corruption.

**Bureaucratic quality** is the measure of institutional strength and quality of the bureaucracy. High points are given to countries where the bureaucracy has the strength and expertise to govern without drastic changes in policy or interruptions in government services. In the low-risk countries, the bureaucracy tends to be somewhat autonomous from political pressure and to have an established mechanism for recruitment and training.

## Capital control variable

Coded from the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions* by Nancy Brune and Geoffrey Garrett; see Brune (2003).

## Other variables

The following series are from the World Bank's *World Development Indicators*:

GDP (constant 1995 US dollars)

GDP (current US dollars)

GDP per capita (constant 1995 US dollars)

GDP per capita, PPP (current international US dollars)

GDP, PPP (current international US dollars)

Interest rate spread (lending rate minus deposit rate)

Interest rate spread (lending rate minus Libor)

Lending interest rate (in per cent)

Credit to private sector (as a percentage of GDP)

Deposit interest rate (in per cent)

Domestic credit provided by banking sector (as a percentage of GDP)  
Market capitalisation of listed companies (as a percentage of GDP)  
Market capitalisation of listed companies (current US dollars)  
Overall budget deficit, including grants (as a percentage of GDP)  
Real effective exchange rate index (1995 = 100)  
S&P/IFC investable index (annual change, in per cent)  
Stocks traded, total value (as a percentage of GDP)  
Stocks traded, turnover ratio (in per cent)

Table 1  
**Total outstanding external finance (end-2001)**

As a percentage of GDP

|                            | Domestic credit provided by banking sector | Stock market capitalisation | Outstanding domestic debt securities |                         |                                  |
|----------------------------|--------------------------------------------|-----------------------------|--------------------------------------|-------------------------|----------------------------------|
|                            |                                            |                             | Issued by corporate issuers          | Issued by public sector | Issued by financial institutions |
| <b>Emerging markets</b>    | <b>90.21</b>                               | <b>56.87</b>                | <b>5.76</b>                          | <b>24.96</b>            | <b>8.28</b>                      |
| <b>Asia</b>                | <b>131.91</b>                              | <b>75.56</b>                | <b>9.27</b>                          | <b>23.52</b>            | <b>12.00</b>                     |
| China                      | 140.59                                     | 45.21                       | 0.90                                 | 25.04                   | 8.80                             |
| Hong Kong SAR              | 141.98                                     | 310.81                      | 3.07                                 | 11.78                   | 11.90                            |
| Korea                      | 110.37                                     | 54.97                       | 27.84                                | 18.32                   | 23.20                            |
| Malaysia                   | 156.23                                     | 135.92                      | 50.40                                | 36.57                   | 7.54                             |
| Singapore                  | 102.95                                     | 138.25                      | 6.71                                 | 34.16                   | 20.61                            |
| Thailand                   | 112.03                                     | 31.67                       | 4.96                                 | 26.17                   | 0.35                             |
| <b>Latin America</b>       | <b>41.21</b>                               | <b>38.70</b>                | <b>1.73</b>                          | <b>26.12</b>            | <b>4.53</b>                      |
| Argentina                  | 37.13                                      | 71.62                       | 2.71                                 | 9.11                    | 2.04                             |
| Brazil                     | 59.19                                      | 37.06                       | 0.56                                 | 51.99                   | 9.40                             |
| Chile                      | 76.74                                      | 89.28                       | 8.82                                 | 29.76                   | 13.86                            |
| Mexico                     | 24.69                                      | 20.49                       | 1.52                                 | 12.10                   | 0.68                             |
| <b>Central Europe</b>      | <b>42.48</b>                               | <b>16.04</b>                | <b>1.23</b>                          | <b>29.32</b>            | <b>0.92</b>                      |
| Czech Republic             | 51.84                                      | 16.22                       | 4.79                                 | 36.35                   | 4.61                             |
| Hungary                    | 49.54                                      | 19.80                       | 1.53                                 | 35.31                   | 0.00                             |
| Poland                     | 37.34                                      | 14.85                       | 0.00                                 | 25.26                   | 0.00                             |
| <b>Developed economies</b> | <b>194.13</b>                              | <b>122.92</b>               | <b>20.55</b>                         | <b>85.18</b>            | <b>33.64</b>                     |
| Australia                  | 93.99                                      | 101.55                      | 12.25                                | 17.13                   | 16.75                            |
| Canada                     | 93.18                                      | 90.86                       | 10.50                                | 59.60                   | 14.33                            |
| Japan                      | 308.67                                     | 92.10                       | 16.48                                | 104.45                  | 15.94                            |
| New Zealand                | 120.00                                     | 36.82                       | 0.00                                 | 28.36                   | 0.00                             |
| United States              | 160.56                                     | 137.48                      | 23.90                                | 83.53                   | 43.32                            |
| Europe                     | 121.30                                     | 156.25                      | 8.05                                 | 44.12                   | 28.44                            |

Sources: World Bank, *World Development Indicators* (WDI); BIS.

Table 2  
**Composition of external finance (end-2001)**

As a percentage of total

|                                | <b>Domestic credit<br/>provided by banking<br/>sector</b> | <b>Stock market<br/>capitalisation</b> | <b>Outstanding<br/>domestic debt<br/>securities (corporate<br/>issuers and public<br/>sector)</b> |
|--------------------------------|-----------------------------------------------------------|----------------------------------------|---------------------------------------------------------------------------------------------------|
| <b>Emerging markets</b>        | <b>50.74</b>                                              | <b>31.98</b>                           | <b>17.28</b>                                                                                      |
| <b>Asia</b>                    | <b>54.90</b>                                              | <b>31.45</b>                           | <b>13.65</b>                                                                                      |
| China                          | 66.40                                                     | 21.35                                  | 12.25                                                                                             |
| Hong Kong SAR                  | 30.36                                                     | 66.46                                  | 3.17                                                                                              |
| Korea                          | 52.18                                                     | 25.99                                  | 21.82                                                                                             |
| Malaysia                       | 41.21                                                     | 35.85                                  | 22.94                                                                                             |
| Singapore                      | 36.50                                                     | 49.01                                  | 14.49                                                                                             |
| Thailand                       | 64.08                                                     | 18.11                                  | 17.81                                                                                             |
| <b>Latin America</b>           | <b>38.24</b>                                              | <b>35.91</b>                           | <b>25.85</b>                                                                                      |
| Argentina                      | 30.79                                                     | 59.40                                  | 9.80                                                                                              |
| Brazil                         | 39.78                                                     | 24.91                                  | 35.31                                                                                             |
| Chile                          | 37.51                                                     | 43.64                                  | 18.86                                                                                             |
| Mexico                         | 41.99                                                     | 34.85                                  | 23.17                                                                                             |
| <b>Central Europe</b>          | <b>47.69</b>                                              | <b>18.01</b>                           | <b>34.30</b>                                                                                      |
| Czech Republic                 | 47.48                                                     | 14.85                                  | 37.67                                                                                             |
| Hungary                        | 46.66                                                     | 18.65                                  | 34.69                                                                                             |
| Poland                         | 48.21                                                     | 19.18                                  | 32.61                                                                                             |
| <b>Developed<br/>economies</b> | <b>45.92</b>                                              | <b>29.08</b>                           | <b>25.01</b>                                                                                      |
| Australia                      | 41.79                                                     | 45.15                                  | 13.06                                                                                             |
| Canada                         | 36.66                                                     | 35.75                                  | 27.58                                                                                             |
| Japan                          | 59.17                                                     | 17.65                                  | 23.18                                                                                             |
| New Zealand                    | 64.80                                                     | 19.88                                  | 15.32                                                                                             |
| United States                  | 39.60                                                     | 33.91                                  | 26.50                                                                                             |
| Europe                         | 42.32                                                     | 38.72                                  | 18.96                                                                                             |

Sources: *WDI*; BIS.

Table 3  
**New external finance in emerging markets**  
As a percentage of GDP

|                             | 1997         | 1998         | 1999         | 2000         | 2001         |
|-----------------------------|--------------|--------------|--------------|--------------|--------------|
| <b>Emerging markets</b>     | <b>22.47</b> | <b>27.03</b> | <b>18.69</b> | <b>23.20</b> | <b>20.28</b> |
| <b><i>Domestic</i></b>      | <b>18.05</b> | <b>24.47</b> | <b>15.77</b> | <b>19.56</b> | <b>17.33</b> |
| Equities                    | 1.00         | 0.92         | 1.26         | 0.67         | 0.54         |
| Bonds                       |              |              |              |              |              |
| Private                     | 0.30         | 0.33         | 0.30         | 2.59         | 3.25         |
| Public                      | 10.45        | 17.73        | 11.50        | 10.25        | 9.09         |
| Bank loans                  |              |              |              |              |              |
| Private                     | 4.55         | 4.49         | 2.25         | 5.29         | 2.72         |
| Public                      | 1.74         | 1.00         | 0.46         | 0.76         | 1.72         |
| <b><i>International</i></b> | <b>4.42</b>  | <b>2.56</b>  | <b>2.93</b>  | <b>3.64</b>  | <b>2.95</b>  |
| Equities                    | 0.50         | 0.16         | 0.46         | 0.84         | 0.25         |
| Bonds                       |              |              |              |              |              |
| Private                     | 1.12         | 0.56         | 0.64         | 0.58         | 0.88         |
| Public                      | 1.12         | 0.81         | 1.01         | 0.86         | 0.83         |
| Bank loans                  |              |              |              |              |              |
| Private                     | 1.14         | 0.61         | 0.65         | 1.04         | 0.79         |
| Public                      | 0.54         | 0.42         | 0.18         | 0.32         | 0.20         |
| <b>Asia</b>                 | <b>12.63</b> | <b>15.88</b> | <b>16.77</b> | <b>19.72</b> | <b>22.20</b> |
| <b><i>Domestic</i></b>      | <b>8.46</b>  | <b>14.38</b> | <b>14.57</b> | <b>16.21</b> | <b>19.03</b> |
| Equities                    | 1.49         | 0.99         | 1.93         | 1.03         | 0.60         |
| Bonds                       |              |              |              |              |              |
| Private                     | 0.00         | 0.00         | 0.05         | 2.12         | 3.00         |
| Public                      | 0.36         | 2.52         | 2.49         | 2.78         | 5.28         |
| Bank loans                  |              |              |              |              |              |
| Private                     | 6.70         | 7.56         | 8.54         | 9.08         | 7.53         |
| Public                      | -0.09        | 3.31         | 1.56         | 1.21         | 2.61         |
| <b><i>International</i></b> | <b>4.16</b>  | <b>1.50</b>  | <b>2.20</b>  | <b>3.51</b>  | <b>3.16</b>  |
| Equities                    | 0.55         | 0.24         | 0.76         | 1.32         | 0.43         |
| Bonds                       |              |              |              |              |              |
| Private                     | 1.04         | 0.20         | 0.45         | 0.62         | 1.21         |
| Public                      | 0.74         | 0.35         | 0.54         | 0.39         | 0.57         |

Table 3 (cont)  
**New external finance in emerging markets**  
As a percentage of GDP

|                       | 1997         | 1998         | 1999         | 2000         | 2001         |
|-----------------------|--------------|--------------|--------------|--------------|--------------|
| Bank loans            |              |              |              |              |              |
| Private               | 1.18         | 0.27         | 0.26         | 0.81         | 0.80         |
| Public                | 0.65         | 0.43         | 0.21         | 0.37         | 0.16         |
| <b>Central Europe</b> | <b>20.88</b> | <b>30.19</b> | <b>24.52</b> | <b>24.30</b> | <b>33.47</b> |
| <b>Domestic</b>       | <b>17.52</b> | <b>26.81</b> | <b>21.49</b> | <b>21.67</b> | <b>31.08</b> |
| Equities              | 0.54         | 2.52         | 1.30         | 0.51         | 0.34         |
| Bonds                 |              |              |              |              |              |
| Private               | 0.21         | 0.11         | 0.13         | 0.07         | 0.11         |
| Public                | 17.69        | 18.03        | 23.07        | 22.35        | 22.85        |
| Bank loans            |              |              |              |              |              |
| Private               | 1.46         | 4.50         | -1.48        | 0.45         | 4.24         |
| Public                | -2.38        | 1.66         | -1.53        | -1.71        | 3.54         |
| <b>International</b>  | <b>3.36</b>  | <b>3.38</b>  | <b>3.03</b>  | <b>2.63</b>  | <b>2.39</b>  |
| Equities              | 1.07         | 0.56         | 0.45         | 0.15         | 0.00         |
| Bonds                 |              |              |              |              |              |
| Private               | 0.52         | 0.82         | 0.69         | 0.33         | 0.66         |
| Public                | 0.52         | 0.96         | 1.05         | 0.50         | 0.78         |
| Bank loans            |              |              |              |              |              |
| Private               | 0.73         | 0.55         | 0.49         | 1.49         | 0.43         |
| Public                | 0.52         | 0.50         | 0.35         | 0.17         | 0.52         |
| <b>Latin America</b>  | <b>34.52</b> | <b>38.45</b> | <b>20.20</b> | <b>27.59</b> | <b>15.35</b> |
| <b>Domestic</b>       | <b>29.63</b> | <b>34.89</b> | <b>16.31</b> | <b>23.60</b> | <b>12.55</b> |
| Equities              | 0.50         | 0.60         | 0.33         | 0.23         | 0.50         |
| Bonds                 |              |              |              |              |              |
| Private               | 0.67         | 0.72         | 0.68         | 3.61         | 4.17         |
| Public                | 21.44        | 33.98        | 21.50        | 18.05        | 11.08        |
| Bank loans            |              |              |              |              |              |
| Private               | 2.46         | 1.19         | -5.56        | 1.12         | -3.47        |
| Public                | 4.56         | -1.59        | -0.65        | 0.59         | 0.27         |
| <b>International</b>  | <b>4.89</b>  | <b>3.55</b>  | <b>3.89</b>  | <b>3.99</b>  | <b>2.80</b>  |
| Equities              | 0.34         | 0.00         | 0.05         | 0.33         | 0.08         |
| Bonds                 |              |              |              |              |              |
| Private               | 1.32         | 0.91         | 0.89         | 0.56         | 0.52         |
| Public                | 1.67         | 1.27         | 1.64         | 1.54         | 1.17         |

Table 3 (cont)  
**New external finance in emerging markets**  
As a percentage of GDP

|            | 1997 | 1998 | 1999 | 2000 | 2001 |
|------------|------|------|------|------|------|
| Bank loans |      |      |      |      |      |
| Private    | 1.15 | 0.98 | 1.21 | 1.27 | 0.84 |
| Public     | 0.41 | 0.39 | 0.11 | 0.28 | 0.19 |

Note: Dollar amounts are from Tables 4.2 and 4.3 in the IMF's *Global Financial Stability Report: Market Developments and Issues* (March 2003). GDP data are from the World Bank's *World Development Indicators*. Emerging markets include China, Hong Kong SAR, Korea, Malaysia, Singapore, Thailand, Argentina, Brazil, Chile, Mexico, the Czech Republic, Hungary and Poland.

Table 4  
Correlations of explanatory variables

|                                 | GDP, PPP | Exports to GDP (%) | Dummy for Asia | Dummy for English legal origin | Distance from equator | Investment profile | Law and order | GDP per capita, PPP | Corruption | Accounting standards | Bank credits | Concentration in banking sector | Bureaucratic quality | Interest rate volatility | Interest rate spread | Exchange rate volatility | Budget balance (% of GDP) 3-year moving average |
|---------------------------------|----------|--------------------|----------------|--------------------------------|-----------------------|--------------------|---------------|---------------------|------------|----------------------|--------------|---------------------------------|----------------------|--------------------------|----------------------|--------------------------|-------------------------------------------------|
| GDP, PPP                        | 1        |                    |                |                                |                       |                    |               |                     |            |                      |              |                                 |                      |                          |                      |                          |                                                 |
| Exports to GDP (%)              | -0.2511  | 1                  |                |                                |                       |                    |               |                     |            |                      |              |                                 |                      |                          |                      |                          |                                                 |
| Dummy for Asia                  | -0.1045  | 0.517              | 1              |                                |                       |                    |               |                     |            |                      |              |                                 |                      |                          |                      |                          |                                                 |
| Dummy for English legal origin  | 0.2960   | 0.3069             | 0.2452         | 1                              |                       |                    |               |                     |            |                      |              |                                 |                      |                          |                      |                          |                                                 |
| Distance from equator           | 0.0131   | -0.4452            | -0.6842        | -0.3749                        | 1                     |                    |               |                     |            |                      |              |                                 |                      |                          |                      |                          |                                                 |
| Investment profile              | 0.1807   | 0.1415             | -0.1082        | 0.0953                         | -0.0496               | 1                  |               |                     |            |                      |              |                                 |                      |                          |                      |                          |                                                 |
| Law and order                   | 0.1658   | 0.0917             | -0.3004        | 0.2509                         | 0.5557                | 0.0247             | 1             |                     |            |                      |              |                                 |                      |                          |                      |                          |                                                 |
| GDP per capita, PPP             | 0.4217   | -0.0032            | -0.4491        | 0.1586                         | 0.6141                | 0.171              | 0.7602        | 1                   |            |                      |              |                                 |                      |                          |                      |                          |                                                 |
| Corruption                      | -0.0273  | -0.0552            | -0.3841        | -0.0111                        | 0.6711                | -0.0405            | 0.6468        | 0.6298              | 1          |                      |              |                                 |                      |                          |                      |                          |                                                 |
| Accounting standards            | 0.1402   | 0.3326             | 0.1509         | 0.4985                         | 0.1489                | -0.0344            | 0.4411        | 0.4720              | 0.4028     | 1                    |              |                                 |                      |                          |                      |                          |                                                 |
| Bank credit                     | 0.3339   | 0.0322             | 0.1145         | 0.1976                         | 0.1700                | -0.0498            | 0.4414        | 0.4301              | 0.2420     | 0.3269               | 1            |                                 |                      |                          |                      |                          |                                                 |
| Concentration in banking sector | -0.5322  | 0.2670             | -0.1784        | -0.1083                        | 0.2408                | -0.0719            | 0.1574        | 0.1041              | 0.4159     | 0.2559               | -0.1242      | 1                               |                      |                          |                      |                          |                                                 |

Table 4 (cont)  
Correlations of explanatory variables

|                                                 | GDP, PPP | Exports to GDP (%) | Dummy for Asia | Dummy for English legal origin | Distance from equator | Investment profile | Law and order | GDP per capita, PPP | Corruption | Accounting standards | Bank credits | Concentration in banking sector | Bureaucratic quality | Interest rate volatility | Interest rate spread | Exchange rate volatility | Budget balance (% of GDP) 3-year moving average |
|-------------------------------------------------|----------|--------------------|----------------|--------------------------------|-----------------------|--------------------|---------------|---------------------|------------|----------------------|--------------|---------------------------------|----------------------|--------------------------|----------------------|--------------------------|-------------------------------------------------|
| Bureaucratic quality                            | 0.2337   | 0.0745             | -0.3017        | 0.2666                         | 0.5625                | 0.1557             | 0.7582        | 0.8176              | 0.7016     | 0.5669               | 0.4373       | 0.1927                          | 1                    |                          |                      |                          |                                                 |
| Interest rate volatility                        | -0.1436  | -0.1417            | 0.0729         | -0.2013                        | -0.3703               | -0.0713            | -0.6644       | -0.5824             | -0.4733    | -0.3767              | -0.3942      | -0.0222                         | -0.5799              | 1                        |                      |                          |                                                 |
| Interest rate spread                            | -0.1516  | -0.2699            | -0.0111        | -0.2893                        | -0.2219               | -0.2787            | -0.6057       | -0.5791             | -0.295     | -0.3633              | -0.389       | -0.0602                         | -0.5275              | 0.7165                   | 1                    |                          |                                                 |
| Exchange rate volatility                        | -0.2516  | -0.0326            | -0.0347        | -0.2457                        | 0.1406                | -0.2046            | -0.0866       | -0.0696             | 0.0998     | 0.0258               | 0.1191       | 0.1883                          | -0.0383              | 0.1795                   | 0.2693               | 1                        |                                                 |
| Budget balance (% of GDP) 3-year moving average | -0.0459  | 0.5713             | 0.4628         | 0.3817                         | -0.549                | 0.3514             | -0.087        | -0.1121             | -0.2364    | 0.1223               | -0.0909      | -0.0481                         | -0.0294              | 0.0907                   | -0.1719              | -0.1969                  | 1                                               |

Table 5  
Multivariate analysis

|                                                                     | (1)                  | (2)                  | (3)                   | (4)                 | (5)                | (6)                  | (7)              | (8)                  |
|---------------------------------------------------------------------|----------------------|----------------------|-----------------------|---------------------|--------------------|----------------------|------------------|----------------------|
| GDP, PPP (current international billions of US dollars)             | 0.010<br>(7.97)      | 0.012<br>(11.72)***  | 0.012<br>(11.98)***   |                     |                    |                      |                  | 0.012<br>(19.04)***  |
| Exports to GDP (in per cent)                                        | 0.209<br>(3.53)***   | 0.237<br>(4.19)***   | 0.351<br>(8.25)***    |                     |                    |                      |                  | 0.265<br>(5.02)***   |
| Dummy for Asia                                                      | -32.702<br>(6.33)*** | -29.669<br>(7.23)*** | -10.674<br>(3.81)***  |                     |                    |                      |                  | -16.899<br>(4.85)*** |
| Dummy for English legal origin                                      |                      | -9.492<br>(4.96)***  | -3.587<br>(1.17)      |                     |                    |                      |                  | -18.426<br>(3.74)*** |
| Distance from equator                                               |                      |                      | 110.339<br>(11.79)*** |                     |                    |                      |                  | 65.177<br>(4.10)***  |
| Investment profile                                                  |                      |                      |                       | -0.371<br>(1.97)**  |                    |                      |                  | -0.542<br>(1.71)*    |
| Law and order                                                       |                      |                      |                       | -0.674<br>(1.47)    |                    |                      |                  | 0.808<br>(0.82)      |
| GDP per capita, PPP (current international thousands of US dollars) |                      |                      |                       | 3.179<br>(30.53)*** |                    |                      |                  | -0.291<br>(1.26)     |
| Corruption                                                          |                      |                      |                       |                     | 3.383<br>(4.90)*** |                      |                  | 0.023<br>(0.03)      |
| Accounting standards (La Porta et al (1998))                        |                      |                      |                       |                     | 0.630<br>(6.66)*** |                      |                  | 0.775<br>(3.47)***   |
| Domestic credit provided by banking sector (as a percentage of GDP) |                      |                      |                       |                     |                    | 0.213<br>(9.17)***   |                  | 0.090<br>(2.84)***   |
| Concentration in banking sector                                     |                      |                      |                       |                     |                    | -9.031<br>(3.47)***  |                  | -18.909<br>(4.60)*** |
| Bureaucratic quality                                                |                      |                      |                       |                     |                    | 12.327<br>(11.10)*** |                  | 1.554<br>(1.17)      |
| Standard deviation of interbank interest rates                      |                      |                      |                       |                     |                    |                      | -0.222<br>(0.83) | 0.605<br>(2.19)**    |

Table 5 (cont)  
Multivariate analysis

|                                                       | (1)                              | (2)                              | (3)              | (4)                             | (5)             | (6)             | (7)                              | (8)                              |
|-------------------------------------------------------|----------------------------------|----------------------------------|------------------|---------------------------------|-----------------|-----------------|----------------------------------|----------------------------------|
| Interest rate spread (interbank rate minus Libor)     |                                  |                                  |                  |                                 |                 |                 | -0.713<br>(5.65) <sup>***</sup>  | -0.484<br>(3.47) <sup>***</sup>  |
| Standard deviation of change in log of exchange rates |                                  |                                  |                  |                                 |                 |                 | 39.393<br>(1.87) <sup>*</sup>    | -5.936<br>(0.34)                 |
| IMF capital controls dummy variable                   |                                  |                                  |                  |                                 |                 |                 | 3.226<br>(2.87) <sup>***</sup>   | 2.641<br>(1.85) <sup>*</sup>     |
| Constant                                              | 45.368<br>(23.25) <sup>***</sup> | 46.363<br>(26.75) <sup>***</sup> | -3.903<br>(0.86) | 13.413<br>(5.24) <sup>***</sup> | 7.538<br>(1.26) | 2.535<br>(0.63) | 52.352<br>(42.46) <sup>***</sup> | -25.739<br>(2.75) <sup>***</sup> |
| Observations                                          | 475                              | 475                              | 421              | 469                             | 395             | 405             | 400                              | 284                              |
| Number of id                                          | 41                               | 41                               | 36               | 41                              | 34              | 41              | 38                               | 30                               |

Note: Absolute value of z statistics in parentheses; \* = significant at 10%; \*\* = significant at 5%; \*\*\* = significant at 1%.

Table 6  
Sensitivity analysis

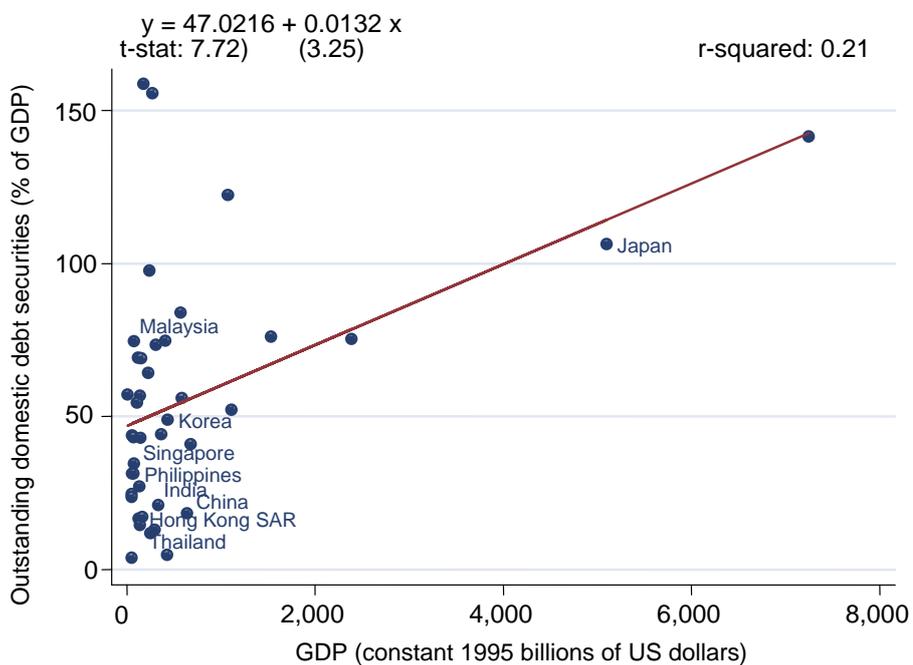
|                                                                     | Total                |                      |                      | Private              |                      | Public               |                      |
|---------------------------------------------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|                                                                     | (1)                  | (2)                  | (3)                  | (4)                  | (5)                  | (6)                  | (7)                  |
| GDP, PPP (current international billions of US dollars)             | 0.011<br>(13.78)***  | 0.011<br>(12.75)***  | 0.005<br>(3.95)***   | 0.006<br>(13.00)***  | 0.005<br>(13.43)***  | 0.006<br>(5.99)***   | 0.010<br>(9.09)***   |
| Exports to GDP (in per cent)                                        | 0.176<br>(2.45)**    | 0.159<br>(1.87)*     | 0.113<br>(3.58)***   | 0.130<br>(3.59)***   | 0.106<br>(3.10)***   | 0.131<br>(3.03)***   | 0.236<br>(6.05)***   |
| Dummy for Asia                                                      | 7.484<br>(1.26)      | 5.217<br>(0.80)      | 13.259<br>(4.94)***  | 8.805<br>(3.90)***   | 7.743<br>(3.07)***   | 8.673<br>(1.57)      | -8.124<br>(1.71)*    |
| Dummy for English legal origin                                      | -4.718<br>(1.16)     | -7.270<br>(1.54)     | -20.759<br>(8.35)*** | -15.939<br>(7.59)*** | -14.394<br>(7.20)*** | 9.714<br>(2.77)***   | 4.957<br>(1.55)      |
| Distance from equator                                               | 111.762<br>(6.02)*** | 79.264<br>(4.08)***  | 69.202<br>(8.02)***  | 58.224<br>(6.91)***  | 48.715<br>(6.18)***  | 73.631<br>(6.03)***  | 63.661<br>(6.03)***  |
| Investment profile                                                  | 0.357<br>(1.06)      | 0.111<br>(0.33)      | 0.187<br>(1.31)      | -0.149<br>(0.97)     | -0.087<br>(0.59)     | 0.260<br>(1.14)      | -0.028<br>(0.11)     |
| Law and order                                                       | 2.066<br>(2.08)**    | -0.097<br>(0.09)     | -0.387<br>(1.07)     | 0.217<br>(0.49)      | 0.288<br>(0.65)      | 1.452<br>(1.87)*     | 1.021<br>(1.18)      |
| GDP per capita, PPP (current international thousands of US dollars) | -0.035<br>(0.09)     | 0.662<br>(1.65)*     | -0.372<br>(2.21)**   | -0.143<br>(0.70)     | -0.203<br>(1.09)     | -0.712<br>(2.58)***  | -0.745<br>(2.95)***  |
| Corruption                                                          | 2.500<br>(2.99)***   | 2.552<br>(2.73)***   | 0.201<br>(0.57)      | 1.208<br>(3.03)***   | 1.353<br>(3.58)***   | 0.456<br>(0.72)      | 0.978<br>(1.34)      |
| Accounting standards (La Porta et al (1998))                        | 0.330<br>(1.72)*     | -0.095<br>(0.32)     | 0.351<br>(4.01)***   | 0.480<br>(5.83)***   | 0.446<br>(5.56)***   | -0.134<br>(0.69)     | 0.102<br>(0.60)      |
| Domestic credit provided by banking sector (as a percentage of GDP) | 0.039<br>(0.89)      | 0.004<br>(0.08)      | 0.071<br>(4.25)***   | 0.070<br>(3.52)***   | 0.103<br>(4.89)***   | 0.040<br>(1.29)      | 0.092<br>(3.05)***   |
| Concentration in banking sector                                     | -11.878<br>(2.63)*** | -20.028<br>(3.87)*** | -4.101<br>(1.68)*    | -2.739<br>(1.12)     | -1.279<br>(0.51)     | -11.415<br>(3.30)*** | -11.823<br>(3.35)*** |

Table 6 (cont)  
Sensitivity analysis

|                                                                                          | Total                |                      |                      | Private              |                      | Public              |                      |
|------------------------------------------------------------------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|---------------------|----------------------|
|                                                                                          | (1)                  | (2)                  | (3)                  | (4)                  | (5)                  | (6)                 | (7)                  |
| Bureaucratic quality                                                                     | -1.397<br>(1.06)     | -0.554<br>(0.32)     | 1.114<br>(2.04)**    | 1.544<br>(2.68)***   | 1.754<br>(3.17)***   | -1.665<br>(1.67)*   | -1.571<br>(1.28)     |
| Standard deviation of interbank interest rates                                           | 0.509<br>(2.02)**    | 0.295<br>(0.87)      | 0.159<br>(1.55)      | 0.084<br>(0.78)      | 0.110<br>(1.07)      | 0.218<br>(1.00)     | 0.191<br>(0.81)      |
| Interest rate spread (interbank rate minus Libor)                                        | -0.391<br>(3.25)***  | -0.289<br>(1.85)*    | -0.104<br>(1.80)*    | -0.116<br>(1.91)*    | -0.166<br>(2.81)***  | -0.285<br>(2.81)*** | -0.295<br>(2.69)***  |
| Standard deviation of change in log of exchange rates                                    | -57.932<br>(3.07)*** | -95.382<br>(4.21)*** | -17.051<br>(2.14)**  | -21.608<br>(2.24)**  | -25.153<br>(2.51)**  | -31.280<br>(2.23)** | -38.613<br>(2.63)*** |
| IMF capital controls dummy variable<br>(1= if capital account is open)                   | 5.740<br>(3.24)***   | 4.859<br>(2.81)***   | -0.218<br>(0.29)     | 1.336<br>(1.44)      | 1.056<br>(1.20)      | 4.385<br>(3.00)***  | 5.667<br>(4.07)***   |
| Fiscal balance (as a percentage of GDP) three-year<br>moving average                     | -1.357<br>(5.91)***  |                      |                      | 0.165<br>(1.58)      |                      | -1.204<br>(6.83)*** |                      |
| Lagged overall budget balance (as a percentage of<br>GDP)                                |                      | -0.871<br>(5.09)***  |                      |                      | 0.078<br>(1.21)      |                     | -0.348<br>(2.52)**   |
| Outstanding domestic debt securities issued by<br>public sector (as a percentage of GDP) |                      |                      | 1.094<br>(45.88)***  |                      |                      |                     |                      |
| Constant                                                                                 | -41.317<br>(3.93)*** | 9.632<br>(0.63)      | -36.844<br>(7.52)*** | -49.076<br>(9.93)*** | -45.686<br>(9.84)*** | 7.940<br>(0.71)     | -8.686<br>(0.91)     |
| Observations                                                                             | 231                  | 235                  | 284                  | 231                  | 235                  | 231                 | 235                  |
| Number of id                                                                             | 28                   | 29                   | 30                   | 28                   | 29                   | 28                  | 29                   |

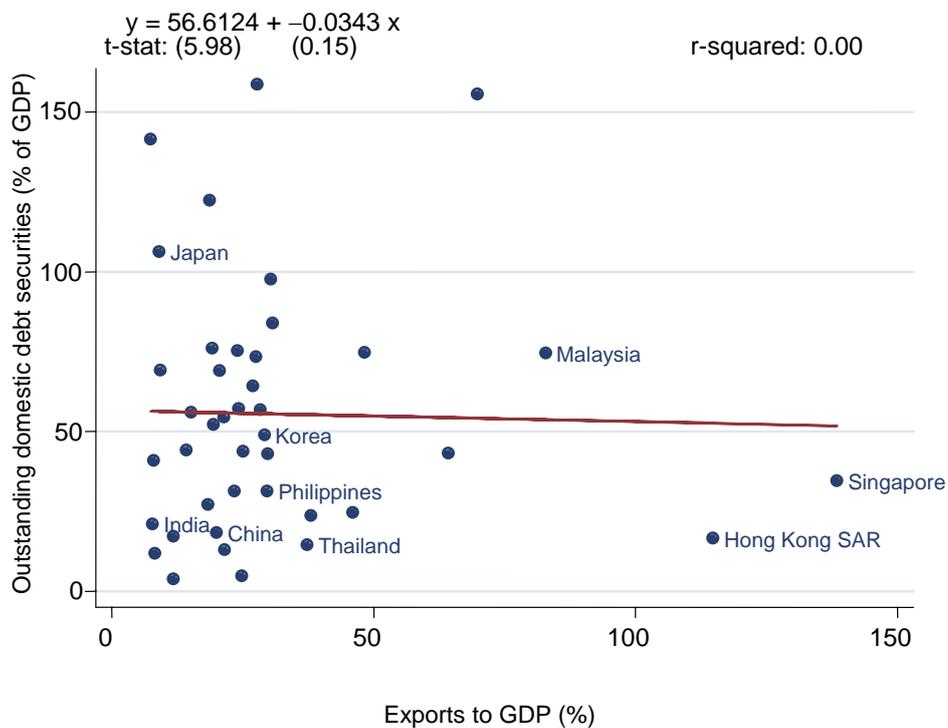
Note: Absolute value of z statistics in parentheses; \* = significant at 10%; \*\* = significant at 5%; \*\*\* = significant at 1%.

Figure 1  
Bond markets and country size



Source: World Bank, *World Development Indicators* (WDI).

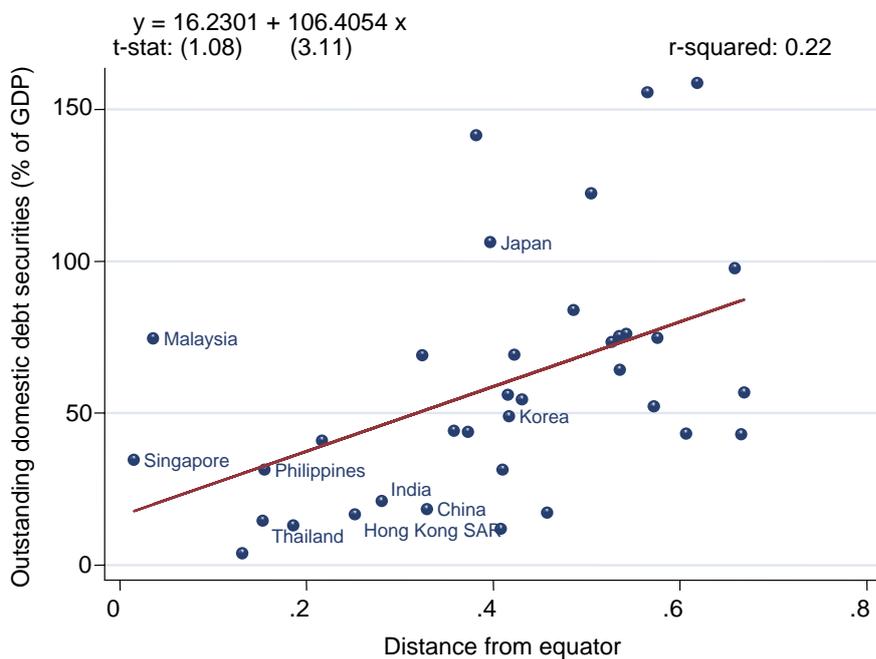
Figure 2  
Bond markets and exports to GDP



Source: WDI.

Figure 3

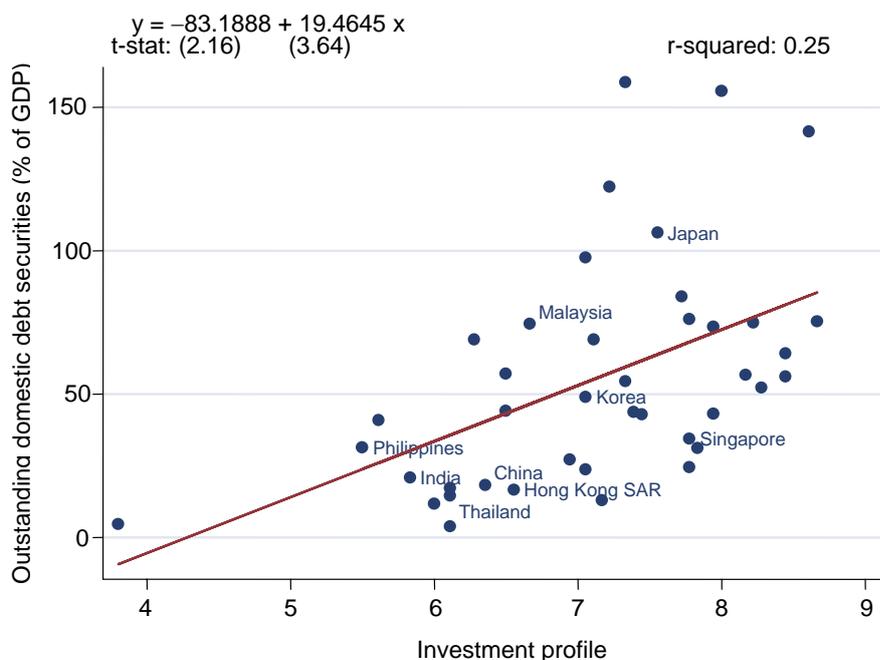
**Bond markets and distance from equator**



Note: Measured by absolute value of the latitude of a country, scaled between zero and one.  
 Source: La Porta et al (1999).

Figure 4

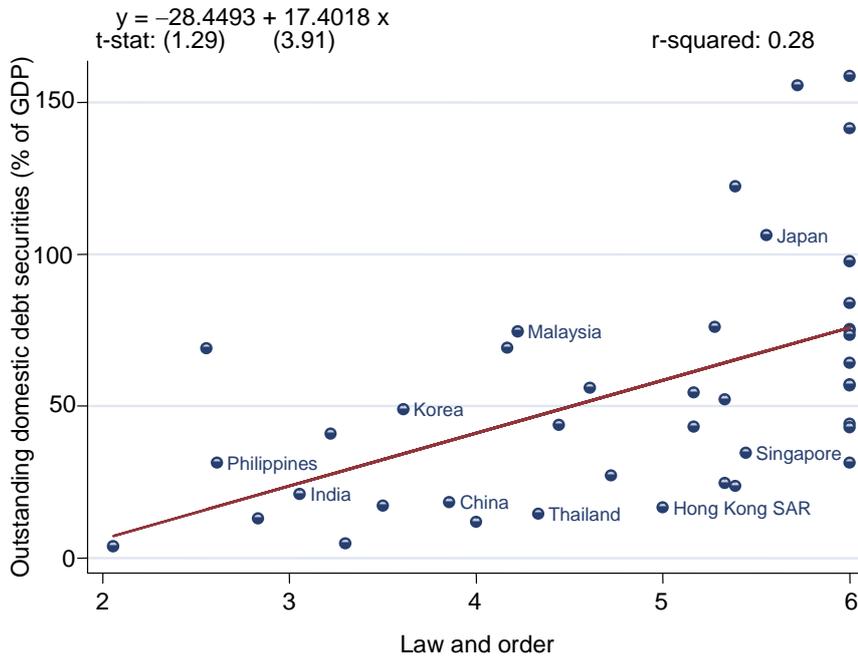
**Bond markets and investment profile**



Note: See data appendix.  
 Source: The PRS Group, *International Country Risk Guide* (ICRG).

Figure 5

**Bond markets and law and order**

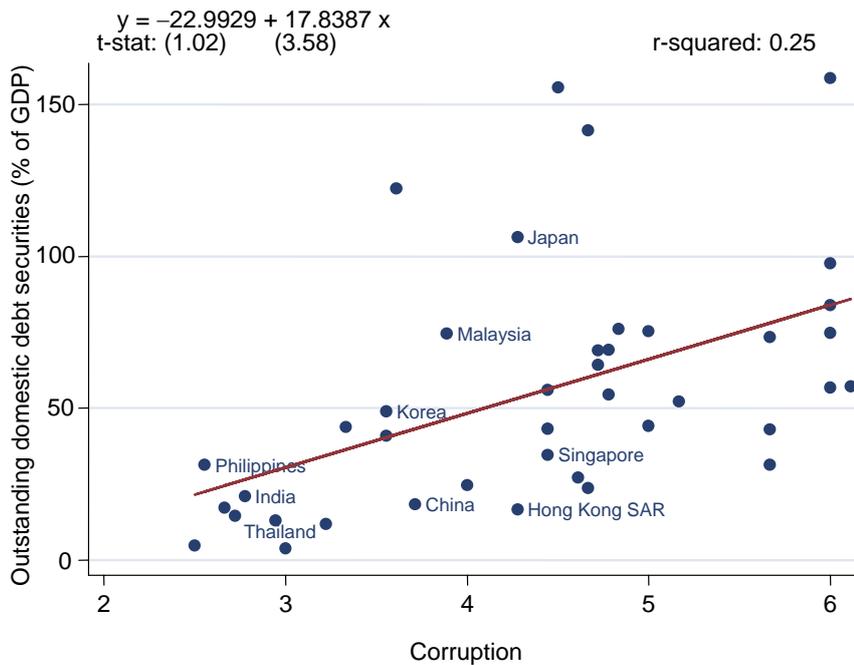


Note: See data appendix.

Source: ICRG.

Figure 6

**Bond markets and corruption**

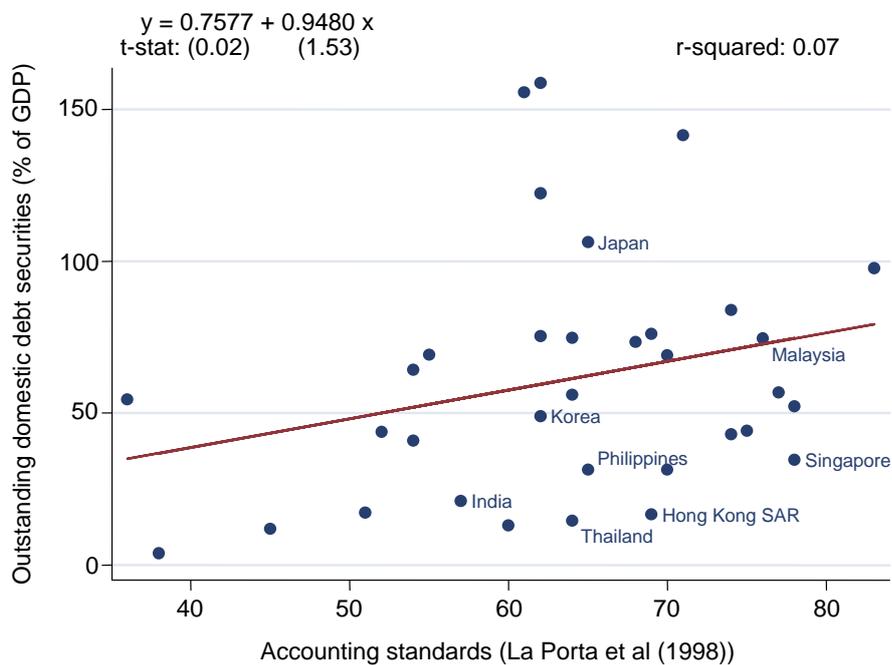


Note: See data appendix.

Source: ICRG.

Figure 7

**Bond markets and accounting standards**

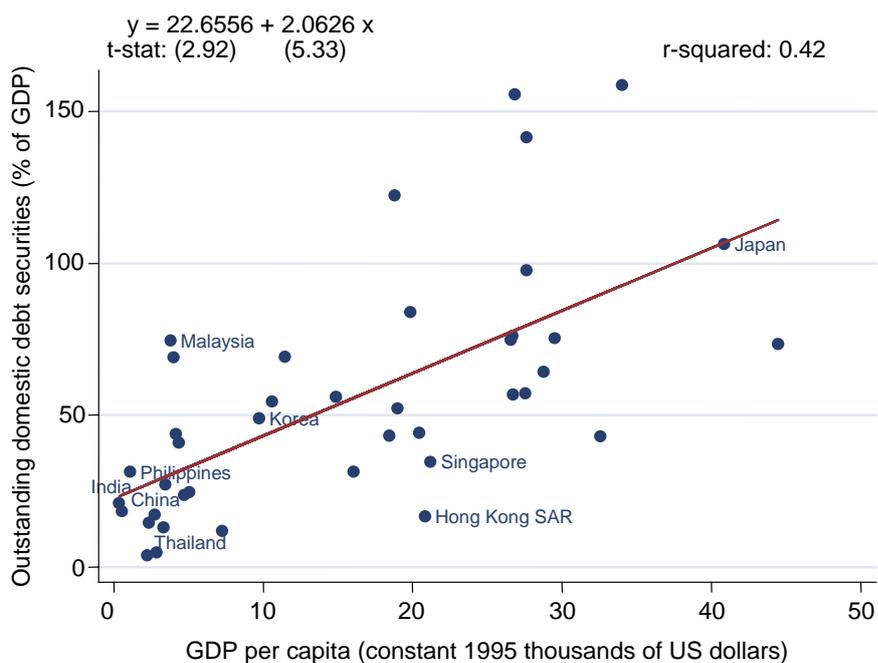


Note: A higher score means a better accounting standard.

Source: La Porta et al (1998).

Figure 8

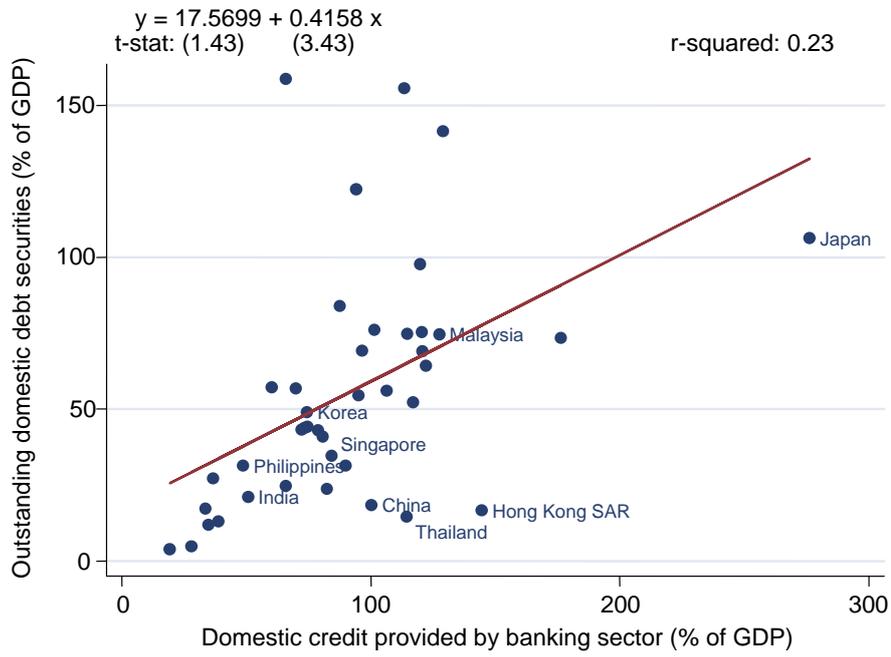
**Bond markets and GDP per capita**



Source: WDI.

Figure 9

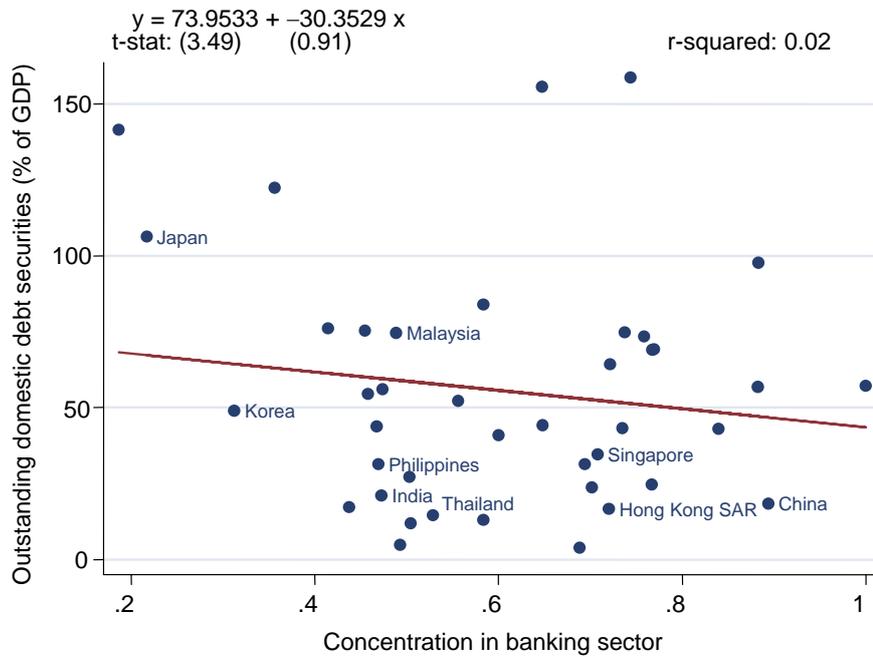
**Bond markets and banking sector development**



Source: *WDI*.

Figure 10

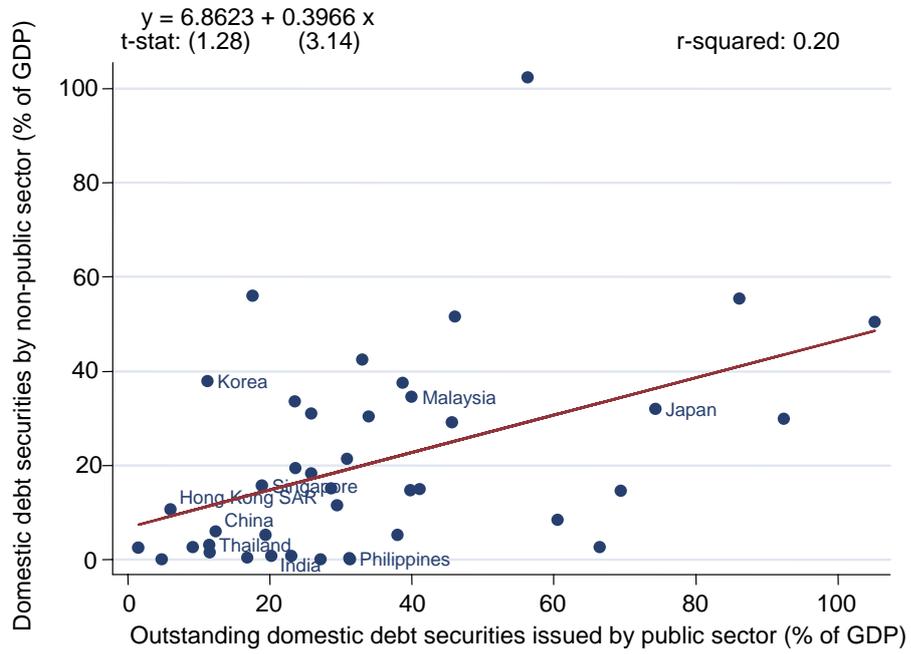
**Bond markets and bank concentration**



Source: Beck et al (1999).

Figure 11

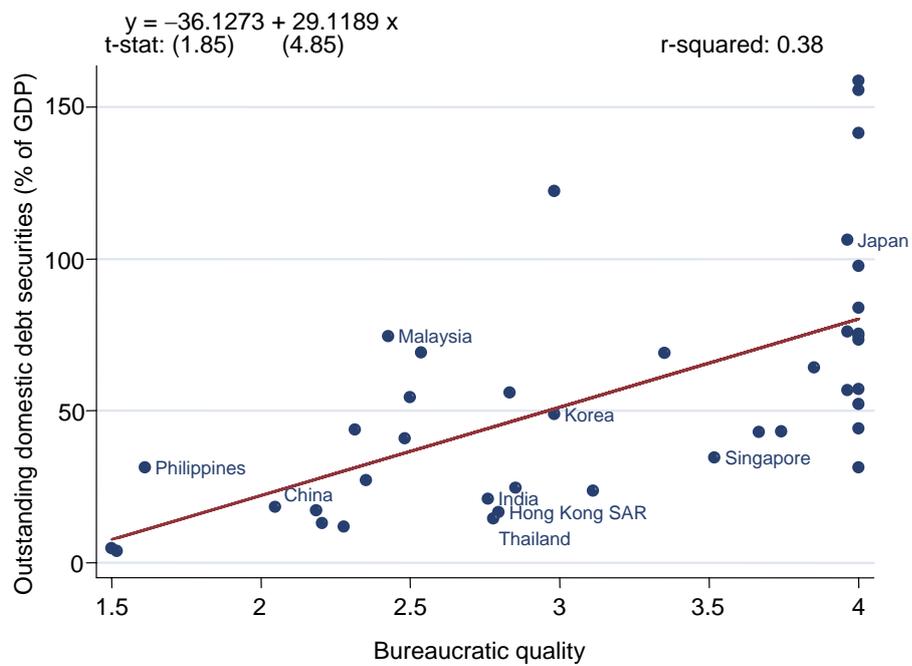
**Public and private sector bond market development**



Source: BIS.

Figure 12

**Bond markets and bureaucratic quality**

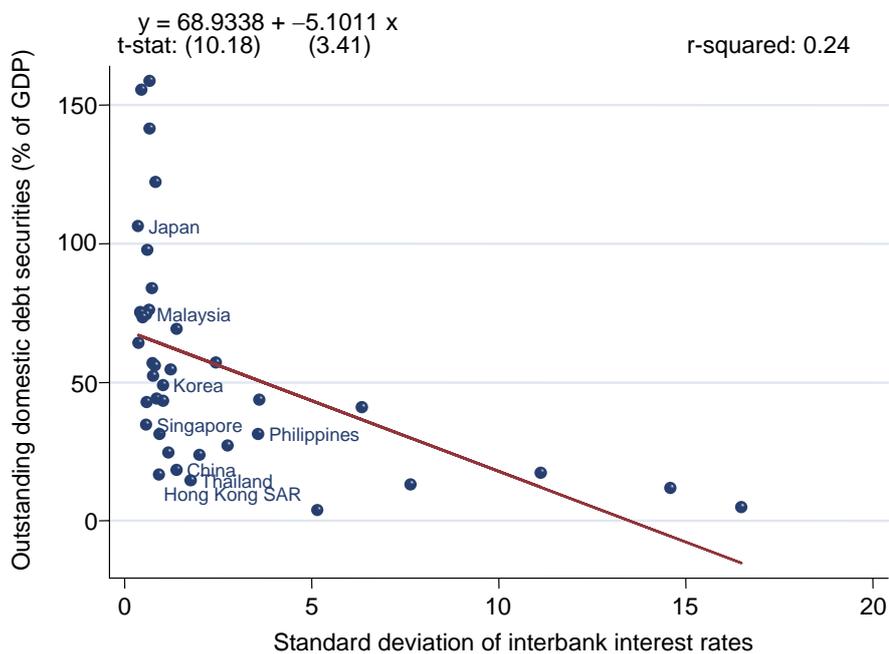


Note: See data appendix.

Source: ICRG.

Figure 13

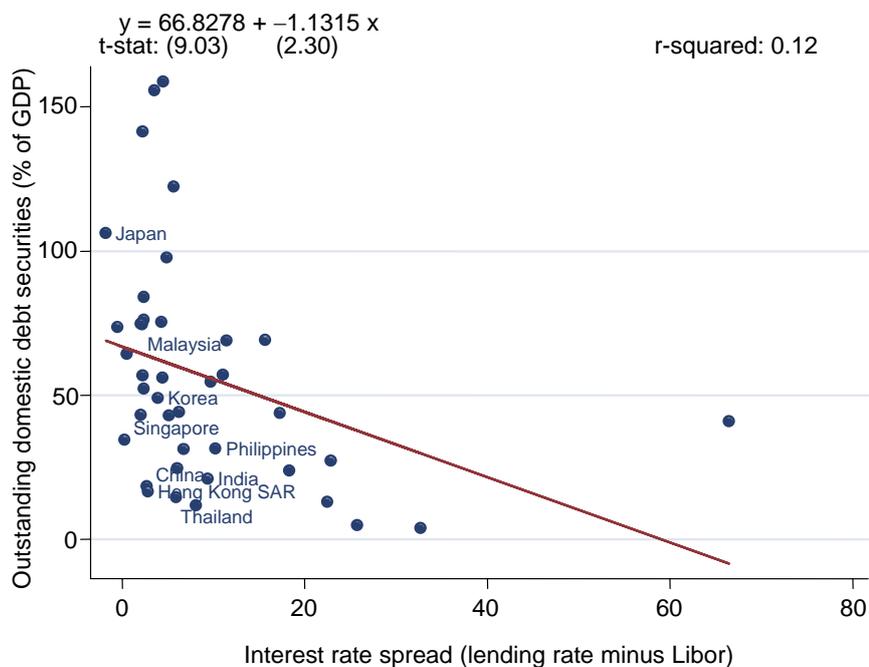
**Bond markets and interest rate volatility**



Sources: Global Financial Database (GFD); authors' calculations.

Figure 14

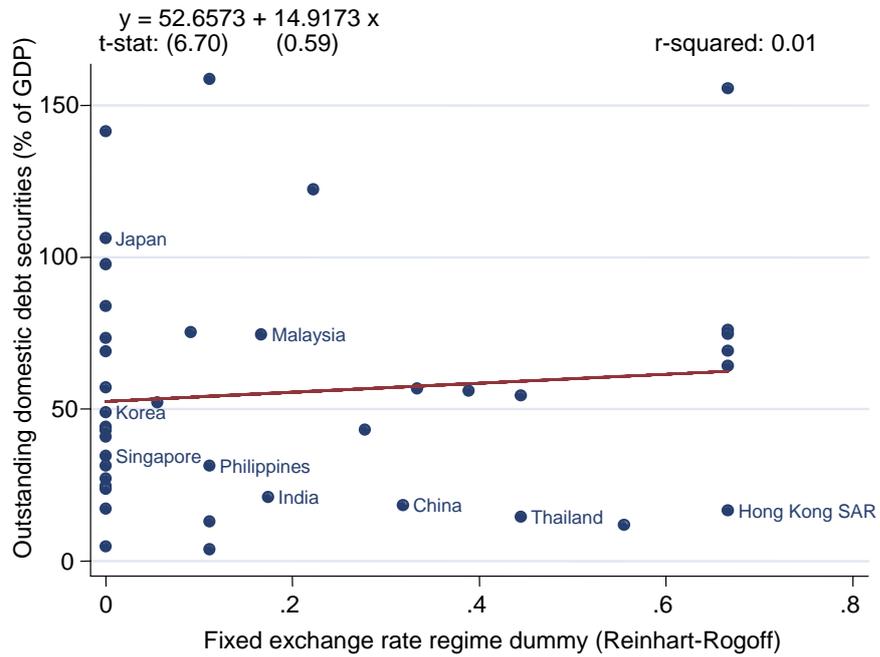
**Bond markets and the level of interest rates**



Sources: GFD; WDI.

Figure 15

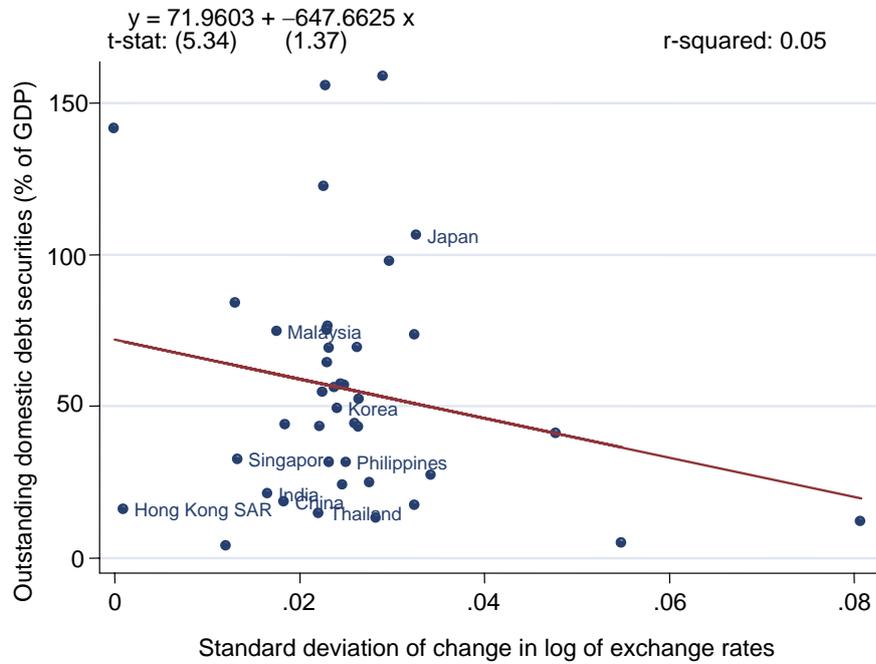
**Bond markets and fixed exchange rate regime**



Source: Reinhart and Rogoff (2002).

Figure 16

**Bond markets and exchange rate volatility**



Sources: IMF, *International Financial Statistics* (IFS); author's calculations.

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# **Comments on Barry Eichengreen and Pipat Luengnaruemitchai's paper "Why doesn't Asia have bigger bond markets?"**

Ric Deverell

I thank the Korea University and the BIS for organising this highly topical conference, and for inviting me to participate. Thanks also to the authors for their thought-provoking presentation and paper, which touch on many of the issues which will be discussed over the coming two days. My comments can be loosely categorised into three sections. First, I will elaborate on the genesis of the Asian Bond Fund, and the motivations underpinning its introduction. Second, I will comment on the methodology adopted in the paper, and suggest some avenues for further work. And third, I will discuss conclusions.

## **1. ABF origin and objectives**

The Asian Bond Fund had its genesis within the EMEAP grouping of regional central banks in mid-2002 - independent of other initiatives. The first stage was launched in the middle of 2003, and involved investment by regional central banks of USD 1 billion in a basket of US dollar-denominated bonds issued by government and quasi-government issuers in eight of the EMEAP economies. While this initiative demonstrates the EMEAP grouping's commitment to the continued development of regional bond markets, its impact on the breadth and liquidity of domestic markets is likely to be small. The second stage, which is not mentioned explicitly in Barry and Pipat's paper, is likely to be far more significant. While the final details are still being finalised, this stage will initially involve investment by central banks in bonds denominated in domestic currencies. However, more significantly, it will put in place the structures to allow access by private investors.

In their paper, Barry and Pipat question whether the use of central bank reserves in the Asian Bond Fund will have the desired effect - which they suggest is to jump-start supply and demand by increasing the size of the installed base through government and central bank purchases of bonds.

This characterisation does not, in my view, fully capture the objectives underlying the ABF - and ignores the ABF2 extension, which was always part of the scoped model. The idea of ABF2 is not so much to "jump-start" demand with our own demand, but to blaze a trail that others could follow. By establishing ABF2, we intend to show that it can be done (identifying and removing regulatory or other impediments along the way), and provide the infrastructure for private sector investors to utilise. This is very clear in the focus on private sector involvement following on from the central bank investments, once we have resolved infrastructure issues such as price dissemination services and the setting-up of indices. In fact, we were always conscious not to make ABF so big as to risk locking up securities and depressing turnover as a result! Something that larger investments by the government sector might have done.

## 2. The results

The paper attempts to shed light on what initiatives are “most urgently needed to promote Asian bond markets”. In order to achieve this, it sets out five hypotheses (historical, structural, developmental stage, structure of financial system, and macroeconomic) and proxies each with several variables. Using these variables, a broad-based cross-country econometric analysis is undertaken.

While this broad-brush approach is useful as part of the initial sorting process, in general the discussion of the empirical results is presented as being more certain than the regressions seem to support. As many of the implications drawn depend on model specification, it would be useful to make a judgment as to the preferred model and then to discuss the results. Alternatively, variables that are robust across model specifications could be singled out as the most likely determinants.

Consistent with this, several of the conclusions warrant further analysis. First, the paper sends mixed messages about the effect of exchange rate stability/volatility. On page 53, last full paragraph, it is suggested that “On the other hand, the stability of exchange rates in the region appears, if anything, to have encouraged bond market development”. However, on page 50, first full paragraph, the paper suggests “...there is little evidence of a relationship between exchange rate volatility and bond market development”. One of the things we have been trying to achieve in emerging markets over recent years is better management of currency mismatch. Part of the solution in our view has to be demand-oriented. That is, there will be little interest in managing currency mismatch if everyone thinks that the exchange rate will be stable. We should not sell currency stability as a means of promoting financial stability.

Second, the paper does not adequately distinguish the type of bond markets that we are seeking to promote, and as such does not explore the important issue of currency denomination of bond markets. Presumably one of our ultimate goals is for bond markets to facilitate borrowing in domestic currency in order to reduce currency mismatch (the so-called problem of original sin). Understanding what allows countries to do this is one of the more important questions the international community faces at the moment.

A third point relates to the type of bond market desired. In the paper, bond market development is defined primarily as aggregate capitalisation. While this may be a useful general proxy, it is not clear that bigger is always better - particularly if a large part of capitalisation is due to large levels of government debt. It is interesting to note that, on this metric, the Australian bond market is almost identical as a share of GDP to that seen in developing Asia. Development may be better defined relative to some metric of secondary market liquidity - for example, bid-offer spread or turnover (ratio of outstandings).

A fourth point relates to the relatively controversial finding that bank financing is complementary to bond market development. Given that market-based financing dominates in some countries, while bank-based financing dominates in others, it may also be useful to split the samples into bank financing and market-based financing countries and examine the relationship between banking sector and bond market development in the subsamples.

## 3. Conclusions

While the paper says that its intention is to help prioritise potential initiatives, its conclusions are very general, with many factors found to be relevant. Given the general nature of the analysis, no convincing argument is put forward that there is any particular initiative that will be more crucial than others. This suggests that more work needs to be done to test which reforms are more urgent.

## On the Asian bond market: comments on Barry Eichengreen and Pipat Luengnaruemitchai's paper "Why doesn't Asia have bigger bond markets?"

Junggon Oh<sup>1</sup>

The main arguments of the above paper are as follows: causes of the underdevelopment of the Asian bond markets include small economic size, poor legal systems, risky investment environments, weak corporate governance and insufficient transparency, low levels of economic development, less developed banking systems, inappropriate interest rate and exchange rate policies, and capital controls. Results of empirical tests using panel generalised least squares (GLS) on data for 41 countries for the period of 1990-2001 support this general hypothesis.

An important finding in this paper is to show empirically the existence of complementarities between banking sector and bond market development. It is necessary to stress again the importance of the banking sector in the period of transition from a bank-centred financial system to a market-centred one after the East Asian crisis, because the sector contributes to a decrease in information asymmetry and transaction costs through long-run close relationships with customers, etc.

There is a hierarchy of external finance in the financial system. The share of bank credit is the largest among external financing sources in most countries mainly because transaction costs and information asymmetry are relatively low in the banking sector (Table 1).

Table 1  
**Composition of external finance**  
2001, in per cent

|                     | Bank credit | Stock market capitalisation <sup>1</sup> | Outstanding domestic bonds |
|---------------------|-------------|------------------------------------------|----------------------------|
| Emerging markets    | 50.74       | 31.98                                    | 17.28                      |
| Asia                | 54.90       | 31.45                                    | 13.65                      |
| Latin America       | 38.24       | 35.91                                    | 25.85                      |
| Central Europe      | 47.69       | 18.01                                    | 34.30                      |
| Developed Countries | 45.92       | 29.08                                    | 25.01                      |
| United States       | 39.60       | 33.91                                    | 26.50                      |
| Japan               | 59.17       | 17.65                                    | 23.18                      |

<sup>1</sup> Stock market capitalisation is not exactly equivalent to the amount of finance obtained through the stock market.

Source: Eichengreen and Luengnaruemitchai (2006).

<sup>1</sup> The views expressed herein are those of the author and do not necessarily reflect those of the Bank of Korea.

In order to develop the bond market, infrastructure development and the introduction of legal requirements in areas such as information disclosure, accounting standards, credit ratings, etc, are necessary in order to reduce transaction costs and information asymmetry. A competitive banking system can also reduce information asymmetry and transaction costs through long-run close relationships with customers and can thereby contribute to the development of the bond market.

However, there are some points to be discussed regarding this paper: Are conclusions specific to Asia or general to all regions? Can empirical tests for Asia only, rather than for 41 countries, obtain the same results?

# Consolidating the public debt markets of Asia

Robert N McCauley<sup>1</sup>

The large reserves of East Asian central banks have received a great deal of attention (Aizenmann and Marion (2002)). Some observers consider that these have made regional finances more robust and better able to weather sudden withdrawals of capital. Others have criticised the reserves as low-yielding external assets that are accumulated at the expense of higher-yielding domestic investment. Others worry that exchange rate management that gives rise to the reserves might result in investment in the traded goods sector that will prove wasteful if exchange rates subsequently appreciate.

Less attention has been paid to the financing of the reserve build-up. The financing, or sterilisation, of the foreign exchange reserve build-up has presented an opportunity for bond market development, but policy has not made the most of this opportunity. While the interest bearing debts issued by central banks to finance the reserve build-up have added to the sum of public debts outstanding, they have generally also segmented that market into government debt per se and central bank debt. While from a macroeconomic standpoint this choice seems innocent, from a market development standpoint it has serious drawbacks.

This paper starts by considering the alternatives faced by a central bank in financing large holdings of foreign exchange reserves. These choices are ranked, with use of government securities in the first position. Then the transactions needed to use government securities to finance reserves when these are held by the central bank are outlined. Then the benefits of this approach are adduced and the issues that must be faced are discussed. These include the attitude of the government and the rating agencies above all, and the practical questions of the return to be paid to the government for its deposit at the central bank, the duration of the extra government debt and consistency with the government budgetary process.

This proposal was originally made with reference to East Asia, especially Indonesia, Korea, Malaysia, Taiwan (China)<sup>2</sup> and Thailand (McCauley (2003)).<sup>3</sup> Recently, the People's Bank of China (PBOC) and the Reserve Bank of India (RBI) both reached a crossroads as they ran out of government securities to sell to sterilise purchases of foreign exchange. While the PBOC opted for central bank bills, the RBI persuaded the government to issue new government debt to sterilise. The contrast between these two cases illustrates that the greatest impediment to the use of government securities is the natural reluctance of finance ministers to issue, and parliaments to authorise, the needed expansion of recognised government debt.

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<sup>1</sup> The author is grateful to Claudio Borio, Brian Coulton, Jeong-Ho Hahm, Corrinne Ho, Hak-Ryul Kim, Kyunjik Lee, Guonan Ma, Madhu Mohanty, Ramon Moreno, T K Ogawa, Junggun Oh and William White and participants in seminars at the Reserve Bank of Australia, the Hong Kong Institute for Monetary Research, the Reserve Bank of India, the Bank of Korea and the Bank of Thailand for helpful discussions. Any errors remain those of the author. Views expressed are those of the author and not the Bank for International Settlements.

<sup>2</sup> Hereinafter Taiwan.

<sup>3</sup> Until very recently the government of Hong Kong SAR had not issued any government debt, and the argument of this paper did not apply there. Similarly, it would not apply to Chile, where the central bank is the only issuer of public debt. With the 2004-05 budget, however, the Hong Kong government will become an issuer in Hong Kong dollars, and the opportunity for a bond market development through consolidating the Exchange Fund paper and government debt per se will arise.

## 1. The choice of sterilisation instrument

Most Asian central banks have seen their foreign exchange reserves (or foreign assets more generally) outgrow their monetary liabilities (base money). This observation points to the practice of sterilising foreign asset growth, typically implemented initially by selling domestic assets like government paper. At some point, the central bank runs out of government paper and must then mop up any additional excess liquidity by issuing its own liabilities.

Major Asian central banks reached this crossroads some time ago. Central banks in small open economies like Singapore and Malaysia have had foreign exchange reserves well in excess of base money for many years, and have managed money market liquidity at least in part via the liability side of their balance sheets. The Indonesian, Korean and Taiwanese central banks all reached similar crossroads in the 1980s. The PBOC and the RBI only just reached it in 2003 and 2004, respectively.<sup>4</sup>

The crossroads between sale of domestic assets and issuing a central bank liability is the first branching on the diagram below (Figure 1). While it is possible to increase the demand for central bank liabilities by increasing reserve requirements, this alternative goes against the international trend towards lower reserve requirements and is not considered here.<sup>5</sup> The key choice is then between “non-market” and “market” liabilities. In the first case, the central bank accepts a deposit from the government or quasi-government body; in the second case, the central bank sells an interest bearing liability to market participants. This distinction is drawn based on the issuance mechanism and the identity of the immediate claimant on the central bank.

The burden of this paper is that taking government deposits (the non-market approach) is the best choice because it is most conducive to the development of money and bond markets when the government has debt outstanding. In this case, the central bank’s issuance of its own liability to market participants creates in effect two sovereign issuers in the domestic bond market.<sup>6</sup> This segments the bond market in a manner that works against liquidity. Thus, the best advised approach is to use a combination of government securities and a

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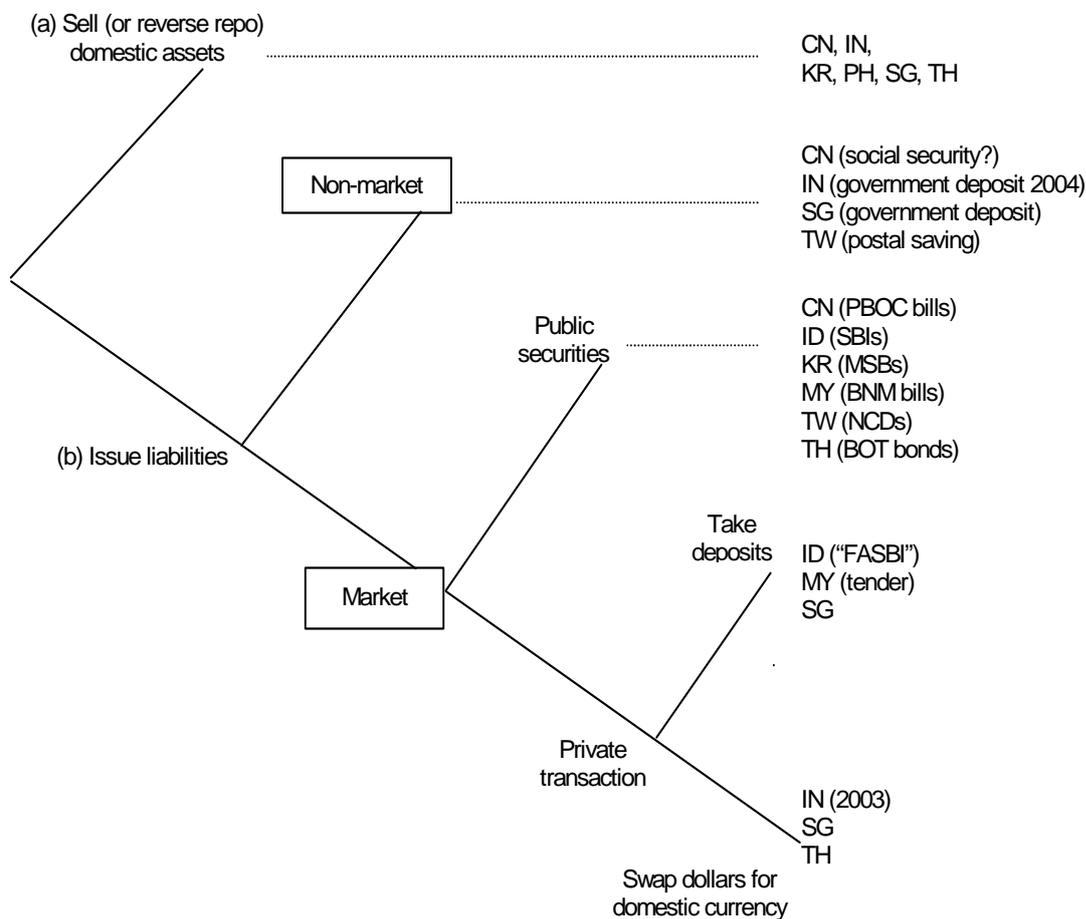
<sup>4</sup> This stylised progression towards a need to issue other liabilities for liquidity management purposes can be accelerated if the central bank holds a substantial sum of unmarketable domestic assets. Thus the Bank of Korea, burdened with loans to particular sectors at below market interest rates, started to sell its own interest bearing liabilities long before foreign exchange reserves reached the level of the monetary base. See Oh (2004) in this volume for a current proposal to fiscalise directed central bank credit as a first step towards consolidating public bond markets. Similarly, quasi-fiscal burdens caused the PBOC to reach the crossroads well before its foreign exchange reserves attained the level of the monetary base. In particular, the PBOC’s claims on the asset management companies and other domestic assets of questionable market value meant that it ran out of tradable domestic assets at a relatively early stage (Ma and Fung (2002)).

<sup>5</sup> The RBI (2004b) notes: “In case CRR [cash reserve ratio] is not remunerated, it has the distortionary impact of a ‘tax’ on the banking system. CRR is also discriminatory in that it has an in-built bias in favour of financial intermediaries that are not required to maintain balances with the Reserve Bank... It is also to be noted that the medium term objective of monetary policy is to bring down the CRR to its statutory minimum level of 3.0 per cent of NDTL [net demand and time liabilities]... Nevertheless, use of CRR as an instrument of sterilisation, under extreme conditions of excess liquidity and when other options are exhausted, should not be ruled out altogether by a prudent monetary authority ready to meet all eventualities.”

<sup>6</sup> The RBI (2004b) reasons: “Issuance of central bank securities can fragment the debt market due to the availability of two competing sovereign issues, one of the Central Government and the other of the Reserve Bank. Normally, central banks issue securities at the short end of the maturity spectrum, on the premise that the capital inflows are transient and may reverse over a short period; in the event of reversal, liquidity could be matched by the maturing central bank paper. However, the Group felt that in the Indian context, issuance of government securities at the short end, particularly for the cash management needs, would also be quite significant and, therefore, market fragmentation remains a key issue.”

government deposit at the central bank as the sterilisation instrument once the central bank has run out of domestic assets to sell or to repo into the market.

Figure 1  
Instrument choices for absorbing liquidity



The other alternative sterilisation instruments are ordered by their desirability in terms of developing the domestic money and bond markets. Thus, if the central bank must issue its own liabilities, these can contribute to market development best if they are tradable securities. Thus public securities are to be preferred to private transactions. Among private transactions, ones that involve only the domestic currency are probably better suited to market development than ones that involve foreign exchange. The latter tend to channel the development of the local money market into the foreign exchange swap market.<sup>7</sup> Indeed, before the crisis, such swap markets were the best developed money markets in East Asia. Thus deposit-taking from banks can be ranked above short-term foreign exchange swaps. The issuance of any central bank liability to market participants is seen as inferior to "overfunding", which the next section outlines.

<sup>7</sup> The RBI (2004b) put forward another argument against the use of foreign exchange swaps, namely that "forex sold by the Reserve Bank through swaps has been used by the market for extending forex loans to customers for meeting rupee expenditure. To the extent that such loans are not hedged, the forex finds its way back into the reserves of the Reserve Bank attenuating the efficacy of swaps as a sterilisation instrument".

## 2. Overfunding the fiscal deficit to transform central bank debt

To unify the domestic public bond market, the government can “overfund” its own fiscal needs in order to replace debt issued by the central bank to market participants. First, the government sells more debt than it needs to finance any deficit and to roll over maturing issues (overfunding). This produces a cash surplus that the government places on deposit with the central bank, thereby draining bank reserves. The central bank is then in a position to pay off its maturing obligations to market participants, thereby reinjecting bank reserves. From the standpoint of the private sector, this would essentially mean a swap of claims on the central bank for claims on the government. The case shown in Table 1 entails an overfunding of sufficient scale to permit the central bank to buy some government securities outright for further use in monetary operations.

Table 1

### Mechanics of overfunding and refunding

| <i>Government overfunds its deficits and places the proceeds on deposit with the central bank</i> |                               |
|---------------------------------------------------------------------------------------------------|-------------------------------|
| Assets                                                                                            | Liabilities                   |
| + deposits due from central bank                                                                  | + government securities       |
| <i>Central bank shifts its liabilities from market participants to the government</i>             |                               |
| Assets                                                                                            | Liabilities                   |
| Foreign exchange reserves                                                                         | Monetary base                 |
| + government securities                                                                           | + deposits due to government  |
|                                                                                                   | – central bank debt to market |

Singapore has recently engaged in such an operation. In order to develop its bond market, the Singapore government more than doubled its outstanding government securities, thereby raising the outstanding stock to 39% of GDP at end-2001, despite fiscal surpluses (see Lian (2002, p 184)). In fiscal 2001/02 and 2002/03, deposits placed by the government with the MAS grew by SGD 21.7 billion, mainly reflecting “the proceeds from the larger issuance of Singapore Government Securities through the [Monetary] Authority to the public and the Central Provident Fund Board”.<sup>8</sup> This allowed “provisions and other liabilities” to fall by SGD 10.9 billion over the two years, “due largely to the reduction in the Authority’s borrowings from banks as part of its money market operations”. At the same time, holdings of Singapore government securities (SGSs) by the MAS rose by SGD 118 million. “The increase was in line with the Authority’s policy to build up its portfolio of SGSs for more active use in repurchase transactions as part of its money market operations.” These transactions implied the changes shown in Table 2.

<sup>8</sup> This and the following citations are from MAS (2002, 2003, p 62 and p 84, respectively).

Table 2

**Selected changes to the Monetary Authority  
of Singapore's balance sheet, 2001/02-2002/03**

In millions of Singapore dollars

| Assets                          |         | Liabilities                                                               |         |
|---------------------------------|---------|---------------------------------------------------------------------------|---------|
| Foreign assets <sup>1</sup>     | +23,967 | Provisions and other liabilities<br>("largely ... borrowings from banks") | -10,866 |
| Singapore government securities | +118    | Deposits of Singapore government                                          | +21,699 |

<sup>1</sup> Includes SGD 15,986 million from the merger of the Currency Fund on 1 October 2002.

The authorities in India decided not to issue a central bank security - which would have required a change in the RBI's legislation - in favour of overfunding from the outset. Reflecting its assessment of the balance of the arguments laid out below, the RBI persuaded the government and parliament to accept selling more government paper than needed to satisfy the public sector borrowing requirement and to place the proceeds in a non-interest bearing blocked account at the RBI. This decision took effect in April 2004, more or less just as the RBI ran out of government securities available for draining operations.

Despite the call in RBI (2004a) for an inframarginal instrument to sterilise surplus liquidity of an "enduring" nature, it was easy to imagine that the new Market Stabilisation Scheme would operate marginally. That is, as the RBI intervened and acquired further foreign exchange, additions would be made to auctions of government bills or bonds, with the proceeds placed in a blocked account at the RBI. The contrast between the top and bottom panels of Table 3 covering selected changes in the RBI's balance sheet in the first and second quarters of calendar 2004, respectively, is consistent with this interpretation. Foreign asset growth slowed, but remained substantial. Whereas, in the first quarter of calendar 2004, reverse repos and outright sales of Indian government securities did the heavy lifting, in the second quarter the deposits under the Scheme took over. Instead of selling government securities outright or on a reversed basis, the RBI received deposits from the government, which in turn was funding the deposits with additional sales of its securities.

Events during the second quarter, however, showed that the Scheme was operating increasingly inframarginally. As capital flows reversed starting in May, the RBI began net sales of dollars that continued to July (RBI (2004d, p 79)). As a result, there was no need for sterilisation at the margin. Still, additions to the Scheme put the RBI in a position to allow reverse repos to run off. In effect, the Scheme came to be used to rebuild the RBI's stock of government securities that can be used to absorb liquidity in the future. Issuance of government securities continued under the Scheme into the third quarter, and by the middle of the quarter (14 August 2004) INR 464.8 billion had been raised.<sup>9</sup>

<sup>9</sup> Because government deposits are invested in government securities held in the RBI's portfolio, the reduction in regular deposits by the Indian government shown in the lower panel of Table 3 also released government securities. Thus, the government deposits under the Scheme have released government securities for use for future absorption through two channels.

Table 3  
**Selected changes to the Reserve Bank of India's balance sheet**

In billions of Indian rupees

| <b>27 December 2003-27 March 2004</b> |         |                                                                 |         |
|---------------------------------------|---------|-----------------------------------------------------------------|---------|
| <b>Assets</b>                         |         | <b>Liabilities</b>                                              |         |
| Foreign assets                        | +461.71 | Reverse repos                                                   | +319.10 |
| Indian government securities          | -53.32  | Deposits of Indian government                                   | -66.85  |
| <b>27 March-25 June 2004</b>          |         |                                                                 |         |
| <b>Assets</b>                         |         | <b>Liabilities</b>                                              |         |
| Foreign assets                        | +349.71 | Reverse repos                                                   | -0.35   |
| Indian government securities          | -4.29   | Deposits of Indian government                                   | -185.77 |
|                                       |         | Deposits of Indian government under Market Stabilisation Scheme | +378.12 |

Source: RBI (2004e), p 128.

### **3. Benefits to the bond market and monetary operations**

Significant benefits could be gained from the overfunding operation described in the previous section. The main benefit arises from the increased liquidity in the secondary market that could be fostered by consolidating all the public debt. In some Asian economies, the increase in the size of the government bond market could be significant, representing growth of anything from 137 to 222%. In aggregate, the five markets considered could be \$220 billion larger. In the next section, the general advantage that size provides for liquidity is elaborated. Measures are then offered for how much larger regional bond markets could be were central bank debt to be transformed into government debt.

#### **3.1 Size and liquidity in government bond markets<sup>10</sup>**

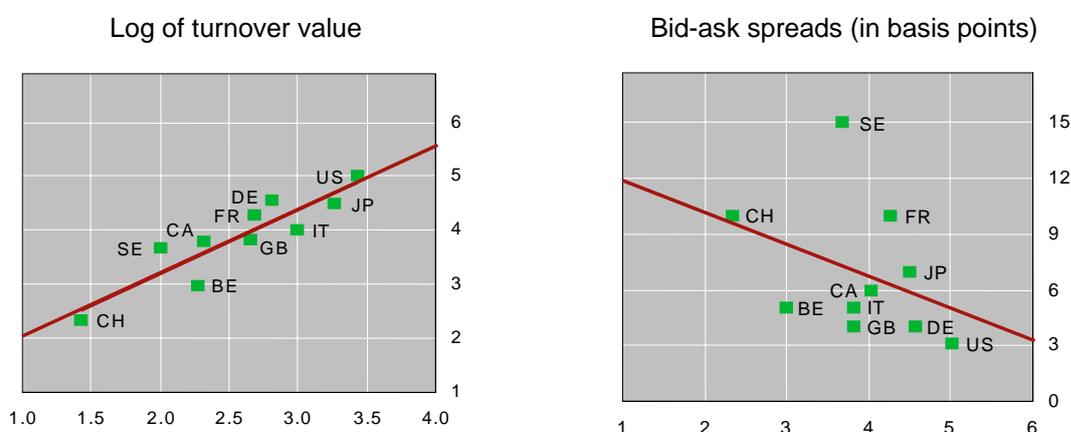
The relationship between the size and liquidity of government bond markets is complicated by the fact that size has several dimensions. In dealer markets, liquidity is generally supplied by market-makers, who not only provide quotes but also take positions. How far size matters for liquidity thus hinges on the various economies of scale in market-making. The size of individual issues matters and debt managers can attain larger sizes by concentrating issuance in fewer maturities, holding auctions less frequently or reopening issues, and buying back illiquid issues. In addition, the overall size of the market matters. One economy of scale arises from market-makers' assembling information about the future path of interest rates. The cost of this in a \$500 billion government bond market is not likely to be 10 times its

<sup>10</sup> This section draws on McCauley and Remolona (2000) and Jiang and McCauley (2004).

cost in a \$50 billion bond market. Similarly, if the extraction of information from order flows entails economies of scale, then overall trading activity may also matter.

The evidence from G10 bond markets suggests that size does make a difference to the liquidity of government bond markets (Graph 1), though it is not the only factor of importance.<sup>11</sup> The larger the outstanding stock of publicly issued central government debt, the higher the turnover in cash and futures trading. And the higher the turnover, the better the liquidity as measured by the tightness of the bid-ask spread.<sup>12</sup> Nevertheless, other factors also play a role. These include: holdings by government accounts and other “buy and hold” investors; the concentration of outstanding debt in benchmark issues; the industrial organisation of the dealers and construction of trading platforms; taxes; arrangements for sale and repurchase; and the efficiency of clearing and settlement systems (CGFS (1999b)).

Graph 1  
Size and liquidity



Source: H Inoue, *The structure of government securities markets in G10 countries: summary of questionnaire results*, in CGFS (1999a).

Size matters for liquidity in Asia (Graph 2, upper panels). A larger market tends to be associated with higher trading volumes (both variables are in logs), which are in turn associated with tighter bid-ask spreads. This is similar to (although somewhat weaker than) the relationship between size, turnover and liquidity observed in G10 government bond markets and ascribed to economies of scale in market-making.

Using the existence of an active government bond futures market as well as bid-ask spreads in G10 markets, McCauley and Remolona (2000) suggest that the critical size for a liquid market is around \$100-200 billion. In Asia, China and India have crossed this threshold, and Korea and Taiwan are approaching it. Australia’s experience, however, suggests that, under the right circumstances, liquid government bond cash and futures markets can both be sustained at a much smaller size (Australia (2003)). Equally, though, the \$100-200 billion threshold may be too low under less favourable circumstances.

<sup>11</sup> See CGFS (1999a).

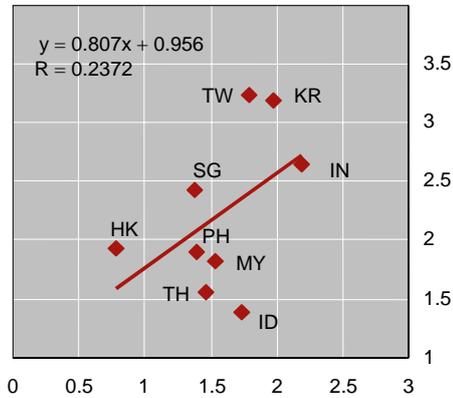
<sup>12</sup> The bid-ask spread measures only one dimension of liquidity, since it does not capture market depth or resilience in respect of absorbing large orders. See CGFS (1999a,b) for a discussion.

Graph 2

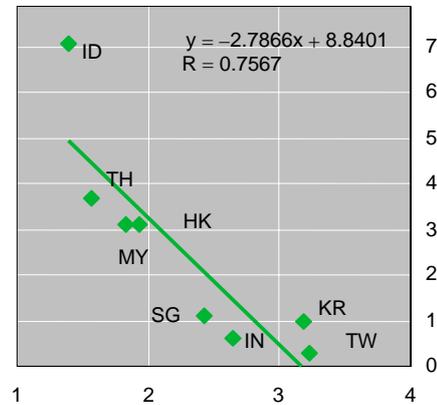
**Liquidity in East Asian bond markets**

Size, trading, issue size and concentration

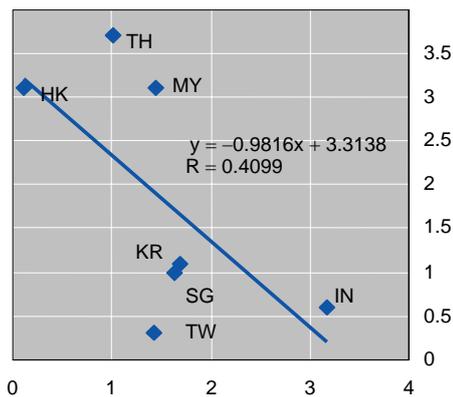
Size (x-axis) and trading volume (y-axis)<sup>1</sup>



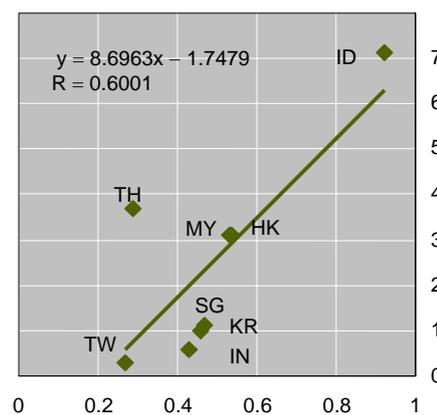
Trading volume (x-axis)<sup>1</sup> and bid-ask spread (y-axis)<sup>2</sup>



Issue size (x-axis)<sup>1</sup> and bid-ask spread (y-axis)<sup>2</sup>



Concentration of bond holdings (x-axis)<sup>3</sup> and bid-ask spreads (y-axis)<sup>2</sup>



<sup>1</sup> In billions of US dollars; in logs. <sup>2</sup> In basis points. <sup>3</sup> Herfindahl-Hirschman index.

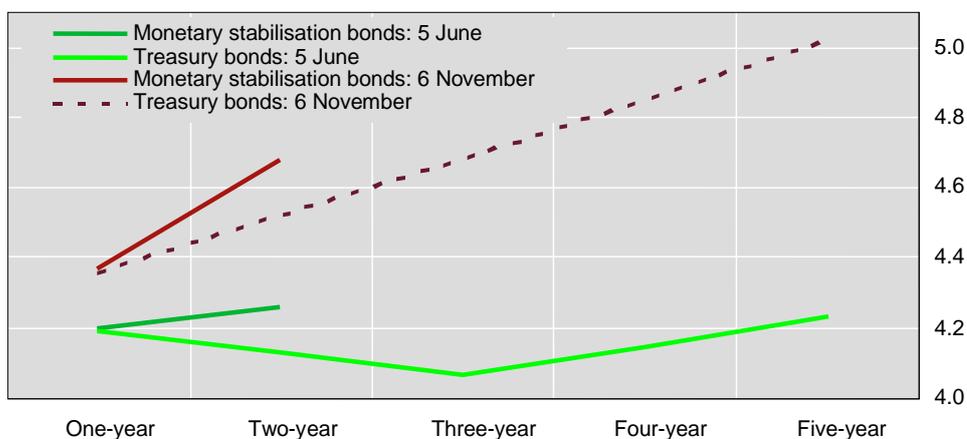
Sources: Barclays Capital; Bloomberg; Deutsche Bank; HSBC; BIS calculations.

As noted by RBI (2004c, p 416), “issuance of central bank securities can fragment the debt market due to availability of two competing sovereign issues, one of the Central Government and the other of the Reserve Bank”. The cost of such fragmentation can be illustrated by the case of Korea. The Bank of Korea sells monetary stabilisation bonds of a maturity of up to two years, while the government’s treasury bonds extend out to five or 10 years. Where the two debt programmes overlap, for instance at the one-year or two-year maturity, the yields are generally identical.<sup>13</sup> In this case, at least, the fear expressed in RBI (2004c) that two sovereign issuers could produce two separate yield curves does not seem justified. Another

<sup>13</sup> I am indebted to Kyunjik Lee for pointing out to me that the data from the Korea Money Broker Corp and Korea Securities Dealers Association quoted by Reuters are inconsistent or otherwise erroneously suggest minor differences in yields on the two public bonds.

observation, however, does suggest a possible loss of liquidity from two sovereign issuers. The yield on the very liquid three-year bond, which is served by a successful futures contract, is often below or about the same as the yield on the two-year monetary stabilisation bond (Graph 3). Confronted by such a strong demand for a benchmark issue, a single debt manager might well issue more three-year bonds and fewer two-year bonds. If the single debt manager did not want to extend the duration of the debt by selling more three-year bonds, then a “barbell” of issuance - more one- and three-year paper and less two-year paper - would better satisfy market demand and thereby reduce financing costs, given the yields shown in Graph 3.

Graph 3  
**Yields on public obligations in Korea**  
 Selected dates in 2003; in percentages



Sources: Korea Money Broker Corp; Korea Securities Dealers Association.

The case of Korea suggests that transforming central bank debt into debt of longer maturity might be particularly advantageous in that it would allow greater issuance at longer benchmark maturities. But it also suggests that market functioning would be improved even if government debt simply replaced central bank debt at the shorter maturities characteristic of the latter.

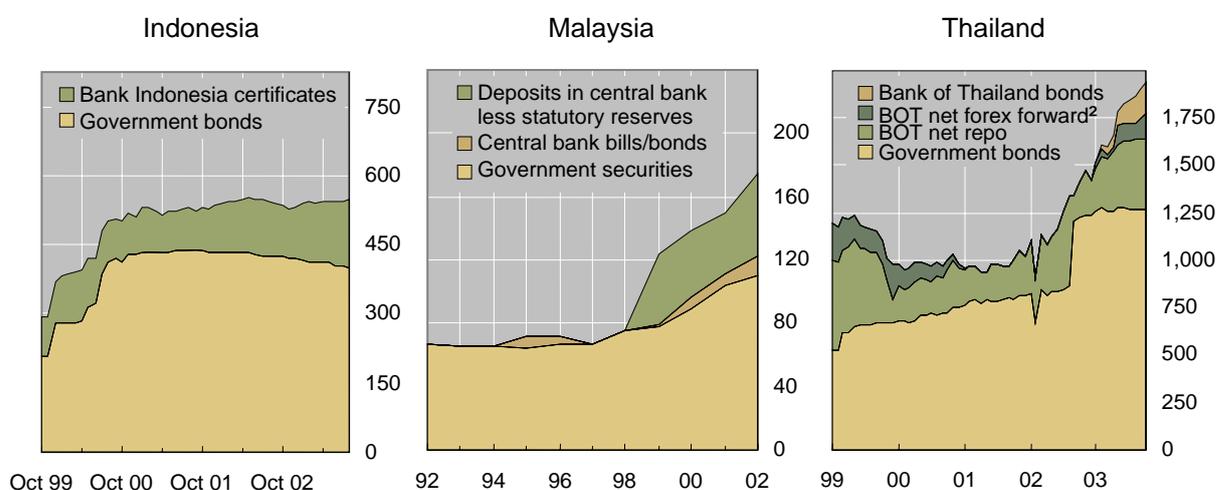
### 3.2 Prospective increase in the size of government bond markets in East Asia

How much of a difference would the transformation of central bank debt into government debt make to the government bond markets in East Asia? The answer varies across the region. The potential stock of government debt would be a third as high again as its current level in Indonesia, half as high again as its current level in Malaysia and Thailand (Graph 4), and more than twice its current level in Korea and Taiwan (Table 4 and Graph 5). This could make a substantial difference to liquidity. For instance, Malaysia’s bond market is dominated by such buy and hold investors as the provident fund (see Harun (2002)). Were the level of government debt to rise by 50%, a significant amount of this debt might be available for trading by more active accounts.

Graph 4

### Outstanding public debt in three Southeast Asian economies

In billions of domestic currency<sup>1</sup>



<sup>1</sup> For Indonesia, in trillions. <sup>2</sup> Truncated at zero between February 2001 and December 2002.

Sources: CEIC; national data.

Table 4

### Potential increase in size of government bond markets

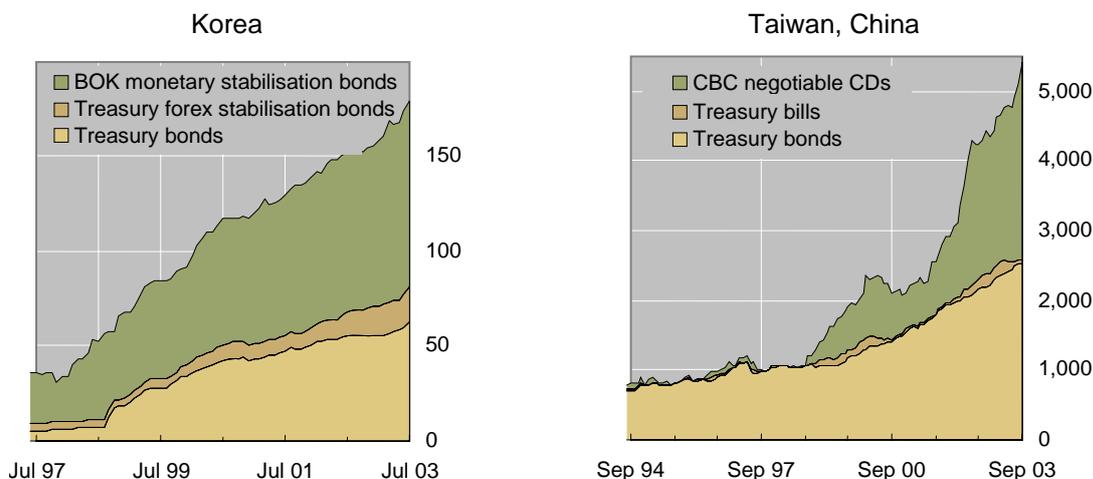
|                            | Government bond market size |            | Central bank debt to market |            | <i>Memo: Size of combined market as a % of current</i> |
|----------------------------|-----------------------------|------------|-----------------------------|------------|--------------------------------------------------------|
|                            | Domestic currency           | \$ billion | Domestic currency           | \$ billion |                                                        |
| Indonesia <sup>1</sup>     | 398.2 trillion              | 47.1       | 147.3 trillion              | 17.3       | 137                                                    |
| Korea <sup>2</sup>         | 81.5 trillion               | 69.0       | 98.9 trillion               | 84.0       | 222                                                    |
| Malaysia <sup>3</sup>      | 109.6 billion               | 28.8       | 77.9 billion                | 20.5       | 171                                                    |
| Taiwan, China <sup>1</sup> | 2.5 trillion                | 73.5       | 2.8 trillion                | 82.4       | 212                                                    |
| Thailand <sup>2</sup>      | 1,269.5 billion             | 30.5       | 648.0 billion               | 15.6       | 151                                                    |
| Total                      |                             | 248.9      |                             | 219.8      | 188                                                    |

Note: Central bank debt: for Indonesia, Bank Indonesia certificates, August 2003; for Korea, monetary stabilisation bonds (MSBs), August 2003; for Malaysia, Bank Negara Malaysia bills/bonds and net deposits of banks, finance companies and merchant banks with Bank Negara Malaysia other than statutory reserves, September 2003; for Taiwan (China), negotiable certificates of deposit (NCDs), September 2003; for Thailand, net borrowing under repo from banks and other financial institutions, Bank of Thailand net forward sales of baht, and Bank of Thailand bonds, August 2003.

<sup>1</sup> End-September 2003. <sup>2</sup> End-July 2003. <sup>3</sup> End-December 2002.

Sources: CEIC; national data.

Graph 5  
**Outstanding public debt in two Northeast Asian economies**  
 In billions of domestic currency<sup>1</sup>



<sup>1</sup> For Korea, in trillions.

Sources: Central Bank of China (CBC); CEIC; national data.

### 3.3 Monetary policy operations and the repo market

Three related advantages pertaining to monetary operations would arise from the transformation of central bank liabilities into explicit government debt. Such a step would help rebalance monetary operations, would allow the central bank to engage in reversed transactions against government bonds and would thereby help to further develop the bond market.

First, the central bank could have a firmer influence over short-term rates if the structural balance in the money market could be shifted from structural surplus to deficit. At present, redemptions of maturing central bank debt and interest payments on such debt represent predetermined injections of bank reserves that must be offset by active draining operations. Sufficient overfunding, and the stability of the government's deposit with the central bank, could leave the money market structurally short of funds and therefore dependent on regular injections of reserves by the central bank. While it is not technically necessary for effective policy implementation, most central bankers instinctively prefer a situation where market participants need to come to the central bank for funding.

Second, sufficient overfunding could allow the central bank to hold a substantial stock of government paper. This would permit it to carry out reversed transactions (repos and reverse repos) against government securities, either to drain or to inject bank reserves. Moreover, to the extent that the central bank can encourage the development of a repo market, not only for its own operations but also among market participants themselves, it would lead the banking system away from outright and towards collateralised interbank transactions. This can enhance counterparty risk management.

Third, development of a deep and liquid repo market that benefits from central bank operations is conducive to the increased depth and liquidity of the government bond market more generally. Short positions become easier to fund and smaller securities firms find it easier to finance themselves. This would contribute to a broadening of the dealer market and more active trading.

## 4. Issues to be resolved

Five practical issues need to be resolved before central bank debt can be transformed into government debt. The first two relate to whether the policy is advisable or politically feasible, and the other three relate to aspects of the implementation of the policy. The first challenge is to overcome the natural reluctance of finance ministers to increase outstanding debt for which they are explicitly responsible. Second is the question of whether the rating agencies would take a dimmer view of the fiscal position. If these deal-breaker issues can be resolved, then three implementation issues must be faced. What yield should the central bank pay on the government deposit? What is the maturity profile and duration of the government securities to be issued? Finally, how can the uncertain scale of sterilisation needs in a year be reconciled with the budgetary process?

### 4.1 The reluctance of the ministry of finance

Of all the practical issues, probably the greatest impediment to the consolidation of central bank and government debt is the unwillingness of finance ministers to increase outstanding debt for which they are explicitly responsible.<sup>14</sup> It is a rare finance minister who leaves office bragging, as did Premier Zhu Ronji, of the government debt he has left as a legacy. A finance minister may fear that a proposal to consolidate public debts would seem to make a virtue out of more government debt, and thereby open the door to further spending or tax cutting.

The legislature, for its part, may distrust the argument that the increase in public debt will have as its counterpart a deposit at the central bank. This may seem an unstable bargain, with the government then being able to draw down the deposit at will to meet some unanticipated need without having to go to the legislature to authorise an increase in debt.<sup>15</sup> The discussion below of rating agencies suggests, however, that market discipline substitutes in some measure for the legal discipline of setting debt ceilings.

In India, comfort is taken from the fact that it would require an act of parliament to authorise the government to spend the funds placed in the blocked account at the RBI. Furthermore, the experience of provincial governments placing funds in blocked accounts at the RBI also supports the expectation that the bargain will prove a stable one.

The different choices of sterilisation instrument in China and India reflect the different attitudes of the two ministries of finance. The Chinese ministry of finance has given evidence of a strong aversion to issuing debt beyond the needs of its immediate deficits: after an initial recapitalisation of the state-owned commercial banks with an addition to explicit government

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<sup>14</sup> Note that the strictures that have evolved against central banks' making advances to governments (as opposed to buying government debt in the market) do not apply to the reverse case of governments making deposits in the central bank. These strictures attempt to keep monetary policy from becoming subservient to the needs of the government. No such issue is raised by the government placing deposits with the central bank. Were a government displeased with a monetary policy choice, it might threaten to withdraw its deposits. But so long as the central bank had other tools to drain the resultant increase in bank reserves held in reserve, this threat would not impinge on monetary policy or compromise central bank independence.

<sup>15</sup> Adam Smith (1937), in his chapter on the public debt, observed that, in the happy case in which taxes earmarked to service a debt proved excessive (generally owing to the reduction in interest on the debt), they were often paid into a sinking fund intended to pay off debt. Such a "fund is almost always applied to other purposes", however: "During the most profound peace, various events occur which require an extraordinary expense, and government finds it always more convenient to defray this expense by misapplying the sinking fund than by imposing a new tax. Every new tax is immediately felt more or less by the people. It occasions always some murmur and meets with some opposition... To borrow from the sinking fund is always an obvious and easy expedient for getting out of the present difficulty."

debt, subsequent moves to recapitalise the Chinese banks have taken place off-budget.<sup>16</sup> The irony in the contrast between the unwillingness of the Chinese ministry of finance and the willingness of the Indian ministry of finance is that the reported debt position of the central Chinese government is among the healthier in Asia, whereas that of the Indian government is among the least healthy; at the same time, the Chinese government enjoys an investment grade rating, whereas the Indian government labours under a speculative rating. As long as Singapore was the outstanding example of overfunding the public sector borrowing requirement in order to sterilise foreign exchange holdings, policymakers could conclude that this option is open only to governments with the strongest debt positions and ratings. Contrary to this conclusion, the government of the large country with the weaker fiscal accounts has agreed to overfund.

Perhaps another reason for the difference between the Chinese and Indian cases is the central bank's relationship to the market, and market participants' involvement in the larger political process. The RBI's consultative process allowed market participants an opportunity to weigh in and to steer policy in a direction conducive to the development of a broad, deep and liquid government bond market.<sup>17</sup>

## 4.2 The reaction of the rating agencies

A second issue is whether rating agencies might see the larger gross stock of government debt as a negative for the sovereign rating. This would happen if the rating agencies looked strictly at the reported gross debt of the government.<sup>18</sup> In contrast, they would be well advised to put more emphasis on a net concept, recognising that the government's deposits with the central bank (and ultimately the foreign exchange reserves) are assets to be accounted for.<sup>19</sup>

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<sup>16</sup> This includes the purchase of non-performing loans at par by the asset management companies (Ma and Fung (2002)), the injection of foreign exchange reserves by the PBOC into the Bank of China and China Construction Bank, the recent capital injection into the Bank of Commerce, and the use of PBOC bills to buy non-performing loans from the big banks. Also consistent with the ministry of finance's aversion to additions to its explicit debt was resistance to PBOC proposals to turn its claims on distressed financial institutions into government securities.

<sup>17</sup> The RBI formed an internal review group to study the choice of sterilisation instruments. Drawn from the departments responsible for internal debt, government accounts, monetary policy, economic research, foreign exchange reserve management and legal affairs, it considered the various options and reviewed the experience in a number of countries, including China, Korea, Malaysia and Thailand. The group held discussions with market participants during the review and received written comments after the report was posted on the RBI website in December 2003 (RBI (2004c,d)). At the time, the Indian financial press featured well informed commentary on the issue and alternatives. With respect to the PBOC issuance of bills, by contrast, after-the-fact commentary by market economists rarely addressed the merits of the sale of PBOC bills or other feasible alternatives. Rather, the focus was put on whether this sterilisation tool would work and thus whether the pegged exchange rate would hold.

<sup>18</sup> The ratios that, say, Standard & Poor's examines suggest that the operation described above would not have a significant implication for the assessment. Three out of four fiscal debt concepts in Standard & Poor's glossary would not seem to be affected by a change in the locus of financing of the foreign exchange reserves. The general government debt is a broad aggregate across the public sector that would include the central bank's debt. The two net debt aggregates vary in netting out cash, deposits, loans and equity holdings or, more restrictively, only cash and deposits. Either one should be unaffected both because of the breadth of the concept of the government and because of the netting. Finally, the central government's gross debt is included in the gross debt concept, and this one could well be increased by the overfunding proposed. It should be noted, however, that this narrow gross concept is last on the list, no doubt because it is the least comparable or the most manipulable because of its non-inclusion of "non-commercial off-budget and quasi-fiscal activities" included in the general government concept.

<sup>19</sup> If one believes that the rating agencies take no heed of what lies behind government debt, one is led to an absurd result in the case of Japan. Consider the case in which the ministry of finance sold the bulk of Japan's

Asked whether the use of government securities to sterilise foreign exchange holdings would result in a downgrading, representatives of both Moody's and Fitch pointed to the case of Singapore. The additions to its government debt described above in Section 2 did not result in downgradings. Indeed, in the discussion of this paper at the BIS/Korea University conference, Tom Byrne of Moody's noted that Singapore received an upgrade even as its government debt increased. At another conference a month earlier in Seoul, Brian Coulton, Senior Director of Fitch Ratings in Hong Kong, held that the rating agencies would not mechanically react to overfunding.<sup>20</sup>

#### 4.3 The return on the government deposit

The third issue is what yield the central bank should pay on the government deposit: available models include profit-sharing, fixed returns and a zero return. The Hong Kong Exchange Fund shares its profits with the government in proportion to most of the government's direct claim, although one small deposit is still serviced at interbank rates (HKMA (2003)).<sup>21</sup> By contrast, the Reserve Bank of Australia pays interest on the government deposit with it in line with yields on Australian government paper.

One of the most surprising aspects of the Indian Market Stabilisation Scheme is the absence of any direct return paid by the RBI to the government on its blocked account. The RBI (2004c) argued against issuance of interest-paying central bank paper to finance foreign exchange holdings precisely because such paper could result in substantial central bank losses. Given the scale of the Indian government's debt, the RBI reasoned, a recapitalisation could not be presumed. If no fixed return were paid to the government, losses would be less likely. At the same time, the RBI argued, the government owns the RBI and has a claim to all its profits.<sup>22</sup> In a sense, the existing profit-sharing norm was successfully appealed to.

#### 4.4 The duration of the additional government securities

A fourth issue is the choice of duration of the government securities used to finance foreign exchange reserves. This choice should be considered along with the choice of duration of the international foreign exchange reserve holdings. A central bank that considers the inflows that have built up the foreign exchange reserves as temporary and thus invests them in short-term securities might sensibly finance the reserves with short-term instruments as well. Conversely, a central bank that regards the reserves, or a portion of them, as stable parts of the national balance sheet might finance with longer-term instruments.

Central banks in Asia hold down the carrying costs of foreign exchange holdings by financing an increasingly medium-term portfolio of reserve assets with short-term liabilities. Only in the cases of Korea and Taiwan does the sterilisation debt extend out to two years. Meanwhile

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foreign exchange reserves to the Bank of Japan. In this case, government debt would fall by 10-20% of GDP. Would the rating agencies upgrade the Japanese government under these circumstances?

<sup>20</sup> His text (Coulton (2004, p 3)) reads: "While Korea's government debt - including guaranteed bonds issued by KAMCO and KDIC - is in line with its 'A' rating peers at 40% of GDP, the prospect of continued fiscal prudence bodes well for a declining public debt ratio in the next few years, *notwithstanding increased issuance of foreign exchange stabilisation bonds by the Ministry of Finance and Economy (MOFE) to finance foreign exchange market intervention*" [emphasis added].

<sup>21</sup> The Bank of Thailand would require legislation to enable it to remunerate government deposits. For practice across industrial countries, see Borio (1997, pp 60-2).

<sup>22</sup> Notwithstanding this, it is said that a disagreement between the Korean ministry of finance and the Bank of Korea in the early 1990s over the proper rate of return ultimately undid an arrangement whereby the Bank of Korea issued government debt as a sterilisation instrument.

the duration of reserve portfolios has moved out to the two- to five-year range (McCauley and Fung (2003)). If the duration of the domestic currency financing portfolio were lengthened and it were desired to maintain the longer duration of the reserve portfolio, the latter could be lengthened.

The Indian authorities have tended to view the inflows that have led to the growth of foreign exchange reserves as not very stable and have thus tended to finance the reserves with short-term securities.<sup>23</sup> In principle, the Indian government can sell either bills or coupon securities to fund its blocked account at the RBI. In practice, the majority of the issuance has taken the form of treasury bills.<sup>24</sup> In the event, this issuance has been very well received by the market owing to the previous scarcity of such paper. In the past, the Indian government had prudently avoided selling much short-term paper out of concern for the rollover risk, given the large government debt. Given the blocked account, however, such a concern for the rollover of maturing paper seemed no longer relevant.<sup>25</sup>

#### 4.5 Reconciliation with the budgetary policy

A final issue is how to reconcile the uncertain extent of sterilisation needs in a year with the budgetary process or how to resolve the related tension between the time variation of sterilisation needs and the predictable issuance aimed for by many government debt managers. The problem calls for flexibility, the solution for predictability. Joseph Yam, Chief Executive of the Hong Kong Monetary Authority (2003), drew attention to this tension and offered a proposal:

Flexibility in deciding not until, say, a week before what maturity of paper is to be issued and what amount is of course helpful, particularly when sterilisation is the more pressing objective. But the market would like as much information on the central bank bills programme as possible in order to plan ahead, in terms for example of managing maturity mismatches. The thing to do may be to fix the weekly programme and to fine-tune monetary conditions through rather more frequent money market operations of the type carried out daily by other central banks...

The difficulty of reconciling the budgetary cycle and unpredictable intervention was recently illustrated in Japan, where foreign exchange reserves are financed at the margin by government debt issues. At the turn of this year, the ministry of finance ran short of authorised debt to finance its massive intervention. In the case of India, a certain amount of overfunding was authorised by parliament for the current fiscal year, with an understanding that it might not prove sufficient.

In practice, both the Singaporean and Indian policies to use government debt for sterilisation had an inframarginal rather than marginal character. That is, in practice, government debt issues and related deposits by the government in the central bank took weight off other means of sterilisation. In this spirit, one can imagine using overfunding in an after-the-fact manner. That is, other instruments, including perhaps central bank debt, might be used to sterilise in the first instance, and subsequently government debt might be substituted the

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<sup>23</sup> RBI (2004b, p 291-2) shows that two of the biggest sources of the reserve build-up were non-resident Indian deposits and foreign institutional investor purchases of Indian equities.

<sup>24</sup> RBI (2004e, p 131) reports that "the total amount raised under the MSS [Market Stabilisation Scheme] amounted to Rs 46,480 crore [464.8 billion rupees] by 14 August 2004, inclusive of Rs 20,000 crore raised through dated securities of residual maturity of up to 2.5 years".

<sup>25</sup> If the government repaid maturing short-term debt with funds drawn from the blocked account, the RBI might need to drain bank reserves, so that the liquidity risk is not so much absent as transferred.

next budget year. Such an arrangement would leave the central bank able to intervene and to sterilise without immediate assistance from the fiscal authorities, an important matter where the central bank controls intervention policy. At the same time, the eventual involvement of the finance ministry and parliament in the financing of the foreign exchange reserves could help ensure that the public sector at large, and not just the central bank, knowingly takes on the foreign exchange risk.

## 5. Conclusions

If these issues can be resolved, then the central bank debt that has financed large holdings of foreign exchange reserves could be consolidated with government debt. In particular, issuing government debt beyond the need of the public sector borrowing requirement could finance a government deposit with the central bank. This would allow a run-off of central bank liabilities.

The benefits from lumping central bank liabilities into government debt are likely to be substantial. Government bond markets could increase in size to anywhere from 137 to 222% of their current size in East Asia. Properly handled, such an increase would make these bond markets more liquid and thereby more attractive to investors.

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## Comments on McCauley's paper "Consolidating the public debt markets of Asia"

Junggon Oh<sup>1</sup>

The main arguments of the paper are as follows: dual mismatches of foreign borrowings, ie currency and maturity mismatches, were important causes of the East Asian financial crisis. Accordingly, it is necessary to develop the region's bond markets. In particular, unifying government bond markets and central bank debt markets may contribute to the development of bond markets.

The benefits of unifying government bond markets and central bank debt markets are as follows: an increase in liquidity in the secondary bond market through the development of the repo market and thereby the development of the government bond market; and advantages for monetary operations through greater influence on short-term rates with the help of a reduction in the burden of redemptions of maturing debt and interest payments.

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### Outstanding amounts of government, public and corporate bonds in Korea

End of period, in trillions of won

|                                            | 1995  | 1996  | 1997  | 1998  | 1999  | 2000  | 2001  | 2002  | 2003  |
|--------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Monetary<br>Stabilisation<br>Bonds         | 25.8  | 25.0  | 23.5  | 45.7  | 51.5  | 66.4  | 79.1  | 84.3  | 105.5 |
| Government<br>bonds<br>(Treasury<br>bonds) | 23.3  | 25.7  | 28.6  | 41.6  | 61.2  | 71.2  | 82.4  | 98.3  | 135.8 |
| Corporate<br>bonds                         | 61.0  | 76.0  | 90.1  | 122.7 | 119.7 | 133.6 | 154.4 | 180.0 | 187.4 |
| Total                                      | 164.6 | 190.0 | 234.2 | 343.9 | 376.2 | 429.3 | 501.6 | 544.8 | 574.1 |

Looking at the table, these suggestions seem acceptable, but there are some practical problems, which include: the difficulty of creating synergy effects from the consolidation of two markets to reduce the liquidity premium; and the possibility of reducing the efficiency and independence of monetary policy.

First, as relates to the difficulty of creating synergy effects from the consolidation, it should be taken into account that the two debts have different characteristics. In particular, government bonds have a relatively easy periodical issuance and are readily fungible, while central bank debt is issued to offset changes in bank reserves due to autonomous factors such as flows of government funds or changes in foreign exchange holdings.

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<sup>1</sup> Views expressed herein are those of the author and do not necessarily reflect those of the Bank of Korea.

Second, as relates to the possibility of reducing the efficiency and independence of monetary policy, it should be pointed out that, in fact, it is difficult to reach an agreement on the issue of government bonds for monetary stabilisation, and the practical procedures for reaching an agreement on the issue from the parliament are complicated.

As an alternative, it may be suggested that bonds be issued by the central bank and interest on them be paid by the government, as in Germany, New Zealand and Israel, etc. In Germany, an issue of three-, six- and nine-month government bonds up to DM 25 billion was decided by the Bundesbank, and in New Zealand, government bonds and central bank debt of three-month maturities for monetary operations are used together for monetary stabilisation, with the interest on the central bank debt paid by the government. More central bank independence is a prerequisite to the implementation of these policies.

As another alternative in Korea, a more feasible step-by-step approach may be considered, taking the current situation into account. As a first step, quasi-fiscal burdens of the Bank of Korea due to aggregate credit ceiling loans, and the underwriting of non-performing asset management fund bonds etc would be transferred to the government to reduce the issuance of Monetary Stabilisation Bonds (MSBs). As a second step, interest on MSBs would be paid by the government. And as a third step, Monetary Stabilisation Government Bonds (MSGBs) would be substituted for MSBs. Amounts, time and conditions of the issue of MSGBs up to a certain amount agreed on by the parliament would be decided by the BOK.

In order to introduce these approaches, it is important to have independence and coordination between government bonds and MSBs, and monetary, fiscal and foreign exchange rate policies. Step-by-step substitution of the government bonds for MSBs seems more feasible and desirable, in line with the improvement of circumstances for the independence of the central bank and of understanding about the use of government bonds for monetary policy operation.

## Lunch address

Huhn-Gunn Ro

As the head of the central securities depository of Korea, I accept as a great honour and pleasure the task of conveying a congratulatory message to this international conference on Asian bond markets, which is being held under the joint auspices of the Institute of Northeast Asian Business and Economics of Korea University and the Bank for International Settlements.

In addition, I would like to thank all the prominent scholars and experts in the securities and financial fields who are gracing this conference with their attendance. It really is a privilege for the Korea Securities Depository (KSD) to support this wonderful conference, where outstanding papers are being presented and heated discussions are being held on the subject of our common interest, the nurture of Asian bond markets.

Also, I would like to take this opportunity to give my special thanks to Professors Yung-Chul Park and Young-Sup Yun of Korea University and all the researchers at the Institute of Northeast Asian Business and Economics for having spared no effort to successfully organise this conference.

As you are well aware, one of the convincing arguments for the root cause of the 1997 East Asia foreign exchange crisis is that East Asia unwittingly invited the crisis. It did so by financing long-term investments with short-term liabilities and financing projects producing domestic currency cash flows with foreign currency debt.

I believe it is encouraging that after the financial crisis we are giving serious consideration to developing Asian bond markets and discussing this topic in earnest within the framework of ASEAN+3 and APEC.

The further development of Asian bond markets is expected to bring about the following three effects. First, it will retain Asia's savings within the region, helping Asian corporations easily finance long-term projects with long-term liabilities. Second, it will provide more diverse investment vehicles to Asian investors. Finally, it will lay the groundwork for enhanced economic cooperation among Asian countries and ultimately perhaps encourage the evolution of an Asian key currency.

However, the prospects are not necessarily rosy. There are a lot of problems which need to be addressed in order to nurture the Asian bond market. Decisions need to be made on areas such as the issuance methods for Asian bonds, credit enhancement measures, and development of the depository and settlement systems within the region, to name but a few.

Under the current circumstances, it is very significant that Asian countries have reached a consensus on the importance of tackling the recognised problems and formed a working group comprising experts from each Asian country.

I firmly believe that more developed Asian bond markets would make a strong contribution to bringing each Asian country's capital market to an international level. Increased financial cooperation among Asian countries would be a welcome by-product of this effort.

This international conference provides a golden opportunity for us to consider the prospects for and the tasks relating to the development of Asian bond markets and to seek the joint prosperity of Asian countries on the firm foundation of stable financial systems.

# Determinants of bond holdings by foreign investors

Kee-Hong Bae, Young Sup Yun<sup>1</sup> and Warren Bailey

## 1. Introduction

A key theme in restructuring economies in the developing world is opening local capital markets to foreign portfolio investments. This can be accomplished by permitting foreign investors to enter the local capital markets directly or by allowing local assets to trade in overseas markets. In theory, this permits firms in developing economies to draw from the global pool of capital to undertake useful investments that generate profits and employment. Furthermore, the scrutiny of foreign investors, foreign analysts and foreign stock listing standards can help resolve agency problems, effectively transmitting higher quality reporting and governance standards to firms in developing countries (Obstfeld (1998), Stulz (1999)).

There is now much theory and empirical evidence to support the notion that foreign equity capital flows are beneficial. One way foreign equity capital flows benefit local capital markets is by causing a fall in the cost of equity capital because of increased risk sharing between domestic and foreign agents.<sup>2</sup> This increased risk sharing reduces systematic risk, which in turn reduces the cost of equity capital.<sup>3</sup> There is also increasing evidence that openness to foreign portfolio investment enhances the governance of local corporations. Doidge (2003), for example, reports evidence that cross-listing in the United States affords greater protection to minority shareholders. More generally, the evidence in Kaminsky and Schmukler (2002) suggests that equity market liberalisation tends to spur the process of institutional reform, not the other way around.

In this paper, we examine what attracts foreign investors to the local bond markets. While we have much evidence on the dynamics of foreign equity investment, there is little evidence on foreign bond investment.<sup>4</sup> The issue is important in that liquidity is essential in order to build up mature bond markets and foreign investors are crucial in building liquidity. Foreign investors hold at least 20% of government bonds in markets as diverse as Canada, Sweden and the United States.<sup>5</sup> For emerging markets that largely lack domestic institutional investors such as mutual funds, pension organisations, insurance companies, etc, foreign investors are likely to be even more important. They will not only provide demand but also bring more varied investment objectives and thus provide liquidity.

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<sup>1</sup> We thank the discussant and conference participants for their comments.

<sup>2</sup> There is also greater liquidity following increased capital inflows. Amihud and Mendelson (1986) and Amihud et al (1997) discuss the effect of liquidity on equity risk premiums.

<sup>3</sup> The effect of increased risk sharing on equity premiums is discussed in Stapleton and Subrahmanyam (1977), Errunza and Losq (1985), Eun and Janakiramanan (1986), Alexander et al (1987), and Stulz (1999a,b). Empirical evidence consistent with the risk sharing view of stock market liberalisation is provided in Henry (2000) and Chari and Henry (2002).

<sup>4</sup> See Bekaert and Harvey (2003) and the references therein.

<sup>5</sup> See Exhibit 2 in Beckert and Pitsilis (2000).

In this paper, we specifically ask whether differences in property rights protection matter for foreign bond holdings, after controlling for cross-country differences in macroeconomic variables including GNP per capita, lending rates and/or inflation rates and exchange rates.

Countries differ considerably in terms of the efficiency with which they respect property rights and enforce contract laws. For example, Sweden provides strong protection for private property rights, but Argentina only weak protection. Recent research indicates that the extent to which property rights are secure among countries shows several important differences in financial systems. More secure property rights are associated with higher values of stock markets (La Porta et al (1997)); a higher number of listed firms (La Porta et al (1997)); higher valuation of listed firms relative to their assets (Claessens et al (2002), La Porta et al (2002)); greater use of external finance (La Porta et al (1997, 1998, 2000)); and greater investments from external funds (Rajan and Zingales (1998), Demirgüç-Kunt and Maksimovic (1998)).

If property rights are weakly protected in emerging markets, which is indeed the case, foreign investors will charge higher risk premiums to compensate for the additional risk of contract repudiation, shorten the duration of bond maturity, or will shy away from these markets completely. Therefore, in countries with poor property rights protection, foreign investors are likely to make smaller investments.

To examine these predictions, we use data on bond portfolio holdings in 45 countries (out of 165 countries in our total sample) for which the rule of law and property rights protection quality can be identified. We estimate cross-country regressions in which the dependent variables are local currency bonds held by foreign investors. The key variable of interest on the right-hand side is an index of property rights protection. We associate countries with high levels of corruption, higher risk of expropriation and greater uncertainty about contract enforcement as countries with poor property rights protection. The regressions control for other possible macroeconomic variables that may also affect the foreign bond holdings.

Our results show that in countries with better property rights protection, foreign investors buy and hold more local bonds. Our results suggest that more secure property rights are important in developing liquid and mature bond markets. To the extent that foreign investors play a vital role in providing liquidity, our evidence shows that improving property rights protection is a matter of prime importance.

The rest of the paper is organised as follows. Section 2 presents our data and variables. Section 3 gives the summary statistics. Section 4 discusses the main empirical results, and Section 5 concludes.

## **2. Data and variables**

### **2.1 Basic bond holdings data**

We obtain our basic data from the International Monetary Fund website. The most recent data show that at end-2001 or end-2002, 67 countries made portfolio investments in foreign equity and debt securities and 236 countries received the investments.<sup>6</sup> Since our objective

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<sup>6</sup> The data are from the Coordinated Portfolio Investment Survey (CPIS) and includes 67 investing countries (and bonds held by international organisations and as reserve assets) and 236 countries receiving investment (other countries classified as “confidential” and “unallocated” and international organisations). For the purposes of the survey, long-term debt securities include bonds, debentures and notes with an original maturity of more than one year. Short-term debt securities cover treasury bills, commercial paper and bankers’ acceptances with an original maturity of one year or less.

is to investigate the determinants of bond holdings by foreign investors, we only examine the long-term and short-term debt securities data. From the IMF sample of 236 countries, we exclude 71 countries that had investments of less than US\$ 1 million in either 2001 or 2002. This restriction results in a sample of 67 investor countries investing in 165 recipient countries (in a matrix form), both in long- and short-term debt securities. For the regression analysis, we use data on bond portfolio holdings of 45 countries for which property rights protection quality can be identified, out of 165 countries.

There is one point worth mentioning about our dataset. Our data source mixes bonds of different currencies, especially local currency and US dollar. This might have the effect of making our property rights variable less relevant in that the governing law of the bonds per se will often be London or New York law rather than local country law. However, in a recent paper, Siegel (2005) tests the functional convergence hypothesis, which states that foreign firms can leapfrog their countries' weak legal institutions by listing equities in New York and voluntarily abiding by US securities law, and he shows that the US Securities and Exchange Commission has rarely been effective in enforcing the law against any US-listed foreign firm. In other words, the governing law of the country where the securities are issued or listed may not be effective. Ideally, for our analysis we should use the local currency-denominated bonds issued in a local country, but the data are not readily available.

## **2.2 Measuring property rights protection**

To measure the extent to which a country respects private property rights, we focus on three indexes from La Porta et al (1998). These three indexes measure corruption, the risk of expropriation of private property and the risk that contracts may be repudiated.

La Porta et al (1998) describe these three indexes as follows: The "corruption index" is an assessment of corruption in government by the International Country Risk Guide (ICRG). Low scores indicate that "high government officials are likely to demand special payments" and "illegal payments are generally expected throughout lower levels of government" in the form of "bribes connected with import and export licenses, exchange controls, tax assessment, policy protection, or loans". The "risk of expropriation index" is the ICRG's assessment of the risk of "outright confiscation" or "forced nationalization". The "index for the repudiation of contracts" is the ICRG's assessment of the "risk of modification in a contract taking the form of repudiation, postponement or scaling down" due to "budget cutbacks, indigenization pressure, a change in government or a change in government economic and social priorities".

The range for each index is between zero and 10 with low values indicating less respect for private property. All three ICRG indexes are averages from 1982 to 1995. Following Morck et al (2000), we combine these three indexes into an additive index of property rights protection. The index measures the extent to which a country's legal systems and institutions enforce all contracts, including government contracts.

We include the natural logarithm of GNP per capita and the level of lending rates in the country. We include the latter in order to control for the differences in inflation rates and sovereign risks that might also explain cross-country differences. Countries with high inflation rates are subject to greater political risks, as there is a greater likelihood that their governments will introduce wage and price controls or tamper with indexes. Higher inflation rates can raise contracting costs for firms and their bank lenders. According to Demirgüç-Kunt and Maksimovic (1999), high and/or variable rates of inflation make it costly for investors and firms to contract. The cross-country macroeconomic data are from a database compiled by the World Bank (and available on its website).

### 3. Descriptive statistics of the basic bond holdings data

#### 3.1 Geographical breakdown

Tables 3.1 and 3.2 show geographical breakdowns of long-term and short-term paper investments at end-2002.<sup>7</sup> The 67 investing countries in the sample are grouped into six regions: East Asia, Europe, North America, Latin America, Africa/Middle East/Southeast Asia and Tax Havens.<sup>8</sup> The 165 recipient countries are grouped into the six regions above plus Other Nations.

The total amount of long-term bond investment is more than seven times larger than that of short-term paper investment (\$6.6 trillion vs \$0.88 trillion). Europe is the region that makes the largest investment in both long- and short-term paper (48.7% and 43.4%), followed by Tax Havens (28.6% and 21.6%), East Asia (8.0% and 12.7%) and North America (7.8% and 18.1%). Europe is also the largest recipient of bond investment (57.2% and 58.2%), followed by North America (23.0% and 27.8%), East Asia (5.4% and 6.1%) and Tax Havens (9.6% and 5.7%).

Focusing on East Asia, we find that as an investor, it makes only a small proportion of total bond investment in its own regional bonds (14.3% and 27.8%). On the other hand, East Asia receives a much larger or the largest proportion of bond investment from the region (21.6% and 58.0%). In particular, more than half of East Asian short-term paper investment comes from the region. This might suggest that due to the weak property rights enforced in East Asia, foreign investors are likely to shorten the duration of bond maturity to minimise the risk of contract repudiation. This might also suggest that there is a regional bias in bond holdings by foreign investors, similar to the much-documented home bias found in stock investment.<sup>9</sup>

#### 3.2 East Asian country breakdown

Tables 3.3 and 3.4 show East Asian country breakdowns of long-term and short-term paper investments. There are three dominant countries that invest in East Asian bonds: Hong Kong SAR, Japan and Singapore. Together they make up more than 90% of the total investment East Asia makes in its own region. However, the profile of countries receiving bond investment is quite different. Australia, Japan, Korea, Singapore, Malaysia and New Zealand receive the majority of the investment. However, it is interesting to note that Australia, which attracts the largest investment (42.7% and 53.6%) from East Asia, makes an insignificant or zero amount of bond investment in other East Asian countries.<sup>10</sup>

#### 3.3 Top 10 country breakdown

Tables 3.5 and 3.6 show the top 10 countries' bond investments in seven different regions. Japan, the United Kingdom, the United States, France and Luxembourg appear to be the most important buyers. As the group of largest investors, the top 10 countries invest mostly

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<sup>7</sup> For summary statistics, we only report results for end-2002, because those for end-2001 are similar. We use the terms long-term and short-term bonds or paper for long-term and short-term debt securities.

<sup>8</sup> We use the list of tax havens compiled by EscapeArtist Inc which can be obtained from the website [EscapeArtist.com](http://EscapeArtist.com).

<sup>9</sup> For more on the regional bias issue, please also refer to McCauley and Park (2006).

<sup>10</sup> This pattern appeared for New Zealand for end-2001 which is not reported here. Considering Australia and New Zealand are both common law countries, one might maintain that the rule of law argument is at work here, but it is premature to do so without further analysis.

in Europe and North America, and East Asia receives about 4% of their total bond investment. Japan's investment in East Asian bonds also appears to be minimal, taking only 3-7% of its total investment.

### **3.4 Rule of law breakdown of bond investment**

Tables 3.7 and 3.8 show rule of law breakdowns. We follow Stulz and Williamson (2003) who classify 51 countries into four classes of rule of law: common law, civil/French, civil/German and civil/Scandinavian.<sup>11</sup> The results show that the largest proportion of bond investment goes to common law countries (38% and 63%) where investor protection is deemed strongest. The second largest proportion goes to civil/French law countries (33% and 19%) that are generally regarded to provide weaker investor protection.

One might speculate that in the common law countries, investors would invest relatively more in long-term bonds than in short-term paper because investor protection tends to be strong in these countries, whereas they would invest relatively more in short-term paper in civil/French countries where investor protection tends to be weaker. However, no such evidence is found from the descriptive statistics. It appears that more investment is made in common law countries in both long-term and short-term paper. In the next section, we conduct a formal analysis on how investor rights protection affects foreign bond holdings.

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<sup>11</sup> See Table 1 of Stulz and Williamson (2003).

Table 3.1

**Geographical breakdown of long-term  
bond investment, end-2002**

In millions of US dollars

| <b>In \ From</b>                                     | <b>East Asia<br/>(10)<sup>1</sup></b>                    | <b>Europe<br/>(28)</b>            | <b>North<br/>America<br/>(2)</b> | <b>Latin<br/>America<br/>(7)</b> | <b>Africa,<br/>Middle<br/>East and<br/>Asia (3)</b> | <b>Tax<br/>Havens<br/>(17)</b>  | <b>Subtotal</b>                 |
|------------------------------------------------------|----------------------------------------------------------|-----------------------------------|----------------------------------|----------------------------------|-----------------------------------------------------|---------------------------------|---------------------------------|
| East Asia (14)                                       | 76,376<br>[21.56%] <sup>2</sup><br>{14.43%} <sup>3</sup> | 109,154<br>[30.82%]<br>{3.39%}    | 16,997<br>[4.80%]<br>{3.28%}     | 12,816<br>[3.62%]<br>{2.86%}     | 399<br>[0.12%]<br>{9.18%}                           | 138,430<br>[39.09%]<br>{7.33%}  | 354,172<br>[100%]<br>{5.36%}    |
| Europe (42)                                          | 266,466<br>[7.04%]<br>{50.35%}                           | 1,839,011<br>[48.60%]<br>{57.16%} | 391,025<br>[10.33%]<br>{75.44%}  | 327,960<br>[8.67%]<br>{73.08%}   | 934<br>[0.02%]<br>{21.51%}                          | 958,945<br>[25.34%]<br>{50.75%} | 3,784,341<br>[100%]<br>{57.28%} |
| North<br>America (2)                                 | 141,327<br>[9.30%]<br>{26.70%}                           | 789,129<br>[51.93%]<br>{24.53%}   | 83,098<br>[5.47%]<br>{16.03%}    | 92,070<br>[6.06%]<br>{20.52%}    | 2,061<br>[0.14%]<br>{47.44%}                        | 411,900<br>[27.11%]<br>{21.80%} | 1,519,585<br>[100%]<br>{23.00%} |
| Latin<br>America (21)                                | 7,172<br>[6.93%]<br>{1.35%}                              | 40,733<br>[39.38%]<br>{1.27%}     | 4,246<br>[4.10%]<br>{0.82%}      | 3,150<br>[3.05%]<br>{0.70%}      | 256<br>[0.25%]<br>{5.88%}                           | 47,881<br>[46.29%]<br>{2.53%}   | 103,438<br>[100%]<br>{1.57%}    |
| Africa, Middle<br>East and<br>Southeast<br>Asia (42) | 1,085<br>[4.47%]<br>{0.21%}                              | 12,266<br>[50.48%]<br>{0.38%}     | 1,051<br>[4.33%]<br>{0.20%}      | 1,666<br>[6.85%]<br>{0.37%}      | 5<br>[0.02%]<br>{0.11%}                             | 8,226<br>[33.85%]<br>{0.44%}    | 24,299<br>[100%]<br>{0.37%}     |
| Tax<br>Havens (44)                                   | 31,201<br>[4.92%]<br>{5.89%}                             | 384,443<br>[60.57%]<br>{11.95%}   | 21,728<br>[3.42%]<br>{4.19%}     | 9,553<br>[1.51%]<br>{2.13%}      | 689<br>[0.11%]<br>{15.87%}                          | 187,129<br>[29.48%]<br>{9.90%}  | 634,743<br>[100%]<br>{9.61%}    |
| Other<br>Nations (73)                                | 5,616<br>[3.01%]<br>{1.06%}                              | 42,357<br>[22.70%]<br>{0.03%}     | 148<br>[0.08%]<br>{0.03%}        | 1,526<br>[0.82%]<br>{0.34%}      | –<br>[0.00%]<br>{0.00%}                             | 136,945<br>[73.39%]<br>{7.25%}  | 186,592<br>[100%]<br>{2.82%}    |
| Subtotal                                             | 529,243<br>[8.01%]<br>{100%}                             | 3,217,093<br>[48.69%]<br>{100%}   | 518,293<br>[7.84%]<br>{100%}     | 448,741<br>[6.79%]<br>{100%}     | 4,344<br>[0.07%]<br>{100%}                          | 1,889,456<br>[28.60%]<br>{100%} | 6,607,170<br>[100%]<br>{100%}   |

<sup>1</sup> In ( ) next to the region's name is the number of countries. <sup>2</sup> In [ ] is the percentage when the IN country subtotal (far right) is 100%. <sup>3</sup> In { } is the percentage when the FROM country subtotal (bottom) is 100%.

Table 3.2

**Geographic breakdown of short-term  
paper investment, end-2002**

In millions of US dollars

| <b>In \ From</b>                            | <b>East Asia (10)<sup>1</sup></b>                        | <b>Europe (28)</b>               | <b>North America (2)</b>         | <b>Latin America (7)</b>      | <b>Africa, Middle East and Asia (3)</b> | <b>Tax Havens (17)</b>           | <b>Subtotal</b>                   |
|---------------------------------------------|----------------------------------------------------------|----------------------------------|----------------------------------|-------------------------------|-----------------------------------------|----------------------------------|-----------------------------------|
| East Asia (14)                              | 31,024<br>[57.98%] <sup>2</sup><br>{27.78%} <sup>3</sup> | 10,285<br>[19.22%]<br>{2.46%}    | 3,336<br>[6.23%]<br>{2.09%}      | –<br>[0.00%]<br>{0.00%}       | 18<br>[0.03%]<br>{2.29%}                | 8,849<br>[16.54%]<br>{4.65%}     | 53512<br>[100.00%]<br>{6.07%}     |
| Europe (42)                                 | 36,477<br>[7.11%]<br>{32.66%}                            | 243,419<br>[47.46%]<br>{58.25%}  | 131,240<br>[25.59%]<br>{82.19%}  | 279<br>[0.05%]<br>{15.20%}    | 169<br>[0.03%]<br>{21.50%}              | 101,359<br>[19.76%]<br>{53.28%}  | 512,943<br>[100.00%]<br>{58.15%}  |
| North America (2)                           | 21,595<br>[8.80%]<br>{19.33%}                            | 133,897<br>[54.54%]<br>{32.04%}  | 19,475<br>[7.93%]<br>{12.20%}    | 1,101<br>[0.45%]<br>{60.00%}  | 244<br>[0.10%]<br>{31.04%}              | 69,186<br>[28.18%]<br>{36.37%}   | 245,498<br>[100.00%]<br>{27.83%}  |
| Latin America (21)                          | 6<br>[0.15%]<br>{0.01%}                                  | 959<br>[24.19%]<br>{0.23%}       | 357<br>[9.01%]<br>{0.22%}        | 19<br>[0.48%]<br>{1.04%}      | 2<br>[0.05%]<br>{0.25%}                 | 2,621<br>[66.12%]<br>{1.38%}     | 3,964<br>[100.00%]<br>{0.45%}     |
| Africa, Middle East and Southeast Asia (42) | 126<br>[11.05%]<br>{0.11%}                               | 833<br>[73.07%]<br>{0.20%}       | –<br>[0.00%]<br>{0.00%}          | 18<br>[1.58%]<br>{0.98%}      | 34<br>[2.98%]<br>{4.33%}                | 129<br>[11.32%]<br>{0.07%}       | 1,140<br>[100.00%]<br>{0.13%}     |
| Tax Havens (44)                             | 18,267<br>[36.41%]<br>{16.35%}                           | 18,027<br>[35.93%]<br>{4.31%}    | 5,272<br>[10.51%]<br>{3.30%}     | 398<br>[0.79%]<br>{21.69%}    | 319<br>[0.64%]<br>{40.59%}              | 7,884<br>[15.72%]<br>{4.14%}     | 50,167<br>[100.00%]<br>{5.69%}    |
| Other Nations (73)                          | 4,200<br>[28.13%]<br>{3.76%}                             | 10,488<br>[70.25%]<br>{2.51%}    | 5<br>[0.03%]<br>{0.00%}          | 20<br>[0.13%]<br>{1.09%}      | –<br>[0.00%]<br>{0.00%}                 | 216<br>[1.45%]<br>{0.11%}        | 14,929<br>[100.00%]<br>{1.69%}    |
| Subtotal                                    | 111,695<br>[12.66%]<br>{100.00%}                         | 417,908<br>[43.37%]<br>{100.00%} | 159,685<br>[18.10%]<br>{100.00%} | 1,835<br>[0.21%]<br>{100.00%} | 786<br>[0.09%]<br>{100.00%}             | 190,244<br>[21.57%]<br>{100.00%} | 882,153<br>[100.00%]<br>{100.00%} |

<sup>1</sup> In ( ) next to the region's name is the number of countries. <sup>2</sup> In [ ] is the percentage when the IN country subtotal (far right) is 100%. <sup>3</sup> In { } is the percentage when the FROM country subtotal (bottom) is 100%.

Table 3.3  
**East Asian country breakdown of  
long-term debt securities, year-end 2002<sup>1</sup>**  
In millions of US dollars

| From<br>In       | Australia                                         | Hong<br>Kong<br>SAR            | Indonesia                 | Japan                          | Korea                       | Malaysia                  | New<br>Zealand             | Philippines               | Singapore                     | Thailand                   | Subtotal                        |
|------------------|---------------------------------------------------|--------------------------------|---------------------------|--------------------------------|-----------------------------|---------------------------|----------------------------|---------------------------|-------------------------------|----------------------------|---------------------------------|
| Australia        | –<br>[0.00%] <sup>2</sup><br>{0.00%} <sup>3</sup> | 11,333<br>[34.76%]<br>{41.72%} | 1<br>[0.00%]<br>{1.14%}   | 17,092<br>[52.43%]<br>{57.01%} | 20<br>[0.06%]<br>{1.66%}    | 26<br>[0.08%]<br>{15.78%} | 358<br>[1.10%]<br>{50.42%} | 10<br>[0.03%]<br>{7.52%}  | 3,761<br>[11.54%]<br>{22.53%} | –<br>[0.00%]<br>{0.00%}    | 32,601<br>[100.00%]<br>{42.67%} |
| China            | –<br>[0.00%]<br>{0.00%}                           | 1,232<br>[54.37%]<br>{4.54%}   | –<br>[0.00%]<br>{0.00%}   | 578<br>[25.50%]<br>{1.93%}     | 38<br>[1.69%]<br>{3.18%}    | –<br>[0.00%]<br>{0.00%}   | –<br>[0.00%]<br>{0.00%}    | 2<br>[0.09%]<br>{1.51%}   | 416<br>[18.37%]<br>{2.49%}    | –<br>[0.00%]<br>{0.00%}    | 2,266<br>[100.00%]<br>{2.97%}   |
| Hong Kong<br>SAR | –<br>[0.00%]<br>{0.00%}                           | –<br>[0.00%]<br>{0.00%}        | 57<br>[1.67%]<br>{64.80%} | 1,137<br>[33.23%]<br>{3.79%}   | 455<br>[13.30%]<br>{37.86%} | 40<br>[1.17%]<br>{24.45%} | –<br>[0.00%]<br>{0.00%}    | 58<br>[1.70%]<br>{43.82%} | 1,653<br>[48.33%]<br>{9.91%}  | 20<br>[0.58%]<br>{100.00%} | 3,421<br>[100.00%]<br>{4.48%}   |
| Indonesia        | –<br>[0.00%]<br>{0.00%}                           | –<br>[0.00%]<br>{0.00%}        | –<br>[0.00%]<br>{0.00%}   | 49<br>[4.86%]<br>{0.16%}       | 78<br>[7.77%]<br>{6.46%}    | 1<br>[0.09%]<br>{0.55%}   | –<br>[0.00%]<br>{0.00%}    | 4<br>[0.40%]<br>{3.01%}   | 869<br>[86.90%]<br>{5.21%}    | –<br>[0.00%]<br>{0.00%}    | 1,000<br>[100.00%]<br>{1.31%}   |
| Japan            | –<br>[0.00%]<br>{0.00%}                           | 5,351<br>[56.36%]<br>{19.70%}  | –<br>[0.00%]<br>{0.00%}   | –<br>[0.00%]<br>{0.00%}        | 29<br>[0.31%]<br>{2.41%}    | –<br>[0.00%]<br>{0.00%}   | 282<br>[2.97%]<br>{39.75%} | 5<br>[0.05%]<br>{3.74%}   | 3,828<br>[40.31%]<br>{22.93%} | –<br>[0.00%]<br>{0.00%}    | 9,495<br>[100.00%]<br>{12.43%}  |
| Korea            | –<br>[0.00%]<br>{0.00%}                           | 4,202<br>[34.24%]<br>{15.47%}  | –<br>[0.00%]<br>{0.00%}   | 5,348<br>[43.58%]<br>{17.84%}  | –<br>[0.00%]<br>{0.00%}     | 51<br>[0.42%]<br>{31.38%} | 69<br>[0.56%]<br>{9.77%}   | 15<br>[0.12%]<br>{11.12%} | 2,586<br>[21.07%]<br>{15.49%} | –<br>[0.00%]<br>{0.00%}    | 12,271<br>[100.00%]<br>{16.06%} |
| Malaysia         | –<br>[0.00%]<br>{0.00%}                           | 2,085<br>[34.28%]<br>{7.68%}   | 3<br>[0.05%]<br>{3.41%}   | 1,823<br>[29.98%]<br>{6.08%}   | 332<br>[5.46%]<br>{27.65%}  | –<br>[0.00%]<br>{0.00%}   | –<br>[0.00%]<br>{0.00%}    | 9<br>[0.15%]<br>{6.85%}   | 1,830<br>[30.08%]<br>{10.96%} | –<br>[0.00%]<br>{0.00%}    | 6,083<br>[100.00%]<br>{7.96%}   |

Table 3.3 (cont)  
**East Asian country breakdown of  
long-term debt securities, year-end 2002**

In millions of US dollars

| <b>In \ From</b> | <b>Australia</b>            | <b>Hong Kong SAR</b>            | <b>Indonesia</b>           | <b>Japan</b>                    | <b>Korea</b>                  | <b>Malaysia</b>             | <b>New Zealand</b>          | <b>Philippines</b>          | <b>Singapore</b>                | <b>Thailand</b>            | <b>Subtotal</b>                  |
|------------------|-----------------------------|---------------------------------|----------------------------|---------------------------------|-------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------------------|----------------------------|----------------------------------|
| New Zealand      | 251<br>[14.03%]<br>{99.93%} | –<br>[0.00%]<br>{0.00%}         | –<br>[0.00%]<br>{0.00%}    | 1,258<br>[70.36%]<br>{4.20%}    | –<br>[0.00%]<br>{0.00%}       | –<br>[0.00%]<br>{0.02%}     | –<br>[0.00%]<br>{0.00%}     | –<br>[0.00%]<br>{0.00%}     | 279<br>[15.63%]<br>{1.67%}      | –<br>[0.00%]<br>{0.00%}    | 1,788<br>[100.00%]<br>{2.34%}    |
| Philippines      | –<br>[0.00%]<br>{0.00%}     | –<br>[0.00%]<br>{0.00%}         | 5<br>[0.22%]<br>{5.12%}    | 1,389<br>[66.96%]<br>{4.63%}    | 81<br>[3.92%]<br>{6.76%}      | 4<br>[0.22%]<br>{2.73%}     | –<br>[0.00%]<br>{0.00%}     | –<br>[0.00%]<br>{0.00%}     | 595<br>[28.68%]<br>{3.56%}      | –<br>[0.00%]<br>{0.00%}    | 2,074<br>[100.00%]<br>{2.71%}    |
| Singapore        | –<br>[0.00%]<br>{0.00%}     | 1,842<br>[66.91%]<br>{6.78%}    | 23<br>[0.82%]<br>{25.69%}  | 680<br>[24.69%]<br>{2.27%}      | 144<br>[5.23%]<br>{11.98%}    | 41<br>[1.49%]<br>{25.05%}   | –<br>[0.00%]<br>{0.00%}     | 23<br>[0.84%]<br>{17.43%}   | –<br>[0.00%]<br>{0.00%}         | –<br>[0.00%]<br>{0.00%}    | 2,753<br>[100.00%]<br>{3.60%}    |
| Taiwan, China    | –<br>[0.00%]<br>{0.00%}     | 674<br>[63.58%]<br>{2.48%}      | –<br>[0.00%]<br>{0.00%}    | 46<br>[4.32%]<br>{0.15%}        | –<br>[0.00%]<br>{0.00%}       | –<br>[0.00%]<br>{0.00%}     | –<br>[0.00%]<br>{0.00%}     | 7<br>[0.66%]<br>{5.27%}     | 333<br>[31.40%]<br>{1.99%}      | –<br>[0.00%]<br>{0.00%}    | 1,060<br>[100.00%]<br>{1.39%}    |
| Thailand         | –<br>[0.00%]<br>{0.00%}     | 447<br>[28.58%]<br>{1.65%}      | –<br>[0.00%]<br>{0.00%}    | 550<br>[35.20%]<br>{1.84%}      | 24<br>[1.53%]<br>{2.00%}      | 1<br>[0.04%]<br>{0.34%}     | –<br>[0.00%]<br>{0.00%}     | –<br>[0.00%]<br>{0.00%}     | 542<br>[34.64%]<br>{3.25%}      | –<br>[0.00%]<br>{0.00%}    | 1,564<br>[100.00%]<br>{2.05%}    |
| Subtotal         | 252<br>[0.33%]<br>{100.00%} | 27,167<br>[35.55%]<br>{100.00%} | 89<br>[0.12%]<br>{100.00%} | 29,951<br>[39.24%]<br>{100.00%} | 1,203<br>[1.57%]<br>{100.00%} | 165<br>[0.22%]<br>{100.00%} | 710<br>[0.93%]<br>{100.00%} | 134<br>[0.17%]<br>{100.00%} | 16,693<br>[21.85%]<br>{100.00%} | 21<br>[0.03%]<br>{100.00%} | 76,376<br>[100.00%]<br>{100.00%} |

<sup>1</sup> Data for Vietnam and Cambodia are not reported here. <sup>2</sup> In [ ] is the percentage when the IN country subtotal (far right) is 100%. <sup>3</sup> In { } is the percentage when the FROM country subtotal (bottom) is 100%.

Table 3.4  
**East Asian country breakdown of  
short-term debt securities, year-end 2002<sup>1</sup>**

In millions of US dollars

| From<br>In       | Australia                                         | Hong<br>Kong<br>SAR           | Indonesia               | Japan                        | Korea                     | Malaysia                 | New<br>Zealand            | Philippines                 | Singapore                     | Thailand                  | Subtotal                     |
|------------------|---------------------------------------------------|-------------------------------|-------------------------|------------------------------|---------------------------|--------------------------|---------------------------|-----------------------------|-------------------------------|---------------------------|------------------------------|
| Australia        | –<br>[0.00%] <sup>2</sup><br>{0.00%} <sup>3</sup> | 9,795<br>[58.89%]<br>{64.39%} | –<br>[0.00%]<br>{0.00%} | 1,657<br>[9.96%]<br>{47.65%} | –<br>[0.00%]<br>{0.00%}   | –<br>[0.00%]<br>{0.00%}  | –<br>[0.00%]<br>{0.00%}   | –<br>[0.00%]<br>{0.00%}     | 5,130<br>[30.84%]<br>{42.11%} | 50<br>[0.30%]<br>{69.44%} | 16,632<br>[100%]<br>{53.61%} |
| China            | –<br>[0.00%]<br>{0.00%}                           | 1,569<br>[94.40%]<br>{10.31%} | –<br>[0.00%]<br>{0.00%} | –<br>[0.00%]<br>{0.00%}      | –<br>[0.00%]<br>{0.00%}   | –<br>[0.00%]<br>{0.00%}  | –<br>[0.00%]<br>{0.00%}   | –<br>[0.00%]<br>{0.00%}     | 53<br>[3.17%]<br>{0.43%}      | –<br>[0.00%]<br>{0.00%}   | 1,622<br>[100%]<br>{5.23%}   |
| Hong Kong<br>SAR | –<br>[0.00%]<br>{0.00%}                           | –<br>[0.00%]<br>{0.00%}       | –<br>[0.00%]<br>{0.00%} | 12<br>[6.52%]<br>{0.34%}     | 4<br>[2.40%]<br>{18.70%}  | –<br>[0.00%]<br>{0.00%}  | –<br>[0.00%]<br>{0.00%}   | 50<br>[27.93%]<br>{100.00%} | 111<br>[62.018%]<br>{0.91%}   | 2<br>[1.12%]<br>{2.78%}   | 179<br>[100%]<br>{0.58%}     |
| Indonesia        | –<br>[0.00%]<br>{0.00%}                           | –<br>[0.00%]<br>{0.00%}       | –<br>[0.00%]<br>{0.00%} | 2<br>[1.85%]<br>{0.05%}      | –<br>[0.00%]<br>{0.00%}   | –<br>[0.00%]<br>{0.00%}  | –<br>[0.00%]<br>{0.00%}   | –<br>[0.00%]<br>{0.00%}     | 89<br>[98.63%]<br>{0.73%}     | –<br>[0.00%]<br>{0.00%}   | 90<br>[100%]<br>{0.29%}      |
| Japan            | –<br>{0.00%}<br>{0.00%}                           | 1,396<br>[33.35%]<br>{9.18%}  | –<br>[0.00%]<br>{0.00%} | –<br>[0.00%]<br>{0.00%}      | –<br>[0.00%]<br>{0.00%}   | –<br>[0.00%]<br>{0.00%}  | 1<br>[0.02%]<br>{100.00%} | –<br>[0.00%]<br>{0.00%}     | 2,789<br>[66.63%]<br>{22.90%} | –<br>[0.00%]<br>{0.00%}   | 4,186<br>[100%]<br>{13.49%}  |
| Korea            | –<br>[0.00%]<br>{0.00%}                           | 1,761<br>[72.53%]<br>{11.58%} | –<br>[0.00%]<br>{0.00%} | 125<br>[5.15%]<br>{3.60%}    | –<br>[0.00%]<br>{0.00%}   | 9<br>[0.35%]<br>{94.68%} | –<br>[0.00%]<br>{0.00%}   | –<br>[0.00%]<br>{0.00%}     | 523<br>[21.56%]<br>{4.30%}    | 10<br>[0.41%]<br>{13.89%} | 2,428<br>[100%]<br>{7.83%}   |
| Malaysia         | –<br>[0.00%]<br>{0.00%}                           | 43<br>[22.99%]<br>{0.28%}     | –<br>[0.00%]<br>{0.00%} | –<br>[0.00%]<br>{0.00%}      | 19<br>[9.89%]<br>{80.43%} | –<br>[0.00%]<br>{0.00%}  | –<br>[0.00%]<br>{0.00%}   | –<br>[0.00%]<br>{0.00%}     | 126<br>[67.20%]<br>{1.03%}    | –<br>[0.00%]<br>{0.00%}   | 187<br>[100%]<br>{0.60%}     |

Table 3.4 (cont)  
**East Asian country breakdown of  
short-term debt securities, year-end 2002**

In millions of US dollars

| <b>From<br/>In</b> | <b>Australia</b>          | <b>Hong<br/>Kong<br/>SAR</b>    | <b>Indonesia</b>          | <b>Japan</b>                   | <b>Korea</b>               | <b>Malaysia</b>           | <b>New<br/>Zealand</b>    | <b>Philippines</b>         | <b>Singapore</b>                | <b>Thailand</b>            | <b>Subtotal</b>               |
|--------------------|---------------------------|---------------------------------|---------------------------|--------------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------------|----------------------------|-------------------------------|
| New Zealand        | –<br>[0.00%]<br>{0.00%}   | –<br>[0.00%]<br>{0.00%}         | –<br>[0.00%]<br>{0.00%}   | 171<br>[5.83%]<br>{4.92%}      | –<br>[0.00%]<br>{0.00%}    | –<br>[0.00%]<br>{0.00%}   | –<br>[0.00%]<br>{0.00%}   | –<br>[0.00%]<br>{0.00%}    | 2,754<br>[93.82%]<br>{22.60%}   | 10<br>[0.34%]<br>{13.89%}  | 2,935<br>[100%]<br>{9.46%}    |
| Philippines        | –<br>[0.00%]<br>{0.00%}   | –<br>[0.00%]<br>{0.00%}         | –<br>[0.00%]<br>{0.00%}   | –<br>[0.00%]<br>{0.00%}        | –<br>[0.00%]<br>{0.00%}    | –<br>[0.00%]<br>{0.00%}   | –<br>[0.00%]<br>{0.00%}   | –<br>[0.00%]<br>{0.00%}    | 104<br>[0.00%]<br>{0.86%}       | –<br>[0.00%]<br>{0.00%}    | 104<br>[100%]<br>{0.34%}      |
| Singapore          | –<br>[0.00%]<br>{0.00%}   | 303<br>[16.70%]<br>{1.99%}      | –<br>[0.02%]<br>{0.00%}   | 1,510<br>[83.26%]<br>{43.44%}  | –<br>[0.00%]<br>{0.00%}    | –<br>[0.03%]<br>{5.54%}   | –<br>[0.00%]<br>{0.00%}   | –<br>[0.00%]<br>{0.00%}    | –<br>[0.00%]<br>{0.00%}         | –<br>[0.00%]<br>{0.00%}    | 1,814<br>[100%]<br>{5.85%}    |
| Taiwan,<br>China   | –<br>[0.00%]<br>{0.00%}   | 131<br>[36.90%]<br>{0.86%}      | –<br>[0.00%]<br>{0.00%}   | –<br>[0.00%]<br>{0.00%}        | –<br>[0.00%]<br>{0.00%}    | –<br>[0.00%]<br>{0.00%}   | –<br>[0.00%]<br>{0.00%}   | –<br>[0.00%]<br>{0.00%}    | 224<br>[62.97%]<br>{1.84%}      | –<br>[0.00%]<br>{0.00%}    | 355<br>[100%]<br>{1.14%}      |
| Thailand           | –<br>[0.00%]<br>{0.00%}   | 213<br>[43.29%]<br>{1.40%}      | –<br>[0.00%]<br>{0.00%}   | –<br>[0.00%]<br>{0.00%}        | –<br>[0.00%]<br>{0.00%}    | –<br>[0.00%]<br>{0.00%}   | –<br>[0.00%]<br>{0.00%}   | –<br>[0.00%]<br>{0.00%}    | 279<br>[56.81%]<br>{2.29%}      | –<br>[0.00%]<br>{0.00%}    | 492<br>[100%]<br>{1.59%}      |
| Subtotal           | –<br>[0.00%]<br>{100.00%} | 15,211<br>[49.03%]<br>{100.00%} | –<br>[0.00%]<br>{100.00%} | 3,477<br>[11.21%]<br>{100.00%} | 23<br>[0.07%]<br>{100.00%} | 9<br>[0.03%]<br>{100.00%} | 1<br>[0.00%]<br>{100.00%} | 50<br>[0.16%]<br>{100.00%} | 12,182<br>[39.27%]<br>{100.00%} | 72<br>[0.23%]<br>{100.00%} | 31,024<br>[100%]<br>{100.00%} |

<sup>1</sup> Data for Vietnam and Cambodia are not reported here. <sup>2</sup> In [ ] is the percentage when the IN country subtotal (far right) is 100%. <sup>3</sup> In { } is the percentage when the FROM country subtotal (bottom) is 100%.

Table 3.5

**Top 10 country breakdown of long-term  
debt securities investment, year-end 2002**

In millions of US dollars

| <b>From<br/>In</b>                                      | <b>United<br/>States</b>                                 | <b>United<br/>Kingdom</b>       | <b>Germany</b>                  | <b>Luxembourg</b>               | <b>Italy</b>                   | <b>Netherlands</b>             | <b>Japan</b>                    | <b>France</b>                   | <b>Canada</b>                | <b>Cayman<br/>Islands</b>     | <b>Subtotal</b>                    |
|---------------------------------------------------------|----------------------------------------------------------|---------------------------------|---------------------------------|---------------------------------|--------------------------------|--------------------------------|---------------------------------|---------------------------------|------------------------------|-------------------------------|------------------------------------|
| East<br>Asia (14) <sup>1</sup>                          | 60,227<br>[30.89%] <sup>2</sup><br>{12.84%} <sup>3</sup> | 50,087<br>[25.69%]<br>{6.42%}   | 13,750<br>[7.05%]<br>{2.52%}    | 16,113<br>[8.26%]<br>{3.12%}    | 3,821<br>[1.96%]<br>{1.25%}    | 3,769<br>[1.93%]<br>{1.10%}    | 29,951<br>[15.36%]<br>{2.79%}   | 15,733<br>[8.07%]<br>{2.63%}    | 627<br>[0.32%]<br>{4.10%}    | 899<br>[0.46%]<br>{2.13%}     | 194,977<br>[100.00%]<br>{4.16%}    |
| Europe (42)                                             | 230,012<br>[8.46%]<br>{49.04%}                           | 345,738<br>[12.72%]<br>{44.31%} | 426,727<br>[15.70%]<br>{78.15%} | 390,163<br>[14.36%]<br>{75.64%} | 190,146<br>[7.00%]<br>{62.32%} | 265,737<br>[9.78%]<br>{77.87%} | 413,010<br>[15.20%]<br>{38.47%} | 450,439<br>[16.57%]<br>{75.37%} | 2,605<br>[0.10%]<br>{17.01%} | 3,190<br>[0.12%]<br>{7.55%}   | 2,717,766<br>[100.00%]<br>{57.99%} |
| North<br>America (2)                                    | 106,024<br>[9.92%]<br>{22.60%}                           | 206,101<br>[19.28%]<br>{26.41%} | 57,071<br>[5.34%]<br>{10.45%}   | 82,675<br>[7.73%]<br>{16.03%}   | 43,198<br>[4.04%]<br>{14.16%}  | 60,612<br>[5.67%]<br>{17.76%}  | 395,281<br>[36.98%]<br>{36.82%} | 78,321<br>[7.33%]<br>{13.11%}   | 7,988<br>[0.75%]<br>{52.15%} | 31,770<br>[2.97%]<br>{75.19%} | 1,069,044<br>[100.00%]<br>{22.81%} |
| Latin<br>America<br>(21)                                | 33,863<br>[37.78%]<br>{7.22%}                            | 10,794<br>[12.04%]<br>{1.38%}   | 7,676<br>[8.56%]<br>{1.41%}     | 4,236<br>[4.73%]<br>{0.82%}     | 11,489<br>[12.82%]<br>{3.77%}  | 2,453<br>[2.74%]<br>{0.72%}    | 8,472<br>[9.45%]<br>{0.79%}     | 3,264<br>[3.64%]<br>{0.55%}     | 1,989<br>[2.22%]<br>{12.99%} | 5,404<br>[6.03%]<br>{12.79%}  | 89,640<br>[100.00%]<br>{1.91%}     |
| Africa,<br>Middle East<br>and<br>Southeast<br>Asia (42) | 4,273<br>[22.17%]<br>{0.91%}                             | 2,643<br>[13.72%]<br>{0.34%}    | 4,890<br>[25.38%]<br>{0.90%}    | 1,044<br>[5.42%]<br>{0.20%}     | 1,515<br>[7.86%]<br>{0.50%}    | 238<br>[1.24%]<br>{0.07%}      | 3,737<br>[19.39%]<br>{0.35%}    | 723<br>[3.75%]<br>{0.12%}       | 29<br>[0.15%]<br>{0.19%}     | 178<br>[0.93%]<br>{0.42%}     | 19,270<br>[100.00%]<br>{0.41%}     |
| Tax<br>Havens (44)                                      | 33,746<br>[7.11%]<br>{7.19%}                             | 60,705<br>[12.80%]<br>{7.78%}   | 35,948<br>[7.58%]<br>{6.58%}    | 21,436<br>[4.52%]<br>{4.16%}    | 52,185<br>[11.00%]<br>{17.10%} | 8,467<br>[1.78%]<br>{2.48%}    | 210,916<br>[44.46%]<br>{19.65%} | 48,923<br>[10.31%]<br>{8.19%}   | 1,869<br>[0.39%]<br>{12.20%} | 185<br>[0.04%]<br>{0.44%}     | 474,411<br>[100.00%]<br>{10.12%}   |

Table 3.5 (cont)

**Top 10 country breakdown of long-term  
debt securities investment, year-end 2002**

In millions of US dollars

| <b>From<br/>In</b>    | <b>United<br/>States</b>         | <b>United<br/>Kingdom</b>        | <b>Germany</b>                   | <b>Luxembourg</b>                | <b>Italy</b>                    | <b>Netherlands</b>              | <b>Japan</b>                       | <b>France</b>                    | <b>Canada</b>                  | <b>Cayman<br/>Islands</b>      | <b>Subtotal</b>                     |
|-----------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|---------------------------------|---------------------------------|------------------------------------|----------------------------------|--------------------------------|--------------------------------|-------------------------------------|
| Other<br>Nations (73) | 910<br>[0.75%]<br>{0.19%}        | 104,219<br>[85.96%]<br>{13.36%}  | 3<br>[0.00%]<br>{0.00%}          | 148<br>[0.12%]<br>{0.03%}        | 2,750<br>[2.27%]<br>{0.90%}     | 3<br>[0.00%]<br>{0.00%}         | 12,152<br>[10.02%]<br>{1.13%}      | 221<br>[0.18%]<br>{0.04%}        | 209<br>[0.17%]<br>{1.36%}      | 629<br>[0.52%]<br>{1.49%}      | 121,244<br>[100.00%]<br>{2.59%}     |
| Subtotal              | 469,055<br>[10.01%]<br>{100.00%} | 780,287<br>[16.65%]<br>{100.00%} | 546,065<br>[11.65%]<br>{100.00%} | 515,815<br>[11.01%]<br>{100.00%} | 305,105<br>[6.51%]<br>{100.00%} | 341,279<br>[7.28%]<br>{100.00%} | 1,073,551<br>[22.91%]<br>{100.00%} | 597,623<br>[12.75%]<br>{100.00%} | 15,316<br>[0.33%]<br>{100.00%} | 42,255<br>[0.90%]<br>{100.00%} | 4,686,351<br>[100.00%]<br>{100.00%} |

<sup>1</sup> In ( ) next to the region's name is the number of countries. <sup>2</sup> In [ ] is the percentage when the IN country subtotal (far right) is 100%. <sup>3</sup> In { } is the percentage when the FROM country subtotal (bottom) is 100%.

Table 3.6

**Top 10 country breakdown of short-term debt securities investment, year-end 2002**

In millions of US dollars

| <b>From<br/>In</b>                          | <b>United States</b>                                   | <b>United Kingdom</b>          | <b>Germany</b>               | <b>Luxembourg</b>              | <b>Italy</b>                 | <b>Netherlands</b>            | <b>Japan</b>                   | <b>France</b>                  | <b>Canada</b>                | <b>Cayman Islands</b>        | <b>Subtotal</b>               |
|---------------------------------------------|--------------------------------------------------------|--------------------------------|------------------------------|--------------------------------|------------------------------|-------------------------------|--------------------------------|--------------------------------|------------------------------|------------------------------|-------------------------------|
| East Asia (14) <sup>1</sup>                 | 3,323<br>[17.81%] <sup>2</sup><br>{2.14%} <sup>3</sup> | 5,396<br>[28.92%]<br>{7.04%}   | 49<br>[0.26%]<br>{0.36%}     | 4,550<br>[24.39%]<br>{4.97%}   | 346<br>[1.85%]<br>{3.77%}    | 486<br>[2.61%]<br>{5.32%}     | 3,477<br>[18.64%]<br>{7.23%}   | 858<br>[4.60%]<br>{1.22%}      | 13<br>[0.073%]<br>{0.30%}    | 158<br>[0.85%]<br>{2.01%}    | 18,656<br>[100%]<br>{3.84%}   |
| Europe (42)                                 | 130,171<br>[41.36%]<br>{83.81%}                        | 41,468<br>[13.17%]<br>{54.07%} | 9,434<br>[3.00%]<br>{69.22%} | 53,290<br>[16.93%]<br>{58.20%} | 7,740<br>[2.46%]<br>{84.36%} | 6,178<br>[1.961%]<br>{67.68%} | 11,940<br>[3.79%]<br>{24.83%}  | 50,503<br>[16.04%]<br>{71.80%} | 1,069<br>[0.35%]<br>{24.48%} | 2,956<br>[0.94%]<br>{37.68%} | 314,749<br>[100%]<br>{64.74%} |
| North America (2)                           | 16,324<br>[15.31%]<br>{10.51%}                         | 18,690<br>[17.53%]<br>{24.37%} | 3,990<br>[3.74%]<br>{29.28%} | 28,868<br>[27.08%]<br>{31.53%} | 246<br>[0.23%]<br>{2.68%}    | 1,582<br>[1.48%]<br>{17.33%}  | 15,153<br>[14.21%]<br>{31.52%} | 14,886<br>[14.00%]<br>{21.16%} | 3,151<br>[2.96%]<br>{72.15%} | 3,710<br>[3.48%]<br>{47.30%} | 106,600<br>[100%]<br>{21.93%} |
| Latin America (21)                          | 357<br>[18.60%]<br>{0.23%}                             | 712<br>[37.10%]<br>{0.93%}     | 8<br>[0.42%]<br>{0.06%}      | 117<br>[6.10%]<br>{0.13%}      | 46<br>[2.40%]<br>{0.50%}     | 15<br>[0.78%]<br>{0.16%}      | –<br>[0%]<br>{0.00%}           | 47<br>[2.50%]<br>{0.07%}       | –<br>[0%]<br>{0.00%}         | 617<br>[32.15%]<br>{7.87%}   | 1,919<br>[100%]<br>{0.39%}    |
| Africa, Middle East and Southeast Asia (42) | –<br>[0.00%]<br>{0.00%}                                | 538<br>[82.64%]<br>{0.70%}     | 7<br>[1.08%]<br>{0.05%}      | 26<br>[3.99%]<br>{0.03%}       | –<br>[0.00%]<br>{0.00%}      | 72<br>[11.06%]<br>{0.79%}     | –<br>[0.00%]<br>{0.00%}        | 1<br>[0.15%]<br>{0.00%}        | –<br>[0.00%]<br>{0.00%}      | 7<br>[1.08%]<br>{0.09%}      | 651<br>[100%]<br>{0.13%}      |
| Tax Havens (44)                             | 5,143<br>[14.58%]<br>{3.31%}                           | 1,962<br>[5.56%]<br>{2.56%}    | 141<br>[0.40%]<br>{1.03%}    | 4,685<br>[13.28%]<br>{5.12%}   | 797<br>[2.26%]<br>{8.69%}    | 793<br>[2.25%]<br>{8.69%}     | 17,318<br>[49.08%]<br>{36.02%} | 4,023<br>[11.40%]<br>{5.72%}   | 129<br>[0.37%]<br>{2.95%}    | 292<br>[0.83%]<br>{3.72%}    | 35,283<br>[100%]<br>{7.26%}   |

Table 3.6 (cont)

**Top 10 country breakdown of short-term debt securities investment, year-end 2002**

In millions of US dollars

| <b>From<br/>In</b> | <b>United States</b>             | <b>United Kingdom</b>           | <b>Germany</b>                 | <b>Luxembourg</b>               | <b>Italy</b>                  | <b>Netherlands</b>            | <b>Japan</b>                   | <b>France</b>                   | <b>Canada</b>                 | <b>Cayman Islands</b>         | <b>Subtotal</b>                |
|--------------------|----------------------------------|---------------------------------|--------------------------------|---------------------------------|-------------------------------|-------------------------------|--------------------------------|---------------------------------|-------------------------------|-------------------------------|--------------------------------|
| Other Nations (73) | –<br>[0.00%]<br>{0.00%}          | 7,933<br>[95.81%]<br>{10.34%}   | –<br>[0.00%]<br>{0.00%}        | 26<br>[0.31%]<br>{0.03%}        | –<br>[0.00%]<br>{0.00%}       | 2<br>[0.02%]<br>{0.02%}       | 192<br>[2.32%]<br>{0.40%}      | 18<br>[0.22%]<br>{0.03%}        | 5<br>[0.06%]<br>{0.11%}       | 104<br>[1.26%]<br>{1.33%}     | 8,280<br>[100%]<br>{1.70%}     |
| Subtotal           | 155,318<br>[31.95%]<br>{100.00%} | 76,699<br>[15.78%]<br>{100.00%} | 13,629<br>[2.80%]<br>{100.00%} | 91,562<br>[18.83%]<br>{100.00%} | 9,175<br>[1.89%]<br>{100.00%} | 9,128<br>[1.88%]<br>{100.00%} | 48,080<br>[9.90%]<br>{100.00%} | 70,336<br>[14.47%]<br>{100.00%} | 4,367<br>[0.90%]<br>{100.00%} | 7,844<br>[1.61%]<br>{100.00%} | 486,138<br>[100%]<br>{100.00%} |

<sup>1</sup> In ( ) next to the region's name is the number of countries. <sup>2</sup> In [ ] is the percentage when the IN country subtotal (far right) is 100%. <sup>3</sup> In { } is the percentage when the FROM country subtotal (bottom) is 100%.

Table 3.7

**Rule of law breakdown of long-term  
bonds, year-end 2002**

In millions of US dollars

| <b>In \ From</b>           | <b>Common<br/>(13)<sup>1</sup></b>                        | <b>Civil/French<br/>(18)</b>    | <b>Civil/German<br/>(5)</b>     | <b>Civil/<br/>Scandinavian<br/>(4)</b> | <b>Subtotal</b>                 |
|----------------------------|-----------------------------------------------------------|---------------------------------|---------------------------------|----------------------------------------|---------------------------------|
| Common (19)                | 582,835<br>[36.29%] <sup>2</sup><br>{42.66%} <sup>3</sup> | 235,504<br>[14.67%]<br>{23.01%} | 722,734<br>[45.01%]<br>{42.35%} | 64,783<br>[4.03%]<br>{36.06%}          | 1,605,856<br>[100%]<br>{37.56%} |
| Civil/French (22)          | 439,889<br>[31.17%]<br>{32.20%}                           | 468,920<br>[33.23%]<br>{45.82%} | 460,009<br>[32.59%]<br>{26.95%} | 42,478<br>[3.01%]<br>{23.65%}          | 1,411,296<br>[100%]<br>{33.01%} |
| Civil/German (6)           | 300,796<br>[27.56%]<br>{22.02%}                           | 287,216<br>[26.32%]<br>{28.07%} | 449,774<br>[41.21%]<br>{26.35%} | 53,658<br>[4.92%]<br>{29.87%}          | 1,091,444<br>[100%]<br>{25.53%} |
| Civil/<br>Scandinavian (4) | 42,627<br>[25.48%]<br>{3.12%}                             | 31,740<br>[18.97%]<br>{3.10%}   | 74,228<br>[44.36%]<br>{4.35%}   | 18,729<br>[11.19%]<br>{10.43%}         | 167,323<br>[100%]<br>{3.91%}    |
| Subtotal                   | 1,366,149<br>[31.95%]<br>{100%}                           | 1,023,379<br>[23.93%]<br>{100%} | 1,706,745<br>[39.92%]<br>{100%} | 179,647<br>[4.20%]<br>{100%}           | 4,275,920<br>[100%]<br>{100%}   |

<sup>1</sup> In ( ) next to the region's name is the number of countries. <sup>2</sup> In [ ] is the percentage when the IN country subtotal (far right) is 100%. <sup>3</sup> In { } is the percentage when the FROM country subtotal (bottom) is 100%.

Table 3.8

**Rule of law breakdown of short-term  
paper, year-end 2002**

In millions of US dollars

| <b>In \ From</b>           | <b>Common<br/>(13)<sup>1</sup></b>                        | <b>Civil/French<br/>(18)</b>     | <b>Civil/German<br/>(5)</b>    | <b>Civil/<br/>Scandinavian<br/>(4)</b> | <b>Subtotal</b>                |
|----------------------------|-----------------------------------------------------------|----------------------------------|--------------------------------|----------------------------------------|--------------------------------|
| Common (19)                | 292,708<br>[75.11%] <sup>2</sup><br>{68.96%} <sup>3</sup> | 62,775<br>[16.11%]<br>{47.84%}   | 30,318<br>[7.77%]<br>{53.48%}  | 3,922<br>[1.01%]<br>{42.74%}           | 389,723<br>[100%]<br>{62.70%}  |
| Civil/French (22)          | 63,700<br>[53.90%]<br>{15.01%}                            | 36,078<br>[30.53%]<br>{27.50%}   | 17,351<br>[14.68%]<br>{30.60%} | 1,046<br>[0.89%]<br>{11.40%}           | 118,175<br>[100%]<br>{19.01%}  |
| Civil/German (6)           | 53,424<br>[61.60%]<br>{12.59%}                            | 25,119<br>[28.96%]<br>{19.14%}   | 6,619<br>[7.63%]<br>{11.67%}   | 1,571<br>[1.811%]<br>{17.12%}          | 86,733<br>[100%]<br>{13.95%}   |
| Civil/<br>Scandinavian (4) | 14,615<br>[54.33%]<br>{3.44%}                             | 7,243<br>[26.92%]<br>{5.52%}     | 2,406<br>[8.94%]<br>{4.24%}    | 2,637<br>[9.80%]<br>{28.74%}           | 26,901<br>[100%]<br>{4.33%}    |
| Subtotal                   | 424,447<br>[68.30%]<br>{100.00%}                          | 131,215<br>[21.11%]<br>{100.00%} | 56,694<br>[9.12%]<br>{100.00%} | 9,176<br>[1.48%]<br>{100.00%}          | 621,532<br>[100%]<br>{100.00%} |

<sup>1</sup> In ( ) next to the region's name is the number of countries. <sup>2</sup> In [ ] is the percentage when the IN country subtotal (far right) is 100%. <sup>3</sup> In { } is the percentage when the FROM country subtotal (bottom) is 100%.

## 4. Regression results

We begin our empirical analysis by estimating cross-country regressions that examine whether differences in foreign bond investments can be accounted for by cross-country differences in property rights protection, while controlling for other macro factors that may be important.

### 4.1 Summary statistics of the regression sample

In Table 4.1, we present the list of 47 sample countries and some of the variables used in the regression analysis. We partition the sample into two groups by the median of the property right index. One clear message delivered by the table is that countries with stronger investor protection show larger GDP and have more local bonds held by foreign investors. The percentage of local bonds held by foreign investors scaled by GDP is 7.18% for countries with low investor protection, whereas the same figure is as much as 35.5% for countries with high property rights protection. Table 4.2 presents some summary statistics and correlations used in the analysis.

Table 4.1

## Summary statistics

| Country                                               | (1)<br>Short-term<br>debts<br>(in m\$) | (2)<br>Long-<br>term<br>debts<br>(in m\$) | (3)<br>Gross<br>domestic<br>product<br>(in m\$) | (4)<br>Percent-<br>age of<br>debts<br>over GDP | (5)<br>Origin of<br>law | (6)<br>Property<br>rights<br>Index | (7)<br>Creditor<br>rights<br>Index |
|-------------------------------------------------------|----------------------------------------|-------------------------------------------|-------------------------------------------------|------------------------------------------------|-------------------------|------------------------------------|------------------------------------|
| <i>Countries with low property rights protection</i>  |                                        |                                           |                                                 |                                                |                         |                                    |                                    |
| ARG                                                   | 606                                    | 21,485                                    | 268,831                                         | 8.22                                           | 2                       | 16.84                              | 1                                  |
| BRA                                                   | 2,984                                  | 43,500                                    | 508,994                                         | 9.13                                           | 2                       | 20.24                              | 1                                  |
| CHL                                                   | 80                                     | 4,332                                     | 66,450                                          | 6.64                                           | 2                       | 19.60                              | 2                                  |
| COL                                                   | 31                                     | 5,886                                     | 82,411                                          | 7.18                                           | 2                       | 18.97                              | 0                                  |
| ECU                                                   | 14                                     | 1,233                                     | 21,024                                          | 5.93                                           | 2                       | 16.93                              | 4                                  |
| EGY                                                   | 48                                     | 491                                       | 98,476                                          | 0.55                                           | 2                       | 16.22                              | 4                                  |
| GRC                                                   | 460                                    | 61,302                                    | 117,169                                         | 52.71                                          | 2                       | 21.01                              | 1                                  |
| IDN                                                   | 79                                     | 1,597                                     | 141,255                                         | 1.19                                           | 2                       | 15.40                              | 4                                  |
| IND                                                   | 214                                    | 1,766                                     | 481,440                                         | 0.41                                           | 1                       | 18.44                              | 4                                  |
| JOR                                                   | 18                                     | 176                                       | 8,829                                           | 2.20                                           | 2                       | 16.41                              | .                                  |
| KEN                                                   | 22                                     | 18                                        | 11,396                                          | 0.35                                           | 1                       | 16.46                              | 4                                  |
| KOR                                                   | 2,018                                  | 22,425                                    | 427,234                                         | 5.72                                           | 3                       | 22.20                              | 3                                  |
| LKA                                                   | 31                                     | 130                                       | 15,662                                          | 1.02                                           | 1                       | 16.30                              | 3                                  |
| MEX                                                   | 742                                    | 42,802                                    | 623,890                                         | 6.98                                           | 2                       | 18.61                              | 0                                  |
| MYS                                                   | 292                                    | 9,538                                     | 88,050                                          | 11.16                                          | 1                       | 22.76                              | 4                                  |
| PAK                                                   | 22                                     | 244                                       | 58,648                                          | 0.45                                           | 1                       | 13.47                              | 4                                  |
| PER                                                   | 143                                    | 1,792                                     | 54,218                                          | 3.57                                           | 2                       | 14.92                              | 0                                  |
| PHL                                                   | 332                                    | 8,804                                     | 71,382                                          | 12.80                                          | 2                       | 12.94                              | 0                                  |
| THA                                                   | 348                                    | 3,607                                     | 115,310                                         | 3.43                                           | 1                       | 20.17                              | 3                                  |
| TUR                                                   | 575                                    | 11,833                                    | 145,244                                         | 8.54                                           | 2                       | 18.13                              | 2                                  |
| URY                                                   | 129                                    | 1,629                                     | 18,561                                          | 9.47                                           | 2                       | 18.87                              | 2                                  |
| VEN                                                   | 226                                    | 8,544                                     | 126,197                                         | 6.95                                           | 2                       | 17.89                              | .                                  |
| ZWE                                                   | 17                                     | 39                                        | 9,057                                           | 0.62                                           | 1                       | 16.07                              | 4                                  |
| <i>Average</i>                                        | <i>410</i>                             | <i>11,008</i>                             | <i>154,771</i>                                  | <i>7.18</i>                                    | <i>.</i>                | <i>18</i>                          | <i>2</i>                           |
| <i>Countries with high property rights protection</i> |                                        |                                           |                                                 |                                                |                         |                                    |                                    |
| AUS                                                   | 25,448                                 | 73,916                                    | 368,726                                         | 26.95                                          | 1                       | 26.50                              | 1                                  |
| AUT                                                   | 6,512                                  | 104,400                                   | 188,546                                         | 58.83                                          | 3                       | 27.86                              | 3                                  |
| BEL                                                   | 22,536                                 | 97,354                                    | 229,610                                         | 52.22                                          | 2                       | 27.93                              | 2                                  |
| CAN                                                   | 14,872                                 | 196,559                                   | 694,475                                         | 30.44                                          | 1                       | 28.63                              | 1                                  |
| CHE                                                   | 3,297                                  | 13,828                                    | 247,091                                         | 6.93                                           | 3                       | 29.96                              | 1                                  |

Table 4.1 (cont)  
Summary statistics

| Country                                               | (1)<br>Short-term<br>debts<br>(in m\$) | (2)<br>Long-<br>term<br>debts<br>(in m\$) | (3)<br>Gross<br>domestic<br>product<br>(in m\$) | (4)<br>Percent-<br>age of<br>debts<br>over GDP | (5)<br>Origin of<br>law | (6)<br>Property<br>rights<br>Index | (7)<br>Creditor<br>rights<br>Index |
|-------------------------------------------------------|----------------------------------------|-------------------------------------------|-------------------------------------------------|------------------------------------------------|-------------------------|------------------------------------|------------------------------------|
| <i>Countries with high property rights protection</i> |                                        |                                           |                                                 |                                                |                         |                                    |                                    |
| DEU                                                   | 84,910                                 | 802,257                                   | 1,846,069                                       | 48.06                                          | 3                       | 28.60                              | 3                                  |
| DNK                                                   | 6,036                                  | 51,119                                    | 161,542                                         | 35.38                                          | 4                       | 28.98                              | 3                                  |
| ESP                                                   | 5,724                                  | 165,876                                   | 581,823                                         | 29.49                                          | 2                       | 25.30                              | 2                                  |
| FIN                                                   | 3,639                                  | 37,677                                    | 120,855                                         | 34.19                                          | 4                       | 28.82                              | 1                                  |
| FRA                                                   | 56,589                                 | 331,120                                   | 1,309,807                                       | 29.60                                          | 2                       | 27.89                              | 0                                  |
| GBR                                                   | 174,385                                | 394,595                                   | 1,424,094                                       | 39.95                                          | 1                       | 28.44                              | 4                                  |
| HKG                                                   | 505                                    | 15,691                                    | 162,843                                         | 9.95                                           | 1                       | 25.63                              | 4                                  |
| IRL                                                   | 12,496                                 | 67,419                                    | 103,298                                         | 77.36                                          | 1                       | 27.15                              | 1                                  |
| ISR                                                   | 91                                     | 8,996                                     | .                                               | .                                              | 1                       | 24.12                              | 4                                  |
| ITA                                                   | 31,564                                 | 428,540                                   | 1,088,754                                       | 42.26                                          | 2                       | 24.65                              | 2                                  |
| JPN                                                   | 36,127                                 | 167,520                                   | 4,141,431                                       | 4.92                                           | 3                       | 27.88                              | 2                                  |
| NLD                                                   | 39,538                                 | 371,334                                   | 380,137                                         | 108.09                                         | 2                       | 29.33                              | 2                                  |
| NOR                                                   | 2,584                                  | 32,007                                    | 166,145                                         | 20.82                                          | 4                       | 29.59                              | 2                                  |
| NZL                                                   | 3,844                                  | 9,145                                     | 50,425                                          | 25.76                                          | 1                       | 28.98                              | 3                                  |
| PRT                                                   | 3,278                                  | 44,617                                    | 109,803                                         | 43.62                                          | 2                       | 24.85                              | 1                                  |
| SGP                                                   | 1,233                                  | 13,228                                    | 84,871                                          | 17.04                                          | 1                       | 26.38                              | 4                                  |
| SWE                                                   | 14,220                                 | 84,280                                    | 209,814                                         | 46.95                                          | 4                       | 28.98                              | 2                                  |
| USA                                                   | 418,135                                | 1,660,138                                 | 10,065,270                                      | 20.65                                          | 1                       | 27.61                              | 1                                  |
| ZAF                                                   | 255                                    | 7,085                                     | 114,174                                         | 6.43                                           | 1                       | 23.07                              | 3                                  |
| <i>Average</i>                                        | <i>40,326</i>                          | <i>215,779</i>                            | <i>1,036,939</i>                                | <i>35.47</i>                                   | <i>.</i>                | <i>27</i>                          | <i>2</i>                           |

This table presents the amount of local bonds held by foreign investors as of the end of 2001, gross domestic product in 2001, percentage of bonds over GDP, legal origin indicator, property rights index and creditor rights index for each of 47 sample countries. The property rights index is the sum of three indexes from La Porta et al (1998). Legal origin indicator "1" is English origin, "2" French, "3" German, and "4" Scandinavian. Each index ranges from zero to 10. Each index measures government corruption, the risk of expropriation by the government and the risk of the government repudiating contracts. High values of property rights indexes indicate better protection of property rights. The creditor rights index is the sum of four dummy variables, each of which measures "no automatic stay on assets", "secured creditors first", "restrictions for going into reorganization" and "current management does not stay in the reorganized firm". High values of creditor rights indicate better protection of creditor rights.

Table 4.2

**Summary statistics of variables**

## Panel A: summary statistics

| Variable              | N  | Mean   | Std dev | Minimum | Maximum |
|-----------------------|----|--------|---------|---------|---------|
| Short-term debts/GDP  | 47 | 2.33   | 3.37    | 0.04    | 12.25   |
| Long-term debts/GDP   | 47 | 18.56  | 20.61   | 0.15    | 97.68   |
| Property rights index | 47 | 22.68  | 5.33    | 12.94   | 29.96   |
| Creditor rights index | 45 | 2.00   | 1.00    | 1.00    | 4.00    |
| GDP per capital       | 47 | 15,053 | 13,686  | 332     | 48,160  |
| Inflation rate        | 46 | 5.90   | 12.52   | -3.97   | 64.87   |
| Growth rate of GDP    | 47 | 0.62   | 4.22    | -14.36  | 10.03   |
| Lending rate          | 43 | 14.32  | 14.41   | 2.16    | 64.02   |

## Panel B: correlations

|                           | (1)             | (2)             | (3)             | (4)             | (5)             | (6)             | (7)             | (8)  |
|---------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------|
| (1) Short-term debts/GDP  | 1.00            |                 |                 |                 |                 |                 |                 |      |
| (2) Long-term debts/GDP   | 0.72<br>(0.00)  | 1.00            |                 |                 |                 |                 |                 |      |
| (3) Property rights index | 0.65<br>(0.00)  | 0.61<br>(0.00)  | 1.00            |                 |                 |                 |                 |      |
| (4) Creditor rights index | -0.09<br>(0.55) | -0.22<br>(0.15) | -0.11<br>(0.46) | 1.00            |                 |                 |                 |      |
| (5) GDP per capita        | 0.52<br>(0.00)  | 0.53<br>(0.00)  | 0.90<br>(0.00)  | -0.18<br>(0.25) | 1.00            |                 |                 |      |
| (6) Inflation rate        | -0.24<br>(0.11) | -0.22<br>(0.14) | -0.38<br>(0.01) | 0.07<br>(0.66)  | -0.37<br>(0.01) | 1.00            |                 |      |
| (7) Growth rate of GDP    | 0.33<br>(0.02)  | 0.30<br>(0.04)  | 0.41<br>(0.00)  | 0.01<br>(0.96)  | 0.34<br>(0.02)  | -0.67<br>(0.00) | 1.00            |      |
| (8) Lending rate          | -0.40<br>(0.01) | -0.41<br>(0.01) | -0.62<br>(0.00) | 0.15<br>(0.34)  | -0.57<br>(0.00) | 0.79<br>(0.00)  | -0.72<br>(0.00) | 1.00 |

## 4.2 Baseline regressions

Table 4.3 presents results from regressions on the cross-country data. The dependent variable is the local bonds held by foreign investors scaled by the size of GDP in the sample countries.<sup>12</sup> We first look at the regression results reported in Column (1) of Table 4.3. The explanatory variables are the log of the lending rate level in the country and the log of per capita GNP. We also include the growth rate of GNP. The coefficient on the lending rate level is positive and that on the growth rate of GNP is also positive, but both of these coefficients are not significant at conventional levels. The coefficient on per capita GNP is positive and significant at the 1% significance level. This implies that richer countries attract more investment in local bond markets from abroad.

In Column (2) we examine whether the cross-country variation in the creditor rights index explains the variation in foreign bond investments. The coefficient on the creditor rights index is again not statistically significant. In the regression in Column (3), we drop the creditor rights index and replace it with the property rights index. The coefficient on the property rights index variable is positive and significant at the 1% level. The coefficient on the per capita GNP loses its significance, which indicates that the institutional variable is more important than the degree of economic development.

The positive relation between foreign bond investments and the strength of property rights protection supports the view that property rights protection allows more efficient contracting, and that foreign investors are willing to take part in countries where property rights protection is strong. Together with other variables, the property rights index explains about 38.5% of the variation in cross-country foreign bond investments. Notice also that the explanatory power significantly increases from the regression in Column (1) by 14.7 percentage points to 38.5%.

The fact that the creditor rights index does not explain the cross-country variation in foreign bond investments supports the argument that what matters to foreign investors is not the actual law that provides creditor rights protection, but, instead, how the law is enforced. The enforcement is a function of property rights protection. Demirgüç-Kunt and Maksimovic (1999) reach a similar conclusion. These authors argue that a direct statistical relation between the existence of creditor rights and financial contracts is not expected, because the “existence of rights may be necessary but not sufficient to make a financial contract enforceable.” In a different context, Esty (2002) finds that creditor rights and property rights affect foreign bank participation in project loan syndicates.

When both the property rights index and the creditor rights index variables are included together with the log of per capita GNP and the log of lending rates (in COLUMN (4)), only the property rights index variable is statistically significant.

Our results provide additional evidence in the literature underscoring the importance of property rights protection in the development of debt markets. Miller and Puthenpurackal (2002) examine the costs, wealth effects and determinants of international capital raising for a sample of 260 public debt issues made by non-US firms in the yankee bond market. They find that investors demand economically significant premiums on bonds issued by firms that are located in countries that do not protect investors’ rights and do not have a prior history of ongoing disclosure. Their results support the idea that better legal protections and more detailed information disclosure increases the price investors will pay for financial assets. Bae and Goyal (2003) examine how property rights affect private contracting in bank loan markets. They find that when property rights are weaker, banks offer less credit, charge higher spreads and lend only on a short-term basis.

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<sup>12</sup> We also scale the foreign investor-held bonds by the size of the bond markets in the sample countries. The results are similar.

Table 4.3

**Regression of bond holdings by foreign investors on  
property rights index and macroeconomic variables**

| Panel A. Short-term paper |                    |                    |                     |                     |
|---------------------------|--------------------|--------------------|---------------------|---------------------|
|                           | (1)                | (2)                | (3)                 | (4)                 |
| Constant                  | 0.414<br>(0.81)    | 0.503<br>(1.22)    | -9.607***<br>(3.14) | -9.541***<br>(3.33) |
| Lending rate              | 0.022<br>(0.04)    | 0.023<br>(0.05)    | 0.015<br>(0.04)     | 0.019<br>(0.04)     |
| Growth rate of GNP        | 0.179<br>(0.14)    | 0.188<br>(0.15)    | 0.081<br>(0.13)     | 0.096<br>(0.14)     |
| Per capita GNP            | 0.114<br>(0.03)    | 0.114***<br>(0.04) | -0.077<br>(0.06)    | -0.080<br>(0.06)    |
| Creditor right index      |                    | -0.048<br>(0.36)   |                     | -0.136<br>(0.32)    |
| Property rights index     |                    |                    | 0.573***<br>(0.17)  | 0.583***<br>(0.18)  |
| Observations              | 45                 | 43                 | 45                  | 43                  |
| Adjusted R-squared        | 0.238              | 0.200              | 0.385               | 0.356               |
| Panel B. Long-term bonds  |                    |                    |                     |                     |
|                           | (1)                | (2)                | (3)                 | (4)                 |
| Constant                  | 6.727<br>(4.98)    | 12.187<br>(7.32)   | -39.078*<br>(20.20) | -35.015*<br>(20.97) |
| Lending rate              | 0.137<br>(0.29)    | 0.154<br>(0.31)    | 0.104<br>(0.28)     | 0.137<br>(0.29)     |
| Growth rate of GNP        | 0.906<br>(0.86)    | 1.030<br>(0.94)    | 0.460<br>(0.84)     | 0.597<br>(0.90)     |
| Per capita GNP            | 0.728***<br>(0.21) | 0.686***<br>(0.22) | -0.145<br>(0.42)    | -0.227<br>(0.44)    |
| Creditor right index      |                    | -2.276<br>(2.15)   |                     | -2.689<br>(2.04)    |
| Property rights index     |                    |                    | 2.620***<br>(1.12)  | 2.741**<br>(1.15)   |
| Observations              | 45                 | 43                 | 45                  | 43                  |
| Adjusted R-squared        | 0.236              | 0.217              | 0.311               | 0.303               |

The table presents results from cross-sectional regression of bond holdings by foreign investors. The sample includes 45 countries. The dependent variable is the short/long-term bonds held by foreign investors as of the end of 2001 over GDP. Independent variables include the inflation rate and log of per capita GNP, property rights index, creditor rights index. Numbers in parentheses are standard errors. \*\*\*Significant at the 1% level. \*\*Significant at the 5% level. \*Significant at the 10% level.

While not reported, we also examine whether property right protection affects the trading activity of foreign investors in local bond markets. We compute the size of bond portfolio flows between the United States and each country in our sample. US investors represent a significant fraction of the portfolio capital flows. Furthermore, comparable data are not available from other countries. The monthly flow of portfolio capital between the United States and virtually every country in the world is made available online by the US Treasury Department starting with 1988 data.<sup>13</sup> We use the sum of inward and outward flows of US investors scaled by the market's GDP to proxy for the amount of bond portfolio activity crossing a particular country's borders in a particular month. The results show that we observe more active foreign trading activity in countries with strong property rights.

### 4.3 Robustness tests

This section presents results from sensitivity tests that examine whether there are other explanations for our results. A concern with cross-country analysis is that the regression may omit an important explanatory variable that is really driving the result and that is highly correlated with property rights protection. To rule out several alternative explanations, we have experimented with other plausible institutional and macroeconomic factors and examine if including them reduces the significance of the coefficient on the property rights index. In particular, we focus on the legal origin dummies, country risk and variables that measure the size and activity of debt and equity markets. These sensitivity tests rule out a large number of alternative explanations.

*Legal origin dummies:* La Porta et al (1998) show that the legal origin of a country's laws explains the degree of investor protection in that country. English common-law countries offer creditors stronger legal protection against managers. German civil-law countries are protective of secured creditors. Scandinavian civil-law countries are the best in law enforcement. The legal variables are from the La Porta et al (1998) dataset. While the results are not reported, none of the legal origin dummy variables is significant.

We also examine the effect that including only the French legal origin dummy has on the coefficient of the property rights index in the baseline regression. French civil-law countries are considered weak in investor protection. However, these unreported results show that the conclusions are not sensitive to the set of legal origin dummies included in the regression. The French legal origin dummy continues to remain insignificant while the property rights index remains positive and significant at the 1% level.

*GNP growth volatility:* To address concerns that per capita GNP or the lending rate level does not adequately capture country risk, we include GNP growth volatility as an additional measure of country risk. GNP growth volatility is estimated as the standard deviation of the annual growth rate in GNP. As one would predict, the coefficient on the GNP growth rate volatility is negative but not significant. The inclusion of GNP growth volatility does not change our main results on the property rights index.

*Size of stock market:* We examine the stock market capitalisation to GDP ratio, which equals the value of listed shares divided by the GDP and the stock market total value traded to GDP. Our results on the importance of the property rights index are robust to controlling for the importance of the stock market in the economy. In addition, our results are robust to the inclusion of variables that measure the size of the bond markets and the size of the primary equity markets.

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<sup>13</sup> The data were downloaded from [www.treas.gov/tic/country-longterm.html](http://www.treas.gov/tic/country-longterm.html), and are also available in the Treasury's monthly bulletin. Across our sample of emerging market countries, only Sri Lanka lacks data from this source.

Table 4.4

**Robustness tests**

| Panel A. Short-term paper |                      |                    |                     |                     |
|---------------------------|----------------------|--------------------|---------------------|---------------------|
|                           | (1)                  | (2)                | (3)                 | (4)                 |
| Constant                  | -11.176***<br>(3.90) | -8.055**<br>(3.56) | -9.662***<br>(3.22) | -14.606<br>(15.07)  |
| Lending rate              | 0.024<br>(0.04)      | 0.034<br>(0.05)    | 0.009<br>(0.04)     | 0.029<br>(0.05)     |
| Growth rate of GNP        | 0.133<br>(0.14)      | 0.098<br>(0.14)    | 0.102<br>(0.14)     | 0.109<br>(0.19)     |
| Per capita GNP            | 0.018<br>(0.08)      | -0.088<br>(0.07)   | -0.091<br>(0.07)    | -0.107<br>(0.08)    |
| Creditor right index      | 0.055<br>(0.37)      | -0.132<br>(0.32)   | -0.001<br>(0.32)    | -0.266<br>(0.46)    |
| Property rights index     | 0.477**<br>(0.19)    | 0.561***<br>(0.18) | 0.615***<br>(0.18)  | 0.687***<br>(0.31)  |
| English origin dummy      | 2.463<br>(1.77)      |                    |                     |                     |
| French civil origin dummy | 2.862<br>(1.82)      |                    |                     |                     |
| German civil origin dummy | -0.794<br>(1.84)     |                    |                     |                     |
| GNP growth volatility     |                      | -0.329<br>(0.29)   |                     |                     |
| Stock market cap/GDP      |                      |                    | -0.113*<br>(0.61)   |                     |
| Country credit rating     |                      |                    |                     | 0.717<br>(4.56)     |
| Observations              | 43                   | 43                 | 43                  | 36                  |
| Adjusted R-squared        | 0.390                | 0.361              | 0.396               | 0.285               |
| Panel B. Long-term bonds  |                      |                    |                     |                     |
|                           | (1)                  | (2)                | (3)                 | (4)                 |
| Constant                  | -60.172**<br>(23.67) | -21.426<br>(22.05) | -35.309*<br>(21.13) | -159.53*<br>(93.68) |
| Lending rate              | 0.057<br>(0.27)      | 0.270<br>(0.29)    | 0.113<br>(0.29)     | 0.139<br>(0.35)     |
| Growth rate of GNP        | 1.165<br>(0.86)      | 0.614<br>(0.88)    | 0.611<br>(0.91)     | 0.284<br>(1.20)     |
| Per capita GNP            | -0.067<br>(0.50)     | -0.300<br>(0.43)   | -0.254<br>(0.44)    | -0.410<br>(0.50)    |

Table 4.4 (cont)  
**Robustness tests**

| Panel B. Long-term bonds (cont) |                    |                   |                   |                   |
|---------------------------------|--------------------|-------------------|-------------------|-------------------|
|                                 | (1)                | (2)               | (3)               | (4)               |
| Creditor right index            | 0.642<br>(2.23)    | -2.518<br>(2.00)  | -2.359<br>(2.11)  | -1.847<br>(2.87)  |
| Property rights index           | 3.053***<br>(1.16) | 2.538**<br>(1.13) | 2.819**<br>(1.16) | 1.151<br>(1.96)   |
| English origin dummy            | -0.424<br>(10.65)  |                   |                   |                   |
| French civil origin dummy       | 19.163*<br>(11.02) |                   |                   |                   |
| German civil origin dummy       | -2.832<br>(11.19)  |                   |                   |                   |
| GNP growth volatility           |                    | -3.014*<br>(1.80) |                   |                   |
| Stock market cap/GDP            |                    |                   | -0.275<br>(0.40)  |                   |
| Country credit rating           |                    |                   |                   | 38.769<br>(28.36) |
| Observations                    | 43                 | 43                | 43                | 36                |
| Adjusted R-squared              | 0.391              | 0.335             | 0.293             | 0.206             |

The table presents results from an additional cross-sectional regression of bond holdings by foreign investors to test the robustness of results reported in Table 3. The sample includes 45 countries. The dependent variable is the short/long-term bonds held by foreign investors as of the end of 2001 over GDP. This table presents several additional country level regressions of country median loan spreads to test the robustness of results reported in Table 4.3. Independent variables include the lending rate and log of per capita GNP, property rights index, creditor rights index, legal tradition dummies, GNP growth volatility, stock market capitalisation over GDP and country credit rating. Numbers in parentheses are standard errors. \*\*\*Significant at the 1% level. \*\*Significant at the 5% level. \*Significant at the 10% level.

*Country credit rating:* We examine if our results survive when we include the country credit rating. We use Standard and Poor's Foreign Currency Sovereign Credit Rating as a proxy for country credit rating. While not reported, we also examine country credit rating scores obtained from IMD survey data as of 2001 and find similar results. The S&P ratings data are available for 40 countries. For our sample countries, the S&P ratings range from AAA to B- with a rank of one to 16. We convert these rank values to continuous variables. Intuitively, bonds of countries with better credit ratings are likely to be preferred by foreign investors and one would expect that this variable is positively related to our dependent variable. The results show that the property rights index is significant and positive in explaining both short-term and long-term bonds held by foreign investors even after controlling for credit rating. However, for long-term bonds, neither the property rights index nor the country credit rating is significant, perhaps due to strong correlation between these two variables.

*2002 data:* To examine if the results are robust across time, we reexamine the data in year 2002. The results are very similar to those using the data in year 2001.

These sensitivity tests show that our results concerning the relation between property rights protection and foreign bond investments are robust.

## 5. Summary and conclusions

This paper investigated how the protection of property rights affects foreign bond investments. Some countries provide stronger protection for private property rights than do other countries. The rights that lenders have are likely to be better enforced in countries with stronger protection of property rights. We asked if cross-country differences in property rights protection affect foreign bond holdings, after controlling for cross-country differences in macroeconomic variables including GNP per capita, lending rates and/or inflation rates and exchange rates.

Our findings suggest that differences in property rights protection translate into large differences in foreign bond investments. In countries that provide weak property rights protection, foreign investors make smaller investments.

These results imply that by improving property rights protection, a country or region can expect to attract foreign interest and participation in local or regional bond markets. To the extent that foreign investors play a vital role in providing liquidity, our evidence shows that improving property rights protection is a matter of prime importance.

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# Choice of currency by East Asia bond issuers

David G Fernandez and Simon Klassen

## Introduction

In discussing bond markets in Asia, academics and policymakers typically begin by noting that the Asian crisis of 1997-98 in part resulted from the underdevelopment of the region's domestic bond markets and the resultant currency and duration mismatches. When assessing the progress made in developing these markets in the post-crisis years, academics and policymakers usually observe that, while several domestic currency government bond markets have moved ahead, corporate bond markets have lagged (Asian Development Bank (2002), Reserve Bank of Australia (2003)). The policy conclusion is therefore often drawn: to prevent another Asian crisis, Asian bond markets must be further developed.

This paper has two objectives, one straightforward and factual, the other more speculative. First, we let the data on Asian bond issuance speak for themselves, finding that since 2000, primary issuance by Asian corporates in local currency has far eclipsed US dollar-denominated paper. We conclude that the post-crisis growth of the domestic currency corporate market is underappreciated (this section expands on points made in Fernandez and Klassen (2003)). We comb through the data on issuance to point out cross-country, cross-sector and duration differences, but the overall message is that corporate issuance, per se, has grown significantly. Second, looking forward, we argue that the problem of Asia's corporate bond market development will not be one of the supply of domestic currency obligations. Rather, it will have more to do with demand: demand side factors that lead to the contrast between a liquid US dollar bond market in Asia and the relatively illiquid local markets. The difference is a by-product of financial market globalisation generally and is one that has drawn investors in Asia towards structured products and away from "plain vanilla" local currency issues.

## About the data

The focus of this paper is on Asian corporate, financial and quasi-sovereign issuance data from BondWare, a database compiled by Dealogic, an independent data distributor. The data start in 1980 and cover an extensive range: 10,157 individual bond issues by a total of 2,388 issuers, for a total issuance amount of USD 667 billion. We look at the issuance patterns in 10 Asian economies excluding Japan - China, India, Indonesia, Hong Kong SAR, Korea, Malaysia, the Philippines, Singapore, Taiwan (China)<sup>1</sup> and Thailand - and focus on the data after 1998, when local currency issuance first started to capture the market's attention.

Restricting ourselves to this data source when looking at Asian corporate bond issuance introduces a bias into our analysis. One of the purposes of BondWare data is to permit the ranking of bookrunners (the lead underwriters controlling the distribution of paper) by amount

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<sup>1</sup> Hereinafter Taiwan.

or number of deals underwritten); indeed, the data are effectively provided by the bookrunners. For this reason, BondWare only captures those issues that the bookrunner wants to advertise. This means that small-sized bonds, reverse inquiries (investor-driven deals) under private placement and the like may be underrepresented in our sample. In addition, we suspect that BondWare's historical closeness to the US dollar market and developed markets generally skews its coverage away from local currency bond markets. This sounds like a serious problem, but in fact this is a bias that serves our purpose well.

We are interested in documenting the current development of the region's local currency corporate debt market. Issuance that goes unadvertised, is placed directly in a limited number of hands, and hence is hidden from the BondWare database is likely similarly to be hidden from the wider investor base. The bonds captured in BondWare therefore represent the state of internationalised corporate bond issuance - the ideal case.

For comparable data on government issuance, we use our own data compilation, based on the respective national treasuries. Issuance that is the direct result of sterilisation of central bank purchases of foreign exchange is excluded (though McCauley (2003) makes interesting points about the potential synergies between the two markets).

## Government issuance has led the way for local bond market development

Issuance of local currency government bonds has grown substantially since the Asian crisis (Klassen (2004)). Taking two snapshots of issuance, one in 1999 and one in 2003, shows that government issuance has grown roughly 40% over that period (Table 1). The amount of renminbi-denominated bonds issued by the Chinese government remains the largest in non-Japan Asia, but considerable increases in issuance have come out of other economies that have run substantial fiscal deficits, such as Malaysia, the Philippines, India and Taiwan. Korean issuance to refinance financial sector restructuring and for other needs has also risen.

Table 1  
**Government gross bond issuance**  
 In billions of US dollars

| Country       | Local 2003   | Local 1999   | USD 2003   | USD 1999   |
|---------------|--------------|--------------|------------|------------|
| China         | 45.5         | 48.6         | 1.0        | –          |
| Hong Kong SAR | 1.7          | 0.8          | –          | –          |
| India         | 31.1         | 19.6         | –          | –          |
| Indonesia     | 1.4          | –            | –          | –          |
| Korea         | 28.8         | 15.8         | 1.0        | –          |
| Malaysia      | 12.6         | 3.7          | –          | 1.0        |
| Philippines   | 17.0         | 1.5          | 2.7        | 3.7        |
| Singapore     | 4.9          | 3.7          | –          | –          |
| Taiwan, China | 13.3         | 8.8          | –          | –          |
| Thailand      | 1.4          | 10.7         | –          | –          |
| <b>Total</b>  | <b>157.7</b> | <b>113.2</b> | <b>4.7</b> | <b>4.7</b> |

Source: National data compiled by JPMorgan Chase.

These snapshots of government issuance also show that sovereign funding done in US dollars has risen. With the exception of the Philippines (which in certain years, such as 1999, actually issued more in dollars than it did in pesos), the Asian sovereign financing mix is very skewed towards local currency bonds. Sovereign dollar issuance from China and Korea in 2003 was clearly for benchmarking and profile purposes.

So, not only have local currency government bond markets grown in size over the past several years, but sovereigns in Asia have displayed a clear preference for local currency over US dollar funding. The mix between local and foreign funding by sovereigns in Asia over the period 1998 to 2003 can be seen in Graph 1. First, there is a group of governments that issue exclusively in local currency (Hong Kong, India, Singapore and Taiwan) and another group that does so almost exclusively (China, Indonesia and Thailand). In the middle are Korea and Malaysia, whose government issuance is still skewed towards local funding, but who tend to have a more balanced mix. And, finally, there is the Philippines exception, which was referred to above. Finally, we take note of the maturity of government issuance, because it will be echoed in the next section on corporate issuance. For governments and quasi-government entities that issue in both local and foreign currency, their issuance in US dollars tends to be further along the yield curve, especially in the Philippines and Malaysia. In the case of Thailand, dollar funding, like baht funding, tends to be of short maturity.

Among the various other characteristics necessary to make government bond markets effective is liquidity. McCauley and Remolona (2000) show that, with respect to government bond markets, larger size tends to lead to more trading and greater liquidity. When it comes to the Asian government bond markets, it seems fair to conclude that size itself is not the limiting factor in market development.

## **Size matters and Asia has it: domestic corporate bond markets have grown considerably**

Before the Asian crisis, the words “liquid” and “internationalised” could not have been used to describe any of the corporate, local currency debt markets in non-Japan Asia. The BondWare data (recalling the biases cited earlier) show that in 1998 corporations in Asia excluding Japan issued a paltry USD 222 million-equivalent of local currency bonds (Graph 2, with amounts converted at prevailing exchange rates). What is effectively a zero line for corporate, local currency issuance across the region continued through the 1997-98 regional crisis. On the other hand, the same graph shows that there was some foreign currency issuance before the crisis, though it largely came from one entity: the Singapore-headquartered Asia Pulp and Paper. By the end of 1998, total US dollar corporate issuance out of the region stood at USD 8.8 billion.

Another way to think about this very skewed currency composition of debt issuance is that local currency bonds made up less than 2% of total corporate issuance before the Asian crisis and a mere 6% during the crisis period. So, the problem of Asia’s corporate, local currency bond markets before the regional financial crisis could not have been more basic - they almost did not exist but for a few examples in Hong Kong SAR, Singapore and possibly Korea. The obvious first step towards creating markets that could ameliorate the double mismatch of currency and duration was for the domestic, corporate bond markets to grow from their paltry size.

Looking at the data, it is immediately apparent that the growth in the size and the shift in the composition of Asia’s corporate bond markets has been even more striking than those of Asia’s government bond markets. Since the Asian crisis, local currency bond issuance by corporations has soared: Graph 2 shows that, by 1999, corporate issuance in local currency surpassed that in US dollars, and since then the race has not been a contest. Total local currency bond issuance in non-Japan Asia was over 10 times higher in 2000 than it was just

two years earlier. This is not to say that US dollar debt issuance from corporations has stood still since the crisis. Indeed, this asset class has expanded to such an extent that dedicated indices, such as the JPMorgan Asia Credit Index (JACI), have been developed as benchmarks for the investor base. Nevertheless, the growth story since the crisis is clearly in the local corporate bond markets, with over 70% of bonds in non-Japan Asia issued in domestic currencies since 1998 - a vast improvement from the single digit percentages cited earlier (Graph 3).

## **Corporate issuance tends to mirror sovereign's currency choices**

Just as we have seen in the case of Asian governments, Asian corporations vary in their choice of currency mix across economies. Like governments, Asia corporations in most of the 10 economies show a clear preference for issuing in their own currencies. Indeed, there is a striking similarity between government and corporate behaviour: the currency choice by corporations tends to closely mirror that of their respective sovereigns (Graph 4).

For Thailand, Taiwan (China), India, Korea, Malaysia and the Philippines, the choice of currency for bond issuance by sovereigns and corporations is very similar. At one extreme, Thai and Taiwanese firms effectively issue all of their debt in local currency (just like their sovereigns), while at the other extreme, Philippine firms raise most of their funding from the US dollar market (just like their sovereign).

The exceptions are worth noting. Clearly, in the cases of Hong Kong and Singapore, the local multinational firms have a natural need for some US dollar funding. In addition, the fixed exchange rate policies of Hong Kong and Malaysia, and to a lesser extent Singapore, create a natural tendency for firms to rely on US dollar financing. We would also recognise the biases of the BondWare data in the case of China, where corporate funding in renminbi may be a higher proportion than that shown if many issues occur "under the radar" in the sense that they are placed with local banks and are not accessible to investors generally. In addition, until recently, tax incentives actually encouraged Chinese issuers to borrow in US dollars. Finally, for Indonesia, note that the numbers in dollar terms are very small and that government issuance in local currencies has only just resumed, while small dollar issuance by corporations became possible only in 2002.

This post-crisis transition to a preference for local currency funding by Asian corporations also varies across countries. To highlight the variation, Graphs 5 and 6 display the dollar amounts of domestic and foreign currency issuance by firms from Thailand and Singapore, respectively, from 1994 to 2003. In the case of Thailand, the switch was dramatic. Pre-crisis, the exchange rate stability, the interest rate premium on baht and other factors led Thai corporations to fund themselves in US dollars. That funding source evaporated during the crisis and since then almost all issuance has been in local currency, including substantial amounts issued to repay foreign currency-denominated debts. In the case of Singapore, the transition by firms was much more gradual and the outcome more balanced. Nevertheless, the pattern of increasing amounts of issuance in local currency is also apparent.

## **Other characteristics of Asian corporate local bond issuance: maturity, size, sectors**

Along with overall market size, there are a host of other characteristics that are associated with a well functioning corporate bond market: issuance across the yield curve, large individual issuance size, and issuance from a variety of sectors, to name a few. We take a last look at the BondWare data on Asian corporations and highlight these patterns. While the

amount of local currency issuance has clearly grown in many Asian countries, there are other dimensions in which this supply could still develop.

*Maturity:* Graph 7 shows that the maturity of local currency corporate issuance is similar to that seen in government bonds. That is, corporate issuance in local currency is heavily skewed to the very short end. For issuance above five years, foreign currency bonds are favoured over local bonds.

*Size:* Graph 8 shows that, in general, issuance in local currency tends to be done in smaller sized bonds. On average, issue size for local currency issuance is less than half that for foreign currency issuance. It should be noted that, over time, especially in the past two years, that size gap is narrowing.

*Sector:* Graphs 9 and 10 show that, in both local and foreign currency bond markets, issuance from financials dominates.

## **Prospects for the issuance of Asian local currency corporate bonds are bright**

So, the overall message regarding the supply of local currency corporate bonds in Asia is that the situation today is already very positive. Governments had taken the lead after the Asian crisis and corporates have followed.

And the future of corporate bond supply looks even brighter. Simply looking at scheduled redemptions (Graph 11), reflecting the short-dated characteristic of local bonds pointed out above, there is more issuance in the pipeline. Once the stock of debt has been built up, as it has over the past several years, issuance tends to be perpetuated: supply begets more supply.

## **Thoughts about the demand side of the market**

In closing, we turn our thoughts to the much-neglected demand side of the equation with respect to Asian corporate bond market development. In our view, the benefits of this fast-growing local currency bond market that we have documented have not been spread evenly. Much attention has rightly been paid to the importance of building a primary bond market for Asia's corporate issuers. But let us spare a moment to think about investors' needs. Indeed, even though significant progress has been made on the supply front over the past several years, the constraint on developing Asian secondary bond markets looks likely to come from issues on the demand side.

In general, the relationship between issuer and investors is not necessarily a zero-sum game. True, for each issue, a lower coupon benefits the issuer at the direct expense of the investor, but lower debt service costs for a firm reduce the likelihood of default, which benefits both. There is also a virtuous cycle in which the lower cost of capital reduces inflation pressures; lower inflation reduces financial volatility; lower volatility is rewarded through lower borrowing costs. Many of these factors have been at work in Asia.

Another area of obvious benefit for both lenders and borrowers is the development of secondary market liquidity. Investors benefit from the flexibility of being able to transfer risk before maturity - they are prepared to pay a premium for this which then lowers the interest costs for issuers. However, a different kind of liquidity - the excess deposit liquidity in the Asian banking sector - already benefits issuers and, as such, the lack of secondary market liquidity is primarily disadvantaging investors. Indeed, the clearest benefits for issuers have come from more traditional demand side pressures: viz the excess liquidity in the region's

banks (Graph 12). Comparing this increase in excess liquidity with the growth in issuance, it can be seen that issuers have benefited through the increased demand.

The result has been a shrinking of credit spreads on Asian dollar bonds (Graph 13). While the exact determinants of this spread tightening are difficult to pin down, we would certainly attach significant importance to the excess liquidity in the banking sector that has prompted the so-called “Asian bid”. Whatever the causes, lower spreads have reduced the opportunity for investors to earn yield by taking credit exposure.

Ideally, this imbalance should be corrected as new issuers enter the market and widen spreads. But the low yields have not enticed enough new entrants. One reason is that the universe of issuers in Asia is very narrow and issuers lack diversity. Additionally, low bond yields have also had to compete with another form of capital-raising - equity financing. With a high demand for global diversity in equity portfolios and the low actual supply, Asian equities are arguably even more mispriced than credit spreads. Accordingly, firms find equity issuance more attractive than bond issuance.

Investors, recognising the supply imbalance, have instead shifted the focus of their demand away from “plain vanilla” corporate issuance. As an alternative, investors have set their sights on structured products. Effectively, investors do not believe that current yields adequately compensate them for taking the credit risk entailed in buying corporate bonds and accepting the lack of secondary market liquidity. Instead, structured products which offer principal protection and leverage market risk (either yield curve shape or volatility), are perceived to offer a higher yield for the same liquidity constraints. In essence, structured products work through taking leveraged bets on observable market prices.

Examples of structured products offered to Asian investors are now numerous:

- Convertible bonds: these pay coupons like a regular bond but the principal is redeemed in equity subject to the performance of the stock and at the discretion of the issuer.
- Cover call selling: the investor buys a standard bond but sells potential upside to lock in a higher up-front yield.
- “Quanto” structures: the principal is issued and redeemed in one currency but the coupon is indexed off another, higher-yielding, currency yield curve.
- Range accrual notes: these pay twice the current market coupon if an observable market interest rate stays between two agreed levels, but half the coupon if the interest rate moves outside the agreed range.
- Target redemption notes: these guarantee principal protection and a higher than market yield but the redemption date is not fixed at issuance.
- Collateralised debt obligations: these tier both the returns and the risks of standard bonds into low-risk and low-return tranches, on the one hand, and high-return, high-risk tranches on the other, and may use derivative products to tailor characteristics to demand.

A common trait across all of these products is that, so long as the investor holds it to maturity, the principal is protected. Of course, this is the same as with a standard bond, barring default. In contrast to the credit risk of direct lending to corporations, however, with market-linked structures the investor limits credit exposure to the default risk of the issuing or arranging banks and even this risk is sometimes reduced by a special-purpose vehicle that segregates the original capital. These products’ returns can also be guaranteed in the currency of the investor, meaning the risk of the currency mismatch between investor and issuer is borne by the arranger or passed onto the market. And, although structured products are often thought of as complex and confusing, they are indexed off tradable market prices,

and so could be considered more transparent than the domestic credit market, with its lack of market standards and, by global standards, poor disclosure.

At this point it is worth discussing whether Asia is any worse off in the current situation: issuers fund cheaply in the credit market, investors in structured products have their principal protected and earn their target yield. The benefits of structured products are clear, they are tailored to meet both sides' cash flow requirements subject to their return and risk profiles. Structured products can be designed to embody yield curve risk, option risk or direct credit risk, alone or in combination. Although the risks are more complex, they are not necessarily higher than the naked credit exposure of owning corporate paper.

Tellingly, just as the demand for corporate bonds pushed down credit spreads, buying of structured products has flattened yield curves and lowered the premiums on financial options, so the attraction of earning income through structured products is waning compared with owning simple credit. Another concern is that, although we argued that credit spreads are too tight and do not compensate for the illiquidity (cost of transferring the risk to someone before maturity), structured products are even less liquid. A holder of a publicly tradable corporate bond can sell it to any other investor in the market. Due to the customised nature of structured products, the buyer's recourse is to the original arranger, so the cost of unwinding is much more than even the wide bid-offer spread on Asia corporate paper.

The other side of structured product buying is structured issuance. Similar to the zero-sum nature of setting a coupon for issuer and investor, a structured product issuer is taking the risks of intermediating between wholesale markets and buyers trying to achieve higher returns. However, taking advantage of this potentially much cheaper funding alternative requires from the issuer an appetite for risk and the sophistication to manage the yield curve, option or credit risks.<sup>2</sup>

And here is the kicker: regardless of what the threshold requirements of sophistication for issuers to participate in this market might be, at the moment fully understanding structured products appears beyond the scope of most Asian financial institutions. To date, only a handful, helped by foreign banks, have issued structured products. So, it is fair to say, structured products currently sold to Asian investors almost entirely benefit issuers headquartered outside Asia. This is obviously not the ideal case, and brings us back to the original problem of Asian savings exiting the region and Asian issuers being disadvantaged.

An obvious solution to this might be to encourage the region's institutions to issue their own structured products. Indeed, foreign expertise has already transferred pricing skills to the region's banks, which have then used their networks to market structured products to their customers. But for all the merits of structured products, they do not represent the ideal solution. They are designed to be customised for counterparties, not commoditised for liquidity. Straight bonds are still needed for corporate benchmarking - as a derivative, some structured products are meant to derive their value from the very cash bonds that they are currently replacing.

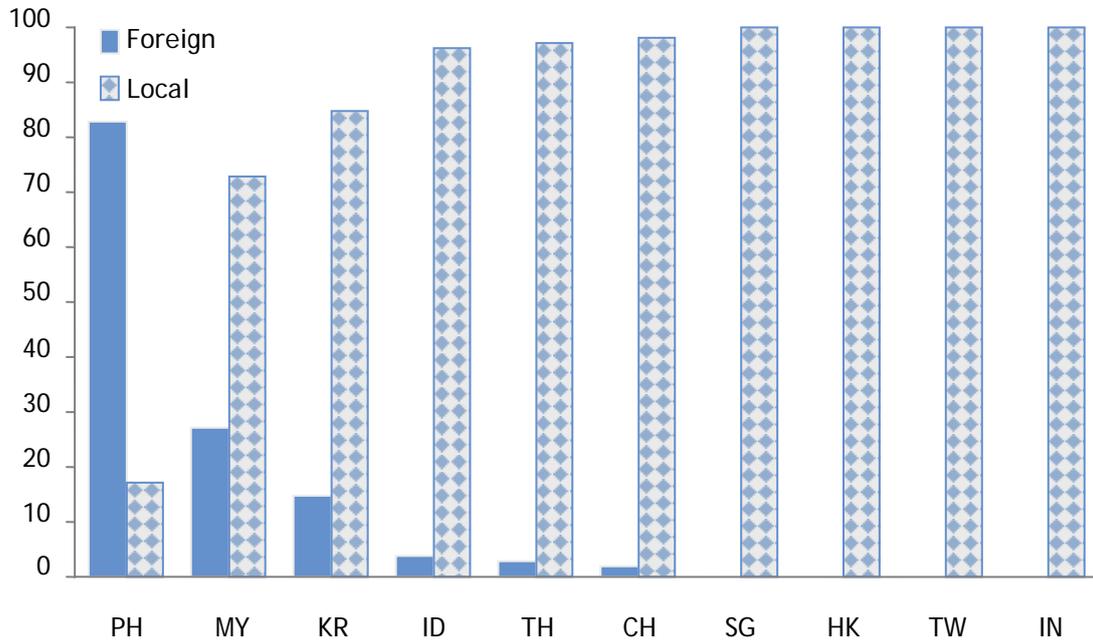
So, indeed, Asia corporate bond markets have come a long way. The primary market is now liquid and deep enough to cover most of the needs of the current issuer base. But imbalances, especially the excess liquidity in the banking sector, have benefited issuers, the supply side of the equation. In the future, the market's success for issuers may be constrained by the costs to investors. Investors, seeking alternatives to raise yields, are increasingly turning away from standard corporate fixed income instruments and towards investments such as structured products. Clearly this is not ideal as, collectively, the myriad

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<sup>2</sup> Although arguably, given the zero-sum nature of derivatives, the same level of sophistication should be required for the Asian buyers of structural products.

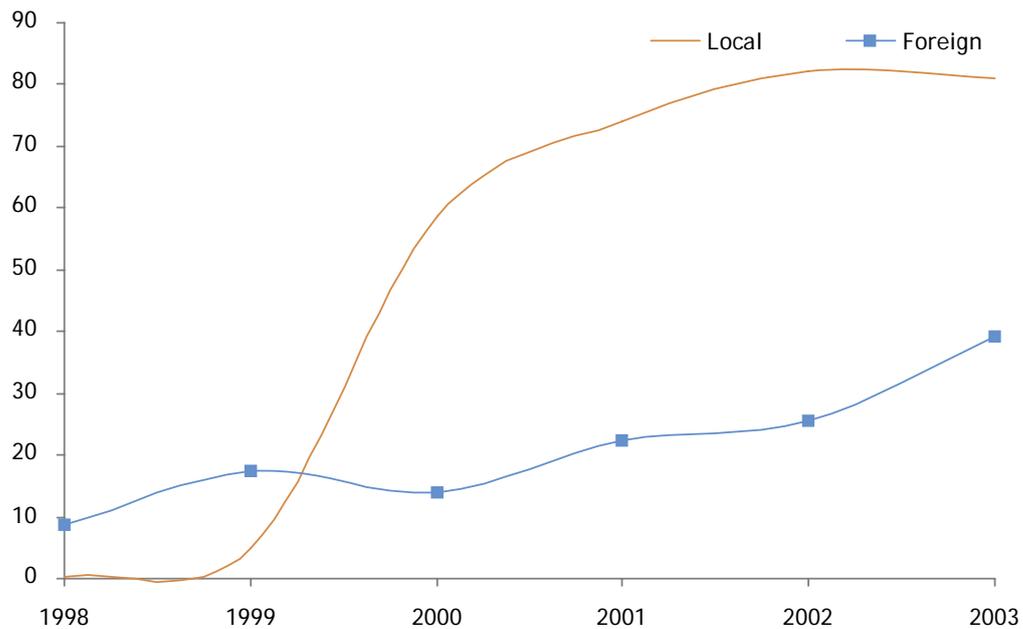
risks involved are more complex than simple credit risks, and at the margin the benefits accrue to the structured product arrangers at the expense of both issuers and investors. Efforts are needed to restore the balance between supply and demand in Asia's corporate bond markets, primarily now helping investors though increasing the diversity and scope of issuer alternatives.

Chart 1  
**Currency mix of government bonds**  
 Per cent of total, 1998-2003



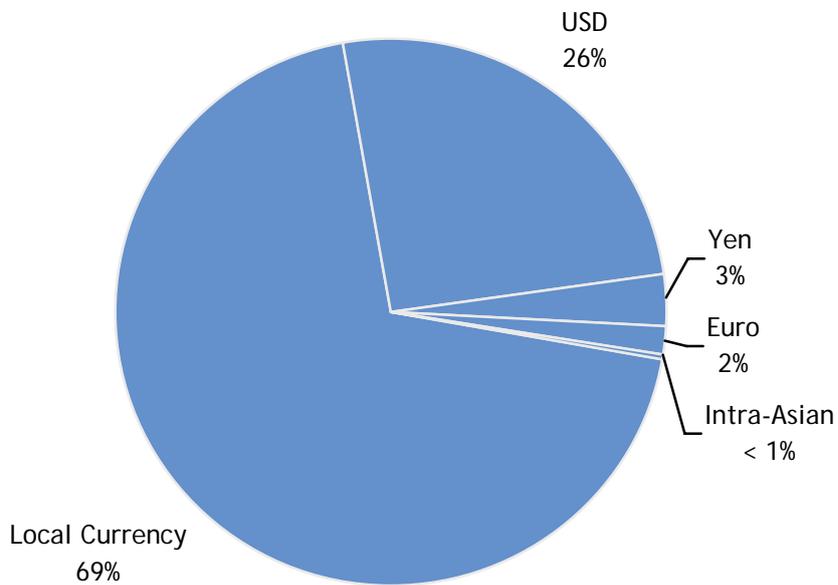
Source: BondWare, December 2003.

Chart 2  
**Currency mix of corporate bonds**  
 USD billions



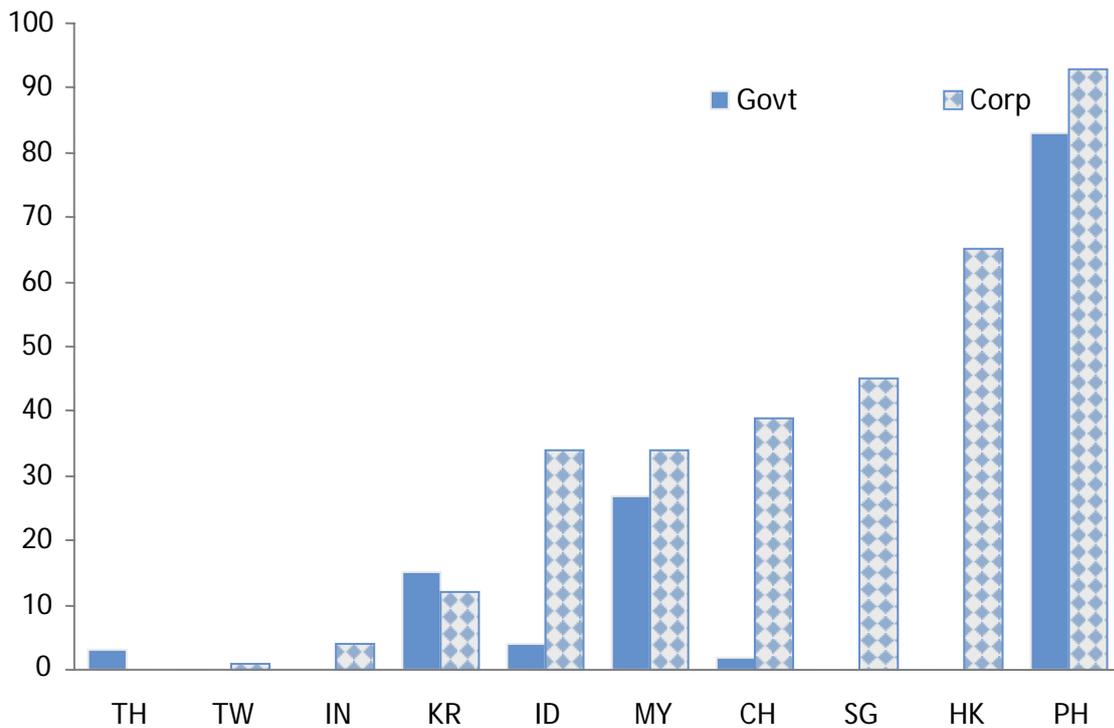
Source: BondWare, December 2003.

Chart 3  
**Asian corporate issuance by currency**  
 Per cent, 1998-2003



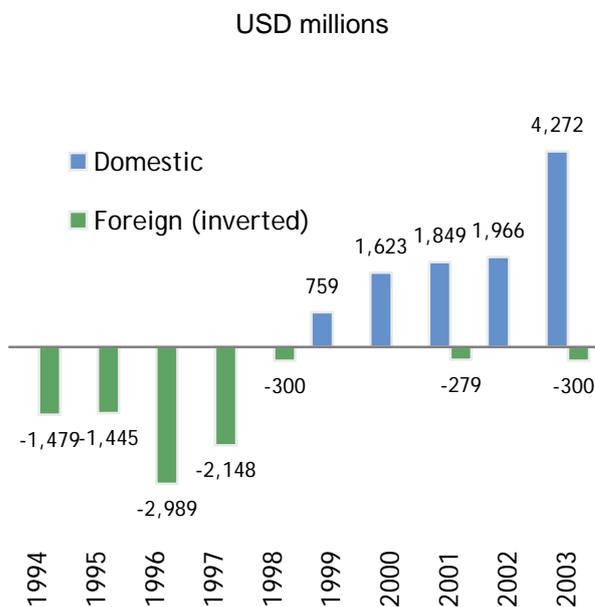
Source: BondWare, December 2003.

Chart 4  
**Foreign currency mix of government and corporate bonds**  
 Per cent of total, 1998-2003



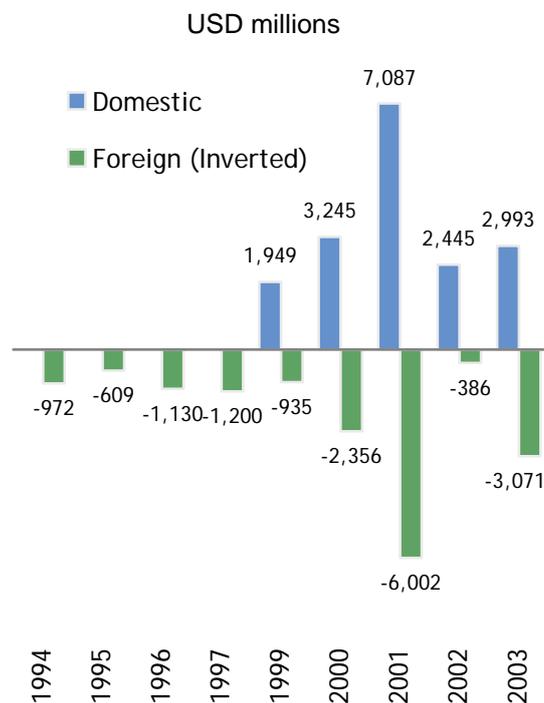
Source: BondWare, December 2003.

**Chart 5**  
**Thailand's switch to local financing**  
**was dramatic ...**



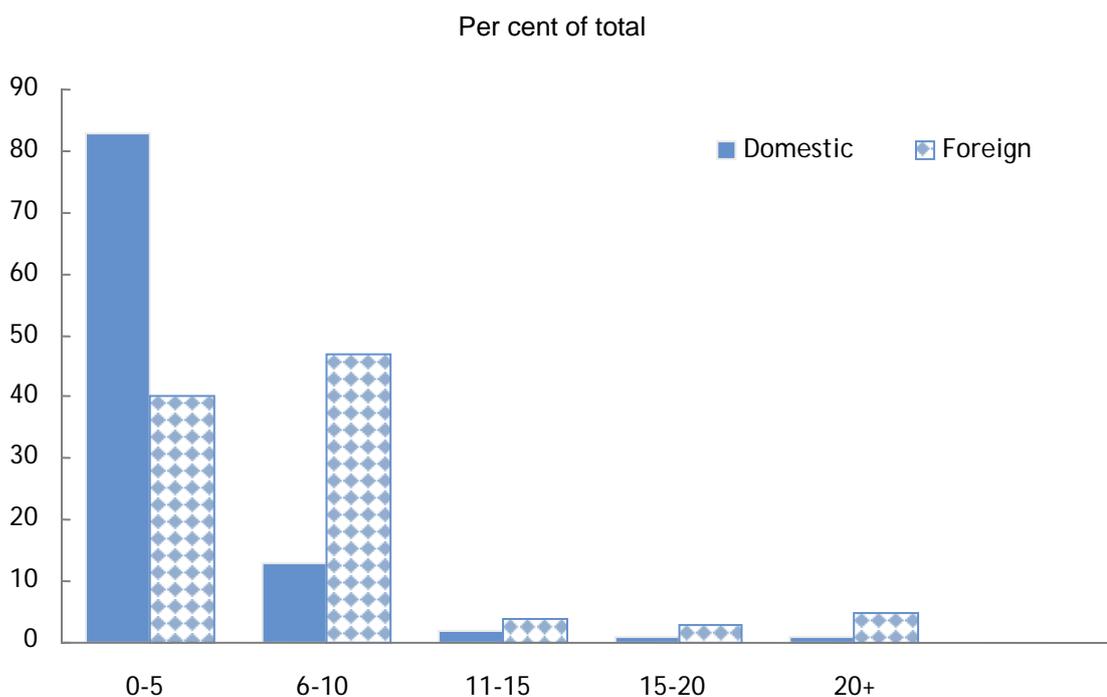
Source: BondWare, December 2003.

**Chart 6**  
**... while Singapore's was**  
**more balanced**



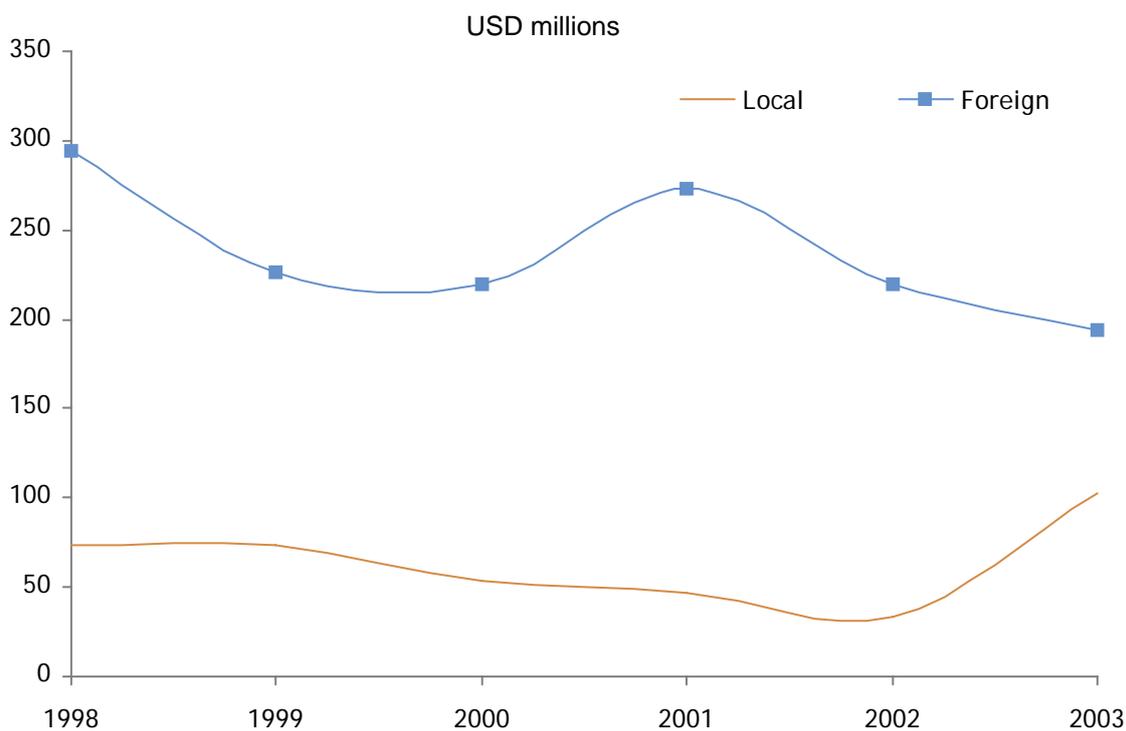
Source: BondWare, December 2003.

**Chart 7**  
**Maturity structure of corporate bonds**



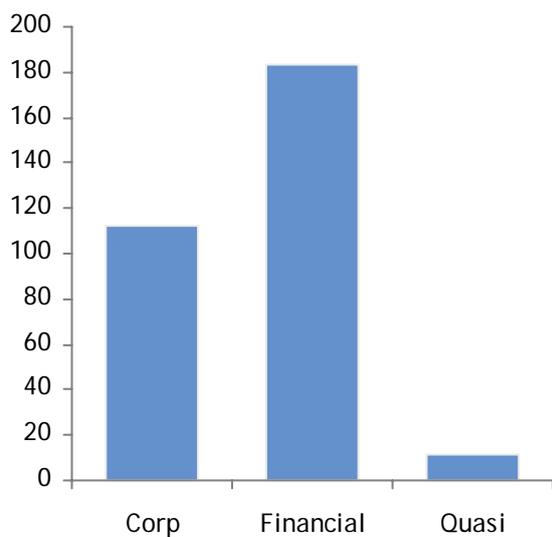
Source: BondWare, December 2003.

**Chart 8**  
**Average issue size**



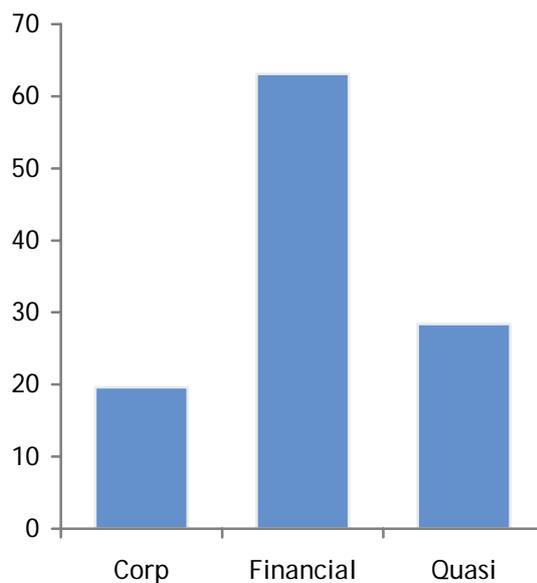
Source: BondWare, December 2003.

**Chart 9**  
**Local currency issuance**  
USD billions, 1998-2003



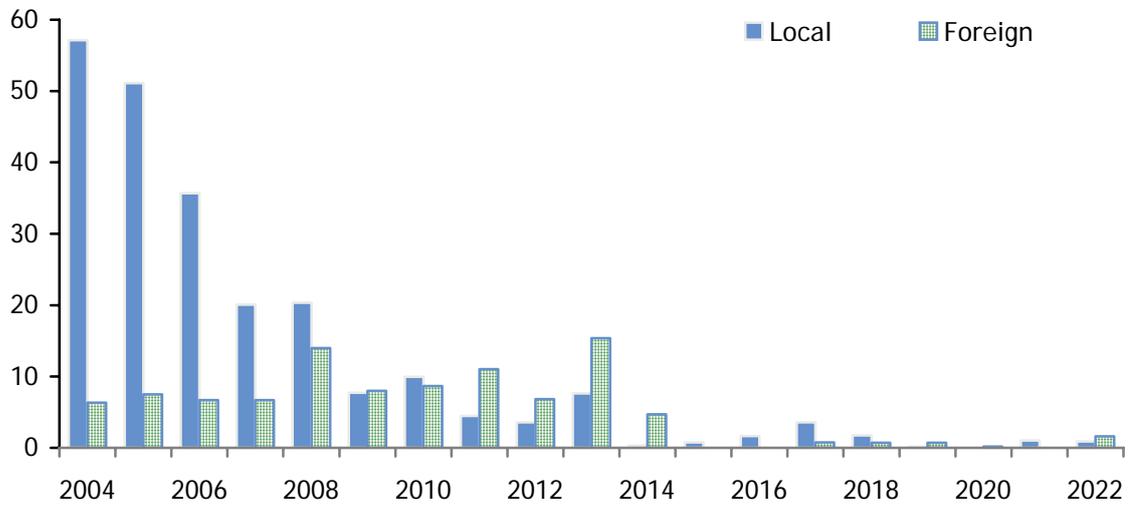
Source: BondWare, December 2003.

**Chart 10**  
**Foreign issuance**  
USD billions, 1998-2003



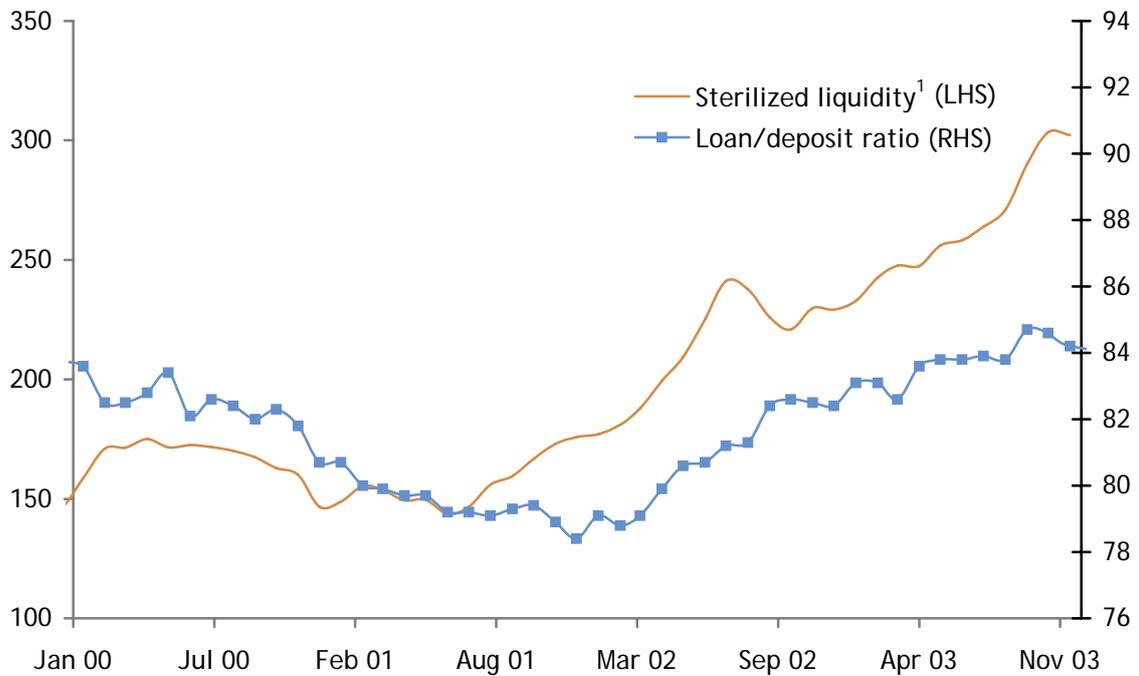
Source: BondWare, December 2003.

Chart 11  
**Redemption schedule**  
 USD billions



Source: BondWare, December 2003.

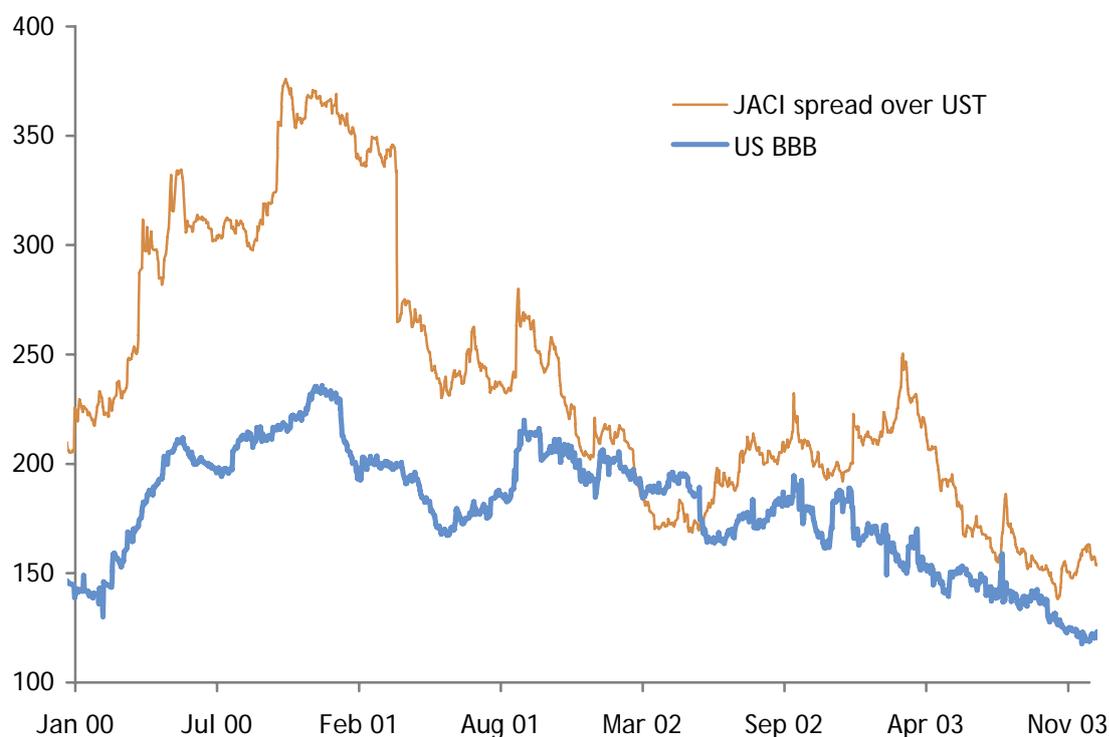
Chart 12  
**Measures of excess liquidity**  
 USD billions/per cent



<sup>1</sup> Combined size of Asian central bank issuance to mop up excess liquidity.

Source: BondWare, December 2003.

Chart 13  
**Credit spreads**  
Basis points



Source: BondWare, December 2003.

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# Asian bond issues in Tokyo: history, structure and prospects

Fumiaki Nishi and Alexander Vergus

## Overview of Tokyo's capital market

This paper outlines the contribution made by the Japanese capital market to international and in particular Asian bond finance. Drawing on one of the major global pools of savings, the Japanese capital market has provided funding opportunities, both in debt and equity, for international entities including sovereigns, government agencies, corporations and other financing vehicles.

During the last several decades, Japanese money has played an important role in the international capital markets. For example, during the 1980s, the movement of Japanese money exerted crucial influence over the performance of US Treasuries, and all market participants carefully monitored Japanese investors' policy. In the area of primary markets, Japanese securities firms monopolised the top positions in international bond underwriting league tables for a considerable time.

However, with the burst of the bubble economy in the early 1990s, the relative importance of Japanese money and capital markets started to decline. Japanese money retreated home, where domestic government debt issuance increased dramatically in the 1990s. As a result, the share of the yen has also been declining in international bond issuance. At the peak, yen-denominated bonds accounted for about 17% of total international bond issuance, but decreased to less than 2% last year.

However, Japan still has a huge capital market with abundant investor liquidity, so that with right products capturing market trends there should be ample opportunities to mobilise Japanese money for international financing. An example is the recent shift of investor preferences from credit/spread instruments to foreign currencies and equity risk, following the credit events of late 1990s.

## Brief historical background

During late 1960s, Japanese foreign currency reserves started to grow and pressure to open up the market and revalue the yen began to intensify. The exchange rate of the yen at that time was fixed at 360 yen per US dollar. It was revalued to 308 yen in 1971 and moved to a floating rate system in February 1973.

In order to divert the foreign exchange pressure, the Japanese government set out around that time to open the Japanese capital market to foreign entities, allowing them to issue yen-denominated bonds.

Japanese foreign currency denominated bond investment started at the same time. In 1970 the first "Samurai" - a yen-denominated bond publicly offered by an international borrower in the domestic market - was issued by the Asian Development Bank.

Development of the Samurai market was followed by liberalisation of euroyen issuance, with the first euroyen bond issue made by the European Investment Bank in 1977. Both developments were aimed at reducing pressure for appreciation of the yen as well as at liberalising the Japanese capital market. However, both the Samurai and the euroyen market

started off under strict government control and there were detailed guidelines on issuer eligibility, bond structure and issuance amounts.

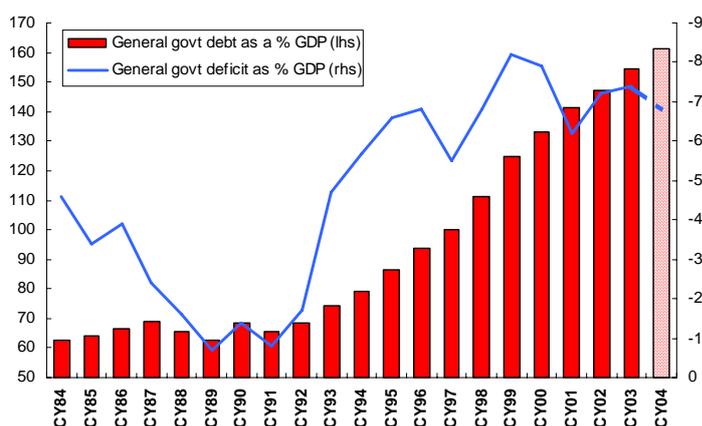
Such controls were gradually eased, attracting a wider range of market participants, and eventually leading to full liberalisation of both markets.

The next section is devoted to the current Japanese bond market and its development, focusing on how Asian and other foreign entities have been using the Japanese market through Samurai and Euroyen bond issuance.

## Japan's domestic bond market

In the present-day Japanese bond market, government debt accounts for the lion's share both in terms of primary issuance and secondary turnover. As can be seen from Chart 1, government bond issuance started to surge in the mid-1980s as fiscal policy was deployed in order to stimulate the economy, reaching nearly 80% of all bond issuance in 2003.

Chart 1  
Public debt and deficit levels since 1984



Note: 2004 data are estimated.

Source: Ministry of Finance, Japan.

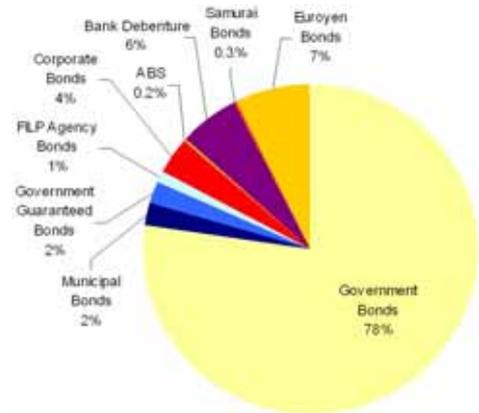
In particular, after the bubble burst at the beginning of the 1990s, Japan government bond issuance accelerated, reaching an estimated 36.4 trillion yen of new bond issuance in FY2003 and bringing the outstanding volume to approximately 500 trillion yen, or an estimated 140% of GDP, at the end of FY2003.

Development of the corporate bond market in Japan has been a slow process, due mainly to the strong influence of commercial banks interested in preserving the importance of lending as the main channel for corporate financing. However, during the last decade, with banks weakened by non-performing loans, corporate bond issuance has been increasing.

For a number of reasons related to events in Japan and internationally, the bulk of the international yen bond market is currently taken by euroyen issuance, with the Samurai market carving out only a very small share, as can be seen in the breakdown of new issuance presented in Chart 2 below.

Chart 2  
**FY2002 bond issuance by instrument**

|                             | Amount       |                |
|-----------------------------|--------------|----------------|
|                             | JPY tm       | US\$ bn        |
| Government Bonds            | 156.7        | 1,424.5        |
| Municipal Bonds             | 4.7          | 42.7           |
| Government Guaranteed Bonds | 4.4          | 40.0           |
| FILP Agency Bonds           | 2.5          | 22.7           |
| Corporate Bonds             | 7.3          | 66.4           |
| ABS                         | 0.5          | 4.5            |
| Bank Debenture              | 12.0         | 109.1          |
| Samurai Bonds               | 0.6          | 5.5            |
| Euroyen Bonds               | 14.4         | 130.9          |
| <b>Total</b>                | <b>203.1</b> | <b>1,846.4</b> |

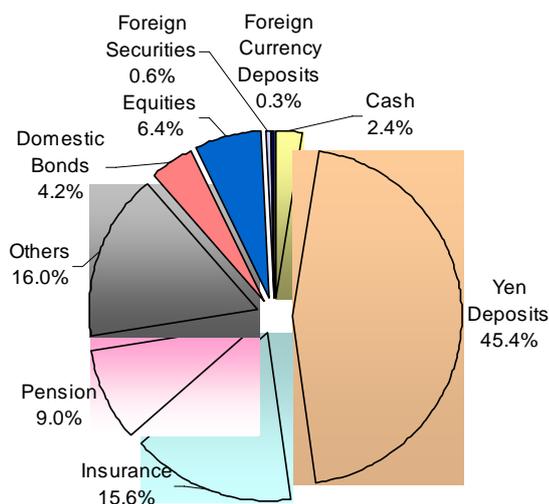


Source: Bank of Japan.

The rather conservative Japanese individual investor portfolio constrains the development of Japan's bond market. Household financial assets numbering 1,400 trillion yen (US\$ 13 trillion) are for the most part held in cash and bank deposits, complemented by significant insurance and pension policy claims, leaving only a relatively small portion of the market for direct securities purchases by Japanese households (Chart 3).

Chart 3  
**Japanese household financial assets, breakdown and investment channels**

As of end-September 2003



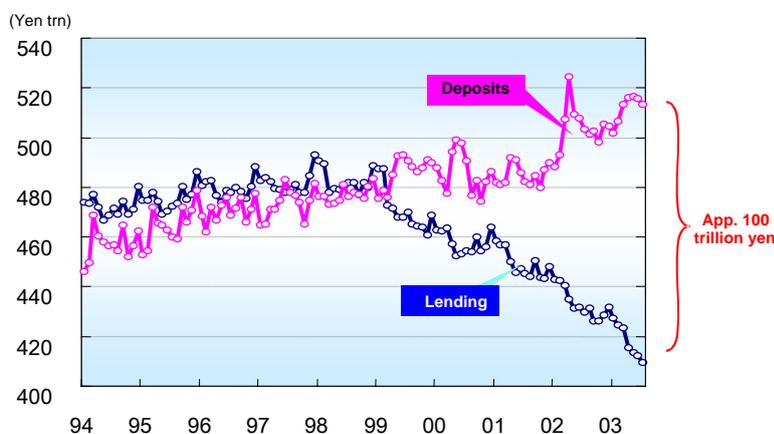
Source: Bank of Japan.

At present, current deposits enjoy unlimited government guarantees in case of bank failure; however, the introduction of a ceiling on such guarantees (10 million yen per depositor per bank), ie the so-called pay-off system, is planned to take effect in April 2005, and is expected to cause significant movement of retail money out of deposits into other financial instruments.

Therefore, current major investors in the Japanese capital market are the banking and insurance sectors, against the backdrop of risk-averse household saving behaviour. Banks and insurers had traditionally channelled funds to the ever-expanding corporate sector; however, slowing economic growth in the mid-1980s created industrial overcapacity and the consequent shrinking of domestic demand for loans. Excessive property investments followed, creating Japan's notorious bubble economy of the second half of the 1980s. The burst of the bubble in 1989-1990 has left a legacy of bad loans and huge loss of savings value, the consequences of which Japan is still dealing with.

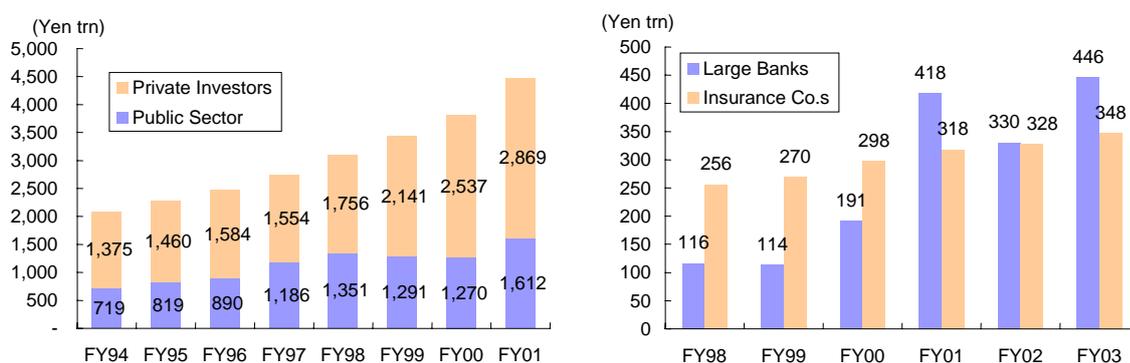
As can be seen in Chart 4, as a result of these trends, Japanese banks had to cope with a continuously widening gap between liabilities (deposits) and assets (lending), causing them to dramatically increase their bond holdings. To a lesser extent, the same applied to the insurance sector. Recent bond holding trends by major investors are shown in Chart 5 below.

Chart 4  
Asset-liability mismatch of the banking system



Source: Bank of Japan.

Chart 5  
Bond holdings

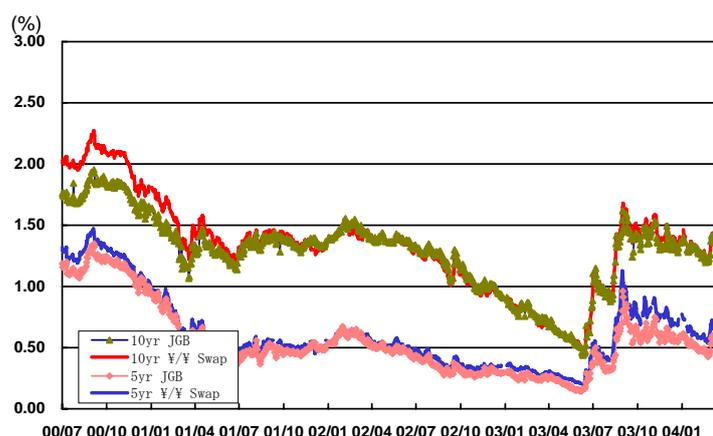


Source: Bank of Japan.

Increased inflow of funds into the bond markets has tended to push down interest rates in Japan since the peak of 1989. As can be seen in Chart 6, while reacting to political and other

factors, interest rates had followed a long-term falling trend, until finally hitting bottom in June 2003, and jumping since then back to the levels of around 2001. In another unique development, as shown in Chart 6, spreads between banking interest rate swap contracts and government bond yields also virtually disappeared around 2001, as markets attached the same risk as the government to the banking system enjoying the government's umbrella guarantee. Interest rates still remain at very low levels which are expected to persist as long as the Bank of Japan maintains zero short-term interest rates in a recovering economy that still suffers from deflation.

Chart 6  
**Government bond yields and yen IRS rates  
 for 5 and 10 years since 2000**



Source: Nomura.

## The Samurai bond market

As can be seen in Chart 6, the amount of Samurai bond issuance accounted for a very small share of issuance in 2003 - only 0.3%.

As we have mentioned above, the Samurai market was set up under pressure to alleviate the external imbalances of the late 1960s, and the inaugural issue was made by the Asian Development Bank in November 1970. The issue amount was 6 billion yen with a 7-year maturity, and it was accepted very well in the market.

Initially, high credit issuers such as the ADB or other supranationals were given priority in access to the market. In order to control the flow of issuance, eligibility criteria were established.

For issuers unable to satisfy such eligibility criteria, there was another way to finance yen through yen-denominated private placement bonds. They were allowed to target a limited number of institutional investors, and issuance terms and liquidity were tightly controlled.

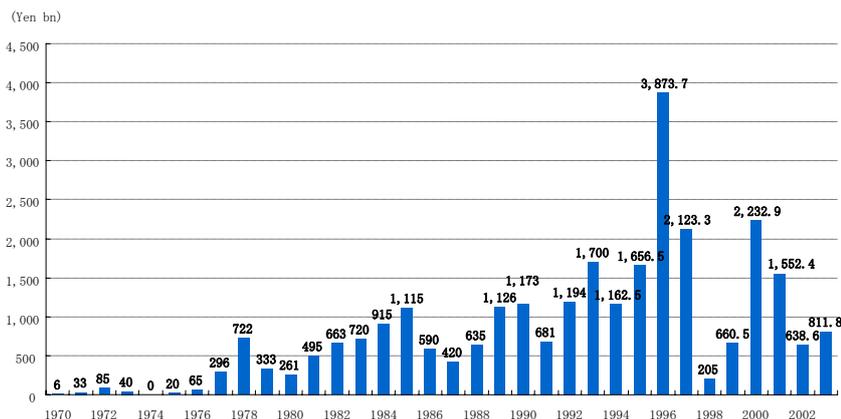
Yen private placement issuance started in 1972; however, with the liberalisation of the Samurai and euroyen markets, the *raison d'être* for private placements diminished, and the market shrank and was replaced by other means of targeting a limited circle of investors.

In the Samurai market, in July 1972 Australia issued the first sovereign bond. The market continued to be gradually opened for more issuers through the easing of eligibility criteria and the liberalisation of new types of bonds. Complicated eligibility criteria were subsequently replaced by requirements for minimum credit ratings and finally abolished.

Later on, bond structures were diversified to allow dual currency or reverse dual currency bonds, with the principal and interest payment in different currencies, while the issuance of floating rate notes and index-linked structures were also liberalised.

As can be seen in Chart 7 below, the Samurai market developed gradually before peaking in 1996, and in the course of its development, it helped to liberalise Japanese bond market in many ways.

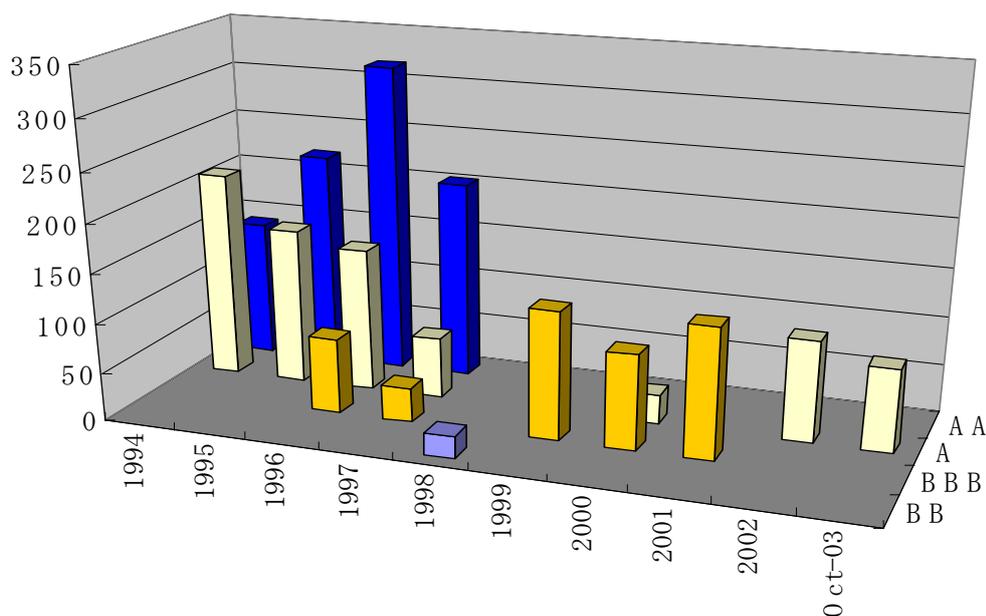
Chart 7  
Historical Samurai issuance



Source: Nomura.

Looking at the ratings breakdown of Samurai issuance during its most active period, one can perceive the activity of AA borrowers with structured Samurais in 1994-1998 (popular as the yen was steadily depreciating after hitting a peak in 1995), while between 1999-2001 the market was open mainly for BBB, and more recently mostly for single A, ratings.

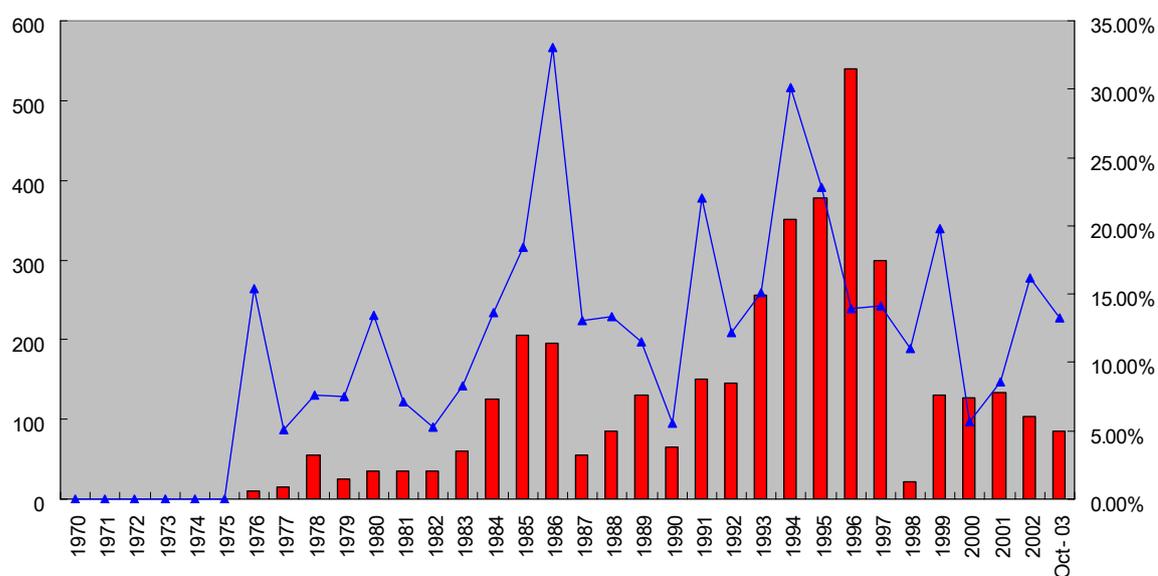
Chart 8  
Samurai issuance trends by rating



Source: Nomura.

Many borrowers have tapped this market, and for several countries the Samurai market was at times the most important foreign bond market. Many issues originated from Asian entities. Singapore opened the market for Asian sovereigns in 1976, while the Korea Development Bank made its debut issue in January 1978, followed by multiple issues by various Korean entities. The Asian presence in the Samurai market is shown in Chart 9 and Table 1 below.

Chart 9  
Samurai bond issuance in Asia and share of the total



Source: Nomura.

Table 1  
Samurai bonds by Asian issuers, 1970 to date

|             | Amount (yen bn) | No of issues |
|-------------|-----------------|--------------|
| South Korea | 1,461           | 69           |
| Australia   | 1,249           | 64           |
| China       | 941             | 49           |
| Malaysia    | 292             | 14           |
| ADB         | 252             | 9            |
| Thailand    | 215             | 16           |
| Hong Kong   | 148             | 12           |
| India       | 141             | 6            |
| Philippines | 90              | 4            |
| New Zealand | 45              | 2            |

Source: Nomura

Table 2

**Deregulation of the Samurai market**

|      | <b>Deregulation measures</b>                                                                       | <b>Remarks</b>                                                                                                 | <b>Issues<sup>1</sup></b> | <b>Volume<sup>1</sup><br/>(Yen bil)</b> |
|------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|---------------------------|-----------------------------------------|
| 1970 | Supranational issuance allowed                                                                     | ADB issues the first Samurai bond                                                                              | 1                         | 6                                       |
| 1972 | Sovereign issuance allowed<br>Yen private placements by non-residents started                      | Australia becomes first sovereign Samurai issuer, Mexico and Brazil debut in 1973                              | 6                         | 85                                      |
| 1979 | Corporate issuance starts                                                                          | Sears Overseas Finance NV issues the first corporate Samurai bond                                              | 16                        | 333                                     |
| 1984 | Public issuer rating criteria broadened to single A                                                | Bank of China issues debut Samurai                                                                             | 37                        | 915                                     |
| 1986 | Financial parameters and single A rating as criteria for private issuers                           | Samurai issuance decreases as Euroyen issuance is widely liberalised                                           | 21                        | 590                                     |
| 1988 | Introduction of shelf registration                                                                 | First issue by Greece, later to become one of the largest sovereign borrowers                                  | 22                        | 635                                     |
| 1989 | First reverse dual currency Samurai issue                                                          | Denmark issued the first reverse dual Samurai Bond - main forex exposure structure to date (currently as PRDC) | 47                        | 1,126                                   |
| 1991 | Sovereigns broadened to BBB, FRN issuance                                                          | First BBB-rated sovereign issue takes place in 1994 (Central Bank of Tunisia)                                  | 34                        | 681                                     |
| 1992 | Public sector broadened to BBB                                                                     | Ankara Municipality issues first BBB public sector Samurai                                                     | 53                        | 1,700                                   |
| 1994 | Private sector issuers broadened to BBB                                                            | PEMEX issues first BBB rated corporate Samurai                                                                 | 55                        | 1,163                                   |
| 1995 | First dual currency Samurai issue                                                                  | Popularity of dual currency structure among retail investors as yen depreciates                                | 35                        | 1,115                                   |
| 1996 | Lifting of issuance eligibility criteria, but financial institutions remain shut from the market   | Brazil issues the first sub-investment grade bond in the Samurai market; market on the way to record in 1996   | 153                       | 3,874                                   |
| 1996 | Foreign non-banks allowed to issue for purposes other than lending                                 | FMCC issues Samurai bond as the first non-bank issuer                                                          |                           |                                         |
| 1997 | Samurai issuance by overseas commercial banks liberated                                            | Citicorp becomes first commercial bank to issue a Samurai                                                      | 85                        | 2,123                                   |
| 1998 | Issuance of Nikkei-linked Samurai bonds liberalised                                                | No issuance so far                                                                                             | 14                        | 205                                     |
| 1999 | Foreign non-bankers allowed to issue for general finance purposes                                  | Associates debut in 1999, Household Finance - 7 issues since 2000                                              | 10                        | 661                                     |
| 2003 | Single A and higher rated foreign non-sovereigns not listed at TSE eligible for shelf registration | Several corporates have already taken advantage of the measure                                                 | 27                        | 641                                     |

1 Excluding private placements.

Again, as can be seen, the gradual expansion of the market reached a peak in 1996 and was arrested by the crisis of 1997, before only partially recovering around 1999, for a less diversified range of issuers. There are several reasons for the relatively inactive market.

There has been criticism as to the rather rigid issue eligibility, the opaque pricing procedure brought about by illiquid trading and cumbersome issue procedures. Some of these problems have been solved. As can be seen in Table 2, all issuance eligibility criteria have been abolished, and almost all the restrictions on types of bonds have been lifted.

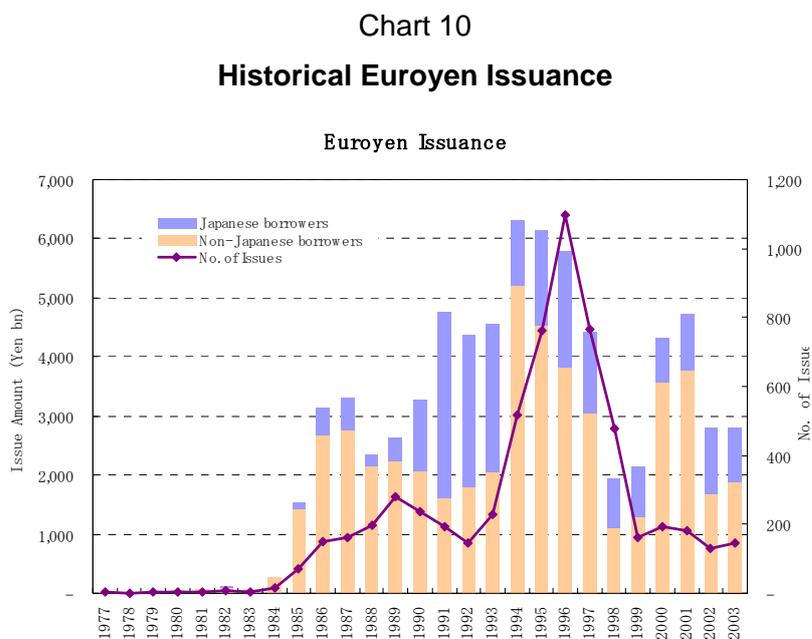
However, there is still some room for improvement. The most important issue is that under the Japanese Securities and Exchange Law, in order to make a public offering, the issuer has to file a Securities Registration Statement with the Ministry of Finance in Japanese.

It used to take 30 days for the Securities Registration Statement to become effective, hindering flexibility to promptly bring an issue to the market. In order to simplify this procedure, the shelf registration system was introduced in 1988 and contributed to significant shortening of the issuance timetable. However, there are still requests to shorten the procedure as well as - since annual and semi-annual statements have to be filed in Japanese - to allow issuers to use English to save both time and costs necessary for translation.

Other practices offering room for improvement include the obsolete registration system, whereby holdings by institutions are “recorded” by the paying agent bank, which also serves as a “recording agency” for each issue. Retail investors, for their part, still receive expensive printed bond certificates. Finally, the commercial law requirement to appoint commissioned banks as trustees also increases issuance expenses in comparison to issuance using just fiscal agents.

## The euroyen market

Chart 10 below shows historical volumes of euroyen issuance.



Source: Nomura.

The euroyen market made its appearance in April 1977, with an issue by the European Investment Bank. At the initial stage, the market was highly regulated by the government and remained very small since at the time Japanese monetary authorities considered that full liberalisation of the euroyen market might cause difficulties in conducting its monetary and foreign exchange policy.

In the autumn of 1983, the closed nature of Japan's financial markets and the yen-dollar problem escalated into a political issue. This led to the setting up in 1983 of the Japan-US Yen-Dollar Committee, which presented in May 1984 its famous report.

This report resulted in drastic changes of the government policy. In December 1984, the rating requirement was relaxed from AAA to single A, and non-Japanese houses licensed under Japanese securities law were allowed to lead manage euroyen bonds. Such deregulations accelerated issuance of euroyen bonds, and in 1985 the amount of euroyen bond issuance exceeded that of the Samurai market. Also, by June 1987, three Japanese rating agencies, in addition to three international rating agencies, were approved as official rating agencies.

In 1987, according to *International Finance Review*, euroyen issue amount accounted for 17% of the total euro market issue amount. In June 1989, all eligibility criteria were lifted, while in 1994, as the last major liberalisation measure, restrictions on flowback, ie the secondary market sale of bonds issued offshore back into the Japanese domestic market, were eased, before being fully lifted in 1995.

Since then, Euroyen issuance, with its relatively easier procedures, became even more popular so that nowadays bonds are sometimes issued offshore even when the targeted investor base is domestic Japanese investors. Table 3 presents the history of the liberalisation of this market.

The market is now completely free and has established its position as one of the major global capital markets. A wide range of issuers utilise this market, including Japanese companies seeking funding abroad.

## **Other structures: Shoguns, Daimyos, globals and the MTN market**

Originally both the Samurai and euroyen markets started to develop due to "gaiatsu" (pressure from foreign countries) but internal efforts have also been made to develop the market.

The "Shogun" - foreign currency denominated bonds issued and sold in the Japanese market to provide a domestic instrument for investors interested in purchasing foreign currency bonds, was introduced in 1985, with the IBRD as the inaugural issuer. The liquidity of the market is very important to make the market attractive for both investors and issuers, and efforts to integrate the Japanese market with the international market were subsequently undertaken.

To that end, it was necessary to set up a system to sell and trade bonds not only in the Japanese market but also in European and US markets. "Daimyo" bonds, which later transformed into "global bonds", were created based on the above concept. The idea was to make registration necessary, to make the bond saleable internationally. At the initial stage, supranationals were major issuers as they are exempt from registration requirements in Japan and the US.

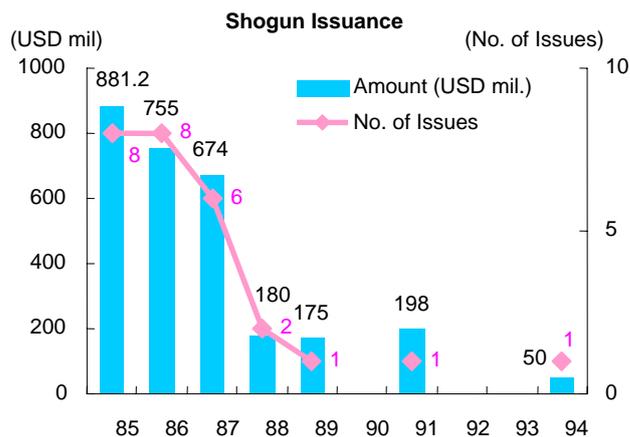
Table 3

**Deregulation of the Euroyen Market**

|         | <b>Issues</b> | <b>Volume (yen bn)</b> | <b>Deregulation Measures</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------|---------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1977    | 2             | 30.0                   | Euroyen issuance by EIB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 1978-83 | 22            | 340.0                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 1984    | 13            | 227.0                  | Broad relaxation of guidelines: <ol style="list-style-type: none"> <li>1. Broadening of issuers from supras and governments to municipalities, government agencies and private entities</li> <li>2. Relaxation of criteria: for public borrowers, from AAA to A; for private, A and compliance with Samurai criteria</li> <li>3. Quantitative relaxation: from 6-7 annual to no limits on number and amounts of issuance</li> <li>4. Limits on lead managers: from domestic only to domestic and foreign securities houses</li> </ol> |
| 1985    | 66            | 1,445.7                | New types of instruments allowed: FRN, zero-coupon, discount, deep discount and currency conversion bonds                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 1986    | 141           | 2,551.5                | Quantitative criteria for corporates replaced with rating only and rating criteria broadened to A rated<br>No flowback period shortened from 180 to 90 days<br>Japanese rating agencies recognised<br>Issuance allowed for banks on condition that proceeds would not enter Japan                                                                                                                                                                                                                                                     |
| 1987    | 151           | 2,993.9                | Tenors shortened from 5 to 4 years<br>Fitch recognised as rating agency                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 1988    | 224           | 2,213.0                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 1989    | 395           | 3,557.9                | Lifting of tenor criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 1990    | 512           | 4,980.9                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 1991    | 314           | 3,290.4                | IBRD issues first global yen; the issue is exempt from flowback limits                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 1992    | 250           | 3,328.0                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 1993    | 640           | 5,084.8                | Full lifting of issuance criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 1994    | 2,030         | 10,085.1               | Lifting of flowback limitations for sovereign issues                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 1995    | 3,015         | 11,515.6               | Lifting of all flowback limitations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 1996    | 5,345         | 14,937.4               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 1997    | 5,492         | 16,952.2               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 1998    | NA            | 12,300.0               | Under the new Foreign Exchange Law, advance approval requirement replaced by filing of post-transaction report                                                                                                                                                                                                                                                                                                                                                                                                                        |

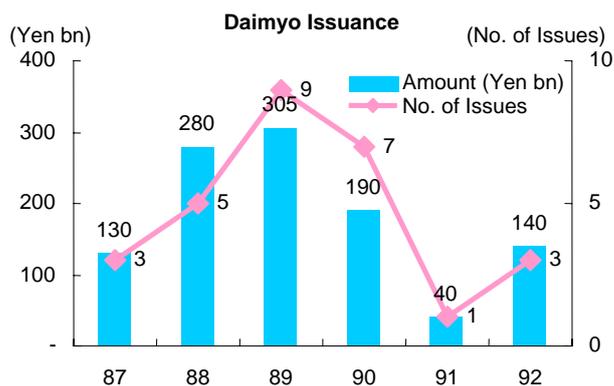
Global dollar bonds and global yen bonds were issued mainly during the 1990s. However, to integrate disclosure requirements, taxation issues and the other administrative requirements of all the markets is not easy, and the majority of issuers continued to be supranationals that enjoy exemption from registration. As a result, as can be seen in Charts 11-13 below, the number of bonds issued has not been that impressive. (We have also presented respective issuance lists and an overview chart of different structures in the annexes).

Chart 11  
**Historical Shogun issuance**



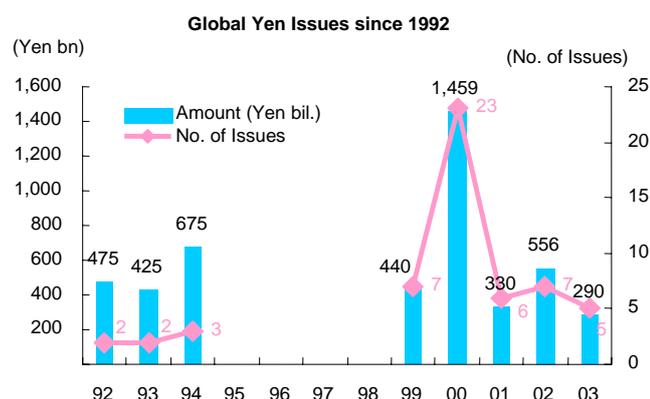
Source: Nomura.

Chart 12  
**Historical Daimyo issuance**



Source: Nomura.

Chart 13  
**Historical global yen Issuance**

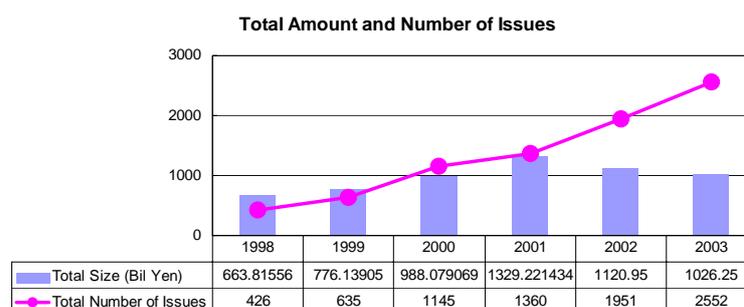


Source: Nomura.

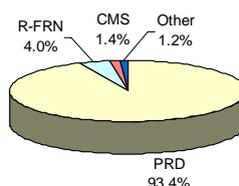
Other efforts have been made to develop new products to satisfy very liquid but conservative domestic investors. Asset-backed securities, index-linked securities and other types of new products have been marketed in Japan. But products offering foreign exchange risk and equity risk have traditionally been, and still are, the most popular ones.

Also, many relatively small, tailor-made transactions targeting the specific requirements of institutional investors are executed through issuers' MTN programmes, with numerous small MTN transactions adding up to an ample market volume, as presented in Chart 14. Again, most issues tend to offer foreign currency exposure through some structure, with the "power reverse dual currency" being the most popular recently.

Chart 14  
**MTN issuance**



Structure Type



Source: Nomura.

## The retail market: the Uridashi

In order to make the domestic public offering of foreign securities possible, in 1994 “Uridashi” registration was introduced. Under this registration, bonds denominated in yen or another currency and issued overseas can be sold in Japan through a secondary market registration and selling contract between a domestic Uridashi agent and an overseas underwriter.

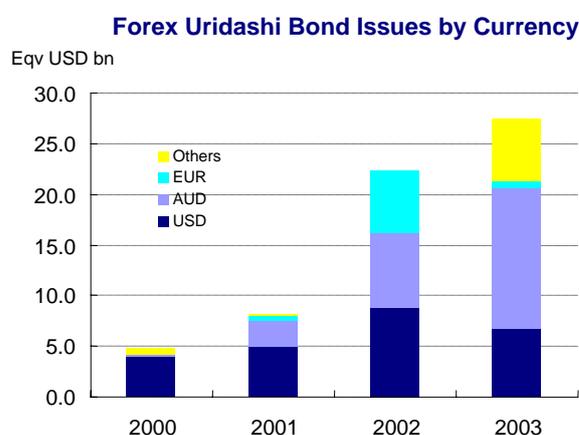
This registration has enabled securities firms to efficiently satisfy domestic retail demand for both foreign currency fixed income and equity-linked products. Some yen straight bond issuers have also sometimes opted for a “euroyen with an Uridashi” structure, notably the Korea Electric Power Corporation.

The Uridashi registration most efficiently serves an issuance structure in which a top-rated foreign, usually corporate, entity issues a foreign currency straight or structured (including equity-linked) instrument. These products normally offer some risk other than the credit risk of the issuer, so that issuers are limited to low-risk entities, while the risk offered is that of a currency popular among retail investors, or of an equity exposure at times of attractive equity market.

Naturally, in recent years, foreign exchange products have enjoyed massive retail demand as Japanese interest rates reached virtually zero. The range of currencies tends to be confined to those of the G7 countries. The US dollar recently conceded popularity to the Australian dollar, with its high interest rates and the robust performance of the Australian economy, the euro on its recent strengthening trend, and, to a lesser degree, the sterling and the Canadian dollar (Chart 15). Some other currencies are also carving out a niche in this market, most notably the South African rand.

Chart 15

### Uridashi issuance 2000-2003



Source: Nomura.

Expansion of this market to Asian currencies is a natural issue at hand, and this will require the resolution of a number of market-related, regulatory and technical issues, ie:

- First, acceptance by Japanese investors of AAA or AA rated (such as those issued by the ADB) bonds denominated in Asian currencies;
- Next, opening of the market for Asian local entities issuing in local currencies; this will require further improvement of credit stories across the region (the market traditionally accepts AAA to AA issuance);

- In the secondary market, Japanese investors' portfolios of foreign currency bonds go through much more trading than those for yen bonds (other than Japan government bonds) as investors tend to move to take profits or cut losses at times of wide currency movements. Liquidity is therefore important, making the infrastructure (ie market capacity, as well as such technical points as clearing and settlement systems, hedging and money market tools, etc.) of the bond market of the corresponding currency an important issue for the functioning of the market;
- The issue of correlation with the dollar may be the last point worth mentioning. As is the case with Chinese yuan (renminbi), any prospects of Asian currencies decoupling and appreciating versus the G3 group will justify the emergence of a new market for these currencies.

## Current issues

We have outlined above procedural issues still weighing mainly on the Samurai market. However, they can and have been easily overcome, should this market be sufficiently attractive for borrowers. Much more crucially, there are a number of important market-related issues which have been affecting the yen markets in all their facets:

1. As Japan's rating was downgraded to the AA/A category, it became difficult for higher rated borrowers to tap the market. Among Japanese investors, it is invariably difficult to sell any instrument whose terms are better than those for Japanese government bonds.
2. Some emerging market sovereigns, as well as some companies hitherto perceived as top-grade defaulted or suffered downgrades. Until 2001, sub-investment grade issues had been very popular as investors were attracted by their yield pick-up amid ever falling domestic interest rates. As a result, the Japanese market is extensively exposed to the Argentine problem, with no prospect of resolution in sight, souring the current market sentiment toward credit risk.
3. However, for some regular, especially Asian, visitors to the Samurai market, their domestic liquidity became very high and the requirements for international fund-raising diminished. In particular, some Asian countries, such as Thailand, Malaysia and China, which used to be regular issuers in the Samurai market, have seen their international funding requirements drastically reduced.
4. As absolute levels of interest rates elsewhere have been "catching up" with low yen interest rates, the exchange risk associated with borrowing in yen started to outweigh the attractiveness of yen for international borrowers.
5. The emergence of the euro as a single currency and of the associated single capital market has attracted countries in other regions, in particular EU and EU accession countries, to finance in the euro market, taking them further away from alternatives, including the yen market.
6. As regards Asia, the position of the dollar remains very strong, with many currencies pegged to the dollar and foreign reserves also still mainly in dollars. As is widely known, recently Asian central banks, together with Japan, have been supporting the dollar, adding record amounts of US Treasuries to their foreign reserves in the process. It can be observed that not only the yen- but also the euro-denominated issuance is also rather limited in the region.
7. Another obvious reason for the decline of the yen's relative importance in the international markets is that some Japanese demand has shifted to non-yen currencies.

This has left international banks and companies, which require yen funding for their Japanese domestic operations, as the only consistently present issuer category on the Samurai market.

Among sovereign and government agency issuers, the market is currently confined to those with BBB to A ratings, with borrowers from Korea, primarily the KDB, as the most consistent visitors to the market, while the People's Republic of China, the Malaysian Federation or PETRONAS, the Kingdom of Thailand and the Republic of the Philippines are among other potential visitors.

There are also higher rated issuers on the market, but they are essentially accessing the market through structured types of bonds, similar to the MTN market.

For a wider community of issuers, the euroyen format, targeting investors throughout international markets through issuance of large internationally liquid issues, still remains attractive (while such issuance would not work through the Samurai format in terms of flexibility, costs, etc.). Such corporates as GECC and IBM, and the Republic of Italy among sovereigns, are most notable issuers on this market.

Any market has its cycles and, as the Japanese economy is at last showing signs of sustainable recovery, Japanese investors have been regaining some of their confidence and the international yen market has been gradually improving. Subject to global economic and consequent investor liquidity, currency and credit events and other trends, the yen capital market may regain some of its prominence in the years to come.

However, another possible reason for the retreat of the yen market may have been the failure to make the yen a truly international currency, and the lack of medium- and long-term policy to develop the Japanese domestic bond and euroyen markets into truly competitive international markets. Without political and legal commitment from the government, such a goal cannot be achieved, and in our view the authorities still have some role to play in the further development of Asian bond markets.

## **Annex 1: The Japanese market for Asian equities**

While the main focus of this paper is on bonds, the picture of capital flows from Japan to Asia will not be complete without briefly mentioning the equity market. If the underlying theme of this discussion is the flow of Japanese capital into Asian currencies or Asian credits, then while such flow via bonds may have been limited, Japanese investors have made substantial investments in Asian equities.

To briefly recall the history, the opening of the Japanese equity market started around the same time as that of the bond market, and in 1972, the first foreign public equity offering in Japan was made by a US company, General Telephone and Electronics, while in 1973 the first listings on the Tokyo Stock Exchange were made by four US companies joined by their French confrère.

Since then, although there have been ups and downs in the amount and number of companies conducting equity financing in Japan or listed on the Tokyo Stock Exchange, the Japanese market has over the years made an ample contribution to international and Asian equity financing.

This contribution has been particularly visible in recent cases of major global offerings of Chinese companies, on some of which it was reported that they “would not have succeeded without the Japanese demand”. What in our view makes them worth mentioning is that through these equity purchases Japanese investors have been aggressively investing in Asian currencies and Asian corporate credits, implicitly taking Asian sovereign exposure as well.

**Annex 2:  
Issuance in various Japanese yen market segments**

**List of Shogun issues**

| <b>Launch date</b> | <b>Issuer</b>                               | <b>Currency</b> | <b>Amount (mil)</b> | <b>Coupon</b> | <b>Issue price</b> | <b>Maturity</b> |
|--------------------|---------------------------------------------|-----------------|---------------------|---------------|--------------------|-----------------|
| Jun-85             | EIB (Shibo)                                 | ECU             | 50                  | 9.2           | 99.75              | 10              |
| Aug-85             | World Bank                                  | USD             | 300                 | 10.5          | 100.000            | 10              |
| Aug-85             | Sallie Mae                                  | USD             | 100                 | 9.75          | 100.875            | 5               |
| Oct-85             | Victorian Public Authorities Finance Agency | A\$             | 60                  | 13.625        | 99.875             | 7               |
| Oct-85             | NSW Treasury Corp                           | USD             | 100                 | 10.375        | 100.875            | 7               |
| Oct-85             | Bank of China                               | USD             | 100                 | 10            | 100                | 10              |
| Nov-85             | Southern California Edison Company          | USD             | 100                 | 10.5          | 100.65             | 8               |
| Dec-85             | CITIC                                       | USD             | 100                 | 9.625         | 100.75             | 10              |
| Mar-86             | Farm Credit Corporation                     | C\$             | 90                  | 9.125         | 100.75             | 5               |
| May-86             | State Bank of NSW                           | USD             | 100                 | 7.125         | 100.9              | 7               |
| Jul-86             | Hydro Quebec                                | C\$             | 150                 | 9.27          | 100.875            | 10              |
| Aug-86             | Federal Business Development Bank           | C\$             | 75                  | 9             | 100.95             | 5               |
| Sep-86             | World Bank                                  | C\$             | 100                 | 9             | 100.85             | 10              |
| Nov-86             | National Bank of Hungary (Shibo)            | USD             | 55                  | 8.875         | 100                | 7               |
| Nov-86             | NSW Treasury Corp                           | USD             | 100                 | 7.75          | 101.375            | 7               |
| Dec-86             | World Bank                                  | USD             | 200                 | 7.375         | 101.125            | 7               |
| Jan-87             | Standard Oil                                | USD             | 50                  | 7.875         | 101.375            | 10              |
| Feb-87             | Ciba Geigy                                  | USD             | 50                  | 7.5           | 101.355            | 7               |
| Feb-87             | FHLB                                        | USD             | 200                 | 7.75          | 101.125            | 10              |
| Mar-87             | GTE Finance                                 | USD             | 100                 | 8             | 101.3              | 7               |
| May-87             | Bell Canada                                 | C\$             | 100                 | 9.875         | 101.4              | 9               |
| Oct-87             | Fannie Mae                                  | USD             | 200                 | 10.1          | 100.19             | 7               |
| Oct-88             | EIB                                         | ECU             | 100                 | 8             | 101.875            | 10              |
| Oct-88             | World Bank                                  | USD             | 100                 | 9.04          | 100                | 10              |
| Aug-89             | P&O (Shogun CB)                             | USD             | 175                 | 6             | 100                | 15              |
| May-91             | EIB                                         | ECU             | 240                 | 9             | 101.755            | 8               |
| Jan-94             | HNG                                         | USD             | 50                  | 5 (A\$)       | 100.6              | 4               |

**List of Daimyo issues**

| <b>Launch date</b> | <b>Issuer</b>                 | <b>Amount (yen mil)</b> | <b>Coupon</b> | <b>Issue price</b> | <b>Maturity</b> | <b>Book-runner</b> |
|--------------------|-------------------------------|-------------------------|---------------|--------------------|-----------------|--------------------|
| 04/22/87           | World Bank                    | 40,000                  | 4.625         | 101.000            | 05/12/97        | Daiwa              |
| 05/15/87           | World Bank                    | 40,000                  | 4.250         | 100.375            | 06/03/97        | Yamaichi           |
| 11/12/87           | World Bank                    | 50,000                  | 5.625         | 101.125            | 11/27/97        | Nomura             |
| 02/25/88           | World Bank                    | 100,000                 | 5.125         | 100.250            | 03/17/98        | Nikko              |
| 04/08/88           | Inter-American Development Bk | 20,000                  | 5.000         | 100.000            | 04/14/98        | Nikko              |
| 05/27/88           | World Bank                    | 60,000                  | 5.125         | 100.000            | 03/17/98        | Daiwa              |
| 08/06/88           | World Bank                    | 70,000                  | 5.250         | 100.500            | 08/19/98        | Yamaichi           |
| 09/08/88           | ADB                           | 30,000                  | 5.500         | 100.250            | 09/26/98        | Nomura             |
| 03/10/89           | ADB                           | 40,000                  | 5.500         | 100.650            | 03/16/99        | Nikko              |
| 04/01/89           | ADB                           | 40,000                  | 5.125         | 100.000            | 04/14/99        | Nomura             |
| 04/10/89           | Inter-American Development Bk | 25,000                  | 5.125         | 100.375            | 04/19/99        | Yamaichi           |
| 07/05/89           | IFC                           | 20,000                  | 5.375         | 100.80             | 07/18/96        | Nomura             |
| 09/05/89           | World Bank                    | 70,000                  | 5.250         | 100.750            | 09/20/99        | IBJ                |
| 10/17/89           | Inter-American Development Bk | 30,000                  | 5.625         | 100.80             | 10/25/99        | Nomura             |
| 11/02/89           | African Development Bank      | 20,000                  | 5.750         | 100.30             | 11/17/99        | Nikko              |
| 12/14/89           | World Bank                    | 50,000                  | 5.875         | 100.750            | 12/22/94        | Yamaichi           |
| 12/21/89           | IFC                           | 10,000                  | 7.100         | 100.80             | 12/28/94        | Nomura             |
| 04/24/90           | African Development Bank      | 40,000                  | 7.250         | 100.500            | 05/09/97        | Daiwa              |
| 06/01/90           | IFC                           | 15,000                  | 8.000         | 100.500            | 06/14/96        | Nomura             |
| 07/11/90           | African Development Bank      | 30,000                  | 7.250         | 100.375            | 07/16/97        | Nomura             |
| 07/22/90           | World Bank                    | 30,000                  | 7.000         | 95.000             | 07/30/97        | Nomura             |
| 09/18/90           | IFC                           | 10,000                  | 8.000         | 95.000             | 09/28/00        | Yamaichi           |
| 10/19/90           | ADB                           | 30,000                  | 7.500         | 100.500            | 11/09/00        | Daiwa              |
| 12/18/90           | Inter-American Development Bk | 35,000                  | 7.000         | 100.750            | 12/27/00        | Daiwa              |
| 04/17/91           | African Development Bank      | 40,000                  | 7.250         | 100.875            | 04/24/98        | Daiwa              |
| 01/23/92           | ADB                           | 50,000                  | 5.625         | 99.60              | 02/12/02        | Yamaichi           |
| 01/31/92           | Inter-American Development Bk | 50,000                  | 5.375         | 100.450            | 02/25/97        | Nikko              |
| 06/09/92           | African Development Bank      | 40,000                  | 6.200         | 99.80              | 06/18/02        | Yamaichi           |

**List of global yen issues 1992-2003**

| <b>Launch date</b> | <b>Issuer</b>                  | <b>Amount (yen mil)</b> | <b>Coupon</b> | <b>Issue price</b> | <b>Maturity</b> | <b>Bookrunner</b>                   |
|--------------------|--------------------------------|-------------------------|---------------|--------------------|-----------------|-------------------------------------|
| 03/10/92           | International Bank for Reconst | 250,000                 | 5.250         | 99.230             | 03/20/02        | IBJ-I/J-P-MORGAN(JB)/NOMURA-SEC(JB) |
| 10/14/92           | International Bank for Reconst | 225,000                 | 4.500         | 99.80              | 12/22/97        | DAIWA-SEC                           |
| 02/18/93           | International Bank for Reconst | 200,000                 | 4.500         | 99.72              | 03/20/03        | IBJ-I/MS-I(JB)/NIKKO-EUR(JB)        |
| 06/30/93           | International Bank for Reconst | 225,000                 | 4.500         | 99.983             | 06/20/00        | DAIWA-SEC/GS(JB)/IBJ-I(JB)          |
| 01/11/94           | Italy                          | 300,000                 | 3.500         | 99.980             | 06/20/01        | DAIWA-EUR/JPM(JB)                   |
| 07/13/94           | Italy                          | 175,000                 | Floats        | 99.870             | 07/26/99        | MERRILL/NOMURA(JB)                  |
| 11/08/94           | International Bank for Reconst | 200,000                 | 4.750         | 99.404             | 12/20/04        | ML-I/NIKKO-EUR(JB)/NOMURA-INT(JB)   |
| 06/29/99           | Inter-American Development Bk  | 100,000                 | 1.900         | 99.449             | 07/08/09        | MSDW/TMI(JB)                        |
| 07/19/99           | General Motors Acceptance Corp | 50,000                  | Floats        | 100.000            | 07/26/02        | BOTMI                               |
| 10/05/99           | Inter-American Development Bk  | 50,000                  | 1.900         | 101.834            | 07/08/09        | MSDW                                |
| 11/01/99           | KFW International Finance Inc  | 100,000                 | 1.000         | 99.980             | 12/20/04        | DEUTSCHE-ALEX-B                     |
| 11/09/99           | Toyota Motor Credit Corp       | 50,000                  | 1.000         | 99.429             | 12/20/04        | MERRILL/NOMURA-SEC(JB)              |
| 11/12/99           | General Motors Corp            | 50,000                  | 1.250         | 99.72              | 12/20/04        | BEAR/MERRILL(JB)                    |
| 11/30/99           | Procter & Gamble Co            | 40,000                  | 1.500         | 99.578             | 12/07/05        | SALOMON-SMITH                       |
| 01/11/00           | Westpac Banking Corp           | 50,000                  | .875          | 99.604             | 09/22/03        | BOTMI                               |
| 01/13/00           | OKB                            | 100,000                 | 1.800         | 99.805             | 03/22/10        | NOMURA                              |

**List of global yen issues 1992-2003 (cont)**

| <b>Launch date</b> | <b>Issuer</b>                  | <b>Amount (yen mil)</b> | <b>Coupon</b> | <b>Issue price</b> | <b>Maturity</b> | <b>Bookrunner</b>               |
|--------------------|--------------------------------|-------------------------|---------------|--------------------|-----------------|---------------------------------|
| 01/25/00           | Bank of Scotland Treasury Svcs | 100,000                 | Floats        | 99.968             | 02/01/02        | DEUTSCHE-ALEX-B                 |
| 01/28/00           | Ford Motor Credit Co           | 100,000                 | 1.200         | 99.855             | 02/07/05        | GS/MSDW(JB)/BOTMI(JB)           |
| 02/03/00           | Mellon Bank NA, Pittsburgh, PA | 10,000                  | 1.400         | Market             | 02/24/05        | JPM                             |
| 02/18/00           | Italy                          | 100,000                 | 1.800         | 99.882             | 02/23/10        | MSDW/NOMURA-SEC(JB)             |
| 03/02/00           | McDonald's Corp                | 15,000                  | 2.000         | 99.927             | 03/09/10        | MERRILL/MSDW(JB)                |
| 03/02/00           | McDonald's Corp                | 15,000                  | 1.250         | 99.859             | 03/09/05        | MERRILL/MSDW(JB)                |
| 03/08/00           | KFW International Finance Inc  | 100,000                 | 1.750         | 99.735             | 03/23/10        | JPM/BOT-MITSUBISHI(JB)          |
| 04/06/00           | IBM Corp                       | 100,000                 | .900          | 99.97              | 04/14/03        | MSDW/TOKYO-MIT-SEC(JB)          |
| 04/14/00           | Westpac Banking Corp           | 25,000                  | .875          | 99.605             | 09/22/03        | NOMURA-SEC-INTL                 |
| 04/27/00           | Italy                          | 50,000                  | .375          | 100.010            | 05/12/02        | DEUTSCHE-ALEX-B                 |
| 05/11/00           | Toyota Motor Credit Corp       | 50,000                  | .625          | 99.840             | 05/23/03        | SALOMON-SMITH                   |
| 05/16/00           | Procter & Gamble Co            | 50,000                  | 1.500         | 100.162            | 12/07/05        | SALOMON-SMITH/BOTMI(JB)         |
| 05/16/00           | Procter & Gamble Co            | 15,000                  | 2.000         | 99.717             | 06/21/10        | SALOMON-SMITH/BOTMI(JB)         |
| 05/24/00           | Province of Ontario            | 50,000                  | 1.875         | 100.241            | 01/25/10        | NOMURA-SEC                      |
| 06/28/00           | Deutsche Telekom International | 90,000                  | 1.500         | 99.805             | 06/15/05        | DEUTSCHE-ALEX-B/GS(JB)/MSDW(JB) |
| 07/03/00           | Japan Development Bank         | 100,000                 | 1.750         | 99.634             | 06/21/10        | NOMURA                          |
| 07/10/00           | Citigroup Inc                  | 45,000                  | 1.400         | 99.954             | 07/18/05        | NIKKO-SSB                       |
| 07/19/00           | Morgan Stanley Dean Witter     | 9,400                   | .900          | 100.000            | 07/28/03        | MSDW                            |
| 07/31/00           | Italy                          | 50,000                  | .375          | 100.095            | 05/12/02        | UBS-WARBURG                     |
| 08/21/00           | OKB                            | 50,000                  | 1.800         | 100.702            | 03/22/10        | NOMURA                          |

**List of global yen issues 1992-2003 (cont)**

| <b>Launch date</b> | <b>Issuer</b>                  | <b>Amount (yen mil)</b> | <b>Coupon</b> | <b>Issue price</b> | <b>Maturity</b> | <b>Bookrunner</b>                                        |
|--------------------|--------------------------------|-------------------------|---------------|--------------------|-----------------|----------------------------------------------------------|
| 08/23/00           | Deutsche Ausgleichsbank        | 100,000                 | 1.850         | 100.009            | 09/20/10        | DEUTSCHE-ALEX-B/<br>NOMURA-SEC(JB)/<br>SALOMON-SMITH(JB) |
| 03/09/01           | Banque Centrale de Tunisie     | 20,000                  | 4.200         | 100.000            | 03/17/31        | ML-I                                                     |
| 03/13/01           | Canada                         | 50,000                  | .700          | 101.027            | 03/20/06        | NOMURA                                                   |
| 04/26/01           | Province of Quebec             | 50,000                  | 1.600         | 99.138             | 05/09/13        | JPM/NOMURA(JB)                                           |
| 06/01/01           | Toyota Motor Credit Corp       | 50,000                  | .750          | 99.592             | 06/09/08        | DAIWA-SEC/NOMURA(JB)                                     |
| 06/20/01           | GE Financial Assurance         | 60,000                  | 1.600         | 99.793             | 06/20/11        | NIKKO-SSB/MORGAN-STANLEY(JB)                             |
| 10/04/01           | Italy                          | 100,000                 | .375          | 99.936             | 10/10/06        | NOMURA/JPM(JB)                                           |
| 02/15/02           | Japan Finance Corp Mncpl Entpr | 130,000                 | 1.550         | 99.785             | 02/21/12        | NIKSSE/NOMURA(JB)/UBS-WARBURG(JB)                        |
| 02/26/02           | Textron Financial Corp         | 6,000                   | Zero          | 99.188             | 03/04/03        | BOTMI                                                    |
| 03/21/02           | Italy                          | 100,000                 | .375          | 99.844             | 10/10/06        | NOMURA                                                   |
| 04/26/02           | IBM Corp                       | 100,000                 | .400          | 99.968             | 05/10/04        | NIKKO-SSB/BOTMI(JB)                                      |
| 06/20/02           | Development Bank of Japan      | 75,000                  | 1.400         | 99.71              | 06/20/12        | NOMURA/UBS-WARBURG(JB)                                   |
| 11/27/02           | Japan Finance Corp Mncpl Entpr | 70,000                  | 1.550         | 105.813            | 02/21/12        | NIKSSE/UBS-WARBURG(JB)                                   |
| 12/05/02           | Development Bank of Japan      | 75,000                  | 1.700         | 99.767             | 09/20/22        | NIKKO-SSB/UBS-WARBURG(JB)                                |
| 02/25/03           | Development Bank of Japan      | 30,000                  | 1.700         | 105.803            | 09/20/22        | NIKSSE/UBS-WARBURG(JB)                                   |
| 06/24/03           | Development Bank of Japan      | 75,000                  | 1.050         | 99.354             | 06/20/23        | NOMURA-SEC/UBS-INV-BANK(JB)                              |
| 10/23/03           | Citigroup                      | 50,000                  | .800          | 99.853             | 10/30/08        | NIKKO-CITIGROUP                                          |
| 11/19/03           | Japan Finance Corp Mncpl Entpr | 130,000                 | 1.350         | 99.86              | 11/26/13        | MILTD/NIKKO-CITIGROUP(JB)/<br>NOMURA-INT(JB)             |
| 12/10/03           | Morgan Stanley                 | 5,000                   | Floats        | 100.000            | 12/15/06        | MORGAN-STANLEY                                           |

### Annex 3: Samurai and euroyen defaults

#### List of defaulted Samurai bond issues

| Date of default | Launch date | Issuer                   | Rating (initial) | Amount (yen bn) | Coupon (%) | Maturity  | Bookrunner                |
|-----------------|-------------|--------------------------|------------------|-----------------|------------|-----------|---------------------------|
| 14-Oct-00       | 15-Dec-94   | HITIC                    | A+(JCR)          | 14.5            | 5.000      | 26-Dec-01 | Nikko                     |
| Feb-02          | 26-Jun-96   | FIEC                     | A+(JBRI)         | 14.0            | 4.100      | 24-Jul-06 | Yamaichi                  |
| 25-Mar-98       | 10-Jun-97   | Peregrine Investment     | BBB+(JBRI)       | 10.0            | 2.600      | 30-Jun-00 | Nikko                     |
| 25-Mar-98       | 10-Jun-97   | Peregrine Investment     | BBB+(JBRI)       | 10.0            | 6mL+90     | 20-Jun-00 | Nikko                     |
| 29-Aug-98       | 19-Jun-97   | Dharmala Intiutama Int'l | BBB-(NIS)        | 15.0            | 5.450      | 9-Jul-02  | Yamaichi                  |
| 14-Oct-00       | 9-Sep-97    | HITIC                    | A+(JCR)          | 14.0            | 3.400      | 24-Sep-04 | Nikko                     |
| 20-Dec-03       | 5-Dec-96    | Argentina                | B1/BB(M/SP)      | 50.0            | 5.000      | 20-Dec-02 | Nikko                     |
| 20-Dec-03       | 2-Dec-99    | Argentina                | B1/BB(M/SP)      | 20.0            | 5.400      | 17-Dec-03 | Nikko SSB                 |
| 20-Dec-03       | 24-May-00   | Argentina                | B1/BB(M/SP)      | 60.0            | 5.125      | 14-Jun-04 | Nomura /<br>Merrill Lynch |
| 20-Dec-03       | 22-Aug-00   | Argentina                | B1/BB(M/SP)      | 61.5            | 4.850      | 26-Sep-05 | Nomura /<br>Nikko SSB     |

**List of defaulted euroyen bonds**

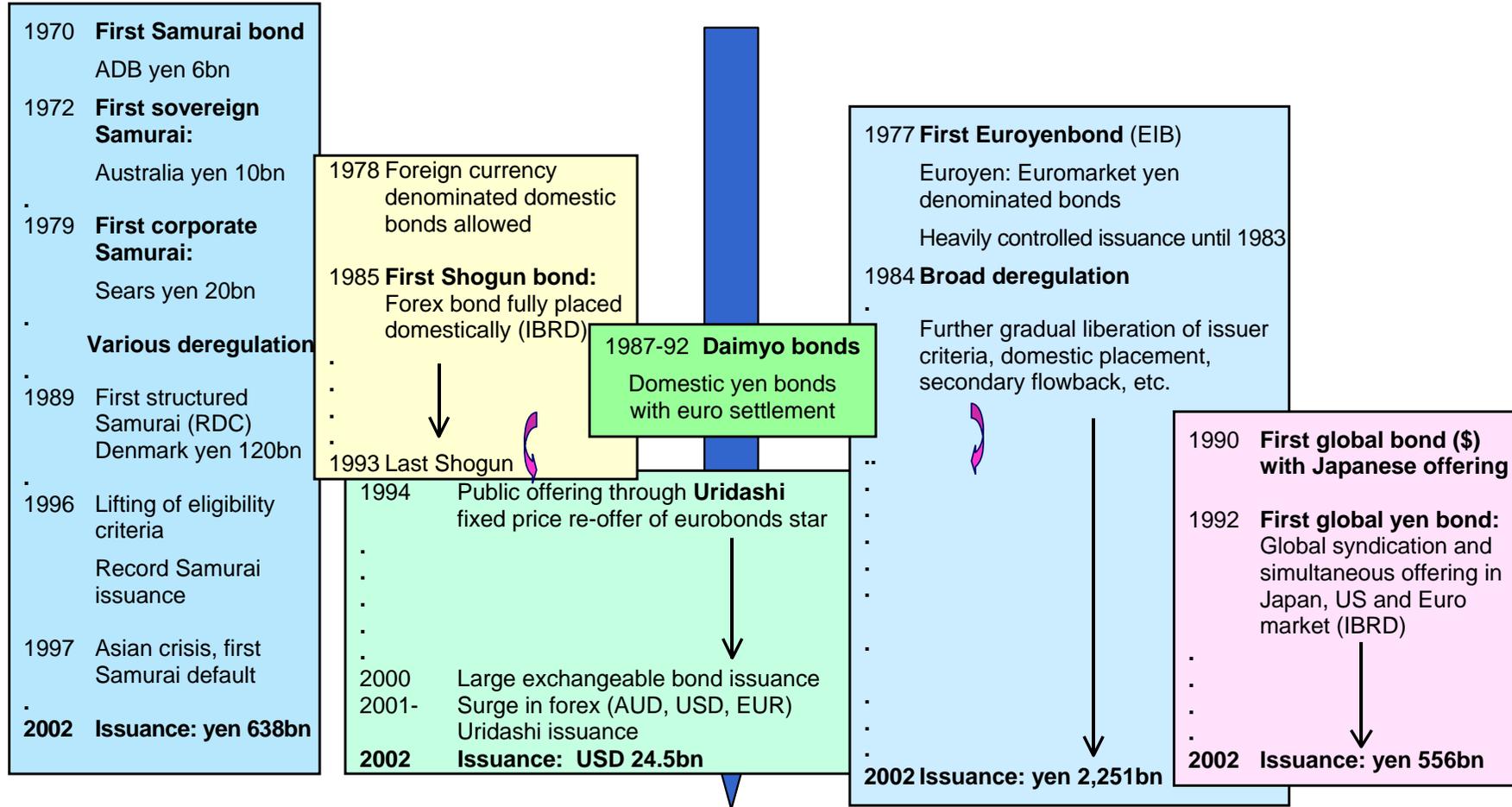
| <b>Date of Default</b> | <b>Launch Date</b> | <b>Issuer</b>         | <b>Rating</b>   | <b>Amount (yen bn)</b> | <b>Coupon (%)</b> | <b>Maturity</b> | <b>Book-runner</b>    |
|------------------------|--------------------|-----------------------|-----------------|------------------------|-------------------|-----------------|-----------------------|
| 20-Dec-03              | 14-Mar-96          | Argentina             | B1/BB-(M/SP)    | 8.0                    | 7.400             | 4-Apr-06        | Yamaichi              |
| 20-Dec-03              | 25-Apr-96          | Argentina             | B1/BB-(M/SP)    | 8.0                    | 7.400             | 25-Apr-06       | Nomura                |
| 20-Dec-03              | 15-May-96          | Argentina             | B1/BB-(M/SP)    | 7.0                    | 7.400             | 15-May-06       | Nomura                |
| 20-Dec-03              | 24-Oct-96          | Argentina             | B1/BB-(M/SP)    | 50.0                   | 6.000             | 24-Mar-05       | Nikko                 |
| –                      | 4-Feb-97           | Bakrie Int'l Finance  | NR              | 14.0                   | 0.000             | 12-Feb-00       | Peregrine             |
| 20-Feb-02              | 20-Feb-97          | APP Int'l Finance     | Ba3(M)          | 17.0                   | 4.800             | 20-Feb-02       | NA                    |
| 20-Dec-03              | 30-Apr-97          | Argentina             | B1/BB(M/SP)     | 50.0                   | 4.400             | 27-May-04       | Yamaichi              |
| 5-Apr-00 <sup>1</sup>  | 10-Jun-97          | Robinson Dept         | NR              | 6.8                    | 0.000             | 12-Jun-00       | Societe Generale Asia |
| –                      | 11-Aug-97          | Sierad Produce        | NR              | 2.0                    | 0.000             | 15-Aug-00       | IBJ                   |
| 20-Dec-03              | 23-Jul-99          | Argentina             | Ba3/BB(M/SP)    | 18.0                   | 3.500             | 11-Aug-09       | Daiwa                 |
| 24-May-02              | 24-May-00          | Buenos Aires Province | B1/BB(M/SP)     | 3.0                    | 4.250             | 27-May-03       | NSSB                  |
| 24-Dec-03              | 31-May-00          | Parmalat Fin BV       | NR              | 30.0                   | 3.650             | 1-Jun-20        | NSSB                  |
| 2-Dec-01               | 8-May-01           | Enron Corp            | Baa1/BBB+(M/SP) | 25.0                   | 0.520             | 15-May-02       | Merrill Lynch         |
| 2-Dec-01               | 4-Jun-01           | Enron Corp            | Baa1/BBB+(M/SP) | 40.0                   | 0.000             | 18-Jun-03       | Merrill Lynch         |
| 2-Dec-01               | 4-Jun-01           | Enron Corp            | Baa1/BBB+(M/SP) | 10.0                   | 0.770             | 18-Jun-03       | Merrill Lynch         |
| 2-Dec-01               | 5-Jun-01           | Enron Corp            | Baa1/BBB+(M/SP) | 10.0                   | 0.970             | 18-Jun-04       | Merrill Lynch         |
| 2-Dec-01               | 15-Jun-01          | Enron Corp            | Baa1/BBB+(M/SP) | 20.0                   | 0.493             | 13-Jun-02       | Merrill Lynch         |

<sup>1</sup> Date of bankruptcy

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### Annex 4: Bond structures in the liberalisation of Japan's capital market: from Samurai via Shogun and Daimyo to euro with Uridashi and global



# Comments on Nishi and Vergus's paper "Asian bond issues in Tokyo: history, structure and prospects"

Toshiharu Kitamura

As a discussant of the Nomura paper, "Asian bond issues in Tokyo: history, structure and prospects", I would like to focus on a few implications of Japanese experiences for emerging Asian bond markets.

## 1. Division of labour in financial intermediation

Many studies indicate that, in East Asia, the banking sector has generally dominated the function of financial intermediation (with the possible exception of the Philippines). Several factors are responsible for the present situation.

- (1) The presence of a government bond market is considered a precondition for the development of a corporate bond market, but government bond markets in East Asia have not been well developed.
- (2) In contrast, the banking mechanism from deposit-taking to loan-making has been strongly supported by the legal framework typified by the central bank and a variety of policy measures in many East Asian countries, including Japan.
- (3) As economic arguments suggest, information asymmetry existed tenaciously between fund providers (investors) and fund raisers (corporations). In other words, at earlier stages, fund raisers in general failed to provide relevant information to fund providers, and only banks were in a position to be well informed about borrowers' activities and thus able to monitor them. This was the case even in Japan until recently.

Only top-level fund-raising institutions such as blue-chip sovereigns and well established corporations have enjoyed direct access to bond markets. However, the so-called double mismatch in 1997 and 1998 in East Asia revealed the shortcomings of financial intermediation that is overly dependent on the banking sector. As a result, more attention has been focused on fostering corporate bond markets.

Even so, bank domination will remain strong in the so-called middle market in many East Asian countries, including Japan. Therefore, it follows that the basic framework for financial intermediation in East Asia will be based on a double-channel approach, paying due attention to both direct finance (capital markets, including bond markets) and indirect finance (banking business). Emphasising only bond markets in East Asia does not adequately address the region's financial intermediation issues.

## 2. Business conflicts (business territorial disputes) and market competition

In the background of the Tokyo Samurai bond market, which appears to have peaked in around 1996, is the fact that, inside Japan, the traditional financial system has continued to help the banking sector dominate the domestic corporate financing business, securing very

close relationships between individual banks and corporations. In general, the Japanese bond market has been predominantly one of government-related bonds (more than 80% of total yen-denominated bond issuance in 2002), and even the issuance of bank debentures has considerably surpassed that of corporate bonds. In this setting, the position of securities firms (investment banks) has been highly biased towards equity business. It is no exaggeration to say that non-resident bond issuers took advantage of Japan's abundant financial resources through the Tokyo Samurai bond market, which has only a small share of Japan's entire financial market.

In contrast, the banking sector has successfully defended its vested interests in corporate financing. This was especially true before the 1990s: the banking sector, notably the Industrial Bank of Japan, had implicitly enforced rigid criteria for issuance eligibility and emphasised the need for a fiscal agent for the public offering of corporate bonds.

Conversely, the securities firms had obstinately interfered in the bond offering business engaged in by bank-affiliated securities subsidiaries both at home and abroad, particularly limits on the lead-manager role. Thus, there had been a battle over the business territory between the banking and securities business sectors in Japan during the 1980s. In these circumstances, the slow process of deregulation of restrictive practices in bond issuance in the 1980s and 1990s led many fund-raising institutions to use the Eurobond market outside Japan. Accordingly, Japan's domestic bond market was seriously hollowed out despite abundant domestic financial resources.

Two lessons for Asian bond markets could be derived from these Japanese experiences. The first concerns vested interests among related parties in financial markets. In many East Asian countries, the banking sector has dominated and established deeply rooted vested interests in the corporate financing business. The banking sector will naturally try to defend its privileged position over the newly emerging financial channel. (Conflicts of business of this type also existed in the United States, involving regulatory controversies, until 2000.) The lesson for the development of Asian bond markets is that the supervisory authorities should have a fair and clear policy perspective and strong commitment to achieving an efficient and balanced financial intermediary process - one that balances the direct (capital market) and indirect (banking business) finance channels.

The second lesson is related to the competition among bond markets: if a local bond market fails to catch up with international standards, potential corporate issuers will quickly turn to other bond markets. (International standards include disclosure requirements, accounting standards, price transparency, trading and clearing/settlement procedures, and taxation harmonisation, as well as related documentation requirements and effective enforcement.) Financial markets are intensifying competition among themselves. (European stock markets have already indicated some movement in this direction, and perhaps bond markets have similar reasons to do so.) The Eurobond market and the Yankee bond market are already widely used and have been predominant around the world. Similarly, in Asia, Tokyo, Hong Kong, and Singapore have gained good bond market reputations. A bond issuer successful in any local Asian bond market will compare emerging local markets with the leading international bond markets. If there is any inefficiency in the local bond market, potential bond issuers will be easily attracted to those sophisticated leading markets.

The dispersion of both the Shogun (foreign currency-denominated bond offerings in the Tokyo market) and the Daimyo bond market (yen-denominated bonds offered in the Tokyo market but settled in the Euro market) could be interpreted in line with this market competition. The public offerings through Uridashi described in the Nomura paper could be interpreted as a new approach rather than an heir to the Shogun and Daimyo bond markets.

### 3. Currency constraints

Basically, bonds are offered because the issuers are eager to raise funds and the investors are seeking safe yet lucrative securities. However, for cross-border transactions, there arises another factor, related to currency sovereignty. For yen-denominated bonds, the Samurai and the Euroyen bond markets have coexisted since the 1970s. The Samurai market aims at mobilising financial resources from domestic investors of the issuing market, whereas the Euroyen bond market aims at mobilising financial resources from the broader base of international investors. Behind them is a crucial currency issue for the Japanese monetary authorities: whether the yen can be freely used outside Japan for financial transactions among non-residents. The process of using the yen outside Japan was called the Euroisation of the yen. (Nowadays, the common terminology for the process of using or not using an individual national currency outside its original currency territory is the “internationalisation” or “non-internationalisation” of the currency.)

Even the US monetary authorities were cautious about the free use of the US dollar outside the United States in the 1960s, and the German monetary authorities were even more cautious about the free use of the Deutsche mark outside Germany. Japan first faced this issue towards the end of the 1970s. The non-internationalisation of a national currency is generally intended to segregate a country’s domestic economic and financial transactions from international turbulence arising from the free use of the national currency in transactions outside its territory. However, Japan decided to internationalise the yen in the 1980s.

The currency internationalisation issue is not an easy one. For instance, the Swiss monetary authorities have long been cautious about it, and in Asia, Singapore has had a long tradition of non-internationalisation of the Singaporean dollar. The Singaporean approach has impressed monetary authorities in many Asian countries, including Malaysia, Indonesia, and Thailand. Taiwan, China has also strictly maintained this approach for many years. Most recently, many Asian economists have focused on the offshore restrictions on the deliverability of currencies (which give rise to non-deliverable forward (NDF) transactions in several Asian currencies) - which are intended to ensure the exchange rate stability of those currencies. (Offshore NDF transactions provide an offshore margin-based mechanism to hedge those currencies that are considered “unhedgeable” due either to the absence of a local forward market or to limited access to a local currency market.)

In these circumstances, monetary authorities in East Asia will likely remain conservative about the free use of their currencies outside their territories. If so, Asian bonds denominated in local currency will be transacted only inside the territory of the issuing market; thus, it follows that there will be no cross-border transactions of local currency-denominated Asian bonds.

If Asian bonds are denominated in a unit reflecting a regional currency basket such as an Asian Currency Unit (ACU), the question remains whether or not those currencies that compose the currency basket will become freely available for smooth bond trading across borders. Another serious problem is the determination of parities among the component currencies.

If local bond markets have to face severe competition with the sophisticated international bond markets, and if the above-mentioned currency issue remains unsolved, Asian bond markets may have to confine themselves to locally segregated bond markets where local issuers raise funds only from local investors. This may sound most pessimistic, but it is a reality learned from past experience.

A long-term policy perspective will have to be stressed for the successful development of Asian bond markets.

## Recent development of the Korean bond market

Seongtae Lee

Ladies and gentlemen, I am very pleased to speak here today at this Asian Bond Market Research Conference, co-hosted by Korea University and the BIS.

As you are well aware, over the past half century the Asian region has achieved unprecedentedly high economic growth, and it has now emerged as among the key players in the world economy. With this continuing remarkable economic growth, trade within the Asian region is growing rapidly, and there is also a greatly increasing demand for financing. However, regional financial markets have so far not developed sufficiently to meet this demand.

Asia's bond markets, in particular, are far less developed than those of developed countries. According to IMF statistics, the amount outstanding of the primary bond markets of Asia's nine emerging market economies combined totalled USD 1.473 trillion as of the end of 2002. This is only 8% the size of the US primary bond market, 12% that of the 15 EU countries combined and 21% that of Japan. The ratio of Asia's outstanding stock of bonds to GDP is a mere 43%, far lower than the figures of 182% in the United States, 146% in the European Union and 175% in Japan. In their secondary bond markets as well, almost all regional economies have much smaller ratios of turnover to average outstanding stocks compared with advanced nations.

There is an argument that the 1997 financial crisis was aggravated by these poorly developed regional bond markets. The argument goes that because the financial structures of Asian economies were overly reliant on banks and Asian bond markets were poorly developed, the Asian countries had to rely for investment on short-term foreign borrowings, which were inevitably withdrawn in a hurry once the regional crisis hit.

Recently, the Asian countries have accumulated significant amounts of foreign assets, thanks to their continued current account surpluses. However, due to the underdeveloped bond markets here, some say that there have been some inefficiencies in both the raising and the managing of foreign funds in the region.

In the wake of the financial crisis, therefore, countries in the region came to realise the necessity of developing their bond markets and related infrastructure. This enlightenment has become the momentum driving the countries in the region to make the necessary efforts. Let me now share with you the efforts Korea has made since the financial crisis in order to develop its bond markets, and tell you what we have achieved so far.

Before the financial crisis, Korea did not have to issue large quantities of government bonds, due to observing its balanced budget principle. Once the crisis had broken out, however, the long-cherished principle of maintaining balanced budgets was abandoned, and the government began to actively issue bonds, as a means of financing the soaring fiscal deficit and supporting economic recovery. With technical support from the IMF and the World Bank, Korea also embarked, in a step-by-step manner, on a series of institutional improvements. These included the introduction of regular government bond auctions, the establishment of a primary dealer system, the integration of different types of government bonds, the opening of the Korean government bond futures market and the introduction of a fungible issue system.

For its part, the Bank of Korea (BOK), the nation's central bank, has also made considerable efforts to help develop the country's bond markets, including the government bond market. Before the crisis, Korean government bond issuance was to some extent not carried out in accordance with the market mechanism. A portion of any bond issue was discretionarily

allocated for underwriting to certain financial institutions. The remaining part of the issue was taken over by the BOK. The government also sometimes financed its fiscal needs by relying on borrowings from the BOK rather than by issuing bonds. Since June 1998, however, the BOK has not accepted government requests to underwrite government bonds and has advised the government to issue all government bonds in the market, based on market interest rates. In addition, the BOK has improved the infrastructure related to bond transactions. It has introduced an electronic competitive bidding process for government bonds using BOK-Wire and adopted the delivery-versus-payment system for government bonds.

As a result of these efforts, the outstanding volume of Korean government bonds has grown almost seven times since 1997, while the turnover ratio for these bonds has skyrocketed 23 times in the same period. In 2003 the issuance of five-year government bonds increased substantially thanks to the government's efforts to meet growing demand for longer-term bonds on the part of institutional investors such as pension funds and insurance companies. The five-year Korean government bond futures market was also set up in order to allow hedging against the associated risks. In line with these developments, the proportion of five-year government bonds in total bond issuance increased by 7 percentage points in 2003, to 36%.

Korea's corporate bond markets are also in the process of becoming more advanced, through the introduction of new financial instruments and the establishment of relevant institutions that will support bond market development. Since 1999, new products such as asset-backed securities (ABSs), mortgage-backed securities (MBSs), asset-backed commercial paper (ABCP), collateralised loan obligations (CLOs) and collateralised bond obligations (CBOs) have been introduced. After the financial crisis, the market structure for corporate bonds shifted to focus on secured bonds rather than unsecured bonds, and this change required more scientific analysis of issuers' credit risk. In response to this need, the setting-up of new credit rating agencies was allowed, and the fiercer competition among credit rating agencies has led to a significant development of credit risk analysis techniques.

There have also been many improvements in terms of market behaviour. With the implementation of mark-to-market bond valuation, rates of return on fund management are now evaluated and disclosed in accordance with daily bond yields. The introduction of a system for interest rate risk management has also made institutional investors respond more sensitively to changes in bond yields. Accordingly, it is now becoming common practice for market participants to closely watch the BOK's monetary policy, along with economic developments at home and abroad.

As I have just described, Korea's bond markets have gone through remarkable changes, in terms of both quality and quantity, since the financial crisis. The government bond market, in particular, has been totally reshaped across the primary and the secondary markets, as well as its infrastructure. We believe that Korea's bond markets will develop further in the future through continuous efforts to heighten bond market efficiency and to push on with corporate restructuring.

There has been considerable discussion going on recently, in various international cooperative forums such as ASEAN+3 and the EMEAP (Executives' Meeting of East Asia and Pacific Central Banks), of the development of regional bond markets. In ASEAN+3, in particular, views on securitisation and credit guarantees have been discussed. In relation to this issue, Korea has put together a two-tier securitisation draft proposal making the most of the securitisation and credit guarantee mechanism. Other nations have also developed plausible draft proposals in these fields. Meanwhile, the EMEAP, comprising 11 central banks and monetary authorities in the East Asia and Pacific region, has raised a USD 1 billion fund and invested it in dollar-denominated bonds issued by countries in the region. Taking this arrangement one step further, the EMEAP is now actively discussing ways to expand the fund and invest it in local currency denominated bonds in the region.

Under these circumstances, I think that this conference is very significant, in that it brings together distinguished scholars and experts from both at home and abroad, to diagnose the reasons why Asia's bond markets have not been developed sufficiently and to propose new visions and ideas on the ways to facilitate their development.

I hope there will be as many active discussions tomorrow as there were today, through which a variety of epoch-making views will be advanced concerning the development of our regional bond markets.

Thank you for your attention.

# Minding the gap in Asia: foreign and local currency ratings

Kate Kisselev<sup>1</sup> and Frank Packer<sup>2</sup>

## Introduction

As governments embrace the goal of developing local currency bond markets as an alternative to inflows of foreign capital,<sup>3</sup> rating agencies now commonly assign a domestic currency rating to sovereigns in addition to a foreign currency one. In Asia, 18 major sovereigns with foreign debt ratings now have a domestic currency rating from a major rating agency. Usually the domestic rating is higher, reflecting the presumed greater ability and willingness of sovereigns to service debt denominated in their own currency. However, the gap between the two ratings is uniform neither across borrowers nor across agencies.

The distinctions between local and foreign currency ratings are likely to have increasingly important implications for the development of capital markets globally and in Asia in particular. The degree to which rating policies favour a particular currency of denomination might provide significant incentives in terms of investor acceptance and market pricing. Rating policies might reinforce government policy initiatives and regulations as well.<sup>4</sup>

In this paper, we first provide a comparative overview of domestic and foreign currency ratings globally and in Asia in particular. Asian credits are similar to the global sample in terms of both the newcomer status of local currency ratings and the tendency for the local/foreign currency rating gap to be largest in the lower investment grade/upper non-investment grade region. However, differences of opinion among rating agencies regarding the relative creditworthiness of local and foreign currency obligations are quite pronounced in Asia. Within a linear regression framework, we then examine the determinants of the difference between local and foreign currency ratings, and find evidence that differences among agencies are driven by distinctions in their overall rating policy rather than a distinct Asian factor per se. Other than the paper of Trevino and Thomas (2001), ours is

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<sup>3</sup> While the first Asian Bond Fund invested in dollar-denominated debt, East Asian central banks announced in late 2004 the launch of a second fund with a mandate to invest in domestic currency denominated bonds. See the press statement of the Executives' Meeting of East Asia-Pacific Central Banks (EMEAP), 16 December 2004.

<sup>4</sup> For the most part, regulations that key off agency ratings make little distinction between foreign and domestic currency rated claims. Those exceptions that do exist favour domestic currency ratings and/or domestic currency claims. For instance, under the standardised approach of Basel II, a new capital adequacy framework for banks, in the case of foreign currency exposures to multilateral development banks whose convertibility and transfer risk are "considered by national supervisory authorities to be effectively mitigated", the domestic currency rating may be used for risk weighting purposes instead of the foreign currency rating (see Basel Committee on Banking Supervision (2004)). In addition, the framework gives national authorities the general discretion to apply even lower risk weights to their banks' exposures to sovereign (or central bank) domestic currency obligations, which is not the case with foreign currency obligations.

the first to empirically estimate the determinants of the local and foreign currency gap for sovereign credits.

## Foreign and local currency ratings

Over the past few decades, the business of providing sovereign ratings has grown considerably. As of 1985, only 15 countries obtained credit agency bond ratings to borrow in international capital markets. Most of these countries were rated AAA; less financially strong countries relied on bank finance or privately placed bonds. However, over the past 15-20 years, countries at the lower end of the credit quality spectrum have relied increasingly on bond markets, and obtained a credit rating for that purpose.

Initially, most of the new sovereign ratings applied to foreign currency debt, as sovereigns apparently felt little need to obtain a rating for domestic currency obligations. But sovereigns gradually moved to having domestic currency ratings, a likely reflection of efforts to increase the investor base for domestic currency bonds (Tables 1 and 2).

Pretty much the same story holds with Asian ratings. Among Asian sovereigns, only Japan and Australia had foreign currency ratings as of 1975, but more than half of the 18 Asian sovereigns had a foreign currency rating by 1990. And although none had a local currency rating before 1990, the catch-up is now complete, which parallels the global rating phenomenon (Tables 1 and 3).

## What might drive the rating gap?

Rating agencies often give higher ratings to the domestic currency obligations of sovereign states than to their foreign currency ones. This is a global phenomenon: for instance, the average gap between Standard & Poor's local and foreign currency ratings was 0.7 notches globally in late 2004, while the Moody's gap was 0.4 notches. Differences are often justified in terms of the sovereign's ability to tax and appropriate domestic currency assets, which is often judged to be greater than in the case of foreign currency assets. In addition, while the sovereign must generate foreign exchange to repay foreign currency debts, it can print money to meet domestic currency obligations (see, for example, Fitch Investors Service (2003)).<sup>5</sup>

Following this logic, constraints on the sovereign's ability to print domestic currency would tend to reduce the justification for a rating gap. Prime examples would be sovereigns that use the currencies of foreign countries, such as Panama and El Salvador. The countries of the euro area are also special cases; here the delegation of monetary policy to the ECB has greatly diminished the distinctions drawn between local and foreign currency debt.<sup>6</sup> Countries

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<sup>5</sup> Another frequently cited justification for notching is that the incidence of default on local currency debt has been lower than that on foreign currency debt (S&P (2003)). However, this is usually based on the default statistics, which include defaults on bank debt. As for the cases of default on rated bonds, the limited default experience to date suggests that it is not obvious that default on foreign currency bonds tends to precede or be more likely than that on domestic currency bonds (see Packer (2003)).

<sup>6</sup> Though there was a difference of approach over whether foreign currency ratings should be upgraded or domestic currency ratings downgraded, the major rating agencies eliminated or narrowed outstanding domestic/foreign currency rating gaps for euro area countries ahead of and during the transition to the euro (for further discussion, see McCauley and White (1997)).

whose local currency obligations are held by foreigners may also have smaller rating gaps. In these countries, it is the local banking system, rather than the sovereign, that must hedge foreign investments in local currency denominated sovereign debt, and the government may be unwilling to print money if that would impose substantial costs on the banking system. More generally, the frequent existence of significant political costs to high levels of inflation should limit the applicability of the “printing press” argument for high domestic currency ratings.

Another possible exception would be if foreign currency issuance is small relative to the total debt outstanding of a sovereign. After all, one of the underlying principles of sovereign debt analysis is that sovereign risk always depends on the willingness as well as the ability to pay. Given a small enough burden, the sovereign might conceivably make an extra effort to avoid default on foreign currency obligations. It is likely that the relatively small size of the international bonds of emerging market countries in the early 1980s explains why the default experience on bonds at that time was rather limited, despite a range of bank loan restructuring programmes.

Another factor influencing the size of the gap is a purely technical one: there is no rating higher than AAA (Aaa) in the rating agencies’ symbology. The additional credit standing that a foreign currency AAA credit might gain by being denominated in domestic currency is unobservable. In addition, countries that are AA+ can only be raised by one notch, and so forth. Notching should thus become more pronounced and frequent as the foreign currency rating drifts downwards from AAA and AA, which is in fact what we generally observe both globally and in Asia. Little surprise, then, that countries such as Malaysia and the Philippines have marked notching relative to highly rated Singapore, Australia and New Zealand, which have little to no room for a notching-up on their domestic currency obligations.

On the other hand, it appears that the gap peaks in the mid-grade rating category BB. For instance, according to Standard & Poor’s, 83% of all rated sovereigns in the BB category in late 2004 had domestic currency obligations that were rated at least one notch higher than foreign currency obligations (Table 4). By contrast, the relative advantage of domestic currency obligations was much smaller for countries that are further below investment grade; only 27% of countries in the B category enjoy a rating gap. For its part, Standard & Poor’s posits that low-rated countries face risks, such as high degrees of social and political stress, that would also impair their ability to keep servicing domestic obligations in circumstances where foreign currency debts were allowed to default (S&P (2002)).

Asia does follow the same global hump-shaped pattern in the distribution of rating gaps, as is evident in Table 4. The propensity for rating gaps to exceed one notch is noticeable in the A range, where two out of three sovereigns - Korea and Malaysia - have large gaps. Meanwhile, Indonesia has one of the lowest ratings among Asian sovereigns and gets only a single one-notch improvement in the local currency rating from only one of the rating agencies.

## **Differences among the rating agencies**

There are surprisingly sharp differences among the rating agencies with respect to the frequency at and degree to which domestic obligations are given favourable ratings. In particular, Moody’s tends to notch up its domestic currency rating much less frequently than the other agencies; for instance, in November 2004 it gave a higher domestic currency rating on only 30% of its rated universe of sovereigns, compared with 44% for S&P (Table 5).

Moody's also assigned a higher foreign currency rating than domestic currency rating in four cases,<sup>7</sup> with a relatively small proportion of outstanding foreign currency debt relative to foreign exchange reserves always cited as a reason (see Moody's (2003c,d)). By contrast, S&P did not assign a higher foreign currency rating to any sovereign, while Fitch assigned a higher foreign currency rating only in the case of Japan.

Consistent with this global finding, Asian countries see far less notching from Moody's than from Standard & Poor's (Table 6). In fact, the differences are starker in the case of Asia: the average gap between S&P's foreign and local currency ratings was 0.9 notches in Asia, even wider than the 0.6 notch gap for non-Asian countries (Table 6). At the same time, Moody's actually notched Asian countries in the other direction, on average, with a mean Asian gap of -0.3 notches compared to a gap of 0.5 notches for non-Asians. This pattern, that the Asia subsample shows an accentuation of the differences in notching policies among the agencies, has held since 1995, when Asian sovereigns began to receive foreign and local currency ratings widely. In the regression analysis to follow, we explore possible reasons why this may be the case.

## Regression analysis

The previous sections present the stylised facts that, in the case of S&P ratings, there is more likely to be a gap between the foreign currency and domestic currency ratings if a country is in Asia, and that such a gap is likely to be larger if a country is in Asia rather than elsewhere. In the case of Moody's, rating gaps in Asia are smaller than elsewhere. Are these facts simply the by-product of different observable endowments among the Asian economies versus elsewhere, which might tend to magnify both the gap and the agency differences, given the agencies' respective rating technologies? Or rather, might there be an unobserved factor common to Asia that is driving the results, reflecting rating agency biases and/or omitted variables?

## Previous literature

According to general descriptions of the rating process by the rating agencies themselves (see Moody's (2003a, 2004) and S&P (2002, 2004), sovereign local and foreign currency ratings are based on a wide array of quantitative and qualitative factors that are intended to capture political risk, income and economic structure, growth, monetary policy, budgetary and public debt management, and external liquidity and debt. However, quantitative studies of ratings - such as Cantor and Packer (1996), Moody's (2003b) and Borio and Packer (2004) - find that most of the variance in Moody's and S&P ratings can be explained by a relatively small number of variables. Typically, the debt burden itself, default history, per capita income and economic growth are important as indicators of a country's wealth and ability to pay, and indices of political risk are also important, presumably because they proxy for willingness to pay.

Partly because they have been around longer, the literature is more developed with regard to the determinants of foreign currency ratings. Specifically, Cantor and Packer (1996) found that per capita income, inflation, external debt, economic development, and default history were particularly strong predictors of foreign currency ratings. A weaker relationship existed between sovereign ratings and GDP growth and the fiscal balance, and there was no statistical relationship between ratings and the external balance. Moody's (2004) found that

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<sup>7</sup> The four countries are India, Lebanon (one notch), Turkey (two notches) and Japan (five notches).

per capita income, debt/exports, growth, external transfer risk, and government effectiveness explain 91% of the variation in its own foreign currency ratings. In addition to many of the above-listed variables, Borio and Packer (2004) also found corruption perceptions to have significant explanatory power in predicting variation in a panel of foreign currency ratings.

The examination of the determinants of local currency ratings includes another study of Moody's (2003b), which found that government debt/government revenue, per capita income, growth, and government effectiveness explained 87% of the variation in Moody's local currency ratings. In a study of the gap between local and foreign currency ratings, which used a probit methodology, Trevino and Thomas (2001) looked at many of the variables discussed above and also added measures of the term structure of bank debt, a country's share of bank lending, bank commitments, bank borrowing/ deposits, reserves and IMF credit usage, rating agency dummy variables, and regional dummy variables. The authors found regional and rating agency biases present even after the inclusion of these variables.

## Methodology

To address our questions about what is driving the prevalence and magnitude of rating gaps in Asia and globally, we estimate regression models for the foreign currency ratings of Moody's and S&P, the local currency ratings of each agency, and the gap between the foreign currency and local currency ratings. We also estimate a set of regressions where the left-hand side variables are the differences between Moody's and S&P's local currency ratings, foreign currency ratings, and notching gaps. In each of our regressions, we use a fixed effects specification and examine the Asian countries' fixed effects for evidence of an unobserved common factor.

We proceed by identifying 61 variables that reflect political risk, default history, external debt burden, macroeconomic performance, and government financial management, and we collect annual data on these variables for the 101 countries that have both foreign currency and local currency ratings at either S&P or Moody's from 1995 to 2003.<sup>8</sup> Ratings are recoded numerically with AAA and Aaa equal to 1, AA+ and Aa1 equal to 2, and so on. Each end-year rating is assumed to be the function of explanatory variables from that same year, and the candidate explanatory variables are listed in Table 7. In many cases, these variables may capture overlapping aspects of ability and willingness to repay foreign or local currency debt, so we pare the list of variables in each regression by identifying subcategories of variables that may capture the same concept. These subcategories are also listed in Table 7.

We start by fitting a regression model to S&P foreign currency ratings. Within each subcategory of variables, we test the fit of each variable separately. For example, we start by testing the fit of each of the CPI-related variables. If no CPI variable is significant at the .10 level, we proceed to the GDP growth subcategory, leaving out a CPI variable. In cases where only one CPI variable is significant, we retain it while testing GDP growth variables. In cases where several CPI variables are separately significant, we include them together in the regression to see whether they are robust to one another's inclusion. We then eliminate variables that are not robust according to t-statistic, and retain robust CPI variables while testing GDP growth variables. After moving through all subcategories in this way, we then eliminate variables that are no longer statistically significant at the .10 level to arrive at the final S&P foreign currency specification. Hausman tests in nearly every specification suggest

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<sup>8</sup> The sample criteria are that a country must have a foreign currency rating and a local currency rating from either S&P or Moody's at any time between 1995 and 2003, and all economic, political, and financial indicators must be available from the sources listed in Table 7.

that fixed effects rather than random effects are present, so we retain a fixed effects specification for consistency throughout. F-tests in every regression specification confirm the importance of the fixed effects. All regressions are estimated in SAS with two-way (cross-sectional and time-series) fixed effects, and we require countries to have more than one time-series observation in each regression.

We follow the same procedure for Moody's foreign currency ratings, except that the starting point is the final S&P specification, for convenience. We first eliminate variables that are not significant for Moody's, and then move through the subcategories again, testing candidate variables in the same way as we did in fitting the S&P model.

Our starting point for the S&P (Moody's) local currency rating specification is the S&P (Moody's) foreign currency specification. The starting point for the S&P (Moody's) rating gap specification is the union of variables in the S&P (Moody's) foreign currency and local currency specifications. Similarly, the starting point for the S&P-Moody's foreign currency (local currency) rating difference specification is the union of variables in the S&P and Moody's foreign currency (local currency) rating specifications.

### **Rating regressions**

The final regressions of S&P and Moody's foreign currency ratings on full sets of explanatory variables are shown in the first two columns of Table 8. In both regressions, all of the explanatory variables are significant at the .05 level and take the expected signs. Per capita GDP is significant at both agencies, with higher levels of income leading to better ratings. While higher per capita GDP may well imply higher costs associated with default, this variable is also likely to proxy for other indicators of development and creditworthiness. M2/reserves is also significant at both agencies, and this variable captures monetary volatility, excess monetary liquidity, and reserve volatility, so that greater variation in this ratio leads to a worse foreign currency rating. Investment is significant at both agencies and has the expected interpretation: higher rates of investment should generate the ability to repay debts. Overall political risk is an important determinant of both agencies' ratings; higher levels of political risk are associated with worse ratings. The importance of political risk is underscored by the fact that an additional source of political risk is significant in each agency's ratings, with control of corruption associated with better S&P ratings, and regulatory quality associated with better Moody's ratings. Finally, the time elapsed since the last default on foreign currency obligations is also important at both agencies, with longer periods without default associated with better ratings.

The most obvious difference between the agencies' foreign currency rating methodologies is in the treatment of debt and external vulnerability, two critical components of foreign currency ratings. Standard & Poor's appears to focus on total public sector indebtedness, with higher public debt/GDP ratios resulting in worse ratings. It also considers exchange rate regime, with pegged and managed floating regimes penalised by half a notch. The significance of the exchange rate regime variable highlights the view that rigid exchange rates may be a direct constraint on debt servicing capacity; if governments must use reserves to defend a currency, less foreign exchange remains available for debt servicing. By contrast, Moody's appears to weight more directly the net external debt burden, as a fraction of exports.

Adding country-specific fixed effects to the regression improves the fit, as all of the cross-sectional fixed effects are significant. It is noteworthy that although the average of the fixed effects in both the S&P and Moody's regressions implies ratings for Asian sovereigns that are 1.4-1.5 notches better on average than for other countries, there is enough variation within the country fixed effect coefficients that an F-test cannot reject the hypothesis of no difference between Asian and non-Asian countries. Thus, higher credit ratings in Asia can be explained more on the basis of better fundamentals in Asian countries and country-specific factors than the result of an "Asia factor".

Regressions of the local currency ratings of each agency on the explanatory variables are presented in the final two columns of Table 8. All variables are significant at the .05 level and all coefficients take the correct signs. As in the foreign currency rating regressions, per capita GDP is an important explanatory variable for both agencies. Public debt/GDP is now significant for both agencies as well. However, while Moody's appears to weight more heavily in its assessments the variables of economic growth and M2/reserves, S&P appears to weight many more additional variables, including inflation, investment, political risk, control of corruption, exchange rate rigidity, the nominal exchange rate change, and the time elapsed since the last local currency default. The relative parsimony of the Moody's regression bears out the agency's own finding that most of the variation in its local currency ratings can be explained with just a few variables (Moody's (2003b)).

The local currency regression results are consistent with our earlier findings regarding Asian foreign currency ratings. While the average Asian fixed effect is 1.1-1.2 notches better than that of non-Asian countries, this difference is not statistically significant, so we conclude that better average Asian local currency ratings tend to be driven by fundamentals and country-specific effects rather than an "Asia factor".

One of the drawbacks of the above approach to discerning differences in rating agency methodology is the fact that the agencies have rated different sets of countries over time, and it may be these differences in samples, rather than differences in methodology, that drive the regression results. To control for this effect, we impose the requirement that the S&P and Moody's samples be the same and rerun the regressions (Table 9). The explanatory variables from the foreign currency rating regressions are highly robust, with all variables still significant at the .10 level and all coefficients remaining at roughly the same order of magnitude. The Moody's local currency regression is also robust to the sample change. The S&P local currency regression is slightly less robust, with three variables becoming insignificant when we change the sample: the investment, political risk score, and exchange rate rigidity variables are no longer significant at the .10 level.

### Rating gap regressions

Next, we report the results of regressions of the gap between local and foreign currency ratings of S&P and Moody's on the explanatory variables (Table 10, first two columns). Our convention is that a positive gap means that the local currency rating is better than the foreign currency rating. Among the variables, inflation, M2, and M2/reserves are important determinants of the gap between foreign and local currency ratings at both agencies. High inflation tends to lead to a smaller gap between ratings, consistent with high levels of inflation eroding the creditworthiness of the sovereign across the board and thus diminishing the relative safety of local currency obligations. The positive coefficients on the change in M2 or M2/reserves suggest that monetary expansion is initially associated with relatively safer local currency obligations, though the negative coefficients on the volatility of the same variables suggest that this effect has diminishing marginal returns, perhaps for the same reason that high inflation is associated with a diminished rating gap.

Some variables explain rating gaps for Moody's rating only. Per capita GDP is significant in the Moody's regression, with higher levels of income associated with smaller rating gaps. This variable may well be picking up the fact that sovereigns with the best foreign currency ratings cannot enjoy a rating gap because they are already at the top of the rating scale, though it is not clear why such an effect would only hold for Moody's. Saving is also significant in the Moody's regression, with higher saving rates permitting larger rating gaps. When a sovereign can tap a large pool of local savings, Moody's may view it as easier for the sovereign to roll over local currency debt and avoid default. Public debt/GDP leads to smaller rating gaps in the Moody's regression, which suggests that Moody's views very heavy debt burdens as making default more likely on all debt, regardless of currency. Real effective exchange rate overvaluation also leads to larger gaps at Moody's, and this may illustrate the

fact that it is expensive to maintain an overvalued exchange rate, and using foreign exchange to defend a currency reduces the availability of foreign exchange for repaying debt.

A few variables enter uniquely into the S&P gap regressions as well. For instance, the measures of regulatory quality and import cover lead to larger rating gaps in the S&P regression, while the time elapsed since local currency default narrows the gap. The latter result perhaps indicates that S&P is more likely to view longer default-free periods as an important sign of creditworthiness on all obligations, which should diminish any foreign-local currency differential.

In the gap regressions, the fixed effect for Asian countries is even more muted than it was in the simple foreign and local currency rating regressions. Both the Moody's and S&P regressions suggest that the average expected Asian rating gap is nearly equal to the expected gap in other countries. This finding supports the view that the different degree of "notching" in Asia between local and foreign currency ratings can be better explained by broadly applicable fundamentals than by Asia-specific factors.

### **Rating difference regressions**

The regressions discussed above suggest that the rating agencies may weight variables differently when they assess foreign and local currency creditworthiness. In order to further investigate how the rating agency methodologies differ, we regress the difference between S&P and Moody's foreign currency ratings, and then the difference between their local currency ratings, on the explanatory variables, with the results reported in the final two columns of Table 10. Here, our convention is that positive differences imply a better rating by Moody's.

As in the gap regressions, inflation, M2, and M2/reserves are important determinants of the differences between the agencies' foreign and local currency ratings. S&P tends to weight inflation more heavily as a negative factor in local currency ratings, but relatively less heavily as a negative factor for foreign currency ratings. S&P also tends to weight monetary expansion less heavily as a negative factor for both foreign and local currency ratings. Additionally, control of corruption, domestic debt/GDP, budget revenue/GDP, short-term debt/GDP, exchange rate changes, and time elapsed since default all appear to be weighted significantly differently across the agencies.

Two final findings are that while average Asian fixed effects do not provide assistance in predicting differences between Moody's and S&P foreign currency credit ratings, there is a significant Asian effect in the difference between S&P and Moody's local currency ratings. That is, S&P's Asian local currency rating are significantly better than those of Moody's, even after controlling for differences in rating methodology.

### **Conclusion**

This paper has analysed the patterns of the foreign and local currency ratings of S&P and Moody's both in Asia and globally, with a particular emphasis on whether ratings and the gaps between foreign and local currency ratings are driven by the same factors in Asia as elsewhere in the world, and whether the different rating agencies take the same approach to ratings and gaps. We find that rating gaps in Asia can be explained by many of the same factors that drive gaps globally, and that the evidence for an Asia-wide effect on ratings is slim.

The local-foreign currency rating gaps of both agencies can be partly explained by inflation, M2, and M2/reserves, but we also find evidence of a divergence across the rating agencies

in methodology. Namely, the gaps of S&P appear to depend more heavily on regulatory quality, import cover, and time elapsed since default, while the gaps in Moody's ratings are better explained by per capita income, saving, public debt/GDP, and the real effective exchange rate overvaluation. At the same time, an Asia factor may help to explain the difference of local currency ratings between agencies, since S&P's local currency Asian ratings are significantly better than those of Moody's even after controlling for differences in methodology.

As domestic bond markets grow in importance, understanding local currency sovereign ratings and what makes them different from foreign currency ratings will become increasingly important. This paper suggests that there are important differences in the way rating agencies view the relationship between foreign and local currency ratings, a fact that could have implications for investors and regulators alike.

Table 1  
**Domestic and foreign currency sovereign ratings**

Number of Asian sovereigns in parentheses

|           | New foreign currency ratings | New domestic currency ratings |
|-----------|------------------------------|-------------------------------|
|           | Number of sovereigns         |                               |
| Pre-1985  | 15 (3)                       | 0 (0)                         |
| 1986-90   | 22 (8)                       | 2 (0)                         |
| 1991-95   | 20 (3)                       | 32 (7)                        |
| 1996-2000 | 55 (4)                       | 65 (9)                        |
| 2001-04   | 17 (0)                       | 20 (2)                        |
| Total     | 129 (18)                     | 119 (18)                      |

Note: Sovereigns are deemed to have a rating if one of the three major agencies has a rating outstanding. The United States did not receive a foreign currency rating until 1992.

Sources: Fitch Investors Service; Moody's Investors Service; Standard & Poor's.

Table 2  
**The credit quality of newly assigned sovereign ratings**

|           | New foreign currency ratings | New domestic currency ratings |
|-----------|------------------------------|-------------------------------|
|           | Median rating                |                               |
| Pre-1985  | AAA                          | ...                           |
| 1986-90   | A                            | AA+                           |
| 1991-95   | BB+                          | AAA                           |
| 1996-2000 | BB                           | BBB                           |
| 2001-04   | B+                           | B+                            |

Note: Sovereigns are deemed to have a rating if one of the three major agencies has a rating outstanding.

Sources: Fitch Investors Service; Moody's Investors Service; Standard & Poor's.

Table 3

**Local and foreign currency credit rating of  
selected Asian economies, November 2004**

|                  | S&P  |      | Moody's |      | Fitch |     | R&I |      |
|------------------|------|------|---------|------|-------|-----|-----|------|
|                  | LC   | FC   | LC      | FC   | LC    | FC  | LC  | FC   |
| Australia        | AAA  | AAA  | Aaa     | Aaa  | AAA   | AA+ | AAA | AA+  |
| China            | BBB+ | BBB+ | –       | A2   | A     | A–  | –   | A    |
| Hong Kong SAR    | AA–  | A+   | Aa3     | A1   | AA+   | AA– | AA  | AA–  |
| India            | BB+  | BB   | Ba2     | Baa3 | BB+   | BB+ | –   | BBB  |
| Indonesia        | B+   | B    | B2      | B2   | B+    | B+  | –   | B    |
| Japan            | AA–  | AA–  | A2      | Aaa  | AA–   | AA  | AAA | AAA  |
| Korea            | A+   | A–   | A3      | A3   | AA–   | A   | –   | A–   |
| Macau SAR        | –    | –    | A1      | A1   | –     | –   | –   | –    |
| Malaysia         | A+   | A–   | A3      | Baa1 | A+    | A–  | –   | A–   |
| Mongolia         | B    | B    | –       | –    | –     | –   | –   | –    |
| New Zealand      | AAA  | AA+  | Aaa     | Aaa  | AAA   | AA+ | AAA | AA+  |
| Pakistan         | BB   | B+   | B2      | B2   | –     | –   | –   | –    |
| Papua New Guinea | B+   | B    | B1      | B1   | B+    | B   | –   | –    |
| Philippines      | BBB– | BB   | Ba2     | Ba2  | BB+   | BB  | –   | BBB– |
| Singapore        | AAA  | AAA  | Aaa     | Aaa  | AAA   | AAA | AAA | AAA  |
| Taiwan, China    | AA–  | AA–  | Aa3     | Aa3  | AA    | A+  | –   | AA   |
| Thailand         | A    | BBB+ | Baa1    | Baa1 | A–    | BBB | –   | BBB+ |
| Vietnam          | BB   | BB–  | –       | B1   | BB    | BB– | –   | –    |

Note: LC refers to local currency rating, and FC to foreign currency rating.

Sources: Fitch Investors Service; Japan Rating and Investment Information, Inc (R&I); Moody's Investors Service; Standard & Poor's.

Table 4

**Domestic vs foreign currency rating  
gaps by rating, November 2004**

Asian countries in parentheses

| S&P foreign<br>currency<br>rating | No difference        | Domestic currency debt<br>rated higher by exactly<br>one notch | Domestic currency debt<br>rated higher by more<br>than one notch |
|-----------------------------------|----------------------|----------------------------------------------------------------|------------------------------------------------------------------|
|                                   | Number of sovereigns |                                                                |                                                                  |
| AAA                               | 18 (2)               | 0                                                              | 0                                                                |
| AA                                | 8 (2)                | 2 (1)                                                          | 0                                                                |
| A                                 | 7 (0)                | 8 (1)                                                          | 5 (2)                                                            |
| BBB                               | 2 (1)                | 6 (0)                                                          | 6 (1)                                                            |
| BB                                | 3 (0)                | 11 (2)                                                         | 4 (1)                                                            |
| B                                 | 18 (1)               | 4 (2)                                                          | 1 (1)                                                            |

Note: Ratings indicate the broad letter grade category, eg AA stands for credits rated AA+, AA and AA-.

Source: Standard & Poor's.

Table 5

**Domestic vs foreign currency rating gaps, November 2004**

Asian countries in parentheses

|                      | Moody's              | S&P      |
|----------------------|----------------------|----------|
|                      | Number of sovereigns |          |
| 4-notch differential | –                    | –        |
| 3-notch              | 6 (0)                | 8 (0)    |
| 2-notch              | 7 (0)                | 8 (4)    |
| 1-notch              | 15 (2)               | 31 (6)   |
| No difference        | 62 (10)              | 59 (6)   |
| –1-notch             | 2 (0)                | –        |
| –2-notch             | 1 (1)                | –        |
| –3-notch             | –                    | –        |
| –4-notch             | –                    | –        |
| –5-notch             | 1 (1)                | –        |
| Total                | 94 (14)              | 106 (16) |

Sources: Moody's Investors Service; Standard & Poor's.

Table 6

**Notching of local currency credit rating  
of Asian economies, November 2004**

|                           | <b>S&amp;P<br/>LC/FC gap</b> | <b>Moody's<br/>LC/FC gap</b> | <b>Fitch<br/>LC/FC gap</b> | <b>R&amp;I<br/>LC/FC gap</b> |
|---------------------------|------------------------------|------------------------------|----------------------------|------------------------------|
| Australia                 | 0                            | 0                            | 1                          | 1                            |
| China                     | 0                            | –                            | 1                          | –                            |
| Hong Kong SAR             | 1                            | 1                            | 2                          | 1                            |
| India                     | 1                            | –2                           | 0                          | –                            |
| Indonesia                 | 1                            | 0                            | 0                          | –                            |
| Japan                     | 0                            | –5                           | –1                         | 0                            |
| Korea                     | 2                            | 0                            | 2                          | –                            |
| Macau SAR                 | –                            | 0                            | –                          | –                            |
| Malaysia                  | 2                            | 1                            | 2                          | –                            |
| Mongolia                  | 0                            | –                            | –                          | –                            |
| New Zealand               | 1                            | 0                            | 1                          | 1                            |
| Pakistan                  | 2                            | 0                            | –                          | –                            |
| Papua New Guinea          | 1                            | 0                            | 1                          | –                            |
| Philippines               | 2                            | 0                            | 1                          | –                            |
| Singapore                 | 0                            | 0                            | 0                          | 0                            |
| Taiwan, China             | 0                            | 0                            | 2                          | –                            |
| Thailand                  | 2                            | 0                            | 2                          | –                            |
| Vietnam                   | 1                            | –                            | 1                          | –                            |
| <i>Average</i>            | <i>0.94</i>                  | <i>–0.33</i>                 | <i>1.00</i>                | <i>0.60</i>                  |
| <i>Average (ex Japan)</i> | <i>1.00</i>                  | <i>0.00</i>                  | <i>1.14</i>                | <i>0.75</i>                  |

Note: LC refers to local currency rating, and FC to foreign currency rating.

Sources: Fitch Investors Service; Japan Rating and Investment Information, Inc (R&I); Moody's Investors Service; Standard & Poor's.

Table 7

**Explanatory regression variables**

| Category           | Subcategory        | Variables                                                                                                                                                                                                            |
|--------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Macroeconomic      | Inflation          | Inflation over 1 year, 5 years and 10 years<br>Log inflation over 1 year, 5 years and 10 years                                                                                                                       |
|                    | GDP                | Log per capita GDP<br>Per capita GDP<br>GDP growth 1-year rate<br>GDP growth 3-year rate<br>GDP growth 3-year average annual rate                                                                                    |
|                    | Monetary           | M2: 1-year, 5-year, 10-year, % change<br>M2: log 1-year, 5-year and 10-year change<br>M2: 1-year, 5-year and 10-year volatility<br>M2: log 1-year, 5-year and 10-year volatility                                     |
|                    | Monetary/liquidity | M2/reserves: 1-year, 5-year, 10-year, % change<br>M2/reserves: log 1-year, 5-year and 10-year change<br>M2/reserves: 1-year, 5-year and 10-year volatility<br>M2/reserves: log 1-year, 5-year and 10-year volatility |
|                    | Saving/investment  | Saving/GDP<br>Investment/GDP                                                                                                                                                                                         |
|                    | Political          | Political                                                                                                                                                                                                            |
| Government finance | Government finance | Public debt/GDP<br>Fiscal balance/GDP<br>Budget revenue/GDP<br>Domestic debt/GDP<br>Government debt/revenue                                                                                                          |
| External position  | Debt               | Net debt/GDP<br>Net debt/exports<br>Gross debt/exports<br>Gross debt/GDP<br>Short-term debt/reserves<br>Short-term debt/GDP<br>Import cover                                                                          |
|                    | Exchange rate      | Nominal exchange rate 1-year change<br>Real effective exchange rate, % deviation from LT average (JPMorgan Chase)<br>IMF exchange rate regime dummy variable (pegs and managed floats are coded as 1)                |
|                    | Default            | Years since foreign currency default<br>Log years since foreign currency default<br>Years since local currency default<br>Log years since local currency default                                                     |

Sources: Transparency International; Political Risk Services' *International Country Risk Guide*; Kaufmann et al (2003); EIU; Datastream; Standard & Poor's; JPMorgan Chase.

Table 8

**The determinants of Moody's and S&P's  
foreign and local currency ratings**

| Agency                                              | S&P                        |               | Moody's                    |               | S&P                      |               | Moody's                  |               |
|-----------------------------------------------------|----------------------------|---------------|----------------------------|---------------|--------------------------|---------------|--------------------------|---------------|
|                                                     | Foreign<br>currency rating |               | Foreign<br>currency rating |               | Local<br>currency rating |               | Local<br>currency rating |               |
| Dependent variable                                  |                            |               |                            |               |                          |               |                          |               |
| R-squared                                           | .9949                      |               | .9961                      |               | .9879                    |               | .9951                    |               |
| F-test of significance of<br>fixed effects, p-value | <.0001                     |               | <.0001                     |               | <.0001                   |               | <.0001                   |               |
| Hausman test, fixed/<br>random effects, p-value     | .0068                      |               | .1642                      |               | .0026                    |               | .0004                    |               |
| Degrees of freedom                                  | 329                        |               | 235                        |               | 358                      |               | 340                      |               |
| Independent variables                               | <b>Coeff</b>               | <b>t-stat</b> | <b>Coeff</b>               | <b>t-stat</b> | <b>Coeff</b>             | <b>t-stat</b> | <b>Coeff</b>             | <b>t-stat</b> |
| <b>Macroeconomic</b>                                |                            |               |                            |               |                          |               |                          |               |
| Inflation, log 1-yr                                 |                            |               |                            |               | 0.366                    | 3.930         |                          |               |
| Inflation, 1-yr                                     |                            |               |                            |               |                          |               |                          |               |
| Inflation, log 10-yr                                |                            |               |                            |               |                          |               |                          |               |
| Per capita GDP, log                                 | -3.016                     | -7.870        | -2.231                     | -5.360        | -1.752                   | -3.170        | -0.985                   | -2.950        |
| GDP growth, 3-yr avg                                |                            |               |                            |               |                          |               | -0.093                   | -3.460        |
| M2, 10-yr % chg                                     |                            |               |                            |               |                          |               |                          |               |
| M2, log 10-yr % chg                                 |                            |               |                            |               |                          |               |                          |               |
| M2, 1-yr log volatility                             |                            |               |                            |               | 0.334                    | 2.600         |                          |               |
| M2, 5-yr volatility                                 |                            |               |                            |               |                          |               |                          |               |
| M2/reserves, 5-yr log<br>volatility                 | 0.463                      | 2.680         | 0.908                      | 4.950         |                          |               | 0.734                    | 4.840         |
| M2/reserves, log 10-yr<br>% chg                     |                            |               |                            |               |                          |               |                          |               |
| M2/reserves, 1-yr volatility                        |                            |               |                            |               |                          |               |                          |               |
| M2/reserves, log 5-yr %<br>chg                      |                            |               |                            |               |                          |               |                          |               |
| Investment                                          | -0.053                     | -2.970        | -0.083                     | -4.210        | -0.064                   | -3.000        |                          |               |
| Saving                                              |                            |               |                            |               |                          |               |                          |               |
| <b>Political</b>                                    |                            |               |                            |               |                          |               |                          |               |
| Political risk score                                | -0.034                     | 2.560         | -0.030                     | 1.970         | -0.045                   | -2.630        |                          |               |
| Regulatory quality                                  |                            |               | -1.418                     | -6.300        |                          |               |                          |               |
| Control of corruption                               | -1.264                     | -4.120        |                            |               | -1.466                   | -3.700        |                          |               |
| <b>Government finance</b>                           |                            |               |                            |               |                          |               |                          |               |
| Public debt/GDP                                     | 0.041                      | 7.040         |                            |               | 0.072                    | 9.690         | 0.037                    | 7.300         |
| Domestic debt/GDP                                   |                            |               |                            |               |                          |               |                          |               |
| Budget revenue/GDP                                  |                            |               |                            |               |                          |               |                          |               |
| <b>External</b>                                     |                            |               |                            |               |                          |               |                          |               |
| Net debt/exports                                    |                            |               | 0.004                      | 2.420         |                          |               |                          |               |
| Short-term debt/GDP                                 |                            |               |                            |               |                          |               |                          |               |
| Import cover                                        |                            |               |                            |               |                          |               |                          |               |

Table 8 (cont)

**The determinants of Moody's and S&P's  
foreign and local currency ratings**

| Agency                                    | S&P                        |        | Moody's                    |        | S&P                      |        | Moody's                  |        |
|-------------------------------------------|----------------------------|--------|----------------------------|--------|--------------------------|--------|--------------------------|--------|
|                                           | Foreign<br>currency rating |        | Foreign<br>currency rating |        | Local<br>currency rating |        | Local<br>currency rating |        |
| Dependent variable                        |                            |        |                            |        |                          |        |                          |        |
| Independent variables                     | Coeff                      | t-stat | Coeff                      | t-stat | Coeff                    | t-stat | Coeff                    | t-stat |
| <b>External (cont)</b>                    |                            |        |                            |        |                          |        |                          |        |
| Exchange rate rigidity                    | 0.493                      | 2.580  |                            |        | 0.584                    | 2.510  |                          |        |
| Exchange rate, 1-yr chg                   |                            |        |                            |        | -0.012                   | -3.320 |                          |        |
| Real effective exchange rate              |                            |        |                            |        |                          |        |                          |        |
| Years since foreign currency default, log | -0.346                     | -2.910 | -0.236                     | -2.790 |                          |        |                          |        |
| Years since local currency default, log   |                            |        |                            |        | -0.661                   | -2.110 |                          |        |
| Years since local currency default        |                            |        |                            |        |                          |        |                          |        |
| <b>Time-series fixed effects</b>          |                            |        |                            |        |                          |        |                          |        |
| Year 1995                                 |                            |        |                            |        |                          |        | -0.143                   | -0.580 |
| Year 1996                                 | -0.197                     | -0.650 | 0.013                      | 0.040  | -0.854                   | -2.330 | -0.151                   | -0.610 |
| Year 1997                                 | -0.031                     | -0.110 | 0.482                      | 1.650  | -0.613                   | -1.790 | -0.049                   | -0.230 |
| Year 1998                                 | -0.255                     | -1.400 | 0.376                      | 1.960  | -0.461                   | -2.070 | 0.195                    | 1.220  |
| Year 1999                                 | -0.298                     | -1.810 | 0.224                      | 1.240  | -0.154                   | -0.730 | 0.023                    | 0.160  |
| Year 2000                                 | -0.196                     | -1.230 | 0.121                      | 0.710  | -0.237                   | -1.150 | 0.035                    | 0.250  |
| Year 2001                                 | -0.244                     | -1.580 | 0.158                      | 0.950  | -0.123                   | -0.590 | -0.003                   | -0.020 |
| Year 2002                                 | -0.341                     | -2.380 | -0.259                     | -1.590 | -0.327                   | -1.760 | -0.029                   | -0.220 |
| <b>Cross-sectional fixed effects</b>      |                            |        |                            |        |                          |        |                          |        |
| Argentina                                 | 42.066                     | 11.990 | 36.030                     | 9.340  | 30.755                   | 6.210  | 20.740                   | 6.650  |
| Australia                                 | 38.690                     | 10.100 | 29.766                     | 7.150  | 27.594                   | 5.110  | 8.888                    | 2.590  |
| Austria                                   |                            |        |                            |        | 24.271                   | 4.310  | 7.661                    | 2.100  |
| Bahrain                                   | 37.817                     | 10.290 |                            |        | 26.200                   | 5.090  |                          |        |
| Barbados                                  |                            |        |                            |        |                          |        |                          |        |
| Belgium                                   |                            |        |                            |        | 21.543                   | 3.750  |                          |        |
| Bolivia                                   |                            |        | 31.343                     | 10.230 |                          |        |                          |        |
| Botswana                                  | 35.650                     | 11.300 |                            |        | 25.630                   | 5.710  | 12.167                   | 4.310  |
| Brazil                                    | 39.252                     | 11.950 | 34.015                     | 9.460  | 27.670                   | 5.950  | 19.606                   | 6.750  |
| Bulgaria                                  | 35.604                     | 11.350 | 33.375                     | 10.180 | 26.324                   | 6.060  | 17.419                   | 6.340  |
| Canada                                    | 36.597                     | 9.060  | 29.884                     | 7.130  | 24.147                   | 4.270  | 7.431                    | 2.060  |
| Chile                                     | 37.966                     | 11.700 | 32.059                     | 9.160  | 26.727                   | 5.840  | 12.227                   | 4.190  |
| Colombia                                  | 33.313                     | 10.380 | 26.989                     | 7.660  | 23.193                   | 5.430  | 11.423                   | 4.040  |
| Costa Rica                                | 39.463                     | 11.870 | 33.270                     | 9.380  | 30.149                   | 6.480  | 16.238                   | 5.480  |
| Croatia                                   | 36.586                     | 10.760 | 32.284                     | 8.980  | 23.328                   | 4.780  | 13.537                   | 4.480  |
| Cyprus                                    | 37.123                     | 9.760  | 31.503                     | 7.860  | 23.764                   | 4.450  | 11.859                   | 3.480  |
| Czech Republic                            | 36.820                     | 10.910 | 31.375                     | 8.690  | 23.978                   | 4.950  | 11.826                   | 3.910  |

Table 8 (cont)

**The determinants of Moody's and S&P's  
foreign and local currency ratings**

| Agency                                      | S&P                        |        | Moody's                    |        | S&P                      |        | Moody's                  |        |
|---------------------------------------------|----------------------------|--------|----------------------------|--------|--------------------------|--------|--------------------------|--------|
|                                             | Foreign<br>currency rating |        | Foreign<br>currency rating |        | Local<br>currency rating |        | Local<br>currency rating |        |
|                                             | Coeff                      | t-stat | Coeff                      | t-stat | Coeff                    | t-stat | Coeff                    | t-stat |
| <b>Cross-sectional fixed effects (cont)</b> |                            |        |                            |        |                          |        |                          |        |
| Denmark                                     | 38.360                     | 9.380  | 29.897                     | 6.880  | 26.363                   | 4.600  | 7.895                    | 2.150  |
| Dominican Republic                          | 38.269                     | 12.400 | 32.239                     | 9.560  | 30.655                   | 6.800  | 18.846                   | 6.970  |
| Ecuador                                     | 38.642                     | 12.060 | 34.761                     | 10.510 | 25.128                   | 5.550  | 19.327                   | 6.970  |
| Egypt                                       | 30.896                     | 10.180 | 29.295                     | 9.540  | 19.215                   | 4.590  | 11.276                   | 4.250  |
| El Salvador                                 | 35.873                     | 11.580 | 29.702                     | 8.800  | 24.268                   | 5.580  | 14.114                   | 5.200  |
| Estonia                                     | 36.972                     | 11.500 | 29.650                     | 8.300  | 27.612                   | 6.030  | 12.079                   | 4.190  |
| Finland                                     | 36.491                     | 8.890  | 27.110                     | 6.100  | 26.513                   | 4.700  | 6.196                    | 1.690  |
| France                                      | 34.486                     | 8.610  | 27.636                     | 6.530  | 22.736                   | 4.050  | 7.248                    | 2.010  |
| Germany                                     | 35.456                     | 8.850  |                            |        | 24.001                   | 4.270  | 7.269                    | 2.010  |
| Greece                                      |                            |        |                            |        | 23.261                   | 4.310  | 9.722                    | 2.800  |
| Guatemala                                   |                            |        |                            |        |                          |        | 16.280                   | 6.170  |
| Hong Kong SAR                               | 42.158                     | 11.200 |                            |        | 32.084                   | 6.070  |                          |        |
| Hungary                                     |                            |        |                            |        | 24.702                   | 5.080  |                          |        |
| Iceland                                     | 41.818                     | 10.380 | 31.264                     | 7.140  | 27.720                   | 4.870  | 8.048                    | 2.230  |
| India                                       | 31.870                     | 12.330 |                            |        | 21.837                   | 6.190  | 15.682                   | 7.020  |
| Indonesia                                   | 32.841                     | 11.540 | 29.574                     | 9.980  | 23.548                   | 5.990  | 17.839                   | 7.220  |
| Ireland                                     | 37.489                     | 9.390  |                            |        | 26.707                   | 4.770  | 8.711                    | 2.450  |
| Israel                                      | 37.226                     | 9.370  | 32.177                     | 7.990  | 21.479                   | 3.870  | 10.981                   | 3.090  |
| Italy                                       | 33.010                     | 7.990  | 29.440                     | 6.960  | 19.251                   | 3.340  | 7.742                    | 2.100  |
| Jamaica                                     | 35.997                     | 10.120 | 34.626                     | 10.150 | 22.921                   | 4.660  | 11.676                   | 3.760  |
| Japan                                       | 34.617                     | 7.990  | 31.204                     | 7.300  | 20.567                   | 3.390  | 7.603                    | 1.980  |
| Jordan                                      | 34.562                     | 10.920 | 32.587                     | 10.230 | 22.675                   | 5.220  | 15.437                   | 5.550  |
| Kazakhstan                                  | 35.176                     | 11.550 | 28.188                     | 8.300  | 26.046                   | 6.260  | 14.228                   | 5.450  |
| Kuwait                                      | 37.615                     | 10.110 |                            |        | 25.484                   | 4.810  | 14.352                   | 4.270  |
| Latvia                                      | 36.325                     | 11.560 | 30.374                     | 8.870  | 25.933                   | 5.850  | 12.829                   | 4.590  |
| Lebanon                                     | 35.836                     | 9.370  | 36.395                     | 10.130 | 22.581                   | 4.370  | 15.976                   | 4.760  |
| Lithuania                                   | 36.458                     | 11.320 | 31.195                     | 8.930  | 26.082                   | 5.790  | 13.767                   | 4.790  |
| Malaysia                                    | 35.989                     | 11.030 | 31.147                     | 9.020  | 24.230                   | 5.350  | 12.750                   | 4.400  |
| Malta                                       | 36.123                     | 9.870  |                            |        | 23.025                   | 4.490  | 13.197                   | 4.050  |
| Mauritius                                   |                            |        |                            |        |                          |        | 12.026                   | 4.140  |
| Mexico                                      | 39.169                     | 11.620 | 32.694                     | 9.030  | 27.604                   | 5.880  | 15.226                   | 5.130  |
| Moldova                                     |                            |        |                            |        |                          |        | 18.243                   | 7.750  |
| Mongolia                                    | 37.041                     | 11.780 |                            |        | 24.691                   | 5.480  |                          |        |
| Morocco                                     | 33.859                     | 11.220 | 30.190                     | 9.710  | 22.095                   | 5.310  | 14.429                   | 5.420  |
| Netherlands                                 | 37.108                     | 9.170  |                            |        | 26.405                   | 4.710  | 7.186                    | 1.990  |
| New Zealand                                 | 37.625                     | 10.050 | 28.299                     | 7.000  | 26.987                   | 5.130  | 8.080                    | 2.400  |

Table 8 (cont)

**The determinants of Moody's and S&P's  
foreign and local currency ratings**

| Agency                                      | S&P                        |                   | Moody's                    |                   | S&P                      |                   | Moody's                  |                   |
|---------------------------------------------|----------------------------|-------------------|----------------------------|-------------------|--------------------------|-------------------|--------------------------|-------------------|
|                                             | Foreign<br>currency rating |                   | Foreign<br>currency rating |                   | Local<br>currency rating |                   | Local<br>currency rating |                   |
|                                             | Coeff                      | t-stat            | Coeff                      | t-stat            | Coeff                    | t-stat            | Coeff                    | t-stat            |
| <b>Cross-sectional fixed effects (cont)</b> |                            |                   |                            |                   |                          |                   |                          |                   |
| Nicaragua                                   |                            |                   | 30.400                     | 10.390            |                          |                   | 14.347                   | 5.670             |
| Norway                                      | 39.149                     | 9.610             |                            |                   | 28.197                   | 4.910             | 9.101                    | 2.490             |
| Oman                                        | 40.673                     | 11.660            | 32.591                     | 8.510             | 31.162                   | 6.520             | 16.078                   | 5.180             |
| Pakistan                                    | 30.697                     | 11.400            | 28.556                     | 9.950             | 21.952                   | 6.060             | 17.578                   | 7.520             |
| Panama                                      |                            |                   |                            |                   |                          |                   |                          |                   |
| Papua New Guinea                            | 32.810                     | 11.660            |                            |                   | 22.335                   | 5.810             | 15.894                   | 6.590             |
| Paraguay                                    | 37.156                     | 12.600            |                            |                   | 27.770                   | 6.800             | 18.626                   | 7.290             |
| Peru                                        | 36.977                     | 12.040            | 32.898                     | 10.050            | 28.206                   | 6.640             | 15.282                   | 5.620             |
| Philippines                                 | 32.411                     | 11.240            | 29.233                     | 9.850             | 21.378                   | 5.350             | 13.338                   | 5.330             |
| Poland                                      | 36.635                     | 11.040            | 30.687                     | 8.630             | 25.441                   | 5.450             | 11.975                   | 4.030             |
| Portugal                                    | 34.721                     | 9.280             |                            |                   | 23.997                   | 4.550             | 8.481                    | 2.540             |
| Qatar                                       | 40.000                     | 9.770             |                            |                   | 26.635                   | 4.650             | 14.710                   | 4.040             |
| Romania                                     | 38.991                     | 12.850            | 34.770                     | 10.550            | 29.474                   | 6.930             | 20.244                   | 7.560             |
| Russia                                      | 35.430                     | 11.070            | 32.009                     | 9.180             | 24.258                   | 5.310             | 17.049                   | 6.140             |
| Senegal                                     |                            |                   |                            |                   | 24.887                   | 6.810             |                          |                   |
| Singapore                                   | 35.674                     | 8.950             |                            |                   | 23.292                   | 4.100             | 7.136                    | 1.990             |
| Slovakia                                    | 37.991                     | 11.490            | 32.044                     | 8.990             | 25.251                   | 5.370             | 12.211                   | 4.160             |
| Slovenia                                    | 37.127                     | 10.310            | 30.644                     | 7.890             | 23.436                   | 4.510             |                          |                   |
| South Africa                                | 35.953                     | 11.180            | 29.310                     | 8.460             | 24.724                   | 5.500             | 11.810                   | 4.120             |
| Spain                                       | 35.348                     | 9.100             | 28.584                     | 7.000             | 24.312                   | 4.530             | 7.837                    | 2.270             |
| Sweden                                      | 37.393                     | 9.120             |                            |                   | 24.457                   | 4.180             | 7.650                    | 2.080             |
| Switzerland                                 | 39.128                     | 9.490             |                            |                   | 28.306                   | 4.950             | 8.411                    | 2.280             |
| Thailand                                    | 33.952                     | 10.990            | 30.294                     | 9.300             | 24.058                   | 5.640             | 12.422                   | 4.540             |
| Trinidad                                    | 37.049                     | 10.550            | 32.732                     | 8.840             | 24.834                   | 5.090             | 13.992                   | 4.500             |
| Tunisia                                     | 34.659                     | 11.100            |                            |                   | 22.762                   | 5.280             | 13.575                   | 4.920             |
| Turkey                                      | 38.494                     | 11.610            | 33.704                     | 9.780             | 28.213                   | 6.090             | 19.083                   | 6.490             |
| Ukraine                                     | 34.907                     | 12.320            | 30.390                     | 9.840             | 26.194                   | 6.530             | 20.564                   | 8.480             |
| United Kingdom                              | 37.322                     | 9.360             | 29.444                     | 7.000             | 26.323                   | 4.720             | 8.137                    | 2.300             |
| United States                               | 37.749                     | 9.170             |                            |                   | 26.569                   | 4.640             | 8.305                    | 2.260             |
| Uruguay                                     | 38.842                     | 11.300            | 33.406                     | 9.030             | 28.855                   | 6.010             | 16.581                   | 5.370             |
| Venezuela                                   | 39.969                     | 11.910            | 34.759                     | 9.520             |                          |                   | 21.854                   | 7.350             |
| Vietnam                                     |                            |                   |                            |                   | 22.940                   | 6.270             |                          |                   |
| <i>Asia average</i>                         | 35.473                     | 3.31 <sup>1</sup> | 29.931                     | 3.57 <sup>1</sup> | 24.272                   | 4.55 <sup>1</sup> | 11.963                   | 2.93 <sup>1</sup> |
| <i>Non-Asia average</i>                     | 36.897                     | 3.47 <sup>1</sup> | 31.457                     | 3.58 <sup>1</sup> | 25.381                   | 4.85 <sup>1</sup> | 13.124                   | 3.07 <sup>1</sup> |

<sup>1</sup> Standard deviations are given for the average Asian and non-Asian fixed effect. Asian countries are shaded.

Table 9

**The determinants of Moody's and S&P's foreign  
and local currency ratings, common sample**

| Agency                                              | S&P                        |        | Moody's                    |        | S&P                      |        | Moody's                  |        |
|-----------------------------------------------------|----------------------------|--------|----------------------------|--------|--------------------------|--------|--------------------------|--------|
|                                                     | Foreign<br>currency rating |        | Foreign<br>currency rating |        | Local<br>currency rating |        | Local<br>currency rating |        |
| Dependent variable                                  |                            |        |                            |        |                          |        |                          |        |
| R-squared                                           | .9954                      |        | .9959                      |        | .9880                    |        | .9947                    |        |
| F-test of significance of<br>fixed effects, p-value | <.0001                     |        | <.0001                     |        | <.0001                   |        | <.0001                   |        |
| Hausman test, fixed/<br>random effects, p-value     | .0209                      |        | .1801                      |        | .0026                    |        | .0010                    |        |
| Degrees of freedom                                  | 219                        |        | 220                        |        | 269                      |        | 274                      |        |
| Independent variables                               | Coeff                      | t-stat | Coeff                      | T-stat | Coeff                    | t-stat | Coeff                    | t-stat |
| <b>Macroeconomic</b>                                |                            |        |                            |        |                          |        |                          |        |
| Inflation, log 1-yr                                 |                            |        |                            |        | 0.308                    | 2.830  |                          |        |
| Inflation, 1-yr                                     |                            |        |                            |        |                          |        |                          |        |
| Inflation, log 10-yr                                |                            |        |                            |        |                          |        |                          |        |
| Per capita GDP, log                                 | -2.711                     | -5.950 | -2.121                     | -4.980 | -2.375                   | -3.510 | -0.873                   | -2.280 |
| GDP growth, 3-yr avg                                |                            |        |                            |        |                          |        | -0.084                   | -2.700 |
| M2, 10-yr % chg                                     |                            |        |                            |        |                          |        |                          |        |
| M2, log 10-yr % chg                                 |                            |        |                            |        |                          |        |                          |        |
| M2, 1-yr log volatility                             |                            |        |                            |        | 0.311                    | 1.920  |                          |        |
| M2, 5-yr volatility                                 |                            |        |                            |        |                          |        |                          |        |
| M2/reserves, 5-yr log<br>volatility                 | 0.713                      | 3.230  | 0.995                      | 4.970  |                          |        | 0.909                    | 4.910  |
| M2/reserves, log 10-yr<br>% chg                     |                            |        |                            |        |                          |        |                          |        |
| M2/reserves, 1-yr<br>volatility                     |                            |        |                            |        |                          |        |                          |        |
| M2/reserves, log 5-yr %<br>chg                      |                            |        |                            |        |                          |        |                          |        |
| Investment                                          | -0.069                     | -3.000 | -0.086                     | -3.920 | -0.029                   | -0.940 |                          |        |
| Saving                                              |                            |        |                            |        |                          |        |                          |        |
| <b>Political</b>                                    |                            |        |                            |        |                          |        |                          |        |
| Political risk score                                | -0.046                     | -2.760 | -0.029                     | -1.820 | -0.024                   | -1.090 |                          |        |
| Regulatory quality                                  |                            |        | -1.497                     | -6.400 |                          |        |                          |        |
| Control of corruption                               | -1.140                     | -2.750 |                            |        | -0.972                   | -1.960 |                          |        |
| <b>Government finance</b>                           |                            |        |                            |        |                          |        |                          |        |
| Public debt/GDP                                     | 0.045                      | 6.770  |                            |        | 0.073                    | 7.730  | 0.040                    | 6.430  |
| Domestic debt/GDP                                   |                            |        |                            |        |                          |        |                          |        |
| Budget revenue/GDP                                  |                            |        |                            |        |                          |        |                          |        |
| <b>External</b>                                     |                            |        |                            |        |                          |        |                          |        |
| Net debt/exports                                    |                            |        | 0.004                      | 2.480  |                          |        |                          |        |
| Short-term debt/GDP                                 |                            |        |                            |        |                          |        |                          |        |
| Import cover                                        |                            |        |                            |        |                          |        |                          |        |
| Exchange rate rigidity                              | 0.787                      | 3.230  |                            |        | -0.005                   | -0.020 |                          |        |

Table 9 (cont)

**The determinants of Moody's and S&P's foreign  
and local currency ratings, common sample**

| Agency                                                     | S&P                        |        | Moody's                    |        | S&P                      |         | Moody's                  |        |
|------------------------------------------------------------|----------------------------|--------|----------------------------|--------|--------------------------|---------|--------------------------|--------|
|                                                            | Foreign<br>currency rating |        | Foreign<br>currency rating |        | Local<br>currency rating |         | Local<br>currency rating |        |
| Dependent variable                                         |                            |        |                            |        |                          |         |                          |        |
| Independent variables                                      | Coeff                      | t-stat | Coeff                      | T-stat | Coeff                    | t-stat  | Coeff                    | t-stat |
| Exchange rate, 1-yr chg<br>Real effective exchange<br>rate |                            |        |                            |        | -0.012                   | - 2.800 |                          |        |
| Years since foreign<br>currency default, log               | -0.325                     | -2.430 | -0.221                     | -1.790 |                          |         |                          |        |
| Years since local<br>currency default, log                 |                            |        |                            |        | -0.660                   | - 1.720 |                          |        |
| Years since local<br>currency default                      |                            |        |                            |        |                          |         |                          |        |
| <b>Time-series fixed<br/>effects</b>                       |                            |        |                            |        |                          |         |                          |        |
| Year 1995                                                  |                            |        |                            |        |                          |         |                          |        |
| Year 1996                                                  | -0.215                     | -0.600 | 0.059                      | 0.190  | -1.545                   | - 1.270 | -0.214                   | -0.260 |
| Year 1997                                                  | -0.058                     | -0.180 | 0.516                      | 1.730  | -0.973                   | -1.370  | -0.248                   | -0.500 |
| Year 1998                                                  | -0.213                     | -0.930 | 0.456                      | 2.240  | -0.646                   | - 2.370 | 0.220                    | 1.220  |
| Year 1999                                                  | -0.443                     | -2.170 | 0.255                      | 1.380  | -0.262                   | - 1.100 | 0.044                    | 0.280  |
| Year 2000                                                  | -0.266                     | -1.350 | 0.158                      | 0.900  | -0.272                   | - 1.180 | 0.071                    | 0.460  |
| Year 2001                                                  | -0.148                     | -0.780 | 0.196                      | 1.150  | -0.200                   | - 0.860 | 0.042                    | 0.280  |
| Year 2002                                                  | -0.263                     | -1.470 | -0.177                     | -1.060 | -0.376                   | - 1.830 | -0.025                   | -0.170 |
| <b>Cross-sectional fixed<br/>effects</b>                   |                            |        |                            |        |                          |         |                          |        |
| Argentina                                                  | 39.570                     | 9.620  | 34.692                     | 8.830  | 35.235                   | 5.710   | 19.210                   | 5.350  |
| Australia                                                  | 36.199                     | 8.100  | 28.422                     | 6.690  | 30.294                   | 4.550   | 7.289                    | 1.850  |
| Austria                                                    |                            |        |                            |        |                          |         |                          |        |
| Bahrain                                                    |                            |        |                            |        |                          |         |                          |        |
| Barbados                                                   |                            |        |                            |        |                          |         |                          |        |
| Belgium                                                    |                            |        |                            |        |                          |         |                          |        |
| Bolivia                                                    |                            |        |                            |        |                          |         |                          |        |
| Botswana                                                   |                            |        |                            |        | 28.629                   | 5.140   | 10.885                   | 3.360  |
| Brazil                                                     | 37.071                     | 9.640  | 32.753                     | 8.940  | 30.491                   | 5.300   | 18.052                   | 5.390  |
| Bulgaria                                                   | 33.426                     | 9.130  | 32.276                     | 9.680  | 29.534                   | 5.510   | 15.930                   | 5.020  |
| Canada                                                     | 33.786                     | 7.190  | 28.552                     | 6.680  | 26.811                   | 3.860   | 5.802                    | 1.390  |
| Chile                                                      | 36.166                     | 9.590  | 31.014                     | 8.710  | 29.023                   | 5.160   | 10.972                   | 3.280  |
| Colombia                                                   | 30.443                     | 7.980  | 25.606                     | 7.110  | 27.059                   | 5.160   | 9.520                    | 2.910  |
| Costa Rica                                                 | 37.060                     | 9.570  | 32.133                     | 8.910  | 33.356                   | 5.830   | 14.695                   | 4.300  |
| Croatia                                                    | 34.400                     | 8.690  | 31.170                     | 8.530  | 26.913                   | 4.430   | 12.095                   | 3.470  |
| Cyprus                                                     | 34.230                     | 7.720  | 30.211                     | 7.390  | 27.498                   | 4.170   | 10.130                   | 2.580  |
| Czech Republic                                             | 34.822                     | 8.830  | 30.308                     | 8.260  | 27.211                   | 4.490   | 10.487                   | 3.020  |

Table 9 (cont)

**The determinants of Moody's and S&P's foreign  
and local currency ratings, common sample**

| Agency                                      | S&P                        |        | Moody's                    |        | S&P                      |        | Moody's                  |        |
|---------------------------------------------|----------------------------|--------|----------------------------|--------|--------------------------|--------|--------------------------|--------|
|                                             | Foreign<br>currency rating |        | Foreign<br>currency rating |        | Local<br>currency rating |        | Local<br>currency rating |        |
|                                             | Coeff                      | t-stat | Coeff                      | T-stat | Coeff                    | t-stat | Coeff                    | t-stat |
| <b>Cross-sectional fixed effects (cont)</b> |                            |        |                            |        |                          |        |                          |        |
| Denmark                                     | 35.246                     | 7.400  | 28.507                     | 6.430  | 29.739                   | 4.230  | 6.134                    | 1.450  |
| Dominican Republic                          | 35.755                     | 9.780  | 31.099                     | 9.060  | 34.246                   | 6.050  | 17.399                   | 5.580  |
| Ecuador                                     | 36.262                     | 9.650  | 33.006                     | 9.680  | 28.911                   | 5.110  | 17.471                   | 5.420  |
| Egypt                                       | 28.747                     | 8.190  | 28.293                     | 9.050  | 22.728                   | 4.400  | 9.921                    | 3.220  |
| El Salvador                                 | 32.775                     | 8.880  | 28.547                     | 8.290  | 27.874                   | 5.150  | 12.751                   | 4.080  |
| Estonia                                     | 35.197                     | 9.110  | 28.555                     | 7.850  | 30.841                   | 5.380  | 10.684                   | 3.220  |
| Finland                                     | 32.920                     | 6.830  | 25.521                     | 5.610  | 29.454                   | 4.250  | 4.067                    | 0.960  |
| France                                      | 31.425                     | 6.750  | 26.284                     | 6.100  | 26.562                   | 3.840  | 5.439                    | 1.310  |
| Germany                                     |                            |        |                            |        | 27.516                   | 3.970  | 5.412                    | 1.300  |
| Greece                                      |                            |        |                            |        |                          |        |                          |        |
| Guatemala                                   |                            |        |                            |        |                          |        |                          |        |
| Hong Kong SAR                               |                            |        |                            |        |                          |        |                          |        |
| Hungary                                     |                            |        |                            |        |                          |        |                          |        |
| Iceland                                     | 38.791                     | 8.250  | 29.821                     | 6.680  | 30.811                   | 4.400  | 6.394                    | 1.540  |
| India                                       |                            |        |                            |        | 24.524                   | 5.590  | 14.530                   | 5.620  |
| Indonesia                                   | 30.931                     | 9.260  | 28.535                     | 9.460  | 27.729                   | 5.720  | 16.397                   | 5.730  |
| Ireland                                     |                            |        |                            |        | 30.222                   | 4.380  | 6.914                    | 1.680  |
| Israel                                      | 34.039                     | 7.380  | 30.900                     | 7.530  | 25.650                   | 3.780  | 9.224                    | 2.240  |
| Italy                                       | 29.818                     | 6.220  | 28.038                     | 6.500  | 23.316                   | 3.290  | 5.695                    | 1.340  |
| Jamaica                                     | 33.626                     | 8.170  | 33.567                     | 9.650  | 26.204                   | 4.280  | 9.918                    | 2.740  |
| Japan                                       | 31.765                     | 6.340  | 29.971                     | 6.900  | 23.786                   | 3.180  | 5.841                    | 1.300  |
| Jordan                                      | 32.440                     | 8.840  | 31.549                     | 9.740  | 25.674                   | 4.770  | 13.920                   | 4.310  |
| Kazakhstan                                  | 33.312                     | 9.310  | 27.003                     | 7.820  | 28.948                   | 5.470  | 12.862                   | 4.280  |
| Kuwait                                      |                            |        |                            |        | 29.824                   | 4.550  | 12.824                   | 3.320  |
| Latvia                                      | 34.623                     | 9.380  | 29.303                     | 8.410  | 29.186                   | 5.220  | 11.496                   | 3.580  |
| Lebanon                                     | 33.029                     | 7.470  | 35.215                     | 9.610  | 26.295                   | 4.100  | 14.101                   | 3.600  |
| Lithuania                                   | 34.212                     | 9.080  | 30.055                     | 8.460  | 29.583                   | 5.260  | 12.306                   | 3.720  |
| Malaysia                                    | 33.847                     | 8.910  | 30.055                     | 8.550  | 27.586                   | 4.950  | 11.355                   | 3.400  |
| Malta                                       |                            |        |                            |        | 26.762                   | 4.200  | 11.673                   | 3.110  |
| Mauritius                                   |                            |        |                            |        |                          |        |                          |        |
| Mexico                                      | 37.193                     | 9.390  | 31.509                     | 8.550  | 31.178                   | 5.360  | 13.861                   | 4.040  |
| Moldova                                     |                            |        |                            |        |                          |        |                          |        |
| Mongolia                                    |                            |        |                            |        |                          |        |                          |        |
| Morocco                                     | 31.872                     | 9.110  | 29.185                     | 9.230  | 25.134                   | 4.870  | 13.006                   | 4.230  |
| Netherlands                                 |                            |        |                            |        | 29.605                   | 4.310  | 5.326                    | 1.280  |
| New Zealand                                 | 35.111                     | 8.040  | 26.992                     | 6.540  | 29.325                   | 4.520  | 6.439                    | 1.670  |

Table 9 (cont)

**The determinants of Moody's and S&P's foreign  
and local currency ratings, common sample**

| Agency                                      | S&P                        |                   | Moody's                    |                   | S&P                      |                   | Moody's                  |                   |
|---------------------------------------------|----------------------------|-------------------|----------------------------|-------------------|--------------------------|-------------------|--------------------------|-------------------|
|                                             | Foreign<br>currency rating |                   | Foreign<br>currency rating |                   | Local<br>currency rating |                   | Local<br>currency rating |                   |
| Dependent variable                          |                            |                   |                            |                   |                          |                   |                          |                   |
| Independent variables                       | Coeff                      | t-stat            | Coeff                      | T-stat            | Coeff                    | t-stat            | Coeff                    | t-stat            |
| <b>Cross-sectional fixed effects (cont)</b> |                            |                   |                            |                   |                          |                   |                          |                   |
| Nicaragua                                   |                            |                   |                            |                   |                          |                   |                          |                   |
| Norway                                      |                            |                   |                            |                   | 31.563                   | 4.460             | 7.284                    | 1.730             |
| Oman                                        | 38.029                     | 9.320             | 31.326                     | 8.000             | 34.929                   | 5.960             | 14.607                   | 4.100             |
| Pakistan                                    | 28.435                     | 9.000             | 27.448                     | 9.390             | 25.254                   | 5.660             | 16.048                   | 5.920             |
| Panama                                      |                            |                   |                            |                   |                          |                   |                          |                   |
| Papua New Guinea                            |                            |                   |                            |                   | 25.262                   | 5.310             | 14.443                   | 5.180             |
| Paraguay                                    |                            |                   |                            |                   | 31.890                   | 6.350             | 17.309                   | 5.880             |
| Peru                                        | 35.454                     | 9.880             | 31.861                     | 9.560             | 31.107                   | 5.970             | 14.024                   | 4.480             |
| Philippines                                 | 30.846                     | 9.170             | 28.249                     | 9.360             | 23.465                   | 4.760             | 11.988                   | 4.140             |
| Poland                                      | 34.677                     | 8.970             | 29.568                     | 8.180             | 28.262                   | 4.880             | 10.558                   | 3.090             |
| Portugal                                    |                            |                   |                            |                   | 27.063                   | 4.140             | 6.578                    | 1.700             |
| Qatar                                       |                            |                   |                            |                   | 30.920                   | 4.380             | 12.818                   | 3.040             |
| Romania                                     | 36.963                     | 10.400            | 33.667                     | 10.040            | 33.541                   | 6.370             | 18.908                   | 6.140             |
| Russia                                      | 33.202                     | 8.820             | 30.807                     | 8.690             | 28.237                   | 4.940             | 15.516                   | 4.840             |
| Senegal                                     |                            |                   |                            |                   |                          |                   |                          |                   |
| Singapore                                   |                            |                   |                            |                   | 25.594                   | 3.650             | 5.476                    | 1.320             |
| Slovakia                                    | 35.933                     | 9.310             | 30.909                     | 8.520             | 28.566                   | 4.830             | 10.749                   | 3.180             |
| Slovenia                                    | 34.746                     | 8.280             | 29.469                     | 7.470             |                          |                   |                          |                   |
| South Africa                                | 33.759                     | 8.970             | 28.144                     | 7.990             | 27.465                   | 4.970             | 10.311                   | 3.130             |
| Spain                                       | 32.397                     | 7.180             | 27.208                     | 6.490             | 27.726                   | 4.220             | 5.962                    | 1.490             |
| Sweden                                      |                            |                   |                            |                   | 27.250                   | 3.790             | 5.706                    | 1.350             |
| Switzerland                                 |                            |                   |                            |                   | 31.229                   | 4.460             | 6.731                    | 1.580             |
| Thailand                                    | 32.163                     | 8.920             | 29.257                     | 8.840             | 26.611                   | 5.060             | 11.044                   | 3.510             |
| Trinidad                                    | 34.435                     | 8.380             | 31.531                     | 8.370             | 28.781                   | 4.790             | 12.344                   | 3.440             |
| Tunisia                                     |                            |                   |                            |                   | 25.662                   | 4.790             | 12.084                   | 3.800             |
| Turkey                                      | 36.244                     | 9.370             | 32.518                     | 9.250             | 31.240                   | 5.420             | 17.487                   | 5.150             |
| Ukraine                                     | 32.890                     | 9.850             | 29.594                     | 9.320             | 29.730                   | 5.920             | 18.295                   | 6.480             |
| United Kingdom                              | 34.690                     | 7.480             | 28.127                     | 6.550             | 29.196                   | 4.270             | 6.513                    | 1.590             |
| United States                               |                            |                   |                            |                   | 29.777                   | 4.260             | 6.786                    | 1.600             |
| Uruguay                                     | 36.342                     | 9.060             | 32.170                     | 8.540             | 32.392                   | 5.510             | 15.040                   | 4.230             |
| Venezuela                                   | 37.592                     | 9.500             | 33.532                     | 9.020             |                          |                   |                          |                   |
| Vietnam                                     |                            |                   |                            |                   |                          |                   |                          |                   |
| <i>Asia average</i>                         | 32.980                     | 3.89 <sup>1</sup> | 28.783                     | 3.56 <sup>1</sup> | 26.418                   | 5.67 <sup>1</sup> | 10.480                   | 3.39 <sup>1</sup> |
| <i>Non-Asia average</i>                     | 34.401                     | 3.95 <sup>1</sup> | 30.279                     | 3.68 <sup>1</sup> | 28.944                   | 5.99 <sup>1</sup> | 11.373                   | 3.57 <sup>1</sup> |

<sup>1</sup> Standard deviations are given for the average Asian and non-Asian fixed effect. Asian countries are shaded.

Table 10

**The determinants of gaps between foreign  
and local currency ratings, Moody's and S&P**

| Agency                                              | S&P                                     |        | Moody's                                 |        | S&P-Moody's<br>difference  |        | S&P-Moody's<br>difference |        |
|-----------------------------------------------------|-----------------------------------------|--------|-----------------------------------------|--------|----------------------------|--------|---------------------------|--------|
| Dependent variable                                  | Foreign-local<br>currency rating<br>gap |        | Foreign-local<br>currency rating<br>gap |        | Foreign<br>currency rating |        | Local<br>currency rating  |        |
| R-squared                                           | .8981                                   |        | .8659                                   |        | .6900                      |        | .8804                     |        |
| F-test of significance of<br>fixed effects, p-value | <.0001                                  |        | <.0001                                  |        | <.0001                     |        | <.0001                    |        |
| Hausman test, fixed/<br>random effects, p-value     | .0006                                   |        | .0782                                   |        | .0116                      |        | .0002                     |        |
| Degrees of freedom                                  | 319                                     |        | 199                                     |        | 170                        |        | 128                       |        |
| Independent variables                               | Coeff                                   | t-stat | Coeff                                   | t-stat | Coeff                      | t-stat | Coeff                     | t-stat |
| <b>Macroeconomic</b>                                |                                         |        |                                         |        |                            |        |                           |        |
| Inflation, log 1-yr                                 | -0.174                                  | -2.730 |                                         |        |                            |        | 0.159                     | 2.180  |
| Inflation, 1-yr                                     |                                         |        | -0.028                                  | -3.440 |                            |        |                           |        |
| Inflation, log 10-yr                                |                                         |        |                                         |        | -0.107                     | -1.690 |                           |        |
| Per capita GDP, log                                 |                                         |        | -2.608                                  | -5.030 |                            |        |                           |        |
| GDP growth, 3-yr avg                                |                                         |        |                                         |        |                            |        |                           |        |
| M2, 10-yr % chg                                     |                                         |        |                                         |        | -0.001                     | -3.350 |                           |        |
| M2, log 10-yr % chg                                 |                                         |        | 0.100                                   | 1.970  |                            |        |                           |        |
| M2, 1-yr log volatility                             |                                         |        |                                         |        |                            |        |                           |        |
| M2, 5-yr volatility                                 | -0.011                                  | -1.890 |                                         |        |                            |        | 0.110                     | 1.790  |
| M2/reserves, 5-yr log<br>volatility                 |                                         |        |                                         |        |                            |        |                           |        |
| M2/reserves, log 10-yr %<br>chg                     | 0.101                                   | 3.150  |                                         |        |                            |        | -0.072                    | -2.040 |
| M2/reserves, 1-yr<br>volatility                     |                                         |        | -0.006                                  | -2.970 |                            |        |                           |        |
| M2/reserves, log 5-yr %<br>chg                      |                                         |        |                                         |        | 0.089                      | 2.680  |                           |        |
| Investment                                          |                                         |        |                                         |        |                            |        |                           |        |
| Saving                                              |                                         |        | 0.073                                   | 3.210  |                            |        |                           |        |
| <b>Political</b>                                    |                                         |        |                                         |        |                            |        |                           |        |
| Political risk score                                |                                         |        |                                         |        |                            |        |                           |        |
| Regulatory quality                                  | 0.509                                   | 2.950  |                                         |        |                            |        |                           |        |
| Control of corruption                               |                                         |        |                                         |        | -0.791                     | -2.350 |                           |        |
| <b>Government finance</b>                           |                                         |        |                                         |        |                            |        |                           |        |
| Public debt/GDP                                     |                                         |        | -0.010                                  | -1.740 |                            |        |                           |        |
| Domestic debt/GDP                                   |                                         |        |                                         |        |                            |        | 0.033                     | 3.000  |
| Budget revenue/GDP                                  |                                         |        |                                         |        | 0.050                      | 1.680  | -0.041                    | -2.160 |
| <b>External</b>                                     |                                         |        |                                         |        |                            |        |                           |        |
| Net debt/exports                                    |                                         |        |                                         |        |                            |        |                           |        |
| Short-term debt/GDP                                 |                                         |        |                                         |        | 0.000                      | 1.850  |                           |        |
| Import cover                                        | 0.079                                   | 2.510  |                                         |        |                            |        |                           |        |
| Exchange rate rigidity                              |                                         |        |                                         |        |                            |        |                           |        |
| Exchange rate, 1-yr<br>change                       |                                         |        |                                         |        | -0.006                     | -2.770 |                           |        |

Table 10 (cont)

**The determinants of gaps between foreign  
and local currency ratings, Moody's and S&P**

| Agency                                    | S&P                               |        | Moody's                           |        | S&P-Moody's difference  |        | S&P-Moody's difference |        |
|-------------------------------------------|-----------------------------------|--------|-----------------------------------|--------|-------------------------|--------|------------------------|--------|
|                                           | Foreign-local currency rating gap |        | Foreign-local currency rating gap |        | Foreign currency rating |        | Local currency rating  |        |
| Dependent variable                        |                                   |        |                                   |        |                         |        |                        |        |
| Independent variables                     | Coeff                             | t-stat | Coeff                             | t-stat | Coeff                   | t-stat | Coeff                  | t-stat |
| <b>External (cont)</b>                    |                                   |        |                                   |        |                         |        |                        |        |
| Real effective exchange rate              |                                   |        | 0.018                             | 2.460  |                         |        |                        |        |
| Years since foreign currency default, log |                                   |        |                                   |        |                         |        |                        |        |
| Years since local currency default, log   | -0.567                            | -2.220 |                                   |        |                         |        |                        |        |
| Years since local currency default        |                                   |        |                                   |        | -0.248                  | -4.500 |                        |        |
| <b>Time-series fixed effects</b>          |                                   |        |                                   |        |                         |        |                        |        |
| Year 1995                                 |                                   |        | 0.501                             | 1.990  |                         |        | -1.328                 | -4.840 |
| Year 1996                                 | 1.228                             | 6.650  | 0.338                             | 1.390  | -1.797                  | -3.810 | -1.212                 | -4.470 |
| Year 1997                                 | 1.078                             | 6.090  | 0.325                             | 1.560  | -1.589                  | -4.060 | -1.193                 | -4.800 |
| Year 1998                                 | 0.852                             | 5.170  | 0.330                             | 1.900  | -1.366                  | -3.920 | -0.844                 | -4.230 |
| Year 1999                                 | 0.468                             | 3.040  | 0.109                             | 0.690  | -0.977                  | -3.310 | -0.734                 | -3.840 |
| Year 2000                                 | 0.485                             | 3.170  | -0.087                            | -0.580 | -0.672                  | -2.990 | -0.706                 | -3.710 |
| Year 2001                                 | 0.358                             | 2.450  | -0.175                            | -1.160 | -0.381                  | -2.110 | -0.570                 | -2.990 |
| Year 2002                                 | 0.232                             | 1.660  | -0.313                            | -2.210 | -0.088                  | -0.570 | -0.404                 | -2.140 |
| <b>Cross-sectional fixed effects</b>      |                                   |        |                                   |        |                         |        |                        |        |
| Argentina                                 | 0.759                             | 1.310  | 22.009                            | 4.600  | 3.046                   | 3.640  |                        |        |
| Australia                                 | 2.238                             | 1.880  | 25.821                            | 4.840  | 25.155                  | 4.470  |                        |        |
| Austria                                   | 0.584                             | 0.470  | 25.302                            | 4.520  |                         |        | 1.402                  | 1.280  |
| Bahrain                                   | 1.590                             | 1.560  |                                   |        |                         |        |                        |        |
| Barbados                                  | 3.833                             | 3.940  |                                   |        |                         |        | -2.826                 | -3.420 |
| Belgium                                   |                                   |        |                                   |        |                         |        |                        |        |
| Bolivia                                   | 3.358                             | 2.450  |                                   |        | 42.320                  | 4.290  |                        |        |
| Botswana                                  | -0.087                            | -0.060 |                                   |        |                         |        |                        |        |
| Brazil                                    | 2.769                             | 3.530  | 19.932                            | 4.550  | 1.767                   | 1.420  |                        |        |
| Bulgaria                                  | 3.047                             | 2.420  | 18.875                            | 4.590  | 20.894                  | 3.940  |                        |        |
| Canada                                    | 2.265                             | 1.790  | 25.789                            | 4.610  |                         |        | -0.696                 | -0.670 |
| Chile                                     | 5.189                             | 3.750  | 23.424                            | 5.150  | 47.390                  | 4.510  | -1.081                 | -1.870 |
| Colombia                                  | 7.109                             | 4.430  | 23.118                            | 5.440  | 46.876                  | 4.410  | -1.425                 | -2.150 |
| Costa Rica                                | 3.064                             | 2.240  |                                   |        | 46.742                  | 4.730  | -0.117                 | -0.220 |
| Croatia                                   |                                   |        |                                   |        |                         |        |                        |        |
| Cyprus                                    | 2.330                             | 2.350  | 23.800                            | 4.630  | 9.962                   | 3.890  | -1.451                 | -1.590 |
| Czech Republic                            |                                   |        |                                   |        |                         |        |                        |        |

Table 10 (cont)

**The determinants of gaps between foreign  
and local currency ratings, Moody's and S&P**

| Agency                                      | S&P                               |        | Moody's                           |        | S&P-Moody's difference  |        | S&P-Moody's difference |        |
|---------------------------------------------|-----------------------------------|--------|-----------------------------------|--------|-------------------------|--------|------------------------|--------|
|                                             | Foreign-local currency rating gap |        | Foreign-local currency rating gap |        | Foreign currency rating |        | Local currency rating  |        |
|                                             | Coeff                             | t-stat | Coeff                             | t-stat | Coeff                   | t-stat | Coeff                  | t-stat |
| <b>Cross-sectional fixed effects (cont)</b> |                                   |        |                                   |        |                         |        |                        |        |
| Denmark                                     | 2.371                             | 1.720  | 26.125                            | 4.610  |                         |        | 0.613                  | 0.510  |
| Dominican Republic                          | -3.019                            | -8.150 |                                   |        | 1.003                   | 1.470  |                        |        |
| Ecuador                                     | 2.741                             | 4.550  | 19.607                            | 4.600  |                         |        | -0.402                 | -0.470 |
| Egypt                                       | 3.853                             | 3.200  | 20.960                            | 5.120  | 18.724                  | 4.160  |                        |        |
| El Salvador                                 | 1.481                             | 2.880  | 19.790                            | 4.880  | 2.073                   | 2.650  | -0.156                 | -0.350 |
| Estonia                                     | 0.155                             | 0.190  | 20.124                            | 4.540  | 4.253                   | 2.940  |                        |        |
| Finland                                     |                                   |        |                                   |        |                         |        |                        |        |
| France                                      | 0.626                             | 0.640  | 25.154                            | 4.520  |                         |        | 0.992                  | 0.880  |
| Germany                                     | 0.318                             | 0.310  |                                   |        |                         |        | 1.911                  | 1.850  |
| Greece                                      | 3.866                             | 2.680  | 26.046                            | 5.020  | 41.298                  | 4.310  |                        |        |
| Guatemala                                   | 3.722                             | 2.620  |                                   |        | 44.976                  | 4.490  | 0.138                  | 0.310  |
| Hong Kong SAR                               | 2.185                             | 1.750  |                                   |        |                         |        |                        |        |
| Hungary                                     |                                   |        | 22.387                            | 4.700  | 37.821                  | 4.430  |                        |        |
| Iceland                                     | 4.079                             | 3.530  |                                   |        |                         |        | 2.739                  | 3.390  |
| India                                       | 3.778                             | 3.370  |                                   |        |                         |        | -3.384                 | -4.790 |
| Indonesia                                   | 3.437                             | 3.080  | 17.240                            | 4.420  | 14.085                  | 4.290  | -0.394                 | -0.510 |
| Ireland                                     |                                   |        |                                   |        |                         |        |                        |        |
| Israel                                      | 3.645                             | 3.430  | 24.928                            | 4.590  | 13.686                  | 4.260  | -2.407                 | -2.120 |
| Italy                                       | 1.443                             | 1.370  | 25.481                            | 4.500  | 11.850                  | 3.470  | -1.920                 | -1.330 |
| Jamaica                                     | 2.726                             | 2.680  | 22.972                            | 4.960  | 10.595                  | 4.390  |                        |        |
| Japan                                       | 0.341                             | 0.310  | 24.686                            | 4.140  |                         |        |                        |        |
| Jordan                                      | 4.157                             | 3.850  | 18.214                            | 4.240  | 13.281                  | 4.110  |                        |        |
| Kazakhstan                                  |                                   |        |                                   |        |                         |        |                        |        |
| Kuwait                                      | 0.923                             | 1.360  |                                   |        |                         |        |                        |        |
| Latvia                                      |                                   |        |                                   |        |                         |        |                        |        |
| Lebanon                                     | 0.349                             | 0.280  | 21.571                            | 4.460  |                         |        |                        |        |
| Lithuania                                   |                                   |        |                                   |        |                         |        |                        |        |
| Malaysia                                    | 3.851                             | 3.830  | 21.163                            | 4.530  | 10.913                  | 4.260  | -1.115                 | -1.790 |
| Malta                                       | 2.794                             | 2.840  |                                   |        |                         |        |                        |        |
| Mauritius                                   |                                   |        | 22.501                            | 4.880  |                         |        |                        |        |
| Mexico                                      | 5.713                             | 4.190  |                                   |        | 44.597                  | 4.540  | -0.948                 | -1.630 |
| Moldova                                     |                                   |        | 16.644                            | 4.650  |                         |        |                        |        |
| Mongolia                                    | 0.288                             | 0.460  |                                   |        |                         |        |                        |        |
| Morocco                                     | 4.212                             | 3.970  | 17.415                            | 4.260  | 11.801                  | 4.370  |                        |        |
| Netherlands                                 | 1.679                             | 1.090  |                                   |        |                         |        | -0.247                 | -0.200 |

Table 10 (cont)

**The determinants of gaps between foreign  
and local currency ratings, Moody's and S&P**

| Agency                                      | S&P                               |                   | Moody's                           |                   | S&P-Moody's difference  |                   | S&P-Moody's difference |                   |
|---------------------------------------------|-----------------------------------|-------------------|-----------------------------------|-------------------|-------------------------|-------------------|------------------------|-------------------|
|                                             | Foreign-local currency rating gap |                   | Foreign-local currency rating gap |                   | Foreign currency rating |                   | Local currency rating  |                   |
| Dependent variable                          |                                   |                   |                                   |                   |                         |                   |                        |                   |
| Independent variables                       | Coeff                             | t-stat            | Coeff                             | t-stat            | Coeff                   | t-stat            | Coeff                  | t-stat            |
| <b>Cross-sectional fixed effects (cont)</b> |                                   |                   |                                   |                   |                         |                   |                        |                   |
| New Zealand                                 | 1.681                             | 1.430             | 24.492                            | 4.770             | 24.177                  | 4.550             |                        |                   |
| Nicaragua                                   |                                   |                   | 16.783                            | 4.540             |                         |                   |                        |                   |
| Norway                                      | 1.547                             | 1.300             | 25.300                            | 4.420             |                         |                   | 2.152                  | 1.990             |
| Oman                                        | 2.625                             | 1.930             |                                   |                   |                         |                   | 1.399                  | 2.090             |
| Pakistan                                    | 4.206                             | 3.730             | 15.497                            | 4.370             | 12.046                  | 3.820             | -3.639                 | -5.560            |
| Panama                                      |                                   |                   |                                   |                   | 23.914                  | 4.290             |                        |                   |
| Papua New Guinea                            | 3.835                             | 4.010             |                                   |                   |                         |                   | -1.978                 | -2.350            |
| Paraguay                                    | 5.162                             | 3.620             |                                   |                   |                         |                   |                        |                   |
| Peru                                        | 3.440                             | 2.460             | 21.425                            | 5.220             | 44.160                  | 4.430             |                        |                   |
| Philippines                                 | 4.878                             | 4.530             | 17.575                            | 4.470             | 13.998                  | 4.420             | -2.444                 | -4.350            |
| Poland                                      | 4.145                             | 3.510             | 22.285                            | 4.890             | 22.124                  | 4.810             | 0.019                  | 0.040             |
| Portugal                                    | 0.947                             | 1.080             | 23.108                            | 4.570             | 5.684                   | 2.970             | -0.139                 | -0.140            |
| Qatar                                       | 1.983                             | 2.110             | 23.922                            | 4.120             | 6.494                   | 3.130             | -0.242                 | -0.310            |
| Romania                                     | 3.788                             | 2.830             | 19.746                            | 4.770             | 29.041                  | 4.210             | -0.782                 | -1.080            |
| Russia                                      |                                   |                   |                                   |                   |                         |                   |                        |                   |
| Senegal                                     |                                   |                   |                                   |                   |                         |                   |                        |                   |
| Singapore                                   | -0.171                            | -0.180            |                                   |                   |                         |                   |                        |                   |
| Slovakia                                    |                                   |                   |                                   |                   |                         |                   |                        |                   |
| Slovenia                                    | 3.348                             | 4.250             |                                   |                   | 3.548                   | 2.550             |                        |                   |
| South Africa                                | 4.522                             | 4.510             | 22.469                            | 5.060             | 7.579                   | 2.670             | -0.385                 | -0.560            |
| Spain                                       | 2.369                             | 1.490             | 23.931                            | 4.480             |                         |                   | 0.613                  | 0.780             |
| Sweden                                      | 1.151                             | 1.310             | 27.070                            | 4.780             |                         |                   | 1.363                  | 1.140             |
| Switzerland                                 | 1.498                             | 0.940             |                                   |                   |                         |                   |                        |                   |
| Thailand                                    | 4.821                             | 3.540             | 20.095                            | 4.620             | 43.601                  | 4.430             | -1.826                 | -3.010            |
| Trinidad                                    | 3.407                             | 3.410             |                                   |                   | 9.245                   | 3.940             |                        |                   |
| Tunisia                                     | 4.940                             | 4.750             |                                   |                   |                         |                   |                        |                   |
| Turkey                                      | 2.416                             | 1.960             | 19.034                            | 4.130             | 20.297                  | 4.570             | -1.379                 | -1.430            |
| Ukraine                                     | 0.766                             | 1.250             | 16.151                            | 4.210             | 0.485                   | 0.440             |                        |                   |
| United Kingdom                              | 1.086                             | 0.820             | 25.085                            | 4.610             |                         |                   | 1.207                  | 1.360             |
| United States                               | 1.551                             | 1.120             |                                   |                   |                         |                   | 0.662                  | 1.310             |
| Uruguay                                     | 3.325                             | 2.420             | 21.675                            | 4.670             | 44.227                  | 4.540             | -0.595                 | -1.020            |
| Venezuela                                   |                                   |                   | 19.667                            | 4.290             | 0.016                   | 0.020             |                        |                   |
| Vietnam                                     |                                   |                   |                                   |                   |                         |                   |                        |                   |
| <i>Asia average</i>                         | 2.597                             | 1.01 <sup>1</sup> | 21.581                            | 4.74 <sup>1</sup> | 21.988                  | 4.93 <sup>1</sup> | -1.857                 | 0.60 <sup>1</sup> |
| <i>Non-Asia average</i>                     | 2.579                             | 1.04 <sup>1</sup> | 21.883                            | 4.70 <sup>1</sup> | 20.109                  | 4.61 <sup>1</sup> | -0.176                 | 0.75 <sup>1</sup> |

<sup>1</sup> Standard deviations are given for the average Asian and non-Asian fixed effect. Asian countries are shaded.

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## **Comments on Kate Kisselev and Frank Packer’s paper “Minding the gap in Asia: foreign and local currency ratings”**

Tom Byrne

To understand the ratings gap phenomenon, or lack thereof, the historical dynamics of local currency ratings need to be explored, in addition to a static look at key indicators as rating drivers. I will also comment on a number of related points made by the authors.

In assigning local currency ratings, the practice in general is to notch up from the foreign currency rating on the grounds that there is no foreign exchange constraint or risk of capital controls being imposed on local currency payments. Governments have the power to tax, and so can take on a higher local currency than foreign currency debt burden. Domestic purchasers of government securities, especially banks, are a much more stable investor base than foreign creditors. However, Moody’s is mindful that the recent historical record of sovereign default, beginning with the 1998 Russian case, shows that governments have defaulted on obligations in both foreign and local currency, or in one but not the other, as well. This means that stylised approaches to rating local currency obligations are not reliable or accurate. A government’s fiscal and debt position, economic growth prospects, institutional strengths (in particular, Moody’s takes into account the World Bank’s indicator of government effectiveness) and policy capabilities need to be taken into account on a case by case basis.

Moody’s big push for expanding local currency ratings in Asia took place in the aftermath of the 1997 Asian financial crisis. This was a time when a number of sovereign foreign currency ratings were many notches (up to six, in the most extreme case, Korea) lower than their pre-crisis peak. Of course, the lower foreign currency ratings reflected a diminished capacity to service external debt. (It should be pointed out that, although ratings fell too rapidly, the Asian financial crisis did not result in any government bond defaults.) Against this background of “abnormally” low foreign currency ratings, local currency ratings for most of the Asian emerging market economies were assigned.

Likewise, the assignment of local currency ratings in Asia was also constrained to some degree by the 1997 crisis. Moody’s recognised that the fiscal cost of the crisis was not fully reflected in government budgets or debt in early 1998, so we tried to anticipate future fiscalisation from financial sector restructuring as well as the rise in government debt from the shift to fiscal stimulus and large budget deficits as governments offset the contractionary effect of the crisis. Nevertheless, Asian countries’ local currency ratings were generally assigned two or three notches higher than their foreign currency government ratings in 1998.

The relatively quick adjustment in the external payments position of most countries affected by the crisis, compared with their slower fiscal consolidation, explains the reduction in the original notching differential. In general, multi-notch upward movement took place in the foreign currency ratings, while upward movement in local currency ratings was not as pronounced, or was absent. Korea and Thailand, for example, sharply reduced external debt and accumulated large holdings of official foreign exchange reserves. Accordingly, Korea’s foreign currency government rating was raised four notches, and Thailand’s three notches, post-crisis. In contrast, Korea’s local currency government rating was raised only one notch post-crisis, and Thailand’s has remained unchanged, reflecting the large accumulation of domestic debt and less robust prospects for debt reduction over the long term.

The authors’ rejection of the argument that governments can easily inflate their way out of a local currency debt problem is well taken. The historical record does not show that this

remedy is painless, either economically or politically, or readily taken. This view has carried little weight in rating committee deliberations. In contrast, default may be better fiscal policy, in extremis, than inflation.

The key indicators guiding the movement of local currency government ratings have been, first, general government debt to GDP and, second, general government debt to general government revenue. Both indicate the capacity of the government, immediately, and the economy, ultimately, to service the government's debt obligations. The former indicator is especially relevant because it is unique to Moody's rating consistency model that attempts to explain the ordinal rankings of local currency government ratings.

There was an "Asian bias" embedded in Moody's foreign currency ratings, although it is difficult to quantify in a statistical sense. Moody's Sovereign Risk Unit had for a long period emphasised savings/investment balances as key rating support factors. Asian countries have high saving rates compared with other regions. Large savings available to absorb government debt make recourse to foreign borrowing less necessary, supporting local currency ratings. Large savings can also be channelled into domestic investment. Economic growth and the level of national income are also key rating determinants for both local and foreign currency government ratings.

Lastly, regarding political risk, Moody's has explicitly incorporated this into the ratings of Taiwan (China) and Korea. In both cases, geopolitical risks constrain both the foreign and local currency government ratings equally, with no ratings gap.

# Building infrastructure for Asian bond markets: settlement and credit rating

Daekeun Park and Changyong Rhee<sup>1</sup>

## 1. Introduction

The development of bond markets in Asia has recently emerged as an important policy issue. During the Ninth APEC Finance Ministers Meeting in September 2002, it was agreed that a regional bond market would be developed through securitisation and credit guarantees. Since then, a number of meetings have been held on this and related issues.

The consensus for developing regional bond markets for Asian countries is a result of the 1997 Asian financial crisis, which the underdevelopment of the region's bond markets is thought to have greatly exacerbated. Firms that had long been dependent upon banks for funds could not find alternative sources of financing when the crisis erupted. The idea of creating regional bond markets is also promoted as a means of overcoming the double mismatch problem that most Asian borrowers face when depending on short-term foreign currency debt to fund long-term projects generating domestic currency revenues. This is also considered one of the root causes of the 1997 crisis.

Development of a regional bond market is also seen as a way to facilitate the mobilisation of East Asian savings within the region. The foreign exchange reserves of most Asian countries have increased significantly since the financial crisis, boosted by the huge current account surpluses triggered by the economic recession and sharp currency depreciations brought about by the financial crisis. By the end of 2002, the Asian economies together held more than half of the world's foreign exchange reserves, and the bulk of these were invested in safe and liquid assets such as US Treasury securities and supranational bonds. At the same time, until regional bond markets are fully established, East Asian borrowers have to rely on international financial markets for funding. East Asia as a whole can thus be considered an importer of safe assets and an exporter of risky assets. As has been pointed out by Oh et al (2003a), such a pattern of capital flows is not desirable in the sense that it deprives the region's financial markets and institutions of valuable opportunities to develop and could render the countries in the region more vulnerable to financial crises.

Under the Asian Bond Market Initiative, ASEAN+3 has launched six working groups to study various aspects of regional bond markets including securitisation, regional credit rating agencies, regional clearing and settlement systems, regional credit guarantee agencies and so on.<sup>2</sup> The paper focuses on the two topics that primarily address building institutional infrastructure for the Asian bond market: securities clearing and settlement systems and credit rating agencies.

Every financial transaction ultimately entails settlement of securities. In order for financial markets to function properly, reliable and efficient financial substructures, including clearing and settlement systems, must be established and supported by the legal and regulatory

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<sup>1</sup> We thank Haeil Jang at the Korea Securities Depository (KSD) for helpful comments and discussions.

<sup>2</sup> EMEAP (Executives' Meeting of East Asia and Pacific Central Banks) has also set up the Asian Bond Fund (ABF) with contributions from the foreign reserves of each member bank. This fund is managed by the Bank for International Settlements under the mandate to invest in dollar-denominated bonds issued by qualified Asian issuers.

systems. An internationally compatible clearing and settlement system is required to promote active cross-border transactions of bonds among Asian countries. Section 2 of this paper discusses how a cross-border clearing and settlement system can be constructed for the development of Asian bond markets. The paper attempts to determine if it is necessary to establish a new Asian settlement system even though there are cross-border settlement systems operated by international central securities depositories (ICSDs) such as Euroclear and Clearstream.

The second financial infrastructure component that this paper addresses is the regional credit rating system. The Asian financial crisis in 1997 made East Asian countries recognise the importance of international credit rating agencies. These countries witnessed the influence of the judgments of credit rating agencies in shaking domestic economies and foreign markets to their foundations and in determining the direction and intensity of foreign capital flows. Credit rating agencies are expected to become more influential because capital adequacy for banks under the revised Basel Accord will take credit ratings into account (BIS (1999)).

Currently, local currency denominated bonds in Asian countries are independently rated by local credit rating agencies. Government bonds are given the highest credit ratings within each country regardless of the sovereign credit ratings, making credit rating comparisons among countries useless. To increase transaction volumes in Asian bond markets and cross-border bond issuance and investment, a common regional credit rating system is needed.

Let us consider, for example, the two-tier securitisation process, which is already under discussion as a strategy for creating the Asian bond market. In this process, each country aggregates and securitises local currency denominated bonds; the junior bonds are absorbed domestically, and the senior bonds are sold to the offshore special purpose vehicle (SPV). The SPV, in turn, repackages these senior bonds and issues asset-backed securities (ABSs).<sup>3</sup> For this two-tier securitisation process to work, the credit ratings of the bonds issued in the first and second stages must be based on a common standard, regardless of the country of issuance.<sup>4</sup>

Section 3 of this paper takes up the question of whether there is a need to establish a new regional credit rating institution in Asia. The alternative would be for the local or global credit rating agencies to continue to do the job.

This paper makes different recommendations regarding the settlement and clearing system and credit rating. We recommend that a new regional institution (a regional ICSD dubbed AsiaSettle) be created to serve as the regional clearing and settlement system. For the credit rating system, in contrast, we recommend that a common standard and methodology be established through coordination among the existing local credit rating agencies.

Establishment of a regional ICSD is recommended even though ICSDs such as Euroclear and Clearstream already handle cross-border settlements. Establishment of AsiaSettle would solve the third time zone problem, which the existing ICSDs cannot solve, and the process of establishing AsiaSettle with the support of the Asian governments itself would provide an opportunity for Asian countries to relax and harmonise financial regulations and open up their domestic markets.

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<sup>3</sup> For a discussion on the pros and cons of two-tier securitisation, please refer to Oh and Park (2003).

<sup>4</sup> The need for a common rating standard will become a more concrete problem when the New Basel Accord is adopted. This is because when capital adequacy regulations consider credit ratings, the financial supervisory institutions must clarify how the ratings of foreign bonds by foreign agencies will be rated by domestic standards. For example, when a Japanese financial institution holds a bond that a Korean agency has rated A, there is a question as to whether a Korean A-rated bond equals a Japanese A-rated bond when assessing the additional risk factor.

Conversely, it is unrealistic and not recommendable to establish a regional credit rating agency through government support. In the credit rating business, advanced scientific and analytic methods are important, but so are value judgments based on local knowledge. Thus, if the regional rating agency is to rate local bonds in each country, it must build up local databases, human resources and other infrastructure. The costs of building this infrastructure would not be negligible. In addition, for a credit rating business to be successful, the most important factor is its reputation for being impartial and accurate. It is questionable whether an agency established with government support and not exposed to market competition would be competitive and acknowledged by the market as impartial. Also, if a regional agency were established with government support, there would be the risk that the agency would crowd out private local credit rating agencies. Therefore, it is preferable for the governments to promote collaboration among local and global rating agencies in establishing a common rating system and meeting new business needs. The Association of Credit Rating Agencies in Asia (ACRAA) has already started to standardise the rating systems with a view to developing the Asian bond market.

This paper is organised as follows. Section 2 describes the current cross-border clearing and settlement system in Asia and the role of the existing ICSDs. It evaluates the pros and cons of various possibilities for setting up a cross-border clearing and settlement system in Asia and proposes the establishment of AsiaSettle as a regional ICSD. A detailed explanation of the benefits of creating a new regional ICSD is offered.

Section 3 discusses the credit rating system. Like Section 2, it deals with the current status of credit rating agencies in Asia and the role of the global credit rating agencies. Section 3 goes on to take up the question of whether establishment of a new agency or collaboration among the existing local agencies would be more appropriate. This section also discusses how the collaboration should be arranged if this second option is considered more appropriate.

## **2. Building a settlement infrastructure for Asian bond markets**

### **2.1 Cross-border securities settlement in Asia**

Cross-border trades of securities can be settled through four different channels: (i) through a local agent, (ii) through a global custodian (GC), (iii) through an ICSD or (iv) through a national central securities depository (NCSD) that has a link with the NCSD in the country of issue.<sup>5</sup> All of these channels are utilised in varying degrees for cross-border settlement in Asia.<sup>6</sup>

Historically, local agents have been used most frequently in cross-border settlement, especially when securities settlement must be made in a country that has no linkage between its NCSD and other NCSDs or between its NCSD and ICSD. However, using a local custodian has one major disadvantage in that investors must designate a separate local custodian for each country where investments are made, and sometimes the fees charged by local custodians can be significant.

Due to this cost disadvantage, institutional investors have increasingly used global custodians (GCs) that provide settlement and custody services in multiple markets through a

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<sup>5</sup> In addition to these channels, cross-border trades can be settled through direct membership in the NCSD of the country of issue. According to BIS (1995), however, this channel is seldom utilised since CSDs typically prohibit foreign residents from becoming participants.

<sup>6</sup> BIS (1995) and the Giovannini Group (2001) compare various methods of cross-border securities settlement.

single gateway by integrating services performed by a network of subcustodians, including its own local branches. GCs can offer cost advantages through economies of scale and scope. Another important advantage of using GCs is the availability of integrated multicurrency banking and cash management services since most GCs are large international commercial banks. Most settlements of Asian securities are made through GCs, not ICSDs, using international currencies such as the US dollar.

In fact, the business base of GCs lies in the inefficiency of the international financial market due to differences in the trading, clearing and settlement systems of each country. GCs provide investors with the convenience of a single interface for their international security transactions. The convenience of a single gateway, however, must come at a price since GCs also have to hire local agents themselves. In addition, the quality of their services differs widely by region depending upon the quality of service provided by the local agents.

Table 1  
**Countries with settlement linkages to Euroclear<sup>1</sup>**

| Region       | Countries                                                                                                                                                     | Number    |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Asia Pacific | Australia, New Zealand, Hong Kong SAR, Indonesia, Japan, Malaysia, the Philippines, Singapore, Thailand                                                       | 9         |
| Europe       | Belgium, Finland, France, Germany, Greece, Ireland, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, Austria, Italy | 16        |
| America      | United States, Argentina, Canada, Mexico                                                                                                                      | 4         |
| Others       | Russia, South Africa                                                                                                                                          | 2         |
| <b>Total</b> |                                                                                                                                                               | <b>31</b> |

<sup>1</sup> Includes all countries linked to Euroclear through specialised depositories, common depositories or clearing depositories.

Source: Korea Securities Depository.

Another way to conduct cross-border settlement is to use an ICSD. As a matter of fact, ICSDs are the natural channels of cross-border settlement for securities like eurobonds that use ICSDs as the central depository. However, even when Asian bonds are deposited in the NCSD of the country of issue and not in an ICSD, their settlement can still be executed through an ICSD. In this case, the ICSD should be linked to the NCSDs of individual countries or to the custodian banks that are members of the NCSDs. Countries that have these linkages with ICSDs are called clearing members. Table 1 shows the 31 clearing members of Euroclear. The table shows that the coverage of Asian countries by Euroclear is quite limited. As of 2002, only seven Asian countries were clearing members of Euroclear.

Cross-border settlement can also be conducted by using an NCSD that has a bilateral linkage with the NCSD of the country of issue. Currently, however, there are only a few bilateral linkages between Asian NCSDs. Some of these include the linkages between Australia and New Zealand, Hong Kong SAR and New Zealand, Korea and Hong Kong and Japan and Hong Kong. Except for the linkage between Australia and New Zealand, trading volumes are quite minimal.

## 2.2 The case for a regional clearing and settlement system in Asia

An informal working group has been organised under the Asian Bond Market Initiative of ASEAN+3 to review and propose the clearing and settlement system for Asian bond markets. Though this group has been in operation for some time, it has yet to make a concrete proposal for the clearing and settlement system, although there have been a few suggestions. These include utilising the existing ICSDs, establishing a regional settlement system by linking NCSDs and creating a new regional ICSD. In this subsection, we will review the pros and cons of using the existing ICSDs. In particular, we will discuss the third time zone problem that arises when investors use the existing ICSDs located in the European time zone to settle securities trades denominated in Asian currencies.

### 2.2.1 *Limits of using an international central securities depository (ICSD)*

Asian bonds will be issued in the offshore market or in the domestic market of the regional financial centres in Asia and will be denominated in the currencies other than the currency of the country of issue (Park and Park, 2003). As a result, Asian bonds are likely to be international bonds like eurobonds. Since securities traded in the eurobond markets are mostly deposited in and settled through ICSDs such as Euroclear or Clearstream, the same ICSDs may also serve as the depository for Asian bonds. Then, Asian bonds denominated in Asian currencies can be settled through the existing ICSDs in the same way eurobonds denominated in Asian currencies are currently settled through the ICSDs.

Currently, Euroclear offers investors a choice of the currency of settlement, but as shown in Table 2, the range of choices is very limited.<sup>7</sup> Only 32 currencies for 42 countries are available for settlement, and of these, only nine are Asian currencies. The currencies of Korea, China, India and Taiwan, China (hereinafter referred to as Taiwan) are not included, but this is not because they are not internationalised. The Malaysian ringgit and the Singapore dollar are settlement currencies in Euroclear even though they are not internationalised.

Most Asian currencies are not Euroclear settlement currencies because there are some limitations on their convertibility or substantial legal uncertainties regarding the application of regulations on foreign currency transactions. In Korea, for example, omnibus accounts (accounts for large groups of investors) are not permitted. This is a major reason that the Korean won is excluded from the list.<sup>8</sup> Non-resident investors in Korea are required to report their individual identities when opening Korean won-denominated accounts. This regulation prohibits ICSDs from opening omnibus accounts with the NCSD in Korea. If an ICSD has an omnibus account in its own name and manages all the internal transactions among its members, the government fears that it will be unable to monitor individual transactions. This regulation, however, subjects foreign investors to onerous procedural requirements and does not permit protection of investors' anonymity. For these reasons, Euroclear does not designate the Korean won as a currency of settlement.<sup>9</sup>

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<sup>7</sup> Euroclear (2002) lists settlement currencies and cash correspondents.

<sup>8</sup> Oh et al (2003b) present the reasons why ICSDs do not include the won among settlement currencies.

<sup>9</sup> The Indonesian rupiah is a currency of settlement in Euroclear, but its use became somewhat restricted after the financial crisis in 1997. The restriction is not due to exchange rate or credit risk to Euroclear: as the settlement of Euroclear is done via the RTGS and DVP systems, Euroclear is not subject to any exchange rate or credit risk. The restriction was introduced due to increasing uncertainty with regard to regulation on capital transactions in Indonesia.

Table 2  
**Settlement currencies of Euroclear**

| Region                 | Country                                                                                                                                                                                                                                                                                                                                                                                        |                                     |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| Asia                   | Australia (AUD), New Zealand (NZD), Hong Kong (HKD), Indonesia (IDR), Japan (JPY), Malaysia (MYR), Philippines (PHP), Singapore (SGD), Thailand (THB)                                                                                                                                                                                                                                          | Nine currencies of nine countries   |
| Europe                 | EUR (Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Portugal, Spain, Luxembourg, the Netherlands), Norway (NOK), Sweden (SEK), Denmark (DKK), Switzerland (CHF), the United Kingdom (GBP),<br>[Republic of Croatia (HRK), Czech (CZK), Republic of Iceland (ISK), Slovakia (SKK), Estonia (EEK), Hungary (HUF), Lithuania (LTL), Latvia (LVL), Poland (PLN)] <sup>1</sup> | 15 currencies of 26 countries       |
| North/South America    | USA (USD), Argentina (ARS), Canada (CAD), Mexico (MXN)                                                                                                                                                                                                                                                                                                                                         | Four currencies of four countries   |
| Middle East and Africa | South Africa (ZAR), [Kuwait (KWD), Israel (ILS)] <sup>1</sup>                                                                                                                                                                                                                                                                                                                                  | Three currencies of three countries |
| Others                 | Gold (XAU) <sup>2</sup>                                                                                                                                                                                                                                                                                                                                                                        | One currency                        |
| Total                  | 32 currencies of 42 countries                                                                                                                                                                                                                                                                                                                                                                  |                                     |

<sup>1</sup> Countries in [ ] are not clearing members of Euroclear, but their currencies are designated as currencies of settlement. Russia is a clearing member of Euroclear, but the Russian ruble is not a currency of settlement (payments are settled in US dollars). Gold is converted into one of the currencies of settlement and then settled according to its value in the currency in question.

Source: Korea Securities Depository.

In addition to the limitation on the currencies of settlement, there is also limitation on the countries of settlement. If we exclude Australia and New Zealand, only seven countries in Asia are directly or indirectly connected to Euroclear: Hong Kong, Japan, Singapore, Thailand, the Philippines, Malaysia and Indonesia, with some restriction on Malaysia and Indonesia. Other Asian countries such as Korea, China, Taiwan, India and Pakistan are not clearing members of Euroclear. The low coverage of Euroclear in the Asian region indicates that there is potential demand for a regional ICSD, and we will take this issue up in the next section.

The selection criteria for clearing members are not identical to those for currencies of settlement. All four cases are possible if we compare Table 1 and Table 2. First, countries such as Japan and Thailand are clearing members of Euroclear, and their currencies are designated currencies of settlement. Second, Russia is a clearing member of Euroclear, but its currency is not a settlement currency. Third, there are countries such as Korea that are not clearing members and whose currencies are not designated as currencies of settlement. Fourth, countries such as Croatia, the Czech Republic, Israel and Iceland are not clearing members, but their currencies are used for settlement.

### **2.2.2 The need to create a regional clearing and settlement system**

The low coverage of the Asian countries and currencies by existing ICSDs provides a case for creating a regional ICSD for Asian bond markets. Besides the limited coverage, there is another reason for creating a regional ICSD; that is, the time zone problem.

Since most Asian currencies are not internationalised, the payment settlement of Asian bonds denominated in local currencies must be finalised in the local market, even though securities settlement can be done through ICSDs located in Europe. However, due to the difference in time zone between Europe and Asia, real-time settlement of Asian bonds is not possible, and there have been calls to establish a regional clearing and settlement system within Asia, the third time zone, in order to cover the non-business hours of the two other time zones, Europe and the Americas.

To illustrate the third time zone problem, consider the settlement process of an Asian bond denominated in Hong Kong dollars.<sup>10</sup> Hong Kong is seven hours ahead of Brussels, where Euroclear is located. Assume that the settlement date of the bond transaction is 2 October in Brussels. In order to finalise the settlement by that date, Euroclear currently mandates that the buyer and the seller deposit money and securities in the common depository of Euroclear in Hong Kong, HSBC Bank, by 1 October, which is a day before the settlement date. After receiving a notification from HSBC overnight, Euroclear Bank in Brussels completes the security settlement by 9 am on 2 October (4 pm in Hong Kong). Then, the seller in Hong Kong can withdraw Hong Kong dollars and the settlement can be finished by 2 October.

Instead of depositing money and securities a day before the settlement date, if the buyer and seller want to settle securities using the real-time gross settlement (RTGS) system on 2 October in Belgian time, the seller may not be able to withdraw money by 2 October. For example, by the time the RTGS settlement is completed by 3 pm on 2 October, it is already 10 pm in Hong Kong, and the bond seller has to wait until the next day to withdraw his money. This is one reason why Euroclear mandates that traders deposit money and securities a day in advance of the settlement date for bonds that are denominated in Asian currencies. If bonds are denominated in European currencies or the US dollar, securities and payment settlement can be completed on the same day through the RTGS system as there is no time zone difference, and the time difference between Europe and the Americas works favourably between security settlement and payment settlements. The time zone problem implies that investors have to bear the extra cost of losing liquidity for a day when trading Asian currency denominated bonds. If there were a regional ICSD within Asia, investors would not face this extra cost. The benefit of solving the third time zone problem can be significant considering that the major investors for Asian currency denominated bonds are institutional investors located in Asia.

The time zone problem may also hinder efforts to reduce the settlement cycle. The recent movement to do so has been motivated by a report by the Group of Thirty (1988) that recommended that the settlement cycle be reduced to T+3 in order to reduce settlement risk. The settlement cycle and settlement amount are the key determinants of settlement risk. Accommodating the report's recommendation, major countries have reduced the settlement cycle to T+3. Some, including the United States, plan to reduce the settlement cycle further down to T+1.

If trades of Asian bonds denominated and settled in Asian currencies are settled through a regional settlement system, such as a regional ICSD located in Asia and operating in the Asian time zone, then investors would not have to deposit securities or money one day in advance of the settlement date. This would not only facilitate liquidity management by investors but would also make it possible to reduce the settlement cycle down to T+1.

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<sup>10</sup> For the detailed settlement procedure, refer to Euroclear (2003).

## 2.3 Proposals for establishing a regional clearing and settlement system in Asia

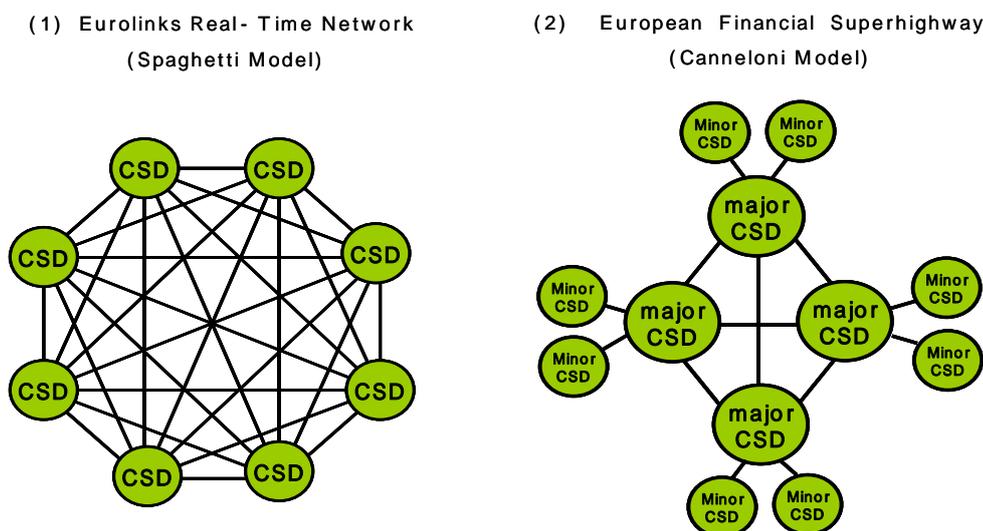
The previous subsection presented the reasons for creating a regional clearing and settlement system for Asian bond markets. There are a couple of proposals to create a regional clearing and settlement system: the bilateral linkage model and the regional ICSD model. In this subsection, we will review these two proposals.

### 2.3.1 Model I: Bilateral linkages between NCSDs for cross-border settlements

If bilateral linkages can be established among Asian NCSDs, cross-border settlement is possible without ICSDs. In fact, the European Central Securities Depositories Association (ECSDA) once proposed a bilateral linkage model for cross-border settlement in Europe. Figure 1 shows two pan-European bilateral linkage models that ECSDA has studied. One is the Eurolinks Real-time Network model (Spaghetti Model), and the other is the European Financial Superhighway (Cannelloni Model). The former connects all NCSDs with each other, while the latter uses major NCSDs as pivots to connect other small NCSDs. Both models emphasise the need to strengthen mutual linkages among NCSDs.

Figure1

#### Bilateral linkage models of ECSDA



Within Asia, Hong Kong has shown the greatest interest in bilateral linkage models. The Hong Kong Monetary Authority (HKMA) has proposed the establishment of AsiaClear, a regional settlement institution, by linking the clearing and settlement systems of member countries in Asia in the manner of the internet. That is, the HKMA defines AsiaClear not as a single hub institution, but as a common network among individual NCSDs in Asia. Thanks to advances in information technology, HKMA believes that linking NCSDs is now feasible in virtual space. For this reason, disagreement over where to locate AsiaClear can be finessed.<sup>11</sup> In fact, the HKMA has been actively pursuing linkages with other Asian countries; it now has links with Australia, New Zealand and Korea, and soon will have one with China.<sup>12</sup>

<sup>11</sup> HKMA (1997a) researched the state of financial market and IT development in Hong Kong that might enable Hong Kong to function as a financial hub in Asia.

<sup>12</sup> See HKMA (1997b, 1997c, 1998, 1999, 2002) on the linkages between HKMA and other NCSDs in Asia.

However, there are a number of problems with applying bilateral linkage models to Asia. First, it is an inefficient method compared with settlement through ICSDs. Transaction costs in bilateral linkage models would likely be high as each NCSD has to open accounts in the NCSDs of all counterparties. Second, these models could only handle securities registered in both NCSDs being used for a transaction. Third, the initial setup costs of establishing bilateral linkages can be high if countries do not share standardised settlement platforms.<sup>13</sup> However, the most serious bottleneck in applying bilateral linkage models is that bond markets in Asian countries are at such greatly varying stages of development that they cannot be readily linked to each other. Among Asian NCSDs, only seven countries (Australia, Hong Kong, Japan, Korea, Malaysia, New Zealand and Singapore) are using RTGS and delivery versus payment (DVP) systems. Table 3 shows the wide difference among Asian NCSDs with regard to compliance with the recommendations of G30/ISSA, which renders the building of bilateral linkages among them difficult.<sup>14</sup>

Different legal systems are another factor. Unlike Europe, where the legal systems of each country are relatively similar, Asian countries have much more varied historical backgrounds, cultures and legal systems, which make it difficult to standardise linkages among Asian NCSDs.

### **2.3.2 Model II: Building a regional ICSD - AsiaSettle**

Oh et al (2003b) propose that AsiaSettle, a regional ICSD, be established as a regional clearing and settlement system in Asia. According to this proposal, AsiaSettle will serve as the hub for the cross-border settlement of Asian bonds with NCSDs serving as the subdepositories. Unlike Euroclear, which is for the most part indirectly linked to NCSDs through custodian banks, AsiaSettle will be directly linked to NCSDs. The direct linkage model has the cost advantage over the indirect linkage model. For the cash settlement, AsiaSettle will be directly linked to the central banks of Asian countries rather than to custodian banks. The direct linkage to the central banks has the advantage of reducing the settlement cycle as well as the settlement cost. Oh et al (2003b) discuss in detail the pros and cons of alternative models of operation and governance structure for AsiaSettle.

The AsiaSettle model belongs to the hub and spoke model as far as settlement for Asian bonds is concerned. The advantage of this model lies with the low setup cost since it fully utilises the existing settlement infrastructure. The public characteristics of AsiaSettle may also serve as a positive factor in building the direct linkages to NCSDs, considering Asian governments' interest in promoting Asian bond markets.<sup>15</sup> AsiaSettle can be established as a private agency funded by the NCSDs and the central banks of Asian countries, or as a multilateral agency.

AsiaSettle's raison d'être has been set forth above in subsection 2.2: the limited coverage of settlement services in Asia by existing ICSDs such as Euroclear and the time zone problem. There are more reasons to create a regional ICSD for Asian bond markets: harmonisation of regulations and introduction of a central counterparty (CCP).

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<sup>13</sup> Park and Hong (2001) discuss the advantages and disadvantages of bilateral linkage models.

<sup>14</sup> For more details, see ISSA (2002).

<sup>15</sup> Direct linkage means that an ICSD has its own omnibus account in a local NCSD. Indirect linkage means that an ICSD is linked to a local NCSD through a third party such as a specialised or common depository. It is more common for Euroclear to have indirect linkages with NCSDs.

Table 3

**NCSDs of Asian countries:  
compliance with G30/ISSA recommendations**

|                                                                 | BA | CN | HK | IN | ID | JP | KR | MY | PA | PH | SG | TH | TW |
|-----------------------------------------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Trade comparisons between direct market participants by T+0     |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Matched trade details should be linked in the settlement system |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Indirect market participants to achieve affirmation by T+1      |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Central depository, broadest possible participation             |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Widest possible range of depository eligible instruments        |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Immobilisation/ dematerialisation to the utmost extent possible |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Compatible rules and practices in case of municipal CSDs        |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Real-time gross settlement system                               |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Trade netting system as per Lamfalussy recommendations          |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Delivery vs payment (DVP) as defined by ISSA                    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Same day funds for securities settlement                        |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Same day funds for the servicing of securities portfolios       |    |    |    |    |    |    |    |    |    |    |    |    |    |
| A rolling settlement system should be adopted by all markets    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Final settlement for all trades by T+3                          |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Securities lending and borrowing should be encouraged           |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Existing regulatory and taxation barriers should be removed     |    |    |    |    |    |    |    |    |    |    |    |    |    |
| ISO Standard 7775 (Securities Messages)                         |    |    |    |    |    |    |    |    |    |    |    |    |    |
| ISO Standard 6166 (ISIN Numbering System)                       |    |    |    |    |    |    |    |    |    |    |    |    |    |

BA: Bangladesh, CN: China, HK: Hong Kong SAR, IN: India, ID: Indonesia, JP: Japan, KR: Korea, MY: Malaysia, PA: Pakistan, PH: Philippines, SG: Singapore, TH: Thailand, TW: Taiwan, China.

Source: Korea Securities Depository.

As previously discussed, the low coverage of ICSDs in Asia is partly due to the existence of complex regulations and legal uncertainties involving cross-border trading of securities. Setting up AsiaSettle through the cooperation of Asian governments offers a great opportunity to open domestic markets and harmonise bond market regulations across Asia. The existing ICSDs are private entities, and Asian governments have had no incentive to ease regulations to increase business flows for the ICSDs unless it is very much in their national interest. However, if a regional ICSD were designed under the consent of Asian governments, the governments would face incentives to ease and harmonise regulations regarding cross-border trading and settlement of securities in order to promote Asian bond markets. Thus, AsiaSettle could be an effective catalyst for easing regulations and opening up local markets in Asia, and consequently in developing the Asian bond market.

Harmonisation of regulations, in turn, would enhance the cost efficiency of AsiaSettle. One of the criticisms of AsiaSettle is that it would entail the additional cost of creating a new institution. Contrary to the common belief, the cost of building the IT infrastructure for AsiaSettle would not be very high. Instead, a large portion of the cost would arise from the need to study the legal and regulatory environment for cross-border securities trading and settlement in each country. It goes without saying that harmonising the regulations would greatly reduce the need for research and consultation on legal and regulatory matters. Admittedly, harmonisation of regulations enhances the cost efficiency of the bilateral linkage model as well.

Creating a regional ICSD has the advantage of introducing central counterparty services in the clearing and settlement of Asian bonds. A CCP is a special financial institution that stands between the seller and buyer in each trade. It replaces the original contractual obligations to deliver and pay with equivalent obligations by the CCP.<sup>16</sup> As a result, a CCP replaces several counterparty exposures with a single one and reduces settlement risks.<sup>17</sup> A CCP can benefit the capital markets by offering standardised processing that translates into lower operating costs and anonymity among participants. Moreover, a CCP minimises the value and volume of settlements through multilateral netting. For example, the gross amount of securities settlement at the Depository Trust & Clearing Corporation (DTCC) in the United States in 2000 was about 722 billion US dollars, but after multilateral netting, the net amount of settlement shrank to only 22 billion US dollars.

Taking advantage of the benefits of a latecomer, the clearing and settlement system for Asian bond markets could be designed so that AsiaSettle provides CCP services itself or by setting up a subsidiary. By providing CCP services for bond settlement, AsiaSettle could enhance the efficiency of Asian bond markets and differentiate itself from existing ICSDs. In particular, the multilateral netting function of AsiaSettle could be expected to reduce foreign exchange (FX) transaction costs in settling Asian bonds denominated in Asian currencies. Since most Asian currencies are not internationalised and their exchange rates vary, it is more likely that the payment settlements for Asian bonds will be effected by international currencies such as the US dollar. However, if CCP services are provided, the volume of FX transactions could be reduced significantly through multilateral netting, and settlement costs could be significantly lowered.

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<sup>16</sup> This is known as “novation”. DTCC (2000) has an overview of the current development of the CCP industry.

<sup>17</sup> The DVP system can also reduce settlement risks, but it cannot effectively cover replacement risk. A CCP can cover principal as well as replacement risk.

Table 4

**Local credit agencies in Asian countries**

| <b>Country</b> | <b>Rating agencies</b>                                       | <b>Affiliation<br/>(operation,<br/>capital)</b> | <b>Major stockholders</b>                             |
|----------------|--------------------------------------------------------------|-------------------------------------------------|-------------------------------------------------------|
| Korea          | KR                                                           | Fitch                                           | Hanil Cement, Korea Development Bank, Fitch           |
|                | KIS                                                          | Moody's                                         | Moody's                                               |
|                | NICE                                                         | R&I                                             | Domestic bank                                         |
|                | SCI                                                          | JCR                                             | SB Partners                                           |
| Japan          | R&I                                                          |                                                 | Nikkei 56.5%                                          |
|                | JCR                                                          |                                                 |                                                       |
|                | Moody's Japan KK                                             | Moody's                                         | Moody's                                               |
|                | S&P Japan                                                    | S&P                                             | S&P                                                   |
|                | Fitch Japan Branch                                           | Fitch                                           | Fitch                                                 |
| China          | China Chengxin International Credit Rating Co Ltd            | Fitch 30% with-drawal                           |                                                       |
|                | Fitch Ratings Hong Kong Limited                              | Fitch                                           | Fitch subsidiary                                      |
|                | Dagong Global Credit Rating Co Ltd                           | Moody's                                         | Moody's                                               |
|                | S&P office                                                   | S&P                                             | S&P                                                   |
|                | China Lianhe Credit Rating Co Ltd                            |                                                 |                                                       |
| India          | The Credit Rating Information Services of India Ltd (CRISIL) | S&P                                             | 9.68% acquired by S&P in 1997                         |
|                | Investment Information & Credit Rating Agency Ltd (ICRA)     | Moody's                                         | Moody's, Central Bank, public financial institutions  |
|                | Credit Analysis and Research Limited (CARE)                  |                                                 | IDBI, Canara Bank, UTI                                |
|                | Fitch Ratings India Pvt Ltd                                  | Fitch                                           | Fitch subsidiary                                      |
| Indonesia      | PEFINDO                                                      | S&P                                             | S&P                                                   |
|                | PT Kasnic Credit Rating Indonesia                            |                                                 |                                                       |
| Singapore      | Moody's Singapore Pte Ltd                                    | Moody's                                         | Moody's                                               |
|                | S&P office                                                   | S&P                                             | S&P                                                   |
|                | Fitch Ratings Singapore Pte Ltd                              | Fitch                                           | Fitch                                                 |
| Bangladesh     | Credit Rating Information & Services Ltd (CRISL)             | JCR-VIS, RAM                                    | Join venture between JCR-VIS and RAM                  |
| Malaysia       | Rating Agency Malaysia Berhad (RAM)                          | Fitch                                           | Fitch 4.9%, minor shares held by other banks          |
|                | Malaysian Rating Corp Berhad                                 | Fitch                                           | Affiliate, but Fitch does not seem to hold any shares |
| Pakistan       | JCR-VIS Credit Rating Co Ltd                                 | IIRA, CRISL                                     | JCR 15%, VIS 67.5%, KSE 12.5% ISE 5.0%                |
|                | The Pakistan Credit Rating Agency (Private) Ltd, (PACRA)     | No longer affiliated with Fitch                 |                                                       |

Table 4 (cont)

**Local credit agencies in Asian countries**

| Country       | Rating agencies                                  | Affiliation (operation, capital) | Major stockholders                        |
|---------------|--------------------------------------------------|----------------------------------|-------------------------------------------|
| Philippines   | Philippine Rating Services Corp (PhilRatings)    | S&P                              | Fitch affiliate                           |
|               | Fitch Ratings Manila Representative Office       | Fitch                            |                                           |
| Taiwan, China | Taiwan Ratings Corp (TRC)                        | S&P                              | Domestic banks and financial institutions |
|               | Fitch Ratings Taipei Representative Office       | Fitch                            | Fitch subsidiary                          |
|               | Moody's Chinese Taipei branch                    | Moody's                          | Moody's                                   |
| Thailand      | Thai Rating & Information Services Co Ltd (TRIS) |                                  |                                           |
|               | Fitch Ratings (Thailand) Ltd                     | Fitch                            | Fitch affiliate                           |
| Sri Lanka     | Fitch Ratings Lanka Ltd                          | Fitch                            | Fitch affiliate                           |

### 3. Building a common credit rating system for the Asian bond market

#### 3.1 Credit rating agencies in East Asia

##### 3.1.1 Local credit rating agencies

As seen in Table 4, most East Asian countries have their own local credit rating agencies, which are responsible for rating bonds or examining the credit ratings of bank loans. In Korea, for example, there are three credit rating agencies that are allowed to rate all types of bonds, and one agency that rates only commercial paper (CP) and asset backed-securities (ABSs). In Japan, two local agencies, R&I and JCR, are currently in business and global credit rating agencies such as Moody's, S&P and Fitch have also established themselves in the Japanese market. Both R&I and JCR represent themselves as global credit rating agencies and provide ratings for samurai and sovereign bonds. With the exception of Japan, the credit rating agencies of East Asian countries are primarily focused on rating domestic bonds, and most of them are linked to global credit rating agencies through capital investment or operational collaboration. The last two columns of Table 4 indicate the collaborative ties between local and global rating agencies and their major shareholders.

##### 3.1.2 Global credit rating agencies in Asia

In response to the rapid expansion of the financial markets in Asia, global credit rating agencies such as Moody's, S&P and Fitch have branched out into Asia. Table 5 shows the number of employees at the global credit rating agencies in Asia as of 2001. S&P has 234 employees, Moody's 99 and Fitch 66.

Table 5

**Number of employees at global  
credit rating agencies in Asia, 2001**

|               | <b>S&amp;P</b> | <b>Moody's</b> | <b>Fitch</b> |
|---------------|----------------|----------------|--------------|
| Japan         | 80             | 70             | 33           |
| Hong Kong SAR | 30             | 13             | 17           |
| Singapore     | 24             | 10             | 4            |
| Australia     | 100            | 6              | 12           |
| Total         | 234            | 99             | 66           |

Source: Korea Investors Service.

Table 6 shows the number of issuers that have been directly rated by global credit rating agencies in Asia. In 2001, Moody's rated the highest number of issuing companies, followed by S&P. However, ratings have been highly concentrated only in those countries where the bond markets are relatively more developed, such as Japan, Australia, Korea and Hong Kong.

Table 6

**Number of issuers rated in 2001**

|               | <b>S&amp;P</b> | <b>Moody's</b> | <b>Fitch</b> | <b>Total</b> |
|---------------|----------------|----------------|--------------|--------------|
| Japan         | 297            | 504            | 71           | 872          |
| Hong Kong SAR | 227            | 226            | 178          | 631          |
| Singapore     | 53             | 89             | 6            | 148          |
| Australia     | 47             | 38             | 3            | 88           |
| Total         | 624            | 857            | 258          | 1,739        |

Source: Korea Investors Service.

### **3.1.3 Association of Credit Rating Agencies in Asia (ACRAA)**

The Association of Credit Rating Agencies in Asia (ACRAA) is an organisation whose members currently consist of 20 rating agencies in 11 Asian countries for mutual cooperation and joint research. Currently, Japan's JCR chairs the ACRAA, and PhilRatings of the Philippines is the executive director. Every credit rating agency in Asia is eligible for ACRAA membership. To join, an agency must receive the Executive Committee's recommendation and then the Board of Directors' approval. The ACRAA holds a meeting every year at which member credit rating agencies discuss various issues concerning mutual collaboration. The ACRAA also offers educational programs to member agencies biannually.

Table 7  
**ACRAA members**  
As of February 2006

| Country     | Credit rating agency                                                                                                    | Notes                                                       |
|-------------|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| Bangladesh  | Credit Rating Information & Services<br>Credit Rating Agency of Bangladesh (CRAB)                                       |                                                             |
| China       | Dagong Global Credit Rating<br>Shanghai Far East Credit Rating                                                          |                                                             |
| India       | Credit Rating Information Services of India Limited<br>(CRISIL)<br>Investment Information & Credit Rating Agency (ICRA) | Board of directors<br>Board of directors<br>(Vice Chairman) |
| Indonesia   | Credit Analysis and Research<br>PEFINDO Credit Rating Indonesia<br>PT Kasnic Credit Rating Indonesia                    |                                                             |
| Japan       | Japan Credit Rating Agency (JCR)                                                                                        | Board of directors<br>(Chairman)                            |
| Korea       | Seoul Credit Rating & Information<br>Korea Investors Service<br>Korea Ratings                                           |                                                             |
| Malaysia    | Rating Agency Malaysia Berhad<br>Malaysian Rating Corporation Berhad (MARC)                                             | Board of directors                                          |
| Pakistan    | JCR-VIS Credit Rating<br>The Pakistan Credit Rating Agency (PACRA)                                                      |                                                             |
| Philippines | Philippine Rating Services Corporation (PhilRatings)                                                                    | Board of directors                                          |
| Taiwan      | Taiwan Ratings                                                                                                          |                                                             |
| Thailand    | TRIS Rating                                                                                                             |                                                             |

Source: ACRAA.

### 3.2 The need for a regional credit rating agency

As the number of international bond investors increases in Asia, the need for common regional credit rating standards becomes greater. The simplest means to meet this need would be to utilise the global credit rating agencies, rather than establish a new regional institution. Considering the fact that cross-border bond investment in Asia is still quite small, utilising global agencies would be more cost effective. However, there are some limitations to using the global credit rating agencies if Asian countries want to promote cross-border bond investment in local currency denominated bonds.

The number of local currency denominated bonds in Asia being rated by global credit rating agencies is very limited. This number may increase in the future as the Asian bond market becomes larger, but the rating standards of global agencies, which are designed mainly for developed countries, may not be adequate to differentiate the credit ratings of the Asian bonds that are highly concentrated in low credit ratings.

Table 8 shows the current sovereign credit ratings for foreign currency debt assigned by a global credit rating agency. Major developed countries in North America and Europe have

ratings of AAA, other European countries and Japan have AA ratings, and emerging economies have ratings varying from A to B. Because there is little possibility of corporate bonds being rated above the sovereign, most Asian bonds will likely be rated lower than BBB. Therefore, unless the global rating system's lower credit ratings are broken down into more specific levels, the ratings of Asian bonds will have a very concentrated distribution, providing limited if any differentiation.

Table 8  
**Sovereign foreign currency credit ratings  
of Standard & Poor's, June 2004**

| Credit rating | Country                                                                                                                                                                                            |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AAA           | Australia, Austria, Canada, Denmark, Finland, France, Germany, Ireland, Isle of Man, Liechtenstein, Luxembourg, Netherlands, Norway, Singapore, Sweden, Switzerland, United Kingdom, United States |
| AA+           | Belgium, New Zealand, Spain                                                                                                                                                                        |
| AA            | Bermuda, Italy, Portugal                                                                                                                                                                           |
| AA-           | Andorra, Japan, Slovenia, Taiwan                                                                                                                                                                   |
| A+            | Hellenic Republic, Hong Kong SAR, Iceland, Kuwait, Qatar,                                                                                                                                          |
| A             | Botswana, Chile, Cyprus, Malta, Saudi Arabia                                                                                                                                                       |
| A-            | The Bahamas, Bahrain, Barbados, Czech Republic, Estonia, Hungary, Korea, Lithuania, Malaysia                                                                                                       |
| BBB+          | China, Latvia, Poland, Slovak Republic, Trinidad & Tobago                                                                                                                                          |
| BBB           | Oman, South Africa, Thailand, Tunisia                                                                                                                                                              |
| BBB-          | Bulgaria, Croatia, Kazakhstan, Mexico                                                                                                                                                              |
| BB+           | Egypt, El Salvador, Russia                                                                                                                                                                         |
| BB            | Colombia, Costa Rica, India, Jordan, Morocco, Panama, Peru, Philippines, Romania                                                                                                                   |
| BB-           | Grenada, Guatemala, Vietnam                                                                                                                                                                        |
| B+            | Belize, Benin, Brazil, Cook Islands, Ghana, Senegal, Turkey                                                                                                                                        |
| B             | Burkina Faso, Cameroon, Indonesia, Jamaica, Mali, Mongolia, Pakistan, Papua New Guinea, Ukraine                                                                                                    |
| B-            | Bolivia, Lebanon, Suriname, Uruguay, Venezuela                                                                                                                                                     |
| CC            | Dominican Republic                                                                                                                                                                                 |
| CCC+          | Ecuador                                                                                                                                                                                            |
| D             | Argentina, Paraguay                                                                                                                                                                                |

Source: S&P homepage, [www.standardandpoors.com](http://www.standardandpoors.com).

In order to solve this concentration problem, the global agencies could adopt a regional rating system separate from the global rating system. However, it is doubtful whether they will develop such a new system for a market that is relatively small. It might create the unwanted impression that the agencies are adopting a double standard. In addition, the credibility and accuracy of credit ratings depend on a detailed awareness of local knowledge along with scientific methodology. If global rating agencies plan to expand into rating local

bonds, they must establish a database and build up local human resources, which would entail significant infrastructure building costs. Because of these limitations, direct involvement of the global agencies in the local rating business has not been extended beyond the collaboration stage with local agents except in Japan.

Another problem with utilising the global rating agencies is that they are often criticised for their lack of impartiality. In 2003, S&P lowered the ratings of major German companies. Germany protested the decision and thereafter started to discuss the possibility of establishing its own domestic credit rating agency.<sup>18</sup> Ferri and Liu (1999) also argue that companies in developing countries are more conservatively rated than companies in developed countries. Together with the criticism that the global credit rating agencies lack awareness of each country's specific economic situation, this argument is reinforced by the fact that there are many black boxes in their credit rating methodology.

An alternative to utilising global rating agencies in adopting a common credit rating system is for local agencies to jointly establish a regional credit rating agency. If the New Basel Accord, which mandates that the credit risk adjusted capital adequacy is to be adopted in the future, and the financial supervisory institutions of each country were to encourage domestic financial institutions to use the credit ratings of this new institution, the regional agency would have a good business outlook, as well.

However, there are serious drawbacks in establishing a new regional credit rating agency through the sponsorship of each country's government. As is the case with the global rating agencies, the regional rating agency must build up the infrastructure, including a database and human resources, if it is to rate local bonds in each country, and the costs of building this infrastructure would not be negligible. In addition, the agency must build a reputation for impartiality and accuracy to compete with global agencies. But it is doubtful whether a government-supported agency, which would not be exposed to competition, would be acknowledged by the market as impartial and efficiently run. Also, if a regional agency were established through government support, it would definitely crowd out the private business of local credit rating agencies.

As seen in Section 2, the establishment of a regional clearing and settlement system with government support is justifiable in that it addresses problems associated with market failure; it would increase efficiency by concentrating transaction volumes and alleviate the third time zone problem. However, establishing a regional credit rating agency is a different problem, even if the need for a new common credit rating system in Asia, which can effectively differentiate Asian bonds concentrated in low credit ratings, is accepted. Considering the drawback of establishing a new regional agency, it would be better for the governments to promote cooperation among local and global rating agencies in establishing a common rating system and meeting the new business needs. The ACRAA has already started standardising the rating systems in anticipation of the development of the Asian bond market.

### **3.3 Standardisation for introducing a regional credit rating system**

The bond markets of Asian countries differ in size and degree of development, as do their credit rating systems and agencies. Clearly, adopting common credit rating standards

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<sup>18</sup> In February 2003, when S&P lowered the rating of three major companies in Germany (Thyssen Krupp, Linde and Deutsche Post), Europe questioned the fairness of the decision. In August 2003, even though the capital of Munich Re, an international reinsurance company based in Germany, had been raised, its credit ratings were lowered from AA- to A+. Germany questioned the credit rating capabilities of the global credit rating agencies, which led to discussion about establishing a new credit rating agency. Gerke and Pellens (2003) argue that the global agencies failed to reflect the difference in pension reserve methods in Germany.

through mutual cooperation among these agencies will not be an easy task. Despite the difficulties, the ACRAA recently announced a plan for mutual cooperation. There is an ongoing effort to improve the expertise of analysts of member agencies through mutual education programs as well as exchanges on rating standards. Furthermore, a best practices committee was set up to determine the common standards for credit ratings, and members are actively working on standardising credit rating concepts and sharing credit rating methodologies.

The process of standardising the credit rating systems in Asia that the ACRAA is promoting will occur in several stages. The most basic stage involves sharing basic rating concepts and offering mutual training through which the member agencies share rating definitions, default concepts and other basic credit rating concepts.

In a more advanced stage of standardisation, agencies could share rating methodologies and a joint committee for a common rating system could be considered. At that stage, if needed, a regional credit rating agency could be established to rate offshore bonds issued in Asia. Instead of governments taking the initiative and financing it, such an agency would draw on the voluntary participation of local credit rating agencies from each country. This would prevent disagreements between the regional and local agencies because the roles of each could be determined beforehand. Moreover, a great deal of overlap in infrastructure investment could be avoided by building an information hub that contained each country's database.

It is expected that actually establishing a common credit rating system for Asia or a regional credit agency will require a considerable amount of time. It is imperative in the meantime that the local credit rating agencies cooperate with each other in order to develop the Asian bond market. For example, if Indonesian bonds were to be pooled together and issued as Korean won-denominated CDOs in Korea, a structure should be set up such that the Korean and Indonesian credit rating agencies could trust the quality of the each other's ratings, even if there is no regional credit rating system. In other words, there must be a certain degree of standardisation between the two countries' credit ratings. The current effort of the Asian governments to develop the Asian bond markets is a valuable opportunity to promote joint cooperation among the local credit rating agencies.

#### **4. Conclusion**

This paper discussed the issues involved in a building infrastructure for Asian bond markets, namely establishing a regional security settlement system and credit rating agencies. As for a clearing and settlement institution for the Asian bond market, we propose establishing a regional ICSD dubbed AsiaSettle by linking the central banks and NCSDs of each country. At the initial stage, AsiaSettle would perform as the clearing and settlement system for local currency-denominated government bonds of Asian countries. The focus in the early stages on government bonds is extremely important; because the supply of high-quality bonds in the private sector is low, high-quality government bonds would be an indispensable catalyst for the development of the Asian bond market. We also discussed the necessity that AsiaSettle also function as the central counterparty for the exchange of government bonds and possess Electronic Communication Networks (ECN) platform capabilities. Furthermore, we discussed the desirable governance structure of AsiaSettle and proposed that AsiaSettle be established as an institution owned by each country's NCSD and central bank, or as a new multilateral agency for Asia.

As for a regional credit rating system, there is a great need for a common credit rating system amongst the Asian countries to develop the Asian bond market. However, unlike the clearing and settlement system, it is not recommended that the regional credit rating agency be established through government support. This recommendation recognises the high costs

of building a centralised agency equipped with an extensive database and specialised local human resources to handle the credit rating of local bonds. Moreover, it is questionable whether an agency established through government support could compete with private agencies in acquiring and retaining a reputation for impartiality. Therefore, this paper opts for harmonisation, in which local credit rating agencies and global credit rating agencies coordinate in building a common credit rating system. The ACRAA, an organisation of Asia's credit rating agencies, is currently undertaking such a harmonisation process.

Whether a credit rating or a settlement agency, the argument for building a regional institution is mistakenly seen as one of market protection. However, building regional infrastructure must be seen not as an attempt at protectionism, but rather as a catalyst for opening the underdeveloped Asian bond markets and removing local restrictions on developing an international bond market in Asia.

There is no denying that the best way to begin developing the Asian bond market is to develop each country's domestic bond market and open it up to foreign investors. In other words, the optimal method of developing cross-border trading in Asia is for Asian countries to open up their domestic bond markets to enable Asian issuers to issue bonds in any country of their choice and to enable investors to invest in bonds in the domestic market of any country. However, the bond markets of East Asian countries are at greatly varying stages of development. Some are much more liberalised than others, and different kinds of capital controls are imposed. Some Asian countries do not even have the economies of scale to support all the components of the bond market infrastructure, such as a settlement and depository system, a primary dealer system, credit rating agencies, bond pricing agencies and credit guarantee agencies, which are needed to develop domestic bond markets. It is, therefore, very unrealistic to expect every Asian country to develop and open up its domestic bond markets in the near future, unless there is political pressure to develop the Asian bond market.

The failure to develop the Asian bond market in the 1990s is a good example. To many, the recent discussion on Asian bond markets seems to be a repetition of the old bond market idea from the early 1990s. The launching of the dragon bond initiatives in the early 1990s sparked discussion in Asia on the development of the Asian bond market which continued through the end of the decade.

In retrospect, however, the Asian bond market initiatives of the 1990s were merely talk without action. Their proponents failed to establish a consensus on their benefits. There was skepticism about the growth potential of the Asian bond market due to the reluctance of Asian countries to liberalise and open up their domestic capital markets for fear of creating market distortions and making themselves vulnerable to speculative attacks. The skeptics also did not believe that the Asian bond market would attract much attention because there were already well established, efficient international bond markets such as the eurobond market.

The situation changed greatly during the Asian financial crisis, and we are finally seeing some meaningful action towards establishing Asian bond markets at least on the government level. A consensus among Asian economies has emerged that regional bond markets should be promoted in order to facilitate the recycling of regional savings and to prevent the recurrence of financial crises as explained in the introduction. For these reasons, Asian countries finally agree on the importance of developing the Asian bond market, and this is a great opportunity for each country to ease government regulations and open domestic markets to international investors. The attempt to build regional infrastructure for the Asian bond markets should not be interpreted as an effort to close off and protect the Asian market, but rather as an opportunity to open and develop it through harmonisation of regulations, policy coordination and improvements in legal structures.

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## **Comments on Daekeun Park and Changyong Rhee's paper "Building infrastructure for the Asian bond markets: settlement and credit rating"**

Tom Byrne

I shall limit my remarks to Section III of Park and Rhee's paper.

The authors conclude by arguing that "harmonisation" of local and global credit rating agencies is necessary to develop an Asian bond market. If what the authors mean is constraining competition between and the independence of credit rating agencies, I disagree. While the authors reject, rightfully, going down the route of government-supported rating agencies, they do not adequately appreciate how global agencies function or their role in the market. From an Asian-centric point of view, the authors' basic gripe is that global credit rating agencies are ignorant of local conditions, implying that they currently lack and will never have the capability to deliver accurate and objective rating opinions on local currency bond issuers. Their argument is convoluted, however, and does not appreciate that factors that affect credit fundamentals tend to be universal. The authors should have stuck more closely to the solution they cite in the opening paragraph of the subsection "The need for a regional credit rating agency". That is, "[t]he simplest means to meet this need would be to utilise global credit rating agencies, rather than establish a new regional institution". To which I would add, use global agencies along with competitive local agencies.

The fact is that global rating agencies are already increasingly expanding ratings in local markets, in Asia and elsewhere, employing local staff along with experienced staff from their home offices. Expansion includes assigning ratings on an agency's global scale, and also rating local corporations on country-specific rating scales. Moody's has ownership stakes in local rating agency affiliates that use indigenous rating scales. Moody's also uses national scale ratings where it does not have affiliates so as to fit into local credit rating systems. A national scale does not necessarily convey the same information as Moody's global scale rating symbols - the probability and expected severity of default. Rather, national rating scales are essentially ordinal, and issuers are notched down from the best issuer (Aaa by definition), providing a relative ranking of creditworthiness. Local rating scales are not as powerful as a rating agency's global scale. One important reason for such local scales is that capital market regulators in many emerging market countries require that a corporation receive an investment grade rating in order to issue. Therefore, regulators themselves have historically limited the universe of ratings. Thus, the national authorities themselves restrict the downward range of ratings on the part of either a local or a global rating agency, and foster a concentrated distribution of relatively high ratings.

Another mistaken notion of the authors is that global rating scales are not suitable for emerging markets. The authors claim that because the sovereign ratings for emerging market sovereigns are lower than in advanced economies (as laid out in Table 8), emerging market corporations are destined to have ratings concentrated in lower rating levels. This is not necessarily so, but to the extent that it is so, it reflects an assessment of credit fundamentals, not rating methodology biases. The fact is that the sovereign defaults in recent history (starting with Russia in 1998) occurred with non-investment grade emerging market government bonds (at the time), not investment grade rated government bonds. So the global rating scale functions as intended. The table lists foreign currency government ratings, but Moody's rating practice allows in select cases a corporation to pierce the foreign currency rating of the government. This happens mostly in countries that are assigned low ratings. Moreover, Moody's does not constrain the local currency ratings of fundamentally strong

corporations by the local currency rating of the government (because the possibility of the imposition of foreign exchange controls is moot for local currency obligations).

Credit rating agencies in the United States developed in an environment of competition. I do not think that the authors' stress on "harmonisation" and coordination "in building a common credit rating system" captures the essence of how rating agencies have contributed to the efficiency of markets. The credit rating industry has its roots in the Anglo-Saxon tradition of free speech and constitutional guarantees of freedom of the press. Credit rating agencies exist in a publishing culture that values objectivity, accuracy and attentiveness to investor needs. A rating agency sells its judgments in a competitive marketplace that rewards credibility, and an agency accepts the reality that market forces will punish bad performance. Recently, in the United States, the number of rating agencies recognised by the market regulator increased to four from three, in an effort to heighten competition and accuracy, but not to foster harmonisation. A danger in the authors' prescription is that rating agencies might be appropriated either implicitly or explicitly by governmental authorities. In this event, companies would be buying a licence to issue bonds, rather than buying the credibility of a credit rating agency's opinion. Investor confidence would be sacrificed, along with efficiency in allocating capital and pricing risk into credit decisions. Rather, the authors should urge an improvement in accounting and disclosure practices of issuers in Asian bond markets - just like efforts under way in the US capital market at present.

# Creation of a regional credit guarantee mechanism in Asia

Gyutaeg Oh and Jae-Ha Park

## 1. Introduction

The development of the bond market has become one of the most significant policy goals in Asia. It is widely considered an important step towards preventing another financial crisis. There is a region-wide realisation that heavy dependence on bank-intermediated financing, especially on foreign currency short-term financing, was one of the main causes of the Asian financial crisis. Asia's dependence on bank-dominated financial systems supported rapid economic growth, but left the corporate sector over-reliant on short-term bank loans, which made the financial system - and entire economies - vulnerable to external shocks. The development of local currency bond markets has, therefore, become one of the important policy initiatives in Asia to prevent another financial crisis in the region.

The importance of developing the region's bond markets has also increased recently as the need to recycle the vast amounts of accumulated official foreign exchange reserves directly into the region has risen. Since the financial crisis, Asian countries have accumulated substantial foreign exchange reserves, partly as a result of huge current account surpluses reflecting high personal savings and subdued investment demand. This increase in foreign exchange reserves was, initially at least, an intentional policy in response to Asian countries' realisation that a lack of foreign currency liquidity caused the crisis. Unfortunately, however, Asia could not benefit much from these reserves since most of them have been invested in developed markets such as the United States and Europe. Capital flows from developing economies where investment returns are higher than in mature economies. The reserves are recycled back into the region in the form of risky assets such as equities and foreign direct investment. There are thus huge missed opportunities for capital market development in Asia. Until the Asian bond markets are fully established, East Asian borrowers will have to turn to the international financial markets. In order to facilitate the recycling of regional savings and to prevent the recurrence of a financial crisis, both Asian policymakers and economists concur that sound and liquid bond markets must be developed.

With this recognition Asian countries have stepped up their collaborative efforts to develop and strengthen the bond markets in the region through diverse forums such as ASEAN+3, APEC, EMEAP and ACD. Since late 2002, experts and policymakers in Asian countries have exchanged their views and ideas on various issues relating to the development of bond markets. One of the most important policy issues that have been intensively discussed by policymakers and markets experts is how to develop and strengthen the credit guarantee mechanism in the region. Development of a credit guarantee market is thought to be critical for the development of the regional bond market, as one of the most critical factors hindering the development of the regional bond markets is the credit quality gap between the low credit ratings of issuers and the minimum credit requirements of investors.

This paper is organised as follows. The next section reviews the recent progress of discussions on the development of the Asian bond markets. In particular, we discuss the efforts by ASEAN+3, APEC and EMEAP. Section 3 provides an overview and discusses the characteristics of the Asian bond markets. In addition, we explain why progress in the development of the bond markets in Asia has been limited. Section 4 explains the rationale and background for creating a new regional credit guarantee mechanism, focusing on the

credit quality gap problem and the limits of the existing guarantee institutions in meeting the need for guarantees in Asia. Section 5 presents possible options for a new guarantee institution including attributes, business strategy and institutional forms. Section 6 concludes with a discussion of policy implications.

## 2. Progress of discussions on the development of Asian bond markets

### A. ASEAN+3: Asian Bond Market Initiative (ABMI)

An informal meeting of the ASEAN+3 Finance Ministry Deputies and Central Bank Deputies (AFDM+3) was held in Tokyo in November 2002 to discuss specific ways to develop the Asian bond markets under the ASEAN+3 framework. A month later, in Chiang Mai, Thailand, a comprehensive plan for the development of the regional bond market, the Asian Bond Market Initiative (ABMI), was endorsed.

On 28 February 2003, an informal session on “Fostering Bond Markets in Asia” was held by AFDM+3 in Tokyo, Japan. Various proposals were presented by member countries to contribute to the development of the bond markets in the region. The delegates agreed to further study those proposals in depth to achieve tangible results as soon as possible. Reflecting the proposals and opinions of the delegates, six working groups of volunteers were established to conduct detailed studies on various aspects of bond market development (see Table 1).

Table 1

#### The six working groups of the ABMI

| Working group                                                                                                                                           | Chair country                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| 1. Creating new securitised debt instruments                                                                                                            | Thailand                                |
| 2. Credit guarantee and investment mechanisms                                                                                                           | Korea and China                         |
| 3. Foreign exchange transaction and settlement issues                                                                                                   | Malaysia                                |
| 4. Issuance of bonds denominated in local currencies by multilateral development banks (MDBs), government agencies and Asian multinational corporations | China                                   |
| 5. Local and regional rating agencies                                                                                                                   | Singapore and Japan                     |
| 6. Technical assistance coordination                                                                                                                    | Indonesia, the Philippines and Malaysia |

The working groups analyse two areas: (i) facilitating market access through a wide variety of issuance and (ii) creating an environment conducive to developing bond markets. The issues related to market access include: (i) bond issuance by Asian governments to establish benchmarks, (ii) bond issuance by Asian governments’ financial institutions (governments) to finance domestic private enterprises, (iii) creation of asset-backed securities markets, including collateralised debt obligations (CDOs), (iv) bond issuance by multilateral financial institutions and government agencies, (v) bond issuance for funding foreign direct investment in Asian countries and (vi) issuance of bonds in a wider range of currencies and introduction of currency basket bonds. The issues concerning the creation of an environment conducive

to active participation by both issuers and investors are: (i) provision of credit guarantees, (ii) improvement of the credit rating system, (iii) establishment of a mechanism for disseminating information, (iv) improvement of the settlement system and (v) strengthening of the legal and institutional infrastructure for bond market development.

The Working Group on Credit Guarantee and Investment Mechanisms chaired by Korea and China focuses on ways to promote the use of credit guarantee mechanisms in Asia. Many government delegates and market experts agreed on the need to study this issue in a more comprehensive and systematic way to produce a practically workable proposal. Also, the Asian Development Bank (ADB) decided to contribute to the creation of an appropriate regional credit guarantee mechanism to support the development of the domestic and regional bond market in ASEAN+3 countries.

## **B. APEC: securitisation and credit guarantee**

The development of the regional bond markets has long been seen by APEC economies as an important objective in the broader effort to promote greater openness, diversity and competitiveness in regional financial markets. This position was reaffirmed most recently in the APEC Finance Ministers' Joint Ministerial Statement of September 2002 and the APEC Leaders' Declaration of October 2002 in Los Cabos, Mexico. The objectives of this initiative are to identify impediments to the development of securitisation and credit guarantee markets within the APEC economies and to propose appropriate solutions to remove them. Securitisation coupled with credit enhancement offers significant benefits for developing markets to the extent that it helps reconcile credit and liquidity mismatches between issuers and investors and can also facilitate balance sheet restructuring.

This APEC initiative on the development of securitisation and credit guarantee markets is highly action-oriented, and it is co-chaired by Hong Kong SAR, Korea and Thailand. This initiative involves (i) holding policy dialogues for the APEC economies to exchange views on the use of securitisation and credit guarantees at the national and regional levels and (ii) sharing experience among APEC economies in identifying impediments and developing detailed action plans. The first policy dialogue was held in April 2003 in Seoul. So far, nine APEC member economies have participated in the initiative, either by sponsoring experts or by seeking expert advice on how to remove impediments in their markets. They are Australia, China, Hong Kong, Japan, Korea, Mexico, the Philippines, Thailand and the United States. Through collaboration among expert panels, domestic interdepartmental taskforces and private sector advisory groups, action plans at the economy level have been drafted to remove impediments to the development of securitisation and credit guarantee markets in individual APEC economies.

## **C. EMEAP: Asian Bond Fund (ABF)**

The ABF is the first fund of its kind in the region. The first phase of the initiative, ABF1, was launched in 2003 and is fully invested in US dollar-denominated bonds in the EMEAP economies. Since then, EMEAP has been working on the second phase of the project: broadening the ABF to cover bonds denominated in local currency, or ABF2. Both phases of the initiative are aimed at promoting the development of the bond market by improving the domestic and regional bond market infrastructures.

### **1. ABF 1: the critical first step**

The establishment of ABF1 was announced in June 2003. All 11 EMEAP central banks invested in ABF1 at its launch, which had a capitalisation of about US\$ 1 billion. The fund is now fully invested in US dollar-denominated bonds issued by sovereign and quasi-sovereign issuers in eight EMEAP economies (China, Hong Kong, Indonesia, Korea, the Philippines,

Malaysia, Singapore and Thailand). The developmental benefit of ABF1 is more than the first-round demand effect of US\$ 1 billion invested by the central banks. Indeed, the seed money invested by EMEAP central banks serves to attract additional money from the private sector, thereby deepening and broadening the demand in the markets. The promotional effect of ABF1 would generate second-round investor and issuer interest in the Asian bond markets, broadening the investor base and increasing market liquidity over time.

Furthermore, the ABF1 initiative is a milestone in regional central bank cooperation. As noted, ABF1 is the first of its kind in Asia, and its success is as symbolic as it is material. The successful launching of ABF1 not only sent a strong message to the financial markets that the regional authorities are committed to stepping up their cooperative efforts in promoting bond market development, it also paved the way for the development of ABF2. The remarkable one-year time frame from the initial discussions to the actual commitment of funds and the subsequent launching of ABF1 testifies to the rapport and sense of ownership among EMEAP members, which will prove valuable towards the development of ABF2. ABF2 will involve many more complex and technical issues than ABF1, and the precedent of ABF1 should be very helpful in efforts to garner political support and commitment in the challenges to the development of ABF2.

## **2. *ABF2: the bold new second phase***

Building on the momentum of developing ABF1, EMEAP has proceeded to study the feasibility and design of ABF2. Owing to the complexity of the project and the likelihood of opening up the funds for private sector investment in the future, the EMEAP Group has appointed financial advisers from the private sector to advise on the design and structure as well as the construction of benchmark indices for ABF2.

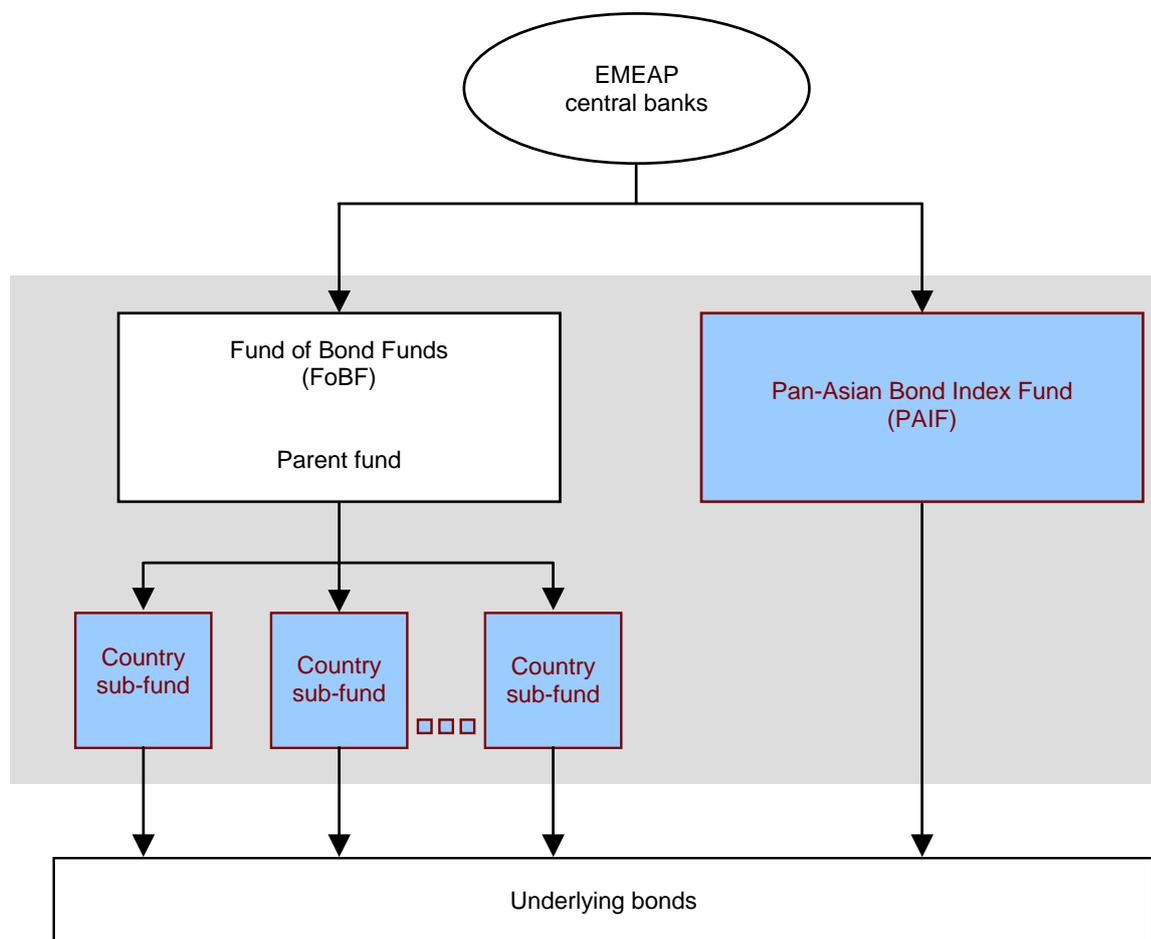
In April 2004, the EMEAP Group issued a press release setting out the basic design and latest thinking behind ABF2. It was proposed that ABF2 would consist of two components: a Pan-Asian Bond Index Fund (PAIF) and a Fund of Bond Funds (FoBF) (Figure 1). While many issues regarding ABF2, such as fund size and detailed fund structure, have yet to be determined by EMEAP after having taken into account such factors as market conditions, the latest thinking on ABF2 is described below.

The preliminary framework of ABF can be described as follows. PAIF is a single bond index fund investing in local currency-denominated bonds in EMEAP economies. It will act as a convenient and cost-effective investment fund and new asset class for regional and international investors who wish to have a well diversified exposure to bond markets in Asia.

The FoBF is a two-tier structure with a parent fund investing in a number of country sub-funds comprising local currency-denominated bonds issued in the respective EMEAP economies. While the parent fund is confined to EMEAP investment, the country sub-funds are intended to provide local investors with low-cost and index-driven investment vehicles and at the same time give regional and international investors the flexibility to invest in the Asian bond markets of their choice.

The ABF2 funds are intended to be passively managed against a set of transparent and predetermined benchmark indices, covering local currency bonds issued by sovereign and quasi-sovereign issuers in EMEAP economies. ABF2 is being designed in such a way that it will facilitate investment by other public and private sector investors. In addition to attracting additional money into the bond market, as in the case of ABF1, ABF2 seeks to achieve a larger and longer-lasting positive impact on regional bond market development. Several features of the design of ABF2 are conducive thereto.

Figure 1  
**ABF2 framework**



ABF2 is likely to have a long-lasting impact on market development in addition to its effect on demand from the seed money invested by EMEAP. In the process of the development of ABF2, individual EMEAP economies can leverage the interest and momentum generated from the collective investment in ABF2 to further develop their domestic bond markets as appropriate. For instance, the appropriate EMEAP members can work with the relevant authorities to improve market infrastructure by identifying and minimising the legal, regulatory and tax hurdles in their markets, thereby facilitating the creation of fixed income products in the region. The momentum and political impetus generated from the development of the fund could perhaps help harmonise regulatory procedures, eg cross-registration of bond funds, and the cross-issuance and trading of bonds, and help address the issue of fragmentation of regional bond markets.

ABF2 will also improve bond market infrastructure by encouraging the development of transparent, replicable and credible bond market indices for use in the PAIF and the FoBF country sub-funds. There is currently a lack of low-cost, passively managed index bond funds in most EMEAP economies, and most of the existing funds available in the markets are actively managed. Furthermore, the performance yardsticks for these funds vary substantially. It is hoped that the ABF2 bond indices would be widely adopted by private sector fund managers as benchmark indices for their fixed income products. For instance, private sector participants could clone or customise (by means of adding in corporate issues, etc) these transparent benchmarks and facilitate the setup of low-cost index bond funds.

Derivative products might also be created based on such indices, which should greatly increase market liquidity.

At the same time, ABF2 would also seek to encourage the development of exchange-traded bond funds (ETFs) in the region. ETFs are new to Asia, but have become increasingly popular and are a fast-growing fund category in the United States and Canada. The development of ETFs will help promote product diversification for both institutional and retail investors, increase market liquidity, provide low transaction cost bond fund products and make the price setting process more transparent. Thus, the seed money invested by EMEAP would also give impetus to product innovation that might otherwise not occur.

### **3. Asian bond markets: overview and factors hindering their development**

#### **A. Overview of the Asian bond markets**

The financial structure of most of the Asian countries is dominated by banks. Usually, the size of outstanding bank loans is much larger than that of outstanding bonds. Prior to the Asian financial crisis, Asian countries pursued prudent fiscal policies with balanced budgets. As a result, the government bonds outstanding were very limited. In addition, corporate bond markets were not developed in most of the countries because of the limited supply of bonds and underdeveloped infrastructure. However, since the 1997-98 financial crisis, government bond issues have increased sharply to finance budget deficits resulting from expansionary fiscal policy, bank recapitalisation and rising social safety net expenditures. Corporate bond issuance has also increased in most of the countries. In some countries like Korea, corporate bond issues increased dramatically, mostly led by rapid growth in the asset-backed securities (ABS) market.

Asian bond markets accounted for 24% of the world bond market in 2001 with US\$ 6.8 trillion in capitalisation. In recent years, Asian countries have sought to improve their bond markets, yet much remains to be done. In fact, the Asian bond market is in its infancy when compared to the US bond market with US\$ 15 trillion capitalisation. Table 2 shows that the ratios of the bond markets as percentages of GDP in most Asian countries are less than 70%, except for Japan. The Japanese bond market accounts for about 85% of the Asian bond market, illustrating the fact that the Asian bond market is still in its initial development stage. Table 2 also shows a high percentage of government bond issuance in Japan, China and Singapore, of corporate bond issuance in Korea, Taiwan (China) and Malaysia, and of financial institutions' bond issuance in Hong Kong.

East Asian countries' bond issuance from 1997 to 2001 is shown in Table 3. The issuance of bonds generally increased during these years, but except for Korea and China, the size of the bond issue is still very small. In addition, the proportions of Asian stock markets to GDP are relatively higher than those of the bond markets. For instance, the capitalisation of the Hong Kong stock market is three times the size of GDP, while its bond market is only 38.1% of GDP. Indonesia's bond market remains at only 5.1% of GDP, and that of China is only 18.0%.

Table 2

**Asia's bond market capitalisation, 2001**

In billions of US dollars and percentages

|               | <b>Total bonds outstanding (A)</b> | <b>Government bonds outstanding (B)</b> | <b>Financial institutions' bonds outstanding (C)</b> | <b>Corporate bonds outstanding (D)</b> | <b>(B)/(A)</b> | <b>(A)/GDP</b> |
|---------------|------------------------------------|-----------------------------------------|------------------------------------------------------|----------------------------------------|----------------|----------------|
| Philippines   | 21.6                               | 20.5                                    | –                                                    | 1.1                                    | 94.9           | 30.3           |
| Thailand      | 36.2                               | 18.4                                    | 12.1                                                 | 5.7                                    | 50.8           | 31.5           |
| Hong Kong SAR | 43.6                               | 14.6                                    | 24.0                                                 | 5.0                                    | 33.5           | 26.6           |
| Singapore     | 52.2                               | 29.0                                    | 17.5                                                 | 5.7                                    | 55.5           | 61.0           |
| Malaysia      | 82.8                               | 32.0                                    | 8.4                                                  | 42.4                                   | 38.6           | 94.0           |
| Taiwan, China | 124.3                              | 54.5                                    | 15.1                                                 | 54.6                                   | 43.8           | 44.0           |
| Korea         | 292.7                              | 77.3                                    | 97.9                                                 | 117.5                                  | 26.4           | 69.3           |
| China         | 403.0                              | 201.3                                   | 191.3                                                | 10.4                                   | 50.0           | 34.8           |
| Japan         | 5,816.9                            | 3,904.7                                 | 1,211.7                                              | 700.5                                  | 67.1           | 139.4          |
| Total         | 6,873.3                            | 4,352.1                                 | 1,578.0                                              | 942.9                                  | 63.3           | 104.8          |
| United States | 15,366.6                           | 4,271.9                                 | 8,658.2                                              | 2,436.4                                | 27.8           | 152.4          |

Sources: World Federation Exchange (2001); FIS; BIS.

Table 3

**Bond issuance of East Asian countries**

In billions of US dollars

|                 | <b>1997</b> | <b>1998</b> | <b>1999</b> | <b>2000</b> | <b>2001</b> |
|-----------------|-------------|-------------|-------------|-------------|-------------|
| China           | 10.27       | 14.39       | 19.53       | 25.34       | 20.83       |
| Hong Kong SAR   | 3.52        | 5.03        | 5.71        | 6.09        | 6.33        |
| Indonesia       | 0.78        | 0.57        | 1.01        | 0.98        | 0.75        |
| Korea           | 23.55       | 23.83       | 30.64       | 37.54       | 38.14       |
| Malaysia        | 4.04        | 3.60        | 4.15        | 6.39        | 7.25        |
| The Philippines | 2.04        | 1.58        | 2.50        | 2.42        | 2.45        |
| Singapore       | 2.69        | 2.90        | 3.68        | 4.48        | 5.68        |
| Thailand        | 1.74        | 2.28        | 3.68        | 4.08        | 4.27        |
| East Asia       | 48.62       | 54.17       | 70.90       | 87.31       | 85.69       |

Source: Ismail Dalla, "Asset-backed securities market in selected East Asian countries", World Bank, 2002.

## **B. Factors hindering development of an Asian bond market**

As mentioned above, capital movement within the East Asian region is limited. Even with substantial foreign exchange reserves, current account surpluses, a surge in exports and high personal savings, not enough of the surplus capital has been circulated within the region. Important insights into this situation can be gleaned by examining the supply of, and demand for, capital in East Asia. On the supply side, low-rated assets in the region and capital controls and regulations have restricted foreign investment in domestic assets. On the demand side, there is a lack of expertise among institutional investors and risk-averse behaviour among regional investors.

A wide credit quality gap exists between the issuers and the minimum requirement of the investors as the credit ratings of many East Asian countries are below investment grade, which on the whole discourages international investors. In addition, there are only a limited number of large, reputable firms which can issue high-rated bonds. The low credit ratings of bonds issued by East Asian governments or corporations have been one of the major factors hindering the development of the bond market in the region. The low credit ratings are mainly due to widely perceived political and commercial risks in East Asian countries. The low credit ratings of major East Asian countries make it difficult for international investors to invest without constraints. The bulk of Japan's overseas capital investment, for example, is in non-Asian bonds because the low credit rating of major East Asian countries means that Japan has few options for portfolio investment in East Asia.

East Asia's capital controls and regulations have been relaxed gradually but they remain a major obstacle impeding capital movement within the region. Capital controls and regulations create distortions in international capital flows. They often take the form of restrictions on foreign financial institutions entering the domestic financial market or a cap on foreign equity ownership in domestic financial institutions. Such restrictions have long since been removed in advanced economies such as Japan, Korea, Hong Kong and Singapore, but many East Asian countries still control capital flows in many ways. Some notable features of capital controls are: (i) more restrictions on capital outflows than on capital inflows and (ii) relatively stronger control on capital inflows for bond investment than on capital inflows for equity investment.

On the demand side, institutional investors in East Asia are largely underdeveloped. Most of the pension funds, mutual funds and insurance companies are small and incapable of expanding their cross-border portfolios. Institutional investors are in their early stage of development in most East Asian countries. Four factors can account for the weak institutional investor base. First, bank-dominated financial intermediation in most of East Asia hinders the development of institutional investors, with the extensive branch networks of banks tapping high domestic savings. Second, corporate governance of family-controlled companies and the emphasis on the expansion of capital through business profits or bank loans tend to discourage the growth of institutional investors. Third, the absence of a long-term capital market and lack of long-term investment products complicate portfolio management by institutional investors. Fourth, the development of the institutional investor base is impeded by government legislation or decrees, such as those restricting pension funds or imposing rigid investment criteria on insurance companies.

Risk-averse behaviour by regional investors is another factor limiting capital movement within East Asia, and was reinforced by the financial crisis. Both public and private investors from Japan, China, Korea, Hong Kong and Singapore who are able to invest abroad have been reluctant to take risks as they consider East Asian investment to be riskier since the financial crisis. Also, East Asia shows a tendency to export risky assets and import safe assets. This is because the increase in accumulated foreign exchange reserves is creating a situation that structurally forces East Asian countries to manage their assets safely. East Asia's relatively weaker capability to evaluate and manage risks also discourages East Asian investors from taking risks.

## **4. Rationale for creating a new regional credit guarantee mechanism**

### **A. Credit guarantees and securitisation as a solution to the credit quality gap**

Securitisation coupled with credit guarantees has been suggested by many experts and economists as one means of narrowing the credit quality gap between the low credit ratings of issuers and the minimum credit requirements of investors. A credit guarantee mechanism is an agency or institution that guarantees bonds by holding a certain sum of money at all times to immediately pay investors in the event that an issuer defaults. Two types of guarantees provided by existing guarantee institutions are commercial and political risk guarantees. Commercial guarantees protect against defaults caused by a company's bankruptcy. Political guarantees protect against defaults due to currency inconvertibility, expropriation, war and social disorder or breach of contract by the government.

A credit guarantor is able to close the gap between the low credit ratings of issuers and the minimum requirement of investors by enhancing issuers' credit. The guarantor is in a way "renting" its high credit rating to the issuer to match the minimum requirement of the investors. Hence, securitisation supported by credit guarantees enables borrowers to issue asset-backed securities at much higher credit ratings than they could on their own. Combined with credit guarantees, these securities could attain a credit quality acceptable to asset managers by qualifying for investment grade ratings from the international rating agencies.

Most bond-issuing Asian firms have poor credit ratings. There are a limited number of large, reputable firms, but they have been migrating to the global bond markets. Some small and medium-sized enterprises (SMEs) have good credit records but are not capable of raising capital from either the local or regional bond markets. Moreover, many corporations in developing countries are rated low because their sovereign ratings are low. These corporations also have low credit ratings due to the poor quality of institutions and information disclosure. The supply of top-grade Asian bonds is very limited, pointing to the need to devise a practical and viable mechanism to increase the supply of investment grade Asian bonds denominated in local currencies.

### **B. Example using credit guarantees and securitisation**

The figure below illustrates one example of how credit guarantees and securitisation can be used to facilitate the financing of developing countries' SMEs by mitigating the credit quality gap problem. This example entails implementing a two-tier securitisation process; one in borrowing countries and the other in capital-abundant countries. A two-tier process is necessary because of differences in the financial and legal systems among the participating countries in the region.

As a first step, government financial institutions or agencies in capital-importing countries would securitise loans or bonds issued by SMEs in local currencies. Then, in a capital-abundant country, a special purpose company (SPC) could be established to securitise the underlying assets, which are composed of the senior tranches from the capital-importing countries. The junior tranches, on the other hand, are assumed by local institutions in the capital-importing countries, which select the firms eligible for securitisation. Some senior tranches may be sold to local investors, but the remainder would be transferred to an SPC in the capital-abundant countries. Additionally, senior tranches could be backed by credit guarantees either from local credit guarantee agencies or government institutions in the capital-abundant countries. In this process, the newly created credit guarantee institution would provide guarantees for senior tranches.

It should be noted that cooperation among participating institutions is critical for the smooth functioning of this system. The coupon rates of both underlying assets and asset-backed securities, fees for underwriting and credit guarantee and the portion of senior tranches

compared to respective junior tranches are notable examples of many areas in which cooperation among participating institutions would be critical. Furthermore, because this proposal allows for the adoption of securitisation with proper risk-sharing among financial institutions, investors and guarantee companies, moral hazard is expected to be minimal.

Figure 2

**SME financing using credit guarantees and securitisation**

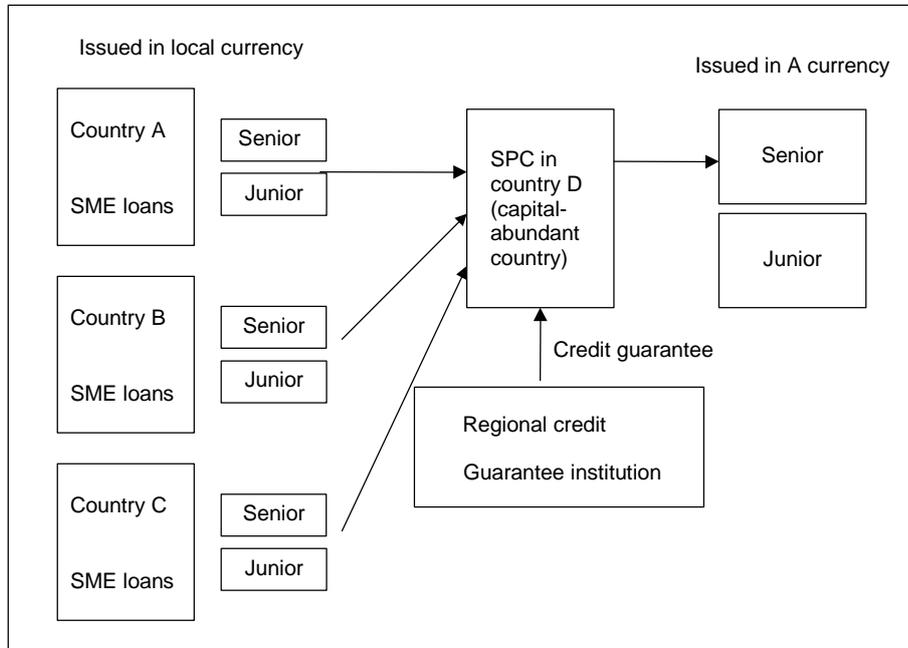
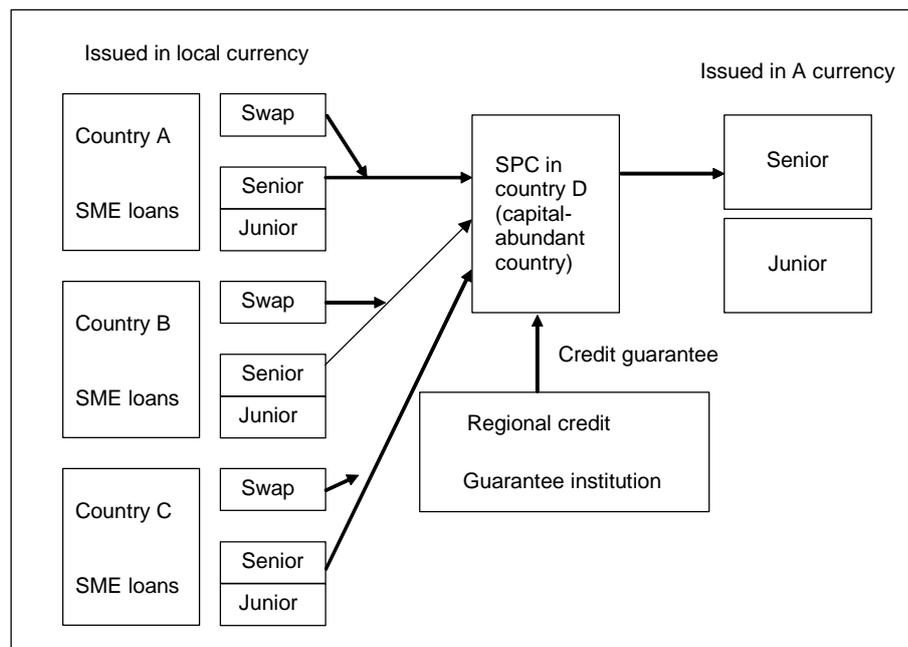


Figure 3

**SME financing with currency swaps**



A slight modification of the first proposal is illustrated by Figure 3. This modified proposal is nearly the same as Figure 2, the only difference being that it calls for providing currency swaps to investors who are not willing to assume currency risk. A government agency (GA) or other proper institution in country A would provide the SPC with currency swaps and then hedge the currency risk using back-to-back swaps with swap dealers. This would be done through the currency swap market, if one exists in the developing country, or with the help of the developing country's central bank if there is no swap market.

### **C. Limits of existing guarantee institutions in meeting the guarantee needs in Asia**

In the near future, the greatest demand for guarantees in Asia is expected to be for local currency-denominated asset-backed securities and infrastructure revenue bonds guarantees. Guarantees for non-traditional ABSs such as SMEs, CDOs and non-performing loans (NPLs), and for mid-market, near investment-grade or unrated issues are in especially high demand. To meet these demands, currency risk or transfer and convertibility risk, regulatory and institutional infrastructures and technical assistance need to be taken care of. In this section, the existing guarantee institutions are examined to determine if they meet the guarantee needs in Asia.

#### **1. Multilateral financial institutions**

There are eight multilateral institutions that offer guarantee services to private and/or public projects: the Multilateral Investment Guarantee Agency (MIGA), the International Finance Corporation (IFC), the Asian Development Bank (ADB), the International Bank for Reconstruction and Development (IBRD), the International Development Association (IDA), the Inter-American Development Bank (IADB), the European Bank for Reconstruction and Development (EBRD) and the African Development Bank (AFDB).

The guarantee operations of the existing multilateral institutions are limited. Most of the institutions' capital has been used for other types of assets; offering guarantees is not their main line of business. For instance, the IBRD's guarantee business accounts for only 1.4% (US\$ 1.58 billion) of its roughly US\$ 116 billion in development-related assets, and most of its resources are used for loans. Among all the existing multilateral institutions, MIGA is the only one that performs guarantee operations as its main line of business. MIGA, however, only covers political, not commercial, risks. Hence, it can be concluded that the existing multilateral institutions do not meet Asia's demand for specialised guarantee services in an efficient and focused manner.

#### **2. Private guarantee companies**

Like the multilateral agencies, the guarantee operations of private institutions are also limited in size and business scope. The US monoline insurance companies tend to overprice Asian risk: they do not split the savings in the issuer's cost resulting from credit enhancement with the Asian issuer. According to the Hong Kong Monetary Authority, studies of six structured deals done by US monolines in Hong Kong in the period 1994-99 show that there were no clear cost advantages, and most of the savings resulting from credit enhancement of the issuer were taken by the monolines. According to the insurers, this is because the small and underdeveloped Asian bond markets prevent US monolines from enjoying economies of scale. The reason for this is that the credit rating agencies consider the Asian financial guarantee business to entail greater political and commercial risk than the US financial guarantee business. Also, the deal closures were delayed because all guarantee decisions were made at the US headquarters. The issuers, especially first-time issuers, who used the US monolines' guarantee services did not use their services to save money but to enhance marketability and reach a wider pool of investors. Due to the lack of funding efficiency, Asian

issuers tend to rely more on bank loans and senior/subordinate structure than guaranteed bonds.

Additionally, the US monolines cannot satisfy the demand for guarantee services in Asia because they do not cover Asia's needs for local currency-denominated guarantees and for near-investment bonds and non-traditional ABSs such as SMEs, CDOs and NPLs. Monolines have conservative underwriting guidelines and do not issue guarantees for these riskier assets because they need to maintain their AAA credit ratings.

### **3. Existing Asian guarantee institutions**

In Asia, there is a credit quality gap in intraregional intermediation in long-term credit, and the existing private and multilateral guarantors do not fill this gap. Many of the existing guarantors lack focus on Asian countries, whose long-term borrowing and lending needs remain unmet. The unmet needs of long-term lending became even greater due to failure to invest during the crisis years. Many infrastructure projects were shelved for lack of long-term financing, and thus infrastructure remains woefully inadequate. However, the potential demand for well structured, long-term bonds of acceptable risk is rapidly growing, as witnessed by the ever growing trade surpluses and international reserves of the region.

Most Asian countries, except for Japan, Korea and China, do not have local credit guarantee institutions. Even the existing ones, however, cannot meet the demand for credit enhancement and guarantees in the Asian bond markets, mostly because they have no or only sub-investment ratings themselves.

### **4. The experience of ASIA Ltd**

A regional multilateral guarantee agency called Asian Securitization and Infrastructure Assurance Pte Ltd (ASIA Ltd) was established in 1995 in an attempt to overcome the Asian bond markets' unmet demands for credit enhancement and guarantees. It was the first regional credit guarantee agency established in Asia (located in Singapore) with more than a commercial objective - to facilitate the development of fixed income markets in Asia. Its shareholders included CapMAC Asia Ltd, Apmac Investment Pte Ltd, the Asian Development Bank (ADB), Employees Provident Fund of Malaysia, American International Assurance Co Ltd, Kookmin Bank, Netherlands Development Finance Co and Deutsche Investitions- und Entwicklungsgesellschaft mbH (DEG). ASIA Ltd had total paid-in capital of US\$ 150 million at the time of establishment. Initially, ASIA Ltd also intended to set up local agencies in the second phase of its development to cater to local currency-denominated bonds, while the Singapore main office would handle non-local currency- (notably US dollar-) denominated bonds. However, the Asian financial crisis led to the downgrade of its claims-paying ability rating in 1998, and currently it is in a run-off mode.

ASIA Ltd applied zero-loss underwriting standards to its operations with a concentration of business in the credit rating range of BBB+ to BBB-. Rating requirements for ASIA Ltd were such that a maximum of 25% of its guarantee portfolio in non-investment grade bonds would still allow it to keep its A rating. After the onset of the financial crisis and particularly the downgrades of Indonesian and Korean credit risks, the claims-paying ability of ASIA Ltd was downgraded by Standard & Poor's from A to BB in January 1998. At this time, the agency had to stop writing new business. As of end-1999, the company's US\$ 934 million credit insurance portfolio consisted mostly of sovereign, asset-backed, infrastructure and financial institution debt obligations throughout Asia. In terms of geographical distribution, as of end-1999, 24% of ASIA Ltd's guarantees and assumed reinsurance were outstanding to South Korea, 11.4% to Malaysia, 10.3% to Indonesia, 9.1% to Hong Kong and 20.9% to OECD countries (except South Korea). As of the end-March 2000, ASIA Ltd still had outstanding guarantees totalling US\$ 924 million.

Following the downgrade of its claims-paying ability, ASIA Ltd sought to raise additional capital to restore its rating to A. The shareholders were, however, unable to agree on the terms of a recapitalisation plan due to dissent over broadening the geographical coverage of ASIA Ltd. In April 1999, ASIA Ltd contracted out its responsibility for day-to-day operations, including surveillance of its credit insurance portfolios, to an affiliate of MBIA, and it is now effectively under the management of MBIA Singapore Pte Ltd. Inclusive of the Reinsurance Treaty with ERC Frankona Ruckversicherungs Aktiengesellschaft of US\$ 100 million, ASIA Ltd now has total claims-paying resources of approximately US\$ 250 million.

In retrospect, the company's business model had many structural problems which made it vulnerable to the shocks. First of all, at the time when ASIA Ltd was building its book of business in 1996-97, its risk management practices appeared to be prudent based on the assumption that country risk among Asian countries was not highly correlated. However, the reality turned out to be completely different; ie the crisis swept through most of the East Asian countries at varying intensities. Second, the institution was prohibited from providing any direct guarantees to non-Asian economies and certain developed Asia-Pacific economies (Japan and Australia). The geographical restriction not only significantly reduced the potential business available to the company but also exacerbated the correlation risk and concentration problem among Asian countries. Third, in relation to the second problem, the business deal flow of the company was too small and limited since its business area was limited to developing countries. It could not follow the detailed local market situations of each developing country. Therefore, the company was forced to engage in overly risky business. There should have been some close links or mechanisms for collaboration with local financial institutions and guarantee agencies. Fourth, the initial capital size was too small to absorb the big risks inherent in the provision of guarantees to developing Asian countries. What made the situation worse was that additional callable capital was not injected from participating shareholders during stress periods, contrary to the original agreement. Fifth, the initial credit rating, single A, was too low to do business.

With high demand for credit enhancement and guarantees in the Asian bond markets, a new and more fitting multilateral guarantee institution that can meet the Asian bond markets' current needs should be built. In light of the experiences of ASIA Ltd, the required level of capital should be much higher, and the return on capital should be lowered. The development of a regional credit guarantee institution would involve a stronger commitment to capital injection from participating countries during stress periods. Thus, the credit guarantee institution should initially be a "public" but "commercially viable" entity. Moral hazard problems should be mitigated by instituting an appropriate ownership structure. Exposure to each economy should be limited through structuring and reinsurance. Cross-border risks should also be limited through an emphasis on local currency business.

## **5. Considerations for the creation of a new guarantee institution**

### **A. Attributes of a regional guarantee institution**

A new regional guarantee institution clearly needs to be established to satisfy the unmet demands for Asian guarantee services. The objectives of the institution would include: (i) development of regional capital markets for stable access to long-term funds to facilitate private sector and infrastructure development, (ii) promotion of transparent and cash flow-based lending by facilitating securitisation and bonds issues, (iii) catalysing investment by providing comfort to investors through guarantees for new products and issuers, (iv) providing cost savings to issuers in the region by sharing the reduction in spreads resulting from credit enhancement, (v) improving the liquidity of bonds through diversification of investment products and (vi) creating an environment in the capital markets conducive to accelerated development of economies and establishment of bond markets.

To ensure the success of the new regional guarantee institution, contributions and cooperation among the ASEAN+3 member countries, proper pricing and business scope, exemption from regulation, risk diversity and sound underwriting policies are critical. The institution should also have a sufficiently high credit rating to foster the development of Asian bond markets. Acceptance by bond investors and sufficient initial paid-in capital and callable capital are other factors to be considered for successful operation of the institution.

## **B. Possible structure of a regional guarantee institution**

### **1. Business strategy**

The primary guiding principles of the business strategy of the new regional guarantee institution would be independence and prudence. The institution should not be influenced by the main issuers or investors, or the country where it is located. The institution should be an entity staffed by first-rate professionals who are able to analyse complex deal structures. Finally, the institution should be prudent in risk-taking in order to remain sound and to attain success.

The institution would provide credit risk guarantees, political risk guarantees and advisory and structuring services. Under the credit risk guarantees, the institution would provide local and convertible currency (US dollar, euro and yen) guarantees, partial credit guarantees, political risk guarantees and guarantees of loans to bond issuers. The products would be offered in three different phases. During the first phase, the institution would provide credit enhancement or guarantees primarily for ABSs and infrastructure revenue bonds, and advisory and structuring services. During the second phase, the institution would add products for SME CDOs in close cooperation with local credit guarantee agencies. Finally, during the third phase, the institution would provide a full-fledged range of products including guarantees for municipal bonds. The institution would not provide guarantees to sovereign bonds without conditionality. Because of these strict conditions, the institution's guarantee business for sovereign bonds might prove to be very limited.

Underwriting would be done according to the reinsurance model based on cooperation with local guarantee institutions. Instead of taking on the zero-loss policy, the institution would take on the risks with sufficient provisions. Because the institution would enter business lines perceived as risky, such as local currency-denominated bond guarantees, the reinsurance model would mitigate the risks. The role of the local institutions would be strengthened if the institution adopted the reinsurance business model. In other words, the first loss is assumed by the local guarantee institutions to the extent that they are able to assume it. The institution itself might take the burden of the second loss, thus alleviating both the credit risk and the currency risk.

The target market is ASEAN+3 countries. The institution would operate in all of these member countries within two years of its inception. However, there would be country, obligor, institutional and regional concentration limits based on the Fitch's Emerging Market CDO Model. The country concentration limits would be based on the country's ratings: higher-rated countries have higher concentration limits as their macroeconomic risks are expected to be lower than the others. The industry concentration limits would vary depending on whether the industry is global or local. Each obligor should represent no greater than a certain portion of the total asset pool.

To maximise the benefits of the institution to the Asian region, it is hoped that the new institution will be rated AAA (both local and foreign currency rating) by one or more international rating agencies such as Moody's Investors Service, Standard & Poor's or Fitch Ratings. A AAA credit rating extends the scope of benefit even to countries like Japan that have credit ratings above AA. A AAA rating also increases the spread between rates with and without guarantee, benefiting both the issuers and the institution. The challenge in

obtaining a AAA rating will be attracting enough capital. Nonetheless, the institution should strive to get a AAA rating.

Adequate pricing would ensure a stable and sufficient return on capital for the institution. Moreover, the spread may be split between the institution and the issuers so that there will be adequate demand for the guarantee business.

The institution's marketing strategy would be to produce continuous deal flows that meet its strict underwriting standards through cooperation with intermediaries such as investment banks and commercial banks, and other institutions including the rating agencies, reinsurance companies and governmental and other regulatory authorities. In addition, to build firm investor acceptance for securities guaranteed by the institution, local, regional and international cooperation between regional and local credit guarantee facilities would be essential and actively pursued.

The main objective of the investment portfolio would be to serve as a source of internal liquidity for the institution. The preservation of its capital would be imperative, and the rate of return should be reasonable. The annualised total rate of return of the portfolio would be compared with inflation as measured by the consumer price index with respect to the appropriate currencies, with the expectation of earning a positive real rate of return. Investments would include primarily fixed income securities issued by governments of major industrial countries such as government bonds of the United States and European countries. This will diversify the portfolio risk of the institution.

With the aim of exercising due financial prudence and maintaining a sound capital structure, the institution would adopt standard financial strategies and policies. At all times, the institution would maintain adequate liquid resources. The guarantee leverage shall be up to 20 times its capital, surplus and reserves. This limit is considerably lower than those of monoline bond insurers (with a limit of about 100 times), or ASIA Ltd (with a limit of up to 40 times), which shows that the sponsors/shareholders of the institution would operate in a conservative manner.

## **2. *Type of institutional form***

The institution may be either public or private. There are five possible institutional options depending on the legal status, organisational form and shareholders. The first option is a multilateral institution, which would be established through a treaty prepared and signed by participating shareholder countries. The second option is a private corporation with sovereign shareholders including governments or government-related institutions. The third option is also a private corporation, but the shareholders could include private as well as public shareholders. One example of this model is ASIA Ltd. The fourth option is a purely private corporation whose shareholders are private investors. The final option is an association of existing local guarantee institutions and companies in the region such as the existing Asian Credit Supplementation Institution Confederation (ACSIC).

A multilateral institution would have many advantages over a private corporation. First, it would be relatively easy to enlist sovereign shareholders through the ASEAN+3 grouping, even with a low expected return on capital in the initial period. The political and commercial risks in Asia are considered very high compared to advanced countries and even developing countries in other regions, and it would also be very difficult to maintain zero-loss underwriting guidance in Asia. It would, therefore, be very difficult to find interested private investors since the return on capital would naturally be lower than that of private companies.

Second, the injection of callable capital could be done quickly and with stronger commitment from shareholders during periods of stress. Third, the tax-exempt status of a multilateral institution could be a factor in the new institution's price competitiveness. In addition, the provision of guarantees would be more efficient and competitive if the new multilateral institution utilises a trust fund and closely collaborates with local guarantee institutions.

However, it should also be noted that a multilateral institution would have shortcomings. The most serious is the long period of time required to establish this type of institution considering the long and complex process of coordinating and reconciling the wide-ranging economic, administrative and political interests of participating countries. A multilateral institution might also by its very nature be more bureaucratic than a private company.

A private corporation with sovereign shareholders including governments or government-related institutions might share many advantages with multilateral institutions since the shareholders would be public. However, it might have a shortcoming in that callable capital might not be injected during periods of stress. Using an existing local guarantee institution would be the least feasible option since most are undercapitalised, might lack the capability and expertise needed to guarantee bonds and have no structure, rating and value as a bond insurer to investors.

As discussed, each option has its own advantages and problems. However, considering not only the nature and prospect of the new guarantee institution, but the economic and financial environments in the region, a multilateral institution is believed to be the best option. To ensure intergovernmental support for the new institution by, and regional financial cooperation among, the ASEAN+3 countries, a multilateral institution is obviously a better model than the others.

A multilateral institution would also be easier to establish than a private company in light of the attractiveness of the new institution to prospective investors. The decision on whether to establish a private or multilateral agency would depend on the attractiveness of its return on capital to private investors. The return on capital measures how effectively the company uses capital in generating profit, and is calculated by subtracting total costs from total revenues. The credit rating agencies consider the Asian financial guarantee business as involving greater political and commercial risks than the US financial guarantee business. As a result, the capital charge for the financial guarantee business is two to three times higher, which reduces the operating leverage by half or two thirds (from 100 to around 33). The much lower rate of return on capital in the Asian financial guarantee business means that it does not attract private equity. In conclusion, the tremendous social benefits and demands in the Asian market suggest that the financial guarantee business should be multilateral rather than private.

A multilateral institution would also be optimal considering that the mandate of the new institution would be partly developmental in that it would facilitate development of bond markets and grant small and medium-sized enterprises wider access to financial markets. Finally, and most importantly, from a practical perspective, the new regional guarantee institution should take the multilateral institution form since a long time might pass before the new institution can generate steady cash flows, and its return on investment might initially be lower than private investors would require.

## **6. Conclusion**

This paper reviews recent efforts by Asian countries to develop the regional bond markets, focusing on the creation of a credit guarantee institution. Establishment of a regional credit guarantee institution is proposed as a viable solution to deal with the credit quality gap between the low credit ratings of issuers and the minimum credit requirements of investors. Combined with securitisation, credit guarantees are urged as an effective means to solve the problem, among the most serious difficulties in the development of the bond markets in Asia.

The existing guarantee institutions, including multilateral institutions and private guarantee companies, are not in a position to satisfy the already high demand for guarantees in Asia, which is expected to grow over time. It is, therefore, believed that a new and more fitting guarantee institution that can meet the Asian bond markets' current needs should be

established. Towards that end, important lessons can be gleaned from the experience of ASIA Ltd. Foremost among these, the new institution should be much more heavily capitalised, and the expected return on capital should be lower. The development of a regional credit guarantee institution would also entail a stronger commitment to capital injection from participating countries during stress periods. Thus, the institution should initially be a public but commercially viable entity. Moral hazard should be mitigated by instituting an appropriate ownership structure, and its exposure to any particular country should be limited through structuring and reinsurance. Cross-border risks should be minimised through an emphasis on local currency business. Although we presented some preliminary ideas on the institutional structure and business operations of the new regional credit guarantee institution, we believe further, in-depth study is necessary. Among other issues, we should seriously consider how to prevent moral hazard and make the new institution commercially viable in the long term. For that purpose, close discussion and cooperation among Asian countries is indispensable.

The new guarantee institution is expected to greatly contribute to the development of the Asian bond markets. Other necessary components of the infrastructure and systems should be introduced and developed to support bond market development, including but not limited to credit rating systems, clearing and settlement systems, a centralised depository system and liberalising exchange and capital controls.

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## Comments on Oh and Park's paper "ASEAN+3 regional guarantee mechanism"

Guorong Jiang<sup>1</sup>

The joint paper by Professor Oh and Mr Park on the regional guarantee mechanism for Asia provides a comprehensive discussion of credit guarantee mechanisms and securitisation in the context of the ASEAN+3 Asian Bond Markets Initiative. The purpose of credit guarantees is to bridge the perceived credit quality gap between the generally low credit rating of many issuers in the region and investor demand for high-grade bonds. The authors propose that a new regional credit guarantee agency be established, preferably in the form of a multilateral, public sector organisation with an AAA rating. My main question concerns its financial viability, even if profit maximisation were not its goal. In this regard, my comments focus on the possible costs associated with extending the guarantee coverage to non-investment grade credits, the use of securitisation, the dilemma of risk concentration and the difficulties in risk mitigation.

**The first question is whether the proposed regional credit guarantee agency would be financially viable, being possibly the only financial guarantor in the world that would insure a substantial sum of non-investment grade credits.** Existing financial guarantors are considered by the authors as inadequate in the Asian context - they generally are available only for credits rated BBB or above before insurance. In fact, about three quarters of the credit enhancements are on credits rated A or above before the guarantees. This chosen risk profile excludes many Asian corporate credits, which are mostly non-investment grade - about two thirds of the credits in Asia are non-investment grade and thus are not potential customers of the existing financial guarantors. It is proposed that the new credit guarantee agency would distinguish itself from existing guarantors by extending its coverage to non-investment grade credits, so that a substantial number of Asian corporate credits could benefit from its credit enhancement services. This could involve substantial costs for the agency.

- First, to maintain the agency's AAA rating, the leverage ratio needs to be substantially reduced in order to cover lower-quality credits.
- Second, the premium charged by the agency needs to reflect the risk the agency undertakes. However, this could be constrained by the need to provide incentives for issuers to actively use the credit enhancement services to achieve a lower funding cost, and the need to be competitive with other competing financing channels such as bank loans.
- Third, the loss rates could be high, because the default rate is substantially higher for non-investment grade credits compared to investment grade credits.
- Finally, a guarantee programme run by the public sector frequently suffers from ultimately costly moral hazard and adverse selection problems. Hong Kong SAR's use of co-insurance in small and medium-sized enterprise (SME) financing is a classic response to these problems. The Special Finance Scheme for SMEs was launched in August 1998 to help address the liquidity crunch in the aftermath of the Asian financial crisis. The government provided a 50-70% guarantee on loans extended to SMEs by commercial banks. Thus, the credit assessments were performed by banks without government interference. Recently disclosed data show

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<sup>1</sup> The views expressed here are those of the author and do not necessarily reflect those of the BIS.

that out of about 12,000 approved guarantees to SMEs, over 1,700 loans (or 14% of the total) went into default. Out of total guarantees of HKD 5.8 billion (USD 0.7 billion), HKD 435 million worth of claims have been filed by banks with the government, a default rate of 7.5%. Whether co-insurance would work as well in economies with more corruption or weaker financial systems is an open question.

**The second question is whether securitisation can serve to narrow the credit quality gap between issuers and investors, thus mitigating the need for the credit guarantee agency to move down the credit spectrum.** Using senior-subordinate tranches, securitisation could offer bonds with a credit rating higher than the underlying assets. However, it should be noted that securitisation can repackage credit risks but cannot reduce such risks, which show up in the subordinate (or equity) tranches. The lower the underlying asset quality, the larger the equity tranche. In general, the subordinated tranches are illiquid and hard to market to investors. In Korea's corporate bond securitisation, they were bought by government-supported agencies. Even if equity tranches are sold, possibly with deep discounts, they shrink the size of senior tranches available to a broader range of investors and raise the cost of funds created through securitisation.

**The third question is how realistic it is for the credit guarantee agency to mitigate its risk by diversifying its market coverage.** Instead of focusing on insuring only Asian credits, the proposed credit guarantee agency could cover credits from the developed countries. This is indeed one of the lessons from ASIA Ltd, the first and failed Asian credit guarantee company with heavy public sector involvement. During the Asian financial crisis, credit risks between Asian economies became highly correlated and ASIA Ltd was downgraded and went out of business. The key lesson is the need to diversify outside Asia to reduce risk concentration. However, this conclusion raises two questions. First, it is hard to justify a publicly funded regional institution writing insurance that is not closely related to the aim of developing local bond markets. Second, a more practical issue is how this newly established agency could compete outside Asia with existing guarantors in their home markets.

**The fourth question is how realistic some of the proposed risk mitigation options for the credit guarantee agency are.** One proposed option is cooperation with local guarantee agencies. To the extent that they compete for business, it is hard to imagine why local guarantee institutions would assume first loss and source possible deals for the regional agency, unless it is a public or publicly owned entity not operating strictly in line with commercial principles. The second option is to establish trust funds as shock absorbers with contributions from regional governments and donors. This would certainly help shift some of the costs out of the agency, but the overall support or subsidy needed for writing credit guarantees is not reduced. To the extent that the regional credit guarantee agency would have an expected low return that would not be attractive for private sector investors, or even incur large losses to be absorbed by trust funds under adverse market conditions, it implies that the initiative could potentially require significant public subsidy to support bond financing. Whether such subsidies are the best use for public money is beyond the scope of the paper; in practice, burden-sharing among Asian governments for financing the agency could be an important issue to consider.

**The final question is how serious an impediment to bond market development the perceived credit quality gap between issuers and investors is.** Strong demand from investors for high-grade bonds should exert heavy market pressure on corporate issuers to improve their creditworthiness through greater reliance on equity financing. Looking forward, the credit quality gap is likely to narrow, with or without the credit guarantee agency. With rapid growth and prudent macroeconomic and financial policies, sovereign and corporate credit fundamentals have indeed improved substantially over the past year, evinced by record upgrades in the region by international rating agencies. Improving corporate credits in the region would certainly benefit the proposed credit enhancement agency.

# Promoting the Asian bond market

Kap-Soo Oh

## Introduction

In dealing with the aftermath of the 1997 Asian financial crisis, many Asian countries came to appreciate just how important it is for economic development and growth to keep their financial system safe and sound. Many of the discussions and debates on the Asian bond market point to the pivotal role that Asia's bond market can play in further enhancing the safety and soundness of the region's financial system. And it is clear that, for Asia's bond market to grow, close cooperation and collaboration among the region's financial regulators will be critical.

There follow some thoughts on recent developments in the Asian bond market, on some of the steps that we can take to further promote its growth, and on the role financial regulators can play in this endeavour.

## Recent developments in the Asian bond market

ASEAN+3, APEC, EMEAP and other regional groups have led most of the region-wide efforts to promote the Asian bond market. The member countries of ASEAN+3 adopted the "Chiang Mai Initiative", the first major regional financing agreement, in May 2000. The agreement strongly supports bilateral swap agreements among the member countries to pre-empt liquidity shortages and other significant financial distress in the region. The agreement provided a much needed boost to countries seeking region-wide swap agreements, and as of October 2003 there were 13 swap agreements totalling approximately USD 32.5 billion, or around double the number and amount before the agreement.

Along with these efforts, a number of specific steps designed to expand both demand and supply in the Asian bond market are in the works as a way to further strengthen financial cooperation among the Asian countries. To stimulate demand, EMEAP agreed to launch the Asian Bond Fund (ABF) last year and approximately USD 1 billion is currently managed by the fund. ASEAN+3 adopted the "Asia Bond Market Initiative" last August and has been working on specific proposals to expand supply in the Asian bond market as well. Moreover, efforts are under way to build a framework that can be used to support and stimulate the local bond markets throughout the region and promote cross-border trading of local currency bonds. Various studies on the feasibility of introducing a regional currency are also in the works. Studies on improving the market and institutional infrastructure for Asia's bond markets - such as proposals on pooling the region's corporate bonds and securitising them, harmonising the region's accounting standards, foreign exchange trading, and new settlement systems - are also gaining attention.

For its part, Korea has been taking a number of concrete steps to contribute to the growth of the Asian bond market. First, we are focusing on building an efficient infrastructure for the bond market and improving international harmonisation, while at the same time enhancing the ability of domestic financial institutions to bring greater depth to the bond market. At the same time, we are aggressively moving forward with our efforts to enhance the transparency and efficiency of our financial market and attract leading international financial institutions and organisations to Korea. I would also like to add that we are making a concerted effort to provide support and actively participate in all collective cooperative endeavours throughout Asia to contribute to the success of Asia's bond market.

## **Where the Asian bond market is headed**

Although the depth and maturity of the bond market vary from country to country, and cross-border bond investments remain limited, many expect the Asian bond market to show a much more robust growth in the near future as the region's financial system advances and the local bond markets gain strength. And there is no doubt that working together to promote economic development and prosperity will contribute to the economic and financial stability of the region.

In promoting a vibrant regional bond market, we face a number of challenges that we must overcome. First, we need to take concerted steps to facilitate the development of such key infrastructure and mechanisms as a centralised clearing and settlement system, credit guarantee institutions and credit rating systems in the bond market. As a part of this endeavour, we may need to carefully weigh the merits of coming up with a blueprint for a new architecture aimed at integrating the local markets closer together and improving the overall efficiency of the region's bond market.

Second, the regulatory regime and information systems of each country must continue to improve so as to ensure efficient and transparent cross-border financial transactions. This effort will most likely entail harmonising the region's market systems and regulations through close collaboration and cooperation among the Asian regulators.

Third, securitisation and other structured financing need to be more actively encouraged. Although many Asian countries do utilise asset securitisation and structured financing in their capital markets, only a few of them are at a mature stage. So it will be a worthwhile endeavour to streamline the existing market structures and come up with some form of uniform standards that can be used to further promote the region's securitisation market.

Lastly, the traditional reliance of many of the regional economies on bank-centred financial systems for capital will need to be shifted to the bond market.

## **The role of the regulators**

In order to ensure a sound development of Asia's financial market, the role that the region's regulators play and the efforts they make will be crucial. One of the key tasks they face is to move forward with building an advanced regulatory system so as to eliminate frictions between international standards and the local financial systems. This will mean, among other things, strengthening the existing prudential regulation and supervision to preserve the safety and soundness of local financial institutions and financial markets, and raising accounting, disclosure and governance standards to enhance market transparency and ensure orderly and disciplined market conduct.

Apart from close cooperation and collaboration on harmonising the region's regulatory structures for the bond market, the regulators will need to work on further market opening. An environment must be created that allows foreign financial service providers to enter into the market and to compete freely with others.

## **Concluding remarks**

In the light of the overall situation in Asia, the financial infrastructure and the bond market, it is clear that the challenges lying ahead will not be easy to overcome. One possible approach may be to come up with and implement a step-by-step road map for the pan-Asia bond market based on the development of the local bond markets in the region.

It is also important to bear in mind that, in order for Asia to firmly take its place in the global economy as the most dynamic region in the 21st century, creating and maintaining efficient and cooperative relations will be more important than ever. From this perspective, the recent efforts led by ASEAN+3, APEC and other regional groups to promote an Asian bond market will surely provide a significant impetus for the region's financial market and help it move up to a new level.

Korea will remain an active partner and participant in the drive for a robust, vibrant Asian bond market, and to do its part, the country will forge ahead with the integration and harmonisation of its bond market with the rest of Asia, further develop its market infrastructure, and contribute to the growth and success of the Asian bond market.

# Identifying impediments to cross-border bond investment and issuance in Asian countries<sup>1</sup>

Atsushi Takeuchi<sup>2</sup>

## 1. Introduction

The Asian currency crisis clearly demonstrated the need to develop well functioning local bond markets in Asia. Before the crisis, companies (including banks) in Asia, regardless of whether they had earnings in foreign currencies, often funded their business activities in foreign currencies, taking advantage of the low interest rates at the time. Such funding typically took the form of short-term bank lending, rolled over repeatedly. The funds raised in this way were often spent to finance domestic fixed (long-term) investment producing local currency cash flow, thereby creating the so-called “double mismatch” of maturity and currency on the companies’ balance sheets. This system collapsed when foreign lenders ceased to roll over their loans to the borrowers in Asia when market perceptions suddenly changed, aggravating the crisis.

Since then, Asian governments have made great efforts to foster bond markets in their respective countries by conducting a series of market reforms. Many of the reform efforts are concentrated on government bond markets, which is quite understandable given that a well functioning government bond market is considered a precondition for the development of the corporate bond market. Such efforts also reflect an increased need for Asian governments to finance their expanded fiscal spending after the crisis.<sup>3</sup> As a result, the size of local bond markets in Asia in terms of outstanding amounts has more than doubled since 1998 and is now estimated to exceed \$1 trillion (excluding Japan).

Nonetheless, local bond markets in Asia have room for further improvement in many aspects. Most notably, secondary markets are not liquid in many countries, which is evidenced by the low turnover ratio of government bonds. While bid/ask spreads are already narrow for some countries, they may be biased given the low trading volume (Table 1). A 1998 APEC study pointed out that inactive secondary markets were attributable to a number of factors such as a lack of reliable benchmark yield curves, a lack of local institutional investors, underdeveloped trading, clearing and settlement systems, a lack of liquidity, a lack of committed market-makers, long settlement periods and the absence of bond lending programmes. Although many of these factors have since seen dramatic improvements, they remain impediments to active bond trading in many countries.

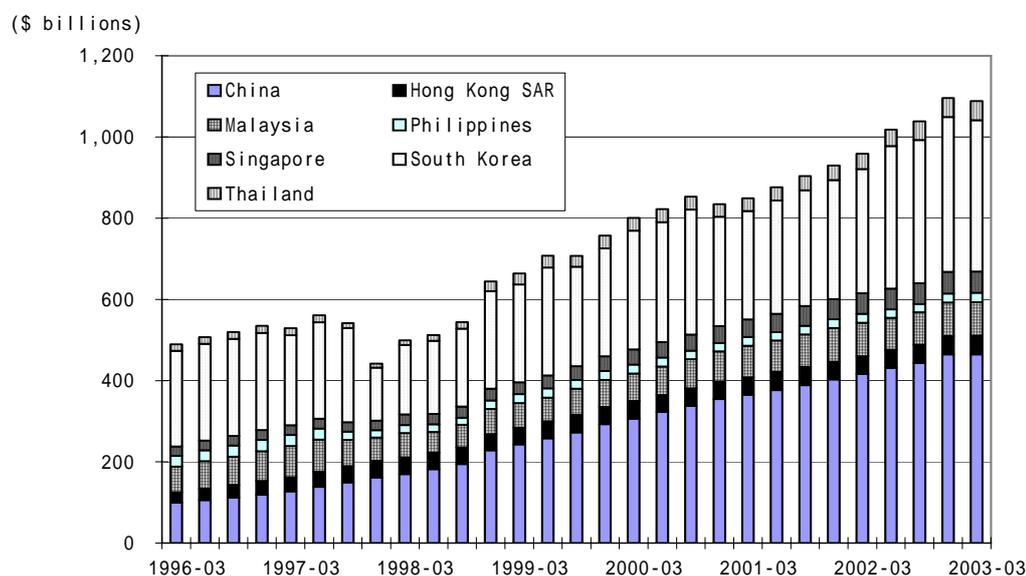
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<sup>1</sup> The markets covered in this paper are those of China, Hong Kong SAR, Indonesia, Japan, Korea, Malaysia, the Philippines, Singapore and Thailand, unless explicitly stated otherwise.

<sup>2</sup> The views expressed here are entirely the personal opinions of the author and do not reflect the official views of the Bank of Japan. This paper is prepared for information only. Although the author has endeavoured to provide accurate and timely information, readers are reminded that there is no guarantee that all information provided is accurate and up-to-date.

<sup>3</sup> There are a number of other reasons to develop local bond markets in Asia. Perhaps the most important is that development of the bond market introduces “credit risk culture” into the region, which is necessary for the efficient allocation of resources.

Chart 1  
**Outstanding amount of debt securities in Asian countries**



Source: BIS.

Table 1  
**Liquidity indicators in government bond markets**

|               | Turnover ratio <sup>1</sup> | Bid/ask spread |
|---------------|-----------------------------|----------------|
|               | (times)                     | (bps)          |
| China         | 0.4                         | –              |
| Hong Kong SAR | 15.6                        | 5-10           |
| Indonesia     | 0.5                         | –              |
| Korea         | 9.6                         | 1              |
| Malaysia      | 3.7                         | 3-5            |
| Philippines   | –                           | 25-50          |
| Singapore     | 5.0                         | 5              |
| Thailand      | 2.5                         | 2-3            |
| Japan         | 6.9                         | 7              |
| United States | 22                          | 3              |

<sup>1</sup> Ratio of turnover to average outstanding stock in 2002.

Sources: RBA (2003); Mohanty (2002).

A related issue is extremely limited foreign (non-resident) participation. In fact, foreign investors are virtually non-existent in local bond markets in Asia. This constitutes a clear contrast with foreign investor participation in local stock markets (Table 2). Similarly, there are only four bond markets in the region where non-resident issuers are meaningfully present, namely Japan, Korea, Hong Kong SAR and Singapore. Among the four markets, Hong Kong seems to be most able to attract foreign issuers. About one third of outstanding Hong Kong dollar issues belong to foreign entities. Nonetheless, the amount of such non-resident issuance is still limited compared with the eurobond market. For example, the amount of issuance of samurai bonds (1.3 trillion yen) stood at only one tenth of that of euroyen bonds in 2002.

Table 2  
**Foreign investor participation  
in local markets**

|               | Bonds <sup>1</sup> | Stocks <sup>2</sup> |
|---------------|--------------------|---------------------|
| Hong Kong SAR | <1                 | 41                  |
| Indonesia     | <1                 | na                  |
| Korea         | 2                  | 37                  |
| Malaysia      | 1                  | 22                  |
| Thailand      | 1                  | 29                  |
| Japan         | 5.8                | 32                  |
| United States | ?                  | ?                   |

<sup>1</sup> Amount of holdings as a percentage of total domestic debt outstanding (end-2000) except Japan (end-2003) and Thailand (as a percentage share of total turnover value during 1999). <sup>2</sup> Percentage share of turnover value for Hong Kong (2001), Japan (2003) and Thailand (1999). Amount of holdings as a percentage of total stocks outstanding for Korea (2001) and Malaysia (1998).

Sources: Mihaljek et al (2002); Daiwa Research Institute (2002); Kadir (2001); Prasarn (2001); Bank of Japan.

After discussing the rationale for promoting cross-border bond investment and issuance in Asian local bond markets, this paper tries to identify the specific factors that are hampering such investment and issuance, taking stock of previous studies and research done by investment banks, academics and public authorities. The paper also offers some suggestions on how to tackle this issue with a view to creating integrated regional bond markets in Asia.

## **2. Rationale for promoting foreign participation in local bond markets**

### **2.1 Benefits to local bond market**

In Asia, local banks continue to play an important role in bond markets. They are the largest bondholders in many countries, though local institutional investors are gradually gaining ground. This concentration of investors is likely to accentuate volatility in the market during times of stress. In this respect, foreign investors can help broaden the investor base and add liquidity to the secondary market. There is a negative image associated with foreign investors in Asian countries. Some believe that foreign investors tend to show herding behaviour because of a lack of information and poor understanding of the market, thereby inducing

volatility in the market. While such a hypothesis is very difficult to verify, past studies and research do not provide any evidence to support it (IMF (2003a)).

Non-resident issuers also contribute to the development of local bond markets by providing an additional supply of bonds. Bonds issued by blue-chip multinational enterprises or international organisations can create a new asset class for such markets, thereby offering diversified investment opportunities to local investors. In addition, foreign market players (both investors and issuers) are often eager to increase the efficiency of local markets and therefore are vocal advocates for market reforms. They are the ones who offer global perspectives when conducting such market reforms and bring internationally acknowledged best practices into local markets.

## 2.2 Benefits to foreign investors and issuers

Opportunities provided by local bond markets in Asia to foreign investors should not be underestimated. As a general characterisation of emerging local bond markets, JPMorgan (2002) states that “emerging local markets are one of the final frontiers of untapped diversification opportunity”. In recent years, Asian local bonds have shown strong performance. A simulation by Consing (2003) shows that the HSBC’s Asian Local Currency Bond Index (ALBI)<sup>4</sup> accumulated a return of 35.7% for the period between 29 December 2002 and 4 September 2003, thereby significantly outperforming US Treasuries (with similar duration) with a return of 20.4% (Table 3). This was attributable to an excess return of 11.2% on capital gains and carry income and a 4.1% excess return from currency gains. Reviewing the performance data for the first half of 2003, Barclays Capital (2003a) finds that a basket of Asian local bonds is a more efficient investment than individual bond holdings due to the less than perfect correlation between local bond markets. In other words, the total volatility of a basket of Asian local bonds in terms of standard deviation of daily percentage changes is lower than the sum of individual market volatility.

Table 3  
Performance of HSBC ALBI

|                                                | Return      |
|------------------------------------------------|-------------|
| ALBI                                           | 35.7%       |
| US Treasuries (similar duration)               | 20.4%       |
| ALBI excess returns over US Treasuries         | 15.3% point |
| Of which:                                      |             |
| Attributable to capital gains and carry income | 11.2% point |
| Currency gains                                 | 4.1% point  |

Source: Consing (2003).

There are already encouraging signs that Asian local bond markets are beginning to gain attention from foreign investors. Investment banks now produce reports on Asian local bond

<sup>4</sup> The HSBC ALBI tracks the total US dollar return performance of liquid bonds denominated in local currencies in mainland China (though the current weighting for China is zero), Hong Kong SAR, India, Malaysia, the Philippines, Singapore, Taiwan (China) and Thailand.

markets more frequently than ever. Seminars and workshops dealing with this topic are attracting quite a few participants from the private sector. Furthermore, Deutsche Bank (2003) observes that most of the world's largest bond funds have now set up offices in Singapore and Hong Kong, even though many are satellite offices doing research on hard currency credit only.

Foreign issuers also benefit from bond issuance in Asian local bond markets. The local bond issuance can give multinational enterprises long-term financing for their business activities in the country. In fact, such financing needs are increasing as direct investment in the region continues to grow. In addition, foreign issuers enjoy diversification of their funding base.

### **3. Overview of impediments**

#### **3.1 Impediments to foreign investor participation in local bond markets**

There are many empirical studies aimed at explaining the extent and determinants of investors' position in international equities. On the contrary, perhaps due to the lack of available data, only a few studies have been conducted to explore the factors that determine investors' position in international bonds. Burger and Warnock (2003) found that country weights in US investors' foreign bond portfolios were related to the openness of capital accounts and potential diversification benefits as indicated by historical correlations. They also found that emerging market countries with more stable policies as evidenced by price stability and stable exchange rates have greater bond market development and higher US participation.

The following sections focus on structural impediments to foreign investor participation. Capital control is probably the most critical issue, as shown in the above-mentioned study, since it directly limits foreign investors' market access. Availability of hedging instruments (currency derivatives and interest rate derivatives) is another significant factor, given that hedging instruments make it possible to reduce performance volatility. There are also factors that affect foreign investor participation indirectly through an increase in costs and risks for investment. Among others, taxation, market infrastructure (such as the disclosure framework and price transparency), creditor protection and clearing and settlement systems are often cited as determining factors. On top of that, the common problem across the region is the language barrier, which makes it difficult for foreign investors to find accurate and timely regulatory information and costly for them to fulfil documentation requirements. All of the above are interrelated and naturally relevant to the development of local bond markets in general. Hereafter, this paper describes the factors that are of particular relevance to foreign investor participation in Asian local bond markets.

#### ***Capital controls***

Controls on capital transactions are a broad concept which includes controls on capital and money market instruments, derivatives and other instruments and credit operations. After the 1997 currency crisis, Asian countries adopted various controls on capital transactions and still maintain many of them. The IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions* offers comprehensive information on this subject.

As for control over foreign ownership of local bonds, China is the only country that imposes a restriction (Table 4). The launch of the QFII (Qualified Foreign Institutional Investors) system effective December 2002 was undoubtedly a significant first step toward financial liberalisation. The total quota authorised for 10 QFIIs (as of 19 November 2003) amounts to \$1.7 billion. However, there are many restrictions that make this system difficult to use. QFIIs are allowed to invest in government and corporate bonds listed on China's securities exchanges only (ie they are not allowed to participate in interbank markets where secondary

market liquidity is more ample). Furthermore, even though the regulation allows QFIs to conduct repurchase transactions in government bonds and to trade corporate bonds, the Shanghai and Shenzhen exchange markets announced that such transactions were not to be conducted temporarily due to technical reasons (PricewaterhouseCoopers (2003)).

Table 4

**Selected capital control  
measures in Asian countries (1)**

|               | <b>Foreign ownership<br/>of local bonds</b> | <b>Note</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| China         | QFIs only.                                  | QFIs must satisfy various requirements. For instance, QFIs must set up special renminbi accounts with domestic banks and use the services of domestic securities companies. Closed-end QFIs may only remit capital after three years, in instalments of no more than 20% of the total each time, at intervals of one month or more. Other QFIs may only remit capital after one year, in instalments of no more than 20% of the total, and at intervals of three months or longer. SAFE must approve all repatriations. |
| Hong Kong SAR | No restriction.                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Indonesia     | No restriction.                             | No non-resident person may purchase more than 1% of any mutual fund.                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Japan         | No restriction.                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Korea         | No restriction.                             | In order to invest in listed bonds, foreign institutions must apply for an Investment Registration Certificate (IRC) from the Financial Supervisory Service before investing in the market.                                                                                                                                                                                                                                                                                                                             |
| Malaysia      | No restriction.                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Philippines   | No restriction.                             | Registration with the BSP is necessary if the foreign exchange needed for capital repatriation and remittance of dividends, profits and earnings that accrue thereon is purchased from the banking system.                                                                                                                                                                                                                                                                                                              |
| Singapore     | No restriction.                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Thailand      | No restriction.                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

Sources: IMF (2003b); PwC (2003); BONY (2002, 2003); JPMorgan (2002).

Whether foreign investors can obtain local currency credit from local financial institutions is another important factor. Foreign investors may find it easier to invest in local bonds if they have free and timely access to local currency credit. As shown in Table 5, most Asian countries set a limit on the extension of local currency credit to non-residents.

Restrictions on foreign exchange transactions are also relevant. Even when foreign exchange transactions for foreign investors to purchase local bonds are permitted, documentation requirements for approval or reporting may be quite onerous.

Table 5  
**Selected capital control  
measures in Asian countries (2)**

|               | <b>Local currency credit facilities by residents to non-residents</b>                                                                                                                                                                                                                                     | <b>Other limitations for non-residents</b>                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| China         | Financial institutions authorised by the PBC may lend to overseas institutions or contract overseas credits.                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Hong Kong SAR | No restriction.                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Indonesia     | Not allowed, unless it is related to economic activities in Indonesia, such as transactions involving rupiah-denominated securities.                                                                                                                                                                      | Foreign exchange transactions must be executed through banks incorporated in Indonesia and licensed by Bank Indonesia.                                                                                                                                                                                                                                                                                                                |
| Japan         | No restriction.                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Korea         | Credit and loans of more than W100 million per borrower denominated in local currency and granted by institutional investor require MOFE approval.                                                                                                                                                        | Won purchases by foreign investors must be associated with a special securities purchase transaction.                                                                                                                                                                                                                                                                                                                                 |
| Malaysia      | Banking institutions as a group may extend ringgit overdraft facilities not exceeding RM 500,000 in aggregate to non-residents, provided the credit facilities are fully covered at all times by fixed deposits placed by the non-resident with the banking institutions extending the credit facilities. | Ringgit purchases by foreign investors must be associated with securities transactions. There is no restriction on the conversion of ringgit funds in external accounts (funds belonging to a non-resident individual or corporation, maintained with a financial institution in Malaysia) into foreign currency for repatriation. Investors may bring funds into and repatriate funds out of the country (in foreign currency only). |
| Philippines   | No restriction so long as the facilities do not involve foreign exchange purchased from the banking system.                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Singapore     | No restriction except that financial institutions in Singapore may not extend SGD credit facilities exceeding SGD 5 million to non-resident financial entities where they have reason to believe that the proceeds may be used for speculation. Overdrafts are prohibited in all cases.                   |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Thailand      | The BOT does not allow domestic financial institutions to extend direct baht-denominated loans to non-residents. Credit facilities provided by domestic financial institutions to foreign investors are capped at THB 30 million per each baht cash account and THB 50 million per counterparty.          |                                                                                                                                                                                                                                                                                                                                                                                                                                       |

Sources: IMF (2003b); PwC (2003); BONY (2002, 2003); JPMorgan (2002).

### **Availability of hedging instruments**

In the absence of hedging instruments, foreign investors have no option but to take both interest rate exposure and foreign exchange rate exposure when they purchase local bonds. Therefore, the availability of hedging instruments, for currency risk in particular, is crucial for foreign investors. After the Asian crisis, the offshore foreign exchange derivatives market for Asian local currencies disappeared due to the introduction of capital controls (whereas offshore non-deliverable forwards markets emerged for some currencies). Nonetheless, most countries have onshore foreign exchange forwards and swap markets, although the hedging costs are high (Barclays Capital (2003b)) and tenors are relatively short (Table 6).

Table 6  
**Overview of currency risk hedging instruments**

|               | <b>Onshore FX forward</b> | <b>Non-resident access to onshore FX forwards</b> | <b>Offshore market</b>       |
|---------------|---------------------------|---------------------------------------------------|------------------------------|
| China         | Up to four months         | Not allowed                                       | NDF liquid                   |
| Hong Kong SAR | Liquid                    | No restriction                                    | None                         |
| Indonesia     | Liquid                    | Allowed to hedge principal and coupon             | NDF liquid                   |
| Korea         | Liquid                    | Allowed to hedge principal and coupon             | NDF liquid                   |
| Malaysia      | Illiquid                  | Prior approval required                           | None                         |
| Philippines   | Liquid                    | Prior approval required                           | NDF illiquid                 |
| Singapore     | Liquid                    | Allowed to hedge principal and coupon             | Deliverable forward illiquid |
| Thailand      | Liquid                    | Allowed to hedge principal and coupon             | Deliverable forward illiquid |

Source: Barclays Capital (2003b).

### **Taxation**

Taxation has a significant impact on the development of bond markets in general. Capital gains taxes create a disincentive to trade bonds frequently, thereby reducing arbitrage opportunities. Moreover, withholding taxes on interest income to foreign investors reduce the returns from holding bonds. They may also create market fragmentation through distortion if the treatment of withholding tax is different depending on the types of bonds or investors. Therefore, it is important to adopt tax policies that are compatible with market development while not seriously compromising the principles of good taxation.

None of the G7 countries charge withholding tax on interest income obtained from government bonds held by foreign investors. On the other hand, withholding tax on interest income is charged in a number of countries in Asia, though the tax rates are not very high (Table 7). Although there are tax treaties among Asian countries that reduce tax burdens, tax reclaim procedures are complicated in many countries.

Table 7

**Tax treatment on returns from foreign investors' holdings of local bonds**

|               | <b>Withholding tax on interest income</b>                                 | <b>Capital gains tax</b>                                                | <b>Any other tax</b>                                                                                                      |
|---------------|---------------------------------------------------------------------------|-------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| China         | No withholding tax on interest rate income.                               | 33%, if bonds are not held until maturity (plus 5% profit tax).         |                                                                                                                           |
| Hong Kong SAR | No withholding tax on interest income.                                    | No capital gains tax.                                                   |                                                                                                                           |
| Indonesia     | Withholding tax on interest income.<br>20% of income earned.              | Capital gains tax.<br>No capital gains tax.                             | 0.1% of gross sale proceeds is withheld by the broker as income tax for securities transactions executed on the exchange. |
| Japan         | No withholding tax for JGB, if a number of requirements are satisfied.    | No capital gains tax.                                                   |                                                                                                                           |
| Korea         | 27.5% of income earned.                                                   | The lower of 11% of gross sales proceeds or 27.5% of net capital gains. |                                                                                                                           |
| Malaysia      | 15% of income earned.                                                     | No capital gains tax.                                                   |                                                                                                                           |
| Philippines   | 20-32% of income earned                                                   | No capital gains tax.                                                   |                                                                                                                           |
| Singapore     | 15% of income earned. Resident investors are exempt from withholding tax. | No capital gains tax.                                                   |                                                                                                                           |
| Thailand      | 15% of income earned.                                                     | 15%.                                                                    |                                                                                                                           |

Sources: BONY (2002, 2003); JPMorgan (2002).

### **Clearing and settlement of bonds**

Scripless settlement, delivery versus payment (DVP) and short settlement cycles are desirable from the viewpoint of efficiency and risk reduction. In this respect, clearing and settlement systems in Asia are fairly well developed (Table 8). In fact, securities settlement systems in the region satisfy most of the G30 recommendations (IIMA (2003)). A real problem arises from the requirements to appoint a local custodian in order to settle local currency bonds (Table 9). For example, foreign investors complain that documentation requirements for participation in BOJ-NET through a third-party intermediary are onerous (in large part relating to the withholding tax exemption procedure).

Table 8

**Selected features of clearing, settlement  
and custody in Asian countries (1)<sup>1</sup>**

|               | <b>Scripless settlement</b> | <b>Real time gross settlement/DVP</b> | <b>Settlement cycles</b> |
|---------------|-----------------------------|---------------------------------------|--------------------------|
| China         | Yes                         | No                                    | T+0 or T+1               |
| Hong Kong SAR | Yes                         | Yes                                   | T+0 or T+1               |
| Indonesia     | Yes (paper remains)         | Unknown                               | T+3                      |
| Japan         | Yes (paper remains)         | Yes                                   | T+3                      |
| Korea         | Yes                         | Yes                                   | T+1                      |
| Malaysia      | Yes                         | Yes (for direct participants only)    | T+1                      |
| Philippines   | Yes                         | Unknown                               | T+0 or T+1               |
| Singapore     | Yes                         | Yes                                   | T+1                      |
| Thailand      | Yes                         | Yes                                   | T+2                      |

<sup>1</sup> Government bonds.

Sources: BONY (2002, 2003); IIMA (2003).

Table 9

**Selected features of clearing, settlement  
and custody in Asian countries (2)<sup>1</sup>**

|               | <b>International linkage of CSD</b>                                                                                            | <b>Custodian</b>     |
|---------------|--------------------------------------------------------------------------------------------------------------------------------|----------------------|
| China         | CMU (Hong Kong, planned)                                                                                                       | Local custodian      |
| Hong Kong SAR | Clearstream (ICSD), Euroclear (ICSD), KSD (Korea), CDC (China, planned), AustraClear (Australia) and AustraClear (New Zealand) | CMU                  |
| Indonesia     | None                                                                                                                           | Local custodian      |
| Japan         | None                                                                                                                           | Local custodian      |
| Korea         | CMU (Hong Kong)                                                                                                                | Local custodian      |
| Malaysia      | None                                                                                                                           | ADI                  |
| Philippines   | None                                                                                                                           | Local custodian      |
| Singapore     | Clearstream (ICSD) and Euroclear (ICSD)                                                                                        | MAS, local custodian |
| Thailand      | None                                                                                                                           | Local custodian      |

<sup>1</sup> Government bonds.

Sources: BONY (2002, 2003); IIMA (2003); Citigroup (2003a).

### 3.2 Impediments to foreign issuer participation in local bond markets

Issuance of local bonds by non-residents is allowed in most Asian countries except China and Thailand. Nonetheless, as noted above, actual issuance by non-residents is negligible in several countries. This is attributable to various factors. For instance, local rating or local listing requirements, use of local law as governing law and preparation of documentation in the local language all increase costs of issuance. Furthermore, if the approval process and/or issuance procedure takes a long time, there is a risk that market conditions might change. The availability of investment tools for the funds raised by non-resident issuance of bonds is another factor.

Table 10

#### Factors affecting issuance of local bonds by non-residents (1)<sup>1</sup>

|               | Issuance of local bonds by non-residents                                                                                                                                                                                                  | Local rating/local listing | Governing law                    |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------------------------------|
| China         | Not allowed                                                                                                                                                                                                                               | Not required/required      | Chinese law                      |
| Hong Kong SAR | Allowed                                                                                                                                                                                                                                   | Not required/not required  | English law                      |
| Indonesia     | Allowed                                                                                                                                                                                                                                   | Required/required          | Indonesian law                   |
| Japan         | Allowed                                                                                                                                                                                                                                   | Not required/not required  | Japanese law                     |
| Korea         | Allowed (prior report to the MOFE and FSC necessary)                                                                                                                                                                                      | Required/required          | Korean law                       |
| Malaysia      | Allowed (approval required)                                                                                                                                                                                                               | Required/required          | English/New York/Malaysian law   |
| Philippines   | Allowed (only after the proper license to do business in the country is secured from the appropriate government agency, provided payment for the sale or issue does not involve the purchase of foreign exchange from the banking system) | Required/not required      | Philippine law                   |
| Singapore     | Allowed (when the Singapore dollar proceeds of an initial public offering are used offshore, they must be swapped or converted into foreign currency upon drawdown by the issuer)                                                         | Not required/not required  | English/New York/Singaporean law |
| Thailand      | Not allowed                                                                                                                                                                                                                               | Required/not required      | Thai law                         |

<sup>1</sup> Corporate bonds.

Sources: IMF (2003b); Citigroup (2003b).

Table 11

**Factors affecting issuance of local bonds by non-residents (2)<sup>1</sup>**

|               | <b>Documentation language</b> | <b>Time required to obtain approval</b>   | <b>Typical duration of issuance process</b> |
|---------------|-------------------------------|-------------------------------------------|---------------------------------------------|
| China         | Chinese                       | 2-6 months                                | 2 weeks                                     |
| Hong Kong SAR | English                       | A few weeks needed only for retail issues | 2-4 weeks                                   |
| Indonesia     | Bahasa                        | 45 days upon completion of documentations | 4 months                                    |
| Japan         | Japanese                      | 1-2 weeks                                 | 2-3 months                                  |
| Korea         | Korean                        | na                                        | 2 weeks                                     |
| Malaysia      | English                       | 14 days for non-equity linked issue       | 4-8 weeks                                   |
| Philippines   | English                       | 2 months                                  | 8-10 weeks                                  |
| Singapore     | English                       | None                                      | 2-4 weeks                                   |
| Thailand      | Thai                          | 2 weeks                                   | 8-12 weeks                                  |

<sup>1</sup> Corporate bonds.

Sources: IMF (2003b); Citigroup (2003b); Mitsubishi Securities (2003).

## 4. Way forward

### 4.1 Regional cooperation

There are already several regional initiatives dealing with Asian bond market development. Ministries of finance and central banks of ASEAN+3 countries are pursuing the "Asian Bond Markets Initiative (ABMI)", a comprehensive approach to developing bond markets in Asia. Working groups have been created on a voluntary basis for six areas: creating new securitised debt instruments, credit guarantee mechanisms, foreign exchange transactions and settlement issues, issuance of bonds denominated in local currency by multilateral development banks (MDBs), foreign government agencies and Asian multinational corporations, local and regional rating agencies, and technical assistance coordination. Asia-Pacific Economic Cooperation (APEC) has also discussed the harmonisation of bond market rules and regulations across the region. Meanwhile, the Asian Cooperation Dialogue (ACD) aims to promote public awareness of the various initiatives as well as to provide political support for them. The Executives' Meeting of East Asia-Pacific Central Banks (EMEAP), a group of 11 central banks from the region (Australia, China, Hong Kong SAR, Indonesia, Japan, Korea, Malaysia, New Zealand, the Philippines, Singapore and Thailand), launched the Asian Bond Fund (ABF), an index bond fund of US dollar-denominated Asian bonds managed by the Bank for International Settlements, in July 2003, and it was welcomed by the ACD. The EMEAP central banks are now studying the ABF2, a bond fund of local currency-denominated Asian bonds. All these regional initiatives indicate that there is a political will to enact market reforms for the development of bond markets.

Against this background, consideration could be given to the creation of a forum for securities regulators, ministries of finance and central banks of ASEAN+3 countries with a view to promoting regional cross-border transactions in local bonds. Discussion topics could

include harmonisation of rules and regulations, regional tax arrangement and any other issues that are of relevance to cross-border local bond transactions.

## 4.2 Private sector involvement

It should be noted that private sector involvement is key to the development of regional bond markets, since market participants are the users of such markets. There should be regular dialogue between the public and private sectors on the national as well as regional level. Impediments to cross-border transactions of bonds must be identified specifically through such dialogue. The public sector must carefully listen to the private sector when exploring new infrastructure projects such as a regional credit guarantee mechanism or regional securities settlement system. In particular, the public sector should be mindful of the risk of crowding out the private sector.

In this context, it would be meaningful to conduct a survey among market participants of the impediments to cross-border bond transactions. At the same time, self assessment could be done by public authorities on the same subject. This may serve as a first step toward identifying impediments, thereby forging common understanding of the issues across the public and private sector.

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# A survey on hedging markets in Asia: a description of Asian derivatives markets from a practical perspective

Martin Hohensee and Kyungjik Lee

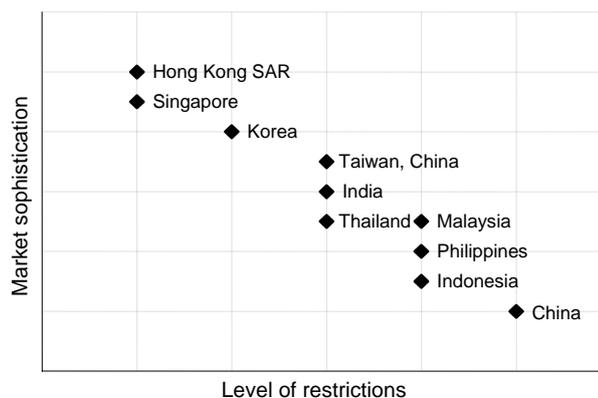
## Introduction

Since the Asian crisis, there has been tremendous growth in Asian bond markets that, in many cases, has not been matched with commensurate growth in derivative products. For those markets that grew out of the financial sector recapitalisation prior to the middle of 2003, there was precious little experience of bearish bond market movement, and therefore perhaps inadequate appreciation of the importance of hedging instruments at that time. However, while liquid hedging instruments may not be strictly necessary for the formation of a bond market, they are recognised as critical to its long-run success. The movement of Asian central banks to better develop fixed income markets should therefore also endeavour to strengthen the development of derivatives markets. As a first step in this effort, we present below a description of the current state of hedging markets in the region.

## The current state and future potential of Asian derivatives markets

Many Asian currency and interest rate derivatives markets are still in the very early stages of development, while others boast a relatively broad range of derivative products. We find that there exists a strong inverse relationship between market sophistication and regulatory restrictions. The two top financial centres in the region, Hong Kong SAR and Singapore, undoubtedly have the most advanced derivatives markets with the least regulation, while at the other end of the spectrum are China and Indonesia who lag behind most of their Asian neighbours. Other countries fall somewhere in between, as depicted below.

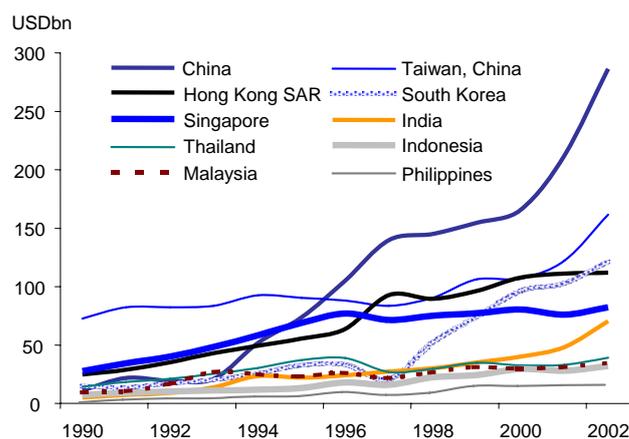
### Level of restrictions vs market sophistication



Source: DB Global Markets Research.

The development of the underlying bond market is surely one of the key factors in the growth of the derivatives market. Since the financial crisis, Asian local bond markets have grown rapidly and the size of nine East Asian local bond markets was estimated to be USD 1.2trn at the end of 2002. In comparison with the more developed economies, however, bond markets remain small. The total East Asian bond market, in fact, amounts to only about 20% of the Japanese market. The average size of the bond market in those countries was 46% of GDP, compared to 169% in Japan and 156% in the United States, suggesting continued high growth potential in the years to come.<sup>1</sup> In order to grow an institutional investor base, particularly an international one, the depth and breadth of the bond market will need to increase, inevitably entailing improvements in the liquidity and diversity of available hedging tools. Regulators in many countries have been moving toward increasing support for derivative products, but there are still apparent inconsistencies in policy approaches. In many countries, the ability to maintain currency stability has been an important regulatory consideration since the 1997 Asian crisis. Different policy reactions to the currency speculation during the crisis and the subsequent high level of FX volatility have set the pace for the capital market liberalisation. For example, under the strict IMF program, Korea has been aggressive in liberalising capital flows while Malaysia reversed its policy to a tightly controlled capital account regime.<sup>2</sup> Although several countries still maintain strict FX regulations, strong regional recovery and rapid accumulation of the FX reserves bode well for further liberalisation of the Asian currency markets.

### Asian FX reserves



Source: CEIC and IMF.

### FX derivatives

The degree of regulatory restrictions varies widely across the region; however, the common purpose of FX control is to protect the local currency from speculation. Therefore, the most frequent form of FX regulation is to impose hedging requirements on the FX trades. The authorities often apply stricter rules to non-resident trades. Any restrictions on free capital

<sup>1</sup> ADB (2003).

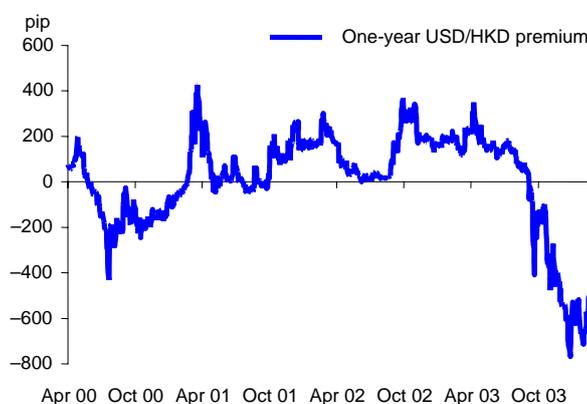
<sup>2</sup> Park and Bae (2002).

mobility can create inefficiencies by not allowing market participants to take full advantage of pricing differences. This is unfortunate since foreign participation could be an important catalyst for the growth of Asian bond and derivatives markets, especially in the early stages. Since restrictions on FX derivatives transactions have a direct result on the formation of other derivatives markets, they represent an appropriate place to start our survey of derivatives markets.

### **Hong Kong**

Despite the fixed exchange rate regime, Hong Kong has the most liquid and efficient FX market in the region. There are no restrictions on the onshore FX derivatives market in Hong Kong. Foreigners can freely trade in the onshore market, so there has not been a need for a non-deliverable forwards (NDF) market in HKD. The FX forward market is used to hedge currency exposure on liabilities and assets, as well as to speculate on the yield curve movements. The market is very liquid up to one-year maturity. The one-year USD/HKD forward, which generally reflects market sentiment on the currency peg, is watched closely by the market and the Hong Kong Monetary Authority (HKMA). Despite the fixed exchange rate, the one-year USD/HKD premium has actually been quite volatile in recent years. Local economic news, comments from senior officials in Hong Kong or China on the subject of the linked exchange rate, and comments from international rating agencies are some of the factors that have influenced the forward premium in the past. In 2003 alone, it went from +350 pips when SARS hit Hong Kong in early 2003, to below -600 pips because of a flood on liquidity into the economy following the September 2003 G10 meeting which increased expectations of a regional currency realignment.

**One-year USD/HKD forward premium**



Source: DB Global Markets Research.

### **Singapore**

The Monetary Authority of Singapore (MAS) has continued to drive the expansion in the FX derivatives market through liberalisation. For example, in 2002, the MAS revised Notice 757 to allow non-residents to transact freely in SGD FX options without filing documentation on the purpose of each transaction. However, a few basic restrictions still apply to protect the currency from speculation. For example, banks' lending to non-resident financial institutions cannot exceed SGD 5m per entity.

## ***Korea***

In 1999, Korea lifted most of the existing restrictions on the FX market, but has recently reversed some of this liberalisation. Prior to 1999, all forward FX transactions required certification as hedges against expected current account transactions. The onshore forward market is highly liquid out to one year, but supporting documentation is required if there is to be a physical delivery. Unlike Singapore or Hong Kong, Korea maintains an NDF market where onshore banks are also permitted to participate with other banks or corporates. No prior reports or approvals are required for NDF transactions. The regulatory environment suddenly tightened in January 2004 in order to discourage offshore investors' speculative demand for KRW. The government put a ceiling on domestic financial institutions' NDF positions with non-residents. Local financial institutions were originally banned from increasing net long dollar positions via NDF trades by more than 10%, or decreasing net short positions by more than 10%, based on their position on 14 January and 16 January 2004 respectively. Later, the restriction was mitigated for net short dollar positions. For FX options, the up-front premium should be under 20% of option notional amount, otherwise prior approval from the Bank of Korea (BoK) is required. If there is to be a physical delivery at the options maturity, the underlying trade documentation must comply with regulations on forward transactions. The currency options market is also liquid, volume of about USD 250m traded in the non-deliverable options (NDO) market.

## ***Taiwan, China***

The primary goal of the Central Bank of China (CBC) is to prevent speculative activity in the currency market to maintain the financial stability of Taiwan, China (hereinafter referred to as Taiwan). Maintaining export competitiveness against countries such as Japan and Korea is also a major concern for the authorities. The CBC manages the currency via capital controls and direct intervention, which is supported by its substantial foreign exchange reserves. Onshore FX spot, forwards and options trades must be explicitly approved by the relevant regulatory authority. Non-residents are not allowed to access the onshore deliverable market, preventing arbitrage flows in the onshore FX and interest rate markets. Liquidity in the NDF market is relatively good, but onshore banks are not allowed to book an NDF trade with onshore corporates.

## ***Thailand***

In January 1998, the Bank of Thailand (BoT) lifted a number of measures imposed previously to stem FX speculation. In particular, domestic financial institutions were allowed to engage in spot transactions involving THB with non-residents so that the onshore and offshore spot THB FX markets became reunited. To safeguard against speculation in the FX market, however, credit facilities provided by each financial institution to non-residents where there is no underlying trade or investment activity in Thailand are subject to a maximum outstanding limit of THB 50m per counterparty. There are no size restrictions on hedging short THB forward positions, however. In an effort to curb speculative capital inflows, the BoT recently introduced new measures. Effective as of 12 September 2003, onshore banks were banned from borrowing more than THB 50m from each non-resident without underlying transactions for less than three months, including transactions similar to borrowing such as buying FX forwards and selling/buying FX swaps. On 14 October 2003, additional measures were introduced to prevent THB speculation. The key changes were: (i) the outstanding non-resident THB balance cannot exceed THB 300m per account and (ii) non-resident THB accounts are locked in for at least six months without interest.

## ***Malaysia***

In Malaysia, strict capital controls were imposed in September 1998 to insulate Malaysia from the financial crisis. The government still maintains some strict regulations on the

currency market. Hedging of foreign exchange exposure must be related to trade activities and cannot exceed a tenor of one year. Non-residents can only access the onshore forward market for the purpose of purchasing MYR securities listed on the KLSE. Financial hedging (for example, hedging of profit repatriation, loan payment) is not allowed without Bank Negara Malaysia (BNM)'s prior approval. An NDF market is not regularly available for MYR.

### **Indonesia**

Under the IMF program, Indonesia's FX policy has been directed at preventing extreme volatility in the currency. The Bank Indonesia (BI) tightened capital control in January 2001 by issuing regulations prohibiting IDR transfers to offshore entities, unless supported by underlying trade or investment transactions. These restrictions quickly spawned the development of an NDF market starting in February 2001. Main hedgers are corporates, but hedge trades are somewhat uncommon, due to high negative carry.<sup>3</sup> Liquidity in the onshore and offshore market is generally low. With the exit from the IMF program at the end of 2003, and inflation trending lower, the Bank Indonesia may move back to a more liberal exchange rate regime.

### **Philippines**

In the Philippines, Banko Sentral Ng Pilipinas (BSP) operates a managed floating exchange rate regime in which capital controls, close observation of market positions and intermittent interventions are used to prevent speculative activity. Corporates are the main hedgers for their USD loans. Liquidity in both the spot and forward markets is generally quite low. Poor liquidity and instability in the Philippines have led to squeezes in the peso market. The basic principle of the BSP in managing foreign exchange is that, outside of the banking system, foreign currency may be freely bought and sold against the peso. Hence, there is no prohibition against, for example, exporters selling their USD directly to importers or even to private investors. FX regulations therefore focus primarily on bank transactions, and the specific rules and restrictions depend on the nature of the transaction as well as the type of counterparty. In general, onshore banks may buy foreign currency from both onshore and offshore counterparties, without prior BSP approval or any documentation requirements. An onshore interbank FX options market does not exist and even the offshore market is mainly inactive.

### **India**

Historically, India experienced substantial ongoing fiscal deficits and persistent current account deficits. Consequently, the Reserve Bank of India (RBI) maintained capital controls in an attempt to prevent speculative activity in the rupee market. In recent years, however, the underlying economic conditions have changed dramatically. India now runs a surplus current account and substantial capital inflows have allowed foreign exchange reserves to balloon. The RBI has therefore eased several restrictions and allowed FX derivative trades for hedging purposes, and the trend towards further flexibility is expected to continue. Most recently, RBI decided to permit foreign currency/rupee options as of 7 July 2003 in order to further develop the derivatives market in India and expand the spectrum of hedging products for currency exposure. Authorised dealers can offer plain vanilla European options and customers can purchase call or put options. The writing of options by customers is not permitted. As in the FX spot and forward markets, customers who have genuine foreign currency exposures are eligible to enter into options contracts, and authorised dealers can use the product for the purpose of hedging trading books and balance sheet exposure. FX options trading is still thin, however.

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<sup>3</sup> The academic evidence strongly rejects the hypothesis that the forward exchange rate is an unbiased predictor of the future spot rate. Currencies that trade at a forward discount, on average, weaken less than the amount implied by the forward discount, which is known as the "forward rate bias".

Table 1  
A summary of Asian FX derivatives markets

|                   | HKD                 | SGD                 | KRW        | TWD            | THB                 | MYR                 | INR          | IDR              | PHP                 | CNY                 |
|-------------------|---------------------|---------------------|------------|----------------|---------------------|---------------------|--------------|------------------|---------------------|---------------------|
| <b>FX forward</b> |                     |                     |            |                |                     |                     |              |                  |                     |                     |
| Restriction       | None                | None                | Minimal    | Prior approval | Hedging only        | Onshore only        | Hedging only | Offer restricted | Offer restricted    | Restricted          |
| Liquidity         | Good                | Good                | Good       | Good           | Good                | Good                | Good         | Average          | Average             |                     |
| Trade size        | USD 20-50m          | USD 25m             | USD 10-20m | USD 1-10m      | USD 5-20m           | USD 10-20m          | USD 1-5m     | USD 0.5-30m      | USD 2-5m            |                     |
| B/as spread       | 0.0005-0.0010       | 0.0002-0.0010       | 0.3-1.0    | 0.002-0.020    | 0.01-0.100          | 0.0005              | 0.03-0.05    | 10-80            | 0.02-0.25           |                     |
| Daily volume      | USD 3-5bn           | USD 6bn             | USD 1bn    | USD 500-700m   | USD 300-600m        | USD 100-200m        | USD 150m     | USD 200m         | USD 75m             |                     |
| <b>FX options</b> |                     |                     |            |                |                     |                     |              |                  |                     |                     |
| Restriction       | None                | None                | Minimal    | Prior approval |                     |                     |              | Offer restricted |                     |                     |
| Liquidity         | Good                | Good                | Good       | Good           | Hedging only        | Market non-existent | Hedging only | Average          | Market non-existent | Market non-existent |
| Trade size        | USD 25-50m          | Up to USD 30m       | USD 20-50m | USD 20m        | No interbank        |                     | Just allowed | USD 0.5-3m       |                     |                     |
| B/as spread       | 0.2-0.5 vol         | 0.5-1.0 vol         | 1 vol      | 0.3-1.0 vol    |                     |                     |              | 5-7 vol          |                     |                     |
| Daily volume      | USD 50-100m         | USD 50 m            | USD 50m    | USD 50m        |                     |                     |              | USD 20m          |                     |                     |
| <b>NDF</b>        |                     |                     |            |                |                     |                     |              |                  |                     |                     |
| Restriction       |                     |                     | None       | Interbank only |                     |                     | None         | None             | None                | Interbank only      |
| Liquidity         | Market non-existent | Market non-existent | Good       | Good           | Market non-existent | Market non-existent | Good         | Average          | Average             | Good                |
| Trade size        |                     |                     | USD 5-10m  | USD 3-10m      |                     |                     | USD 3-5m     | USD 3m           | USD 2-5m            | USD 5-10m           |
| B/as spread       |                     |                     | 0.5 won    | 0.03-0.05      |                     |                     | 0.05-0.20    | 20-100           | 0.15-0.50           | 0.001-0.005         |
| Daily volume      |                     |                     | USD 1bn    | USD 300m       |                     |                     | USD 20-50m   | USD 40-60m       | USD 20-30m          | USD 50m             |

Table 1 (cont)

**A summary of Asian FX derivatives markets**

|              | <b>HKD</b>          | <b>SGD</b>          | <b>KRW</b> | <b>TWD</b>     | <b>THB</b> | <b>MYR</b>          | <b>INR</b> | <b>IDR</b> | <b>PHP</b> | <b>CNY</b>     |
|--------------|---------------------|---------------------|------------|----------------|------------|---------------------|------------|------------|------------|----------------|
| <b>NDO</b>   |                     |                     |            |                |            |                     |            |            |            |                |
| Restriction  |                     |                     | None       | Interbank only | None       |                     | None       | None       | None       | Interbank only |
| Liquidity    | Market non-existent | Market non-existent | Good       | Good           | Good       | Market non-existent | Average    | Average    | Average    | Average        |
| Trade size   |                     |                     | USD 20-50m | USD 30m        | USD 20m    |                     | USD 5m     | USD 5m     | USD 5m     | USD 10-20m     |
| B/as spread  |                     |                     | 1 vol      | 0.7 vol        | 1 vol      |                     | 2-4 vol    | 7 vol      | 5 vol      | 1-2 vol        |
| Daily volume |                     |                     | USD 250m   | USD 150m       | USD 50m    |                     | Irregular  | Irregular  | Irregular  | USD 250m       |

Source: DB Global Markets Research.

## **China**

Foreign exchange policy in China is determined by the People's Bank of China (PBOC) and managed by the State Administration for Foreign Exchange (SAFE). Despite becoming a major player in global commerce, the Chinese economy in aggregate remains relatively closed. However, strong global pressure on its currency will likely lead to a more flexible currency regime in China sooner or later. Although China prefers gradual reform, the officials made it clear that they wish to liberalise the capital account with the goal of developing a sophisticated financial sector and an independent monetary policy. Currently, designated onshore banks and authorised foreign banks are allowed to participate in the FX spot market. For current account items, relevant documentation is required for transactions of over USD 1m cumulative amount, while capital account items require pre-approval from the local SAFE. Only the Bank of China can offer CNY deliverable forwards with the tenor out to 6M. An active market for CNY NDFs exists, however, onshore corporates are not allowed to take part in the market.

## **Exchange-traded rate futures markets**

Appreciating the importance of adequate hedging instruments for dealers and investors, particularly in bear markets, many countries in the region have devoted effort to developing exchange-traded derivatives markets. As of March 2004, six Asian countries have interest rate and/or bond futures markets, namely Hong Kong, Singapore, Korea, Taiwan, Malaysia and India. These efforts have met with varying degrees of success, as described below.

### **Hong Kong**

The three-year HKD bond futures is one of the few that is settled by physical delivery (the other being the 10-year TWD contract). Exchange fund notes (EFNs) issued by the HKMA are reference instruments for the contract. On the Hong Kong Futures Exchange one-month Hibor futures, three-month Hibor futures and three-year EFN futures are traded. The liquidity in each of these contracts has declined in recent years, disappointing expectations, probably due to limited foreign participation and already good liquidity in the OTC derivatives market.

Table 2

#### **Open interest for HKD interest rate futures**

|               | <b>One-month<br/>Hibor futures</b> | <b>Three-month<br/>Hibor futures</b> | <b>Three-year<br/>EFN futures</b> |
|---------------|------------------------------------|--------------------------------------|-----------------------------------|
| End-2001      | 750                                | 58,830                               | 375                               |
| End-2002      | 20                                 | 13,806                               | 0                                 |
| 11 March 2004 | 55                                 | 6,172                                | 300                               |

Source: Hong Kong Exchanges and Clearing Limited.

### **Singapore**

Currently, there are two exchange-traded interest rate futures products in Singapore: three-month swap offer rate (SOR) futures and the five-year bond futures. The SOR is an FX forward-implied interest rate calculated from three-month USD/SGD forwards, and an official fixing is provided by the Association of Banks in Singapore. Trading in three-month SOR

futures has been sporadic, and the market has been inactive recently with open interest only at 5,000 contracts in 2002. Possible reasons could be: (i) local corporates are generally cash-rich and do not need to borrow much short-term cash, and/or (ii) with rates trending lower for the past couple of years, hedging borrowing needs has not been a real concern.

The five-year bond futures market was launched in June 2001, but the trading has slowed to nearly nothing. One explanation may be that the investor base in government bonds is skewed towards banks, who have strong credit and ample access to OTC derivatives. In recent years, the basis risk between bonds and swaps has been small, and spreads have been tight. Hedging in the OTC market therefore has provided an efficient, liquid and cost efficient hedge.

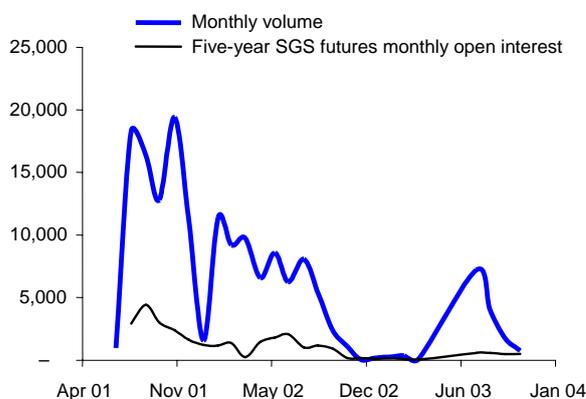
### Taiwan

The Taiwan Financial Futures Exchange introduced government bond contracts only in early 2004 but these have not taken off. Whether the reason is the sharp liquidity and accessibility differences between on- and off-the-run bonds, reflecting institutional investors' propensity to hold bonds to maturity, high transaction costs or other factors, is not clear. Neither a narrowing of the maturity range for deliverable securities nor the removal of the penalty for cash settlement has improved liquidity. At the short end of the maturity spectrum, the futures contract based on 30-day commercial paper has also fizzled. In this case, the choice of 30- rather than 90-day paper seems unfortunate in retrospect. The floating leg of interest rate swaps, for instance, is based on 90-day yields.

### Malaysia

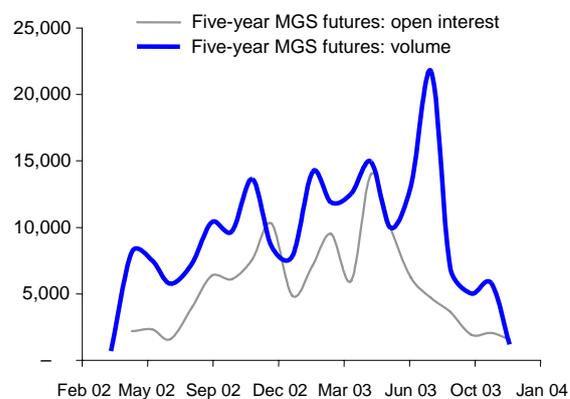
In March 2002, the Malaysian Derivatives Exchange (MDEX) launched Malaysia's first bond futures contract, with the five-year government bond being the underlying security. The contract has similar specifications to the five-year bond futures in Singapore, using a basket of bonds in pricing and being cash settled. Activity in the contract is not great with average daily volume or open interest rarely moving above 1,000 contracts. The use of the futures contract as a hedge for cash bond positions is small. Other futures products in Malaysia are three-year and 10-year bond futures, launched in September 2003, and three-month KLibor futures, launched in March 1996. As in the case of the five-year bond futures, liquidity remains poor.

**Singapore five-year bond futures**



Source: DB Global Markets Research.

**Malaysia five-year bond futures**



Sources: Bloomberg; DB Global Markets Research.

## **Korea**

The shining success story among the exchange-traded futures markets is clearly the cash settled three-year Korean Treasury bond (KTB) futures contract. To some degree, the success of the three-year bond futures in Korea could actually be attributable to lack of transparency in the bond market and limited availability of alternative hedging tools. Over time, improved liquidity in the underlying bond market and strong foreign interest have effectively accelerated the growth of the futures market. According to the World Bank,<sup>4</sup> the three-year KTB futures is the sixth most active interest rate futures contract by trading volume. Banks and ITCs are the two main participants in the market with a combined share of 50-60%. Despite the fact that foreigners trade only around 10% of the total volume, they seem to play an important role in catalysing the development of the market. Their activities are closely monitored by domestic players, since they are often viewed as more sophisticated. Foreigners may find it easier to trade futures than cash bonds due to taxation, leverage and liquidity issues. The fact that foreigners' net open interest is as much as 30% of the market compared to less than 1% holding in cash bonds would strengthen the argument. In value terms, foreign net open interest typically ranges between 0.5 to 2.0% of the government bond market.

Table 3

### **Foreign participation in Korean three-year bond futures**

| <b>Foreigners' net open interest</b> | <b>Typical market open interest</b> | <b>Value of foreigners' net open interest</b> | <b>Cash bond outstanding</b> | <b>% to cash market</b> |
|--------------------------------------|-------------------------------------|-----------------------------------------------|------------------------------|-------------------------|
| 10-30%                               | 60,000 contracts                    | KRW 0.5-2.0trn                                | KRW 90trn                    | 0.6-2.2%                |

Source: Korea Futures Exchange.

Three-month CD futures, one-year MSB futures and five-year KTB futures are also listed on the Korea Futures Exchange (KOFEX), but they are totally inactive at the moment.

## **India**

India launched 10-year bond futures in June 2003. One unique feature is that the settlement price is based on the value of the notional bond, derived from the zero-coupon curve which the National Stock Exchange of India (NSE) publishes every day. To date, this product has been a failure. In fact, in less than three months after the launch, trading in bond futures literally stopped. There may be several ways to explain this. First, the unique settlement price calculation adds complication, and is seen by many investors as an opaque "black box". Moreover, the basis risk between the NSE curve and the cash prices could also be substantial and unpredictable. Finally, restrictions on short selling and requiring financial institutions to use derivatives only for hedging purposes could account for the inactivity of the product. In this case, the absence of speculators may be cheating the market out of badly needed liquidity.

<sup>4</sup> OECD-World Bank Annual Bond Market Forum, 3 June 2003, *Emerging Derivative Markets* presented by Oliver Fratzscher.

Table 4

**Indian bond futures trading**

|                            | Jun 03 | Jul | Aug | Sep | Dec | Feb 04 |
|----------------------------|--------|-----|-----|-----|-----|--------|
| Number of days             | 5      | 23  | 20  | 22  | 22  | 19     |
| Number of contracts traded | 9,768  | 963 | 50  | 0   | 0   | 0      |

Source: National Stock Exchange of India.

**Taiwan**

The Taiwan Futures Exchange (TAIFEX) launched 10-year bond futures in January 2004. The contract is settled with physical delivery of bonds maturing between seven and 11 years, much like the very successful 10-year Japanese Government bond futures contract. In order to prevent short squeezes on the cheapest and to deliver bonds around the final settlement date, TAIFEX simultaneously opened a Bond Lending Center. TAIFEX hoped that by providing effective hedging tools, the launching of bond futures would attract more foreign funds into the Taiwan bond market. This may eventually take place; however, the initial market reaction was not very enthusiastic. So far, open interest has stayed below 1,000 contracts.

**OTC interest rate derivatives<sup>5</sup>****Interest rate swaps****Hong Kong**

Based on the most recent survey done by the Hong Kong Monetary Authority (HKMA), interest rate swaps (IRSs) represent the largest segment (over 73%) of interest rate derivative transactions in Hong Kong. With about HKD 9.1bn in daily turnover, the liquidity in the IRS market is far better than the Exchange Fund Note (EFN) market whose daily turnover is about HKD 2.5bn. HKD swap spreads are among the widest in Asia. While EFNs are consistently well supported by strong demand from local banks, HKD swaps are much more sensitive to the volatile risk premium of the currency peg. In addition, the 10-year HKD swap spread tends to be persistently tight, especially right after the issuance of a new 10-year EFN. In order to reduce the interest cost of the 10-year paper in an environment of upward sloping yield curve, the HKMA has consistently swapped the 10-year EFN into a floater after the issuance, creating downward pressure on the 10-year part of the HKD swap curve.

**Singapore**

Interest rate swaps are also more liquid than government bonds in Singapore. The floating leg of an IRS trade is the swap offer rate (SOR) posted by the Association of Banks in Singapore. (It is an FX-implied rate, in contrast to a Libor-type fixing in typical G7 trades. Many countries in Asia are following this model for developing their own interest rate swap

<sup>5</sup> Cross-currency swap, a hedging instrument for FX risk, is included here due to its similar trading patterns.

market, for lack of a well developed money market.) Corporations are the main hedgers in the swap market, while hedge funds often come in for speculation as well as relative value investments. The MAS has recognised that hedge funds can offer diversification from more traditional funds, and help Singapore develop into an international financial centre. This recognition led to the MAS introducing legislation to allow retail hedge funds to be offered to the local market. Swap spreads have been generally market-directional and more so for long-dated tenors. In other words, swap spreads tend to widen when rates rise and tighten when they fall. There also exists an overnight interest rate swap (OIS) market, with the first trade done in April 2000. In 2002, the government removed the restrictions in the cross-currency swap market. Previously, cross-currency swap could not be traded without economic activity associated with the trade.

### **Korea**

During the first half of 2003, interest rate swaps held 88% share of total OTC interest rate derivatives trades in Korea.<sup>6</sup> However, compared to bond futures, turnover of interest rate swaps is relatively small and volatile. Very recently, daily trading volume has decreased to less than KRW 0.3trn.

Table 5  
**Daily turnover for KRW bonds, futures and swaps**  
KRW trillion

|         | <b>All bonds</b> | <b>Government bonds</b> | <b>Three-year bond futures</b> | <b>Interest rate swaps</b> |
|---------|------------------|-------------------------|--------------------------------|----------------------------|
| 2002    | 5.9              | 2.0                     | 2.3                            | 0.8                        |
| 1H 2003 | 6.6              | 2.3                     | 2.5                            | 0.9                        |

Sources: Financial Supervisory Service; KoreaBondWeb.

The relative illiquidity of swaps partly stems from the underdeveloped short-term benchmark rates in Korea. Interest rate swaps use the three-month CD rate as the floating rate, but CDs are not liquid in the secondary market. The BoK plans to introduce Libor-type interbank rates in 2H 2004, which will help step up the liquidity of swap trades. IRS trades up to 10 years with a bid/ask spread of 5 bps up to five years and 10 bps for longer tenors.

Trading in OTC derivatives increased in 2001, fuelled by the increased interest in structured products. Since then, in order to enhance returns, investors welcomed structured products whose performance was linked to future market direction or the shape of the yield curve. The most popular products were dual index floaters and inverse floaters, based on constant maturity treasury (CMT) or constant maturity swap (CMS) rates as the reference rates.

The Korean IRS market is highly driven by technicals that may not be reflected in the cash market. The spread between bond yields and swaps (the bond/swap basis) can be quite volatile, as seen in the chart below. Swaps, therefore, can be a relatively risky hedging tool for investors.

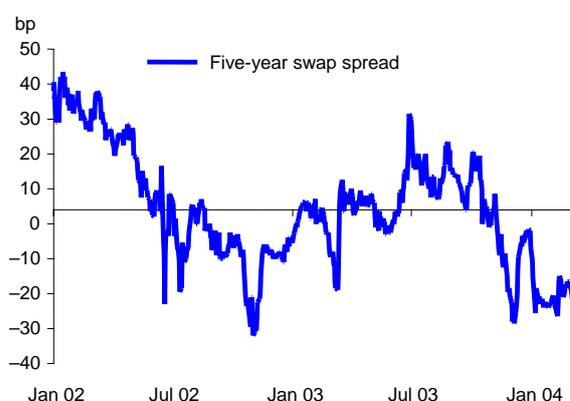
A USD/KRW cross-currency swap (CCS) can be structured out to 10 years, but one to five years are more actively traded tenors. Exporters' USD forward selling and the central bank's

<sup>6</sup> Financial Supervisory Service, *internal data*.

FX intervention are the main drivers in the short end of the cross-currency curve, while external debt issuers and investors generally trade in the long end.

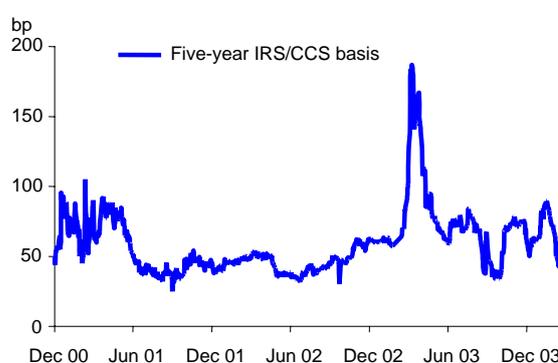
The spread between the CCS and IRS rates (the IRS/CCS basis) has also been volatile in recent years. For the past couple of years, the CCS market has been dominated by domestic investors' KRW-receiving demand to swap their offshore investment into KRW. Many swap dealers who could not hedge their position in the CCS market hedged their position in the relatively more liquid IRS market, running this IRS/CCS basis risk in order to increase market share with asset swapping investors. With continued receiving demand in the CCS market, however, dealers were eventually squeezed out of this basis risk, in late February 2003. As a result of massive unwinding demand, - paying IRS and receiving CCS - five-year IRS/CCS basis had widened to almost 200 bps before it came down to more reasonable levels. Foreigners can participate in the swap market using non-deliverable IRS or CCS and current participation is estimated to be 15%.

**Korea five-year swap spread**



Source: DB Global Markets Research.

**Korea five-year IRS/CCS basis**



Source: DB Global Markets Research.

### **Taiwan**

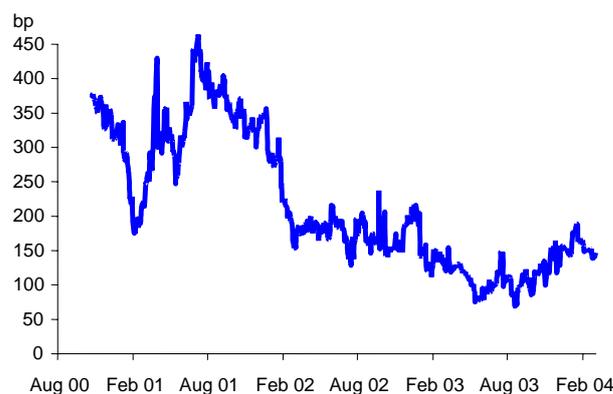
The Taiwan swap market has been affected by some of the same dynamics that have affected Korea's. Interest rate swaps trade up to 10 years and the floating rate index is the Taiwan CP rate. Currency swaps are quoted against six-month US Libor and the approval from CBC is required for onshore entities to transact in the onshore CCS market. In recent years, with interest rates declining, investors increased buying offshore debt and swapped cash flows into TWD to achieve their yield targets. These activities, combined with multilateral entities' swapping TWD-denominated debt into major currencies, tended to widen out the IRS/CCS basis. Foreigners can participate in non-deliverable IRS or CCS market where cash flows are net settled in USD, although liquidity is generally low.

### **Thailand**

In Thailand, the dynamics of the bond/swap basis is slightly unusual. First, the onshore IRS market adopts the onshore FX forward-implied yield (THBFIX) as the floating rate index. The basis between onshore CCS and IRS curves is thus minimal, and any cross-currency asset or liability swapping activity, therefore, directly affects the government bond/IRS basis. Since the cross-currency swap uses USD Libor as its floating rate index, the onshore bond/swap basis should theoretically be exactly equal to the Kingdom of Thailand's USD swap spreads. Following this theoretical argument, the THB IRS curve should be below the government bond curve to reflect a positive USD Libor margin for the Kingdom. However, this turns out not to be the case. An asset swap of Thailand's offshore 2007 bond has always offered onshore investors with a yield enhancement opportunity over the onshore market.

This is because the linkage between onshore and offshore capital markets is tightly regulated. Onshore investors have only a limited ability to asset swap USD paper into THB on a case-by-case basis, while foreign entities are currently prohibited from issuing bonds in the onshore market. Only a few state-owned enterprises have been allowed an opportunity to liability swap THB borrowings into USD. With only limited ability to engage in asset/liability arbitrage, the market cannot force a convergence of credit pricing in THB and USD. As long as cross-border restrictions on issuers and investors exist, those who are granted permission will systematically have an opportunity to create cheap THB assets from USD assets, or cheap USD liabilities from THB liabilities. The easing of the regulatory environment has been slow so far.

**KoT 2007 swapped into THB minus interpolated onshore government bond yield**



Source: DB Global Markets Research.

### **Malaysia**

With strict government regulation of the currency market, a cross-currency swap market does not exist in Malaysia. The only active OTC derivative product in the onshore market is the interest rate swap. Liquidity has improved over the years, but the average trade size is still small at MYR 10m. The most liquid part of the curve is up to three years with a bid/ask spread of 5 bps. Commercial banks, finance companies and merchant banks are the predominant users of the swap market. Given the illiquid nature of the long-term fixed rate assets such as commercial loans, banks with an expectation of higher interest rates are likely to hedge in the swap market rather than to sell such assets outright.

### **Indonesia**

In Indonesia, there is no developed IRS market trading onshore at the moment. However, banks are interested in hedging their liabilities, from fixed to floating or floating to fixed depending on their situation. As a result, some swap trades were done using the IDRFIX<sup>7</sup> and three-month sale offering of the Bank Indonesia Certificate (SBI) rate as floating rate.

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<sup>7</sup> IDR interest rate fixing =  $\{[1+(FWD/SPOT)] \times [1+(SIBOR \times DAYS/360)] - 1\} \times 360/DAYS$   
 where FWD = average of the offered side of the FX forward points from banks of each day  
 SPOT = average of mid spot rate provided by each bank  
 SIBOR = US interest rate for the respective tenor derived from Sibor  
 DAYS = number of days for each tenor.

## ***Philippines***

No offshore IRS market exists for the Philippines yet, but CCS does trade offshore, albeit with low liquidity. Onshore IRS was launched on 18 August 2003 among six foreign banks (Deutsche Bank, HSBC, Standard Chartered, Citibank, JP Morgan and ING). The market is still very illiquid with trading volume of around PHP 200m a week and a bid/ask spread ranging between 50-70 bps. But by the end of the first half of 2004, at least four local banks are expected to join the market, which should improve the depth of the market. Standard tenors are one to five years and the typical trade size is PHP 50m. The floating leg is the three-month PHIREF or Philippine Interbank Reference Rate. The PHIREF is the implied peso rate derived from all dealt USD/PHP swap and forward interbank transactions.

## ***India***

In India, interest rate swaps were first allowed in July 1999. Since then, the OTC derivatives market has grown rapidly. Major hedgers are corporates and financial institutions (FIs). In the past, most hedging came from large borrowers converting fixed debts to floating. Historically, one of the major hurdles in developing the IRS market has been the lack of a liquid money market curve. Due to limited credit appetite and the capital constraints that banks face, the overnight market remains the deepest and the most liquid in the short end of the curve. The overnight rate has also been the most widely accepted benchmark for floating rate bond issues. As a result, overnight index swap (OIS) with the floating rate indexed to the overnight NSE Mumbai interbank offer rate (Mibor) was the most natural market to develop, and today enjoys high liquidity. Another interest rate swap indexed to the three-month or the six-month Mumbai interbank forward offer rate (Mifor) is also highly liquid, in fact far more liquid than OIS with 85% of the total swap trading volume. Although all of the cash flows are settled in INR, Mifor swap effectively becomes a CCS trade since the Mifor is essentially FX implied yield derived from onshore USD/INR forwards.

An increasing number of banks, primary dealers and corporations are actively participating in the two swap markets. Both the OIS and Mifor curves are active up to five years with a bid/ask spread of around 5 bps up to five years and 15-20 bps for longer tenors. Lack of participation from large players, such as public sector banks (PSBs), mutual funds and insurance companies, is often pointed to as the hurdle to further development. In addition, corporations can use OTC derivatives only for hedging purposes while no such restrictions apply in the case of exchange-traded derivatives. One specific case is that corporates cannot cancel and rebook a currency swap.

## ***China***

Although offshore non-deliverable CCS trading is not entirely impossible for China, the main issue in the onshore Chinese market is how to develop the underlying bond market. At this point, neither an IRS nor a CCS market exists onshore.

Table 6

## A summary of Asian IRS and CCS markets

|                            | HKD                        | SGD                 | KRW                 | TWD                 | THB                 | MYR                 | INR                 | IDR                 | PHP                | CNY                 |
|----------------------------|----------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|--------------------|---------------------|
| <b>Interest rate swap</b>  |                            |                     |                     |                     |                     |                     |                     |                     |                    |                     |
| Floating rate              | Hibor                      | SOR                 | Three-month CP      | Three-month CP      | THBFIX              | Three-month Klibor  | O/n Mibor           |                     | Three-month PHIFEF |                     |
| Floating legal basis       | Qtr-Act/365                | Semi-Act/365        | Qtr-Act/365         | Qtr-Act/365         | Semi-Act/365        | Qtr-Act/365         | Daily-Act/365       |                     | Qtr-Act/360        |                     |
| Fixed legal basis          | Qtr-Act/365                | Semi-Act/365        | Qtr-Act/365         | Qtr-Act/365         | Semi-Act/365        | Qtr-Act/365         | Daily-Act/365       | Market non-existent | Qtr-Act/360        | Market non-existent |
| Active tenors              | One- to 10-year            | One- to 10-year     | Two- to five-year   | Two- to five-year   | Two- to five-year   | One- to three-year  | One- to five-year   |                     | One- to five-year  |                     |
| Trading size               | HKD 200m                   | SGD 10-30m          | KRW 10bn            | TWD 300m            | USD 10m             | MYR 10m             | INR 250m            |                     | PHP 50m            |                     |
| Bid/ask spread             | 10bp                       | 2-5bp               | 5-10bp              | 5-10bp              | 10bp                | 5-15bp              | 5bp                 |                     | 50-70bp            |                     |
| Daily volume               | HKD 10-15bn                | SGD 500-700m        | KRW 100-300bn       | TWD 1-2bn           | USD 15-20m          | MYR 25m             | INR 4-6bn           |                     | PHP 50m            |                     |
| <b>Cross-currency swap</b> |                            |                     |                     |                     |                     |                     |                     |                     |                    |                     |
| Floating rate              | Hibor vs Libor             | Six-month USD Libor | Six-month USD Libor | Six-month USD Libor | Six-month USD Libor | Market non-existent | Six-month USD Mifor | Market non-existent | Three-month T-bill | Market non-existent |
| Floating legal basis       | Qtr-Act/365 vs Qtr-Act/360 | Semi-Act/360        | Semi-Act/360        | Semi-Act/360        | Semi-Act/360        |                     | Semi-Act/365        |                     | Qtr-Act/360        |                     |

Table 6 (cont)

**A summary of Asian IRS and CCS markets**

|                   | <b>HKD</b>         | <b>SGD</b>         | <b>KRW</b>           | <b>TWD</b>           | <b>THB</b>           | <b>MYR</b>                 | <b>INR</b>           | <b>IDR</b> | <b>PHP</b>           | <b>CNY</b>                 |
|-------------------|--------------------|--------------------|----------------------|----------------------|----------------------|----------------------------|----------------------|------------|----------------------|----------------------------|
| Fixed legal basis | na                 | Semi-Act/<br>365   | Semi-Act/<br>365     | Semi-Act/<br>365     | Semi-Act/<br>365     |                            | Semi-Act/<br>365     |            | Qtr-Act/360          |                            |
| Active tenors     | Two- to<br>10-year | Two- to<br>10-year | Two- to<br>five-year | Two- to<br>five-year | Two- to<br>five-year |                            | Two- to<br>five-year |            | One- to<br>five-year |                            |
| Trading size      | USD 30m            | SGD 20m            | USD 10m              | USD 10m              | USD 10m              | Market<br>non-<br>existent | INR 250m             |            | USD 3-5m             | Market<br>non-<br>existent |
| Bid/ask spread    | 10bp               | 2-4bp              | 5-10bp               | 10bp                 | 10bp                 |                            | 5bp                  |            | 60-110bp             |                            |
| Daily volume      | USD 30-50m         | Volatile           | USD 100m             | USD 20-30m           | USD 15-20m           |                            | INR 10-12bn          |            | Volatile             |                            |

Source: DB Global Markets Research.

## Interest rate options

According to a recent BIS report, interest rate contracts account for 71.8% of the global OTC derivatives market.<sup>8</sup> Particularly, interest rate swaps remain by far the largest single group of products in the OTC derivatives market, representing 56% across market risk categories. In the G10 countries that the BIS report covers, interest rate options are also popular, with 16% share in the total OTC derivatives market. However, except for a few countries such as Hong Kong and Singapore, interest rate options rarely trade in Asia. Among interest rate options products, swaptions are more actively traded in Asia than caps/floors, probably due to a lack of reliable benchmark short-term rates. Hong Kong has the most liquid interest rate options market in the region with average daily trading volume around HKD 500-600m. In Singapore, since the interest rate volatility market has begun to pick up since 2002, rates are quoted regularly in the broker market. The typical daily volume is about SGD 50-100m with foreign participation at about 5-10%. Although the market quotes swaptions with expirations out to five years, three-month and six-month swaptions are the most actively traded. Interest rate options markets also exist for KRW, TWD and THB, but trades are infrequent and volatile. KRW swaptions trade somewhere between two to three times a day to three times per week, and the trade size ranges from KRW 50bn to over KRW 1trn. Average trade size for TWD swaptions is TWD 1bn and trade happens about 10 times a month. For THB, trades are highly infrequent, probably five times a month, and THB 1trn is the average size.<sup>9</sup>

## Credit derivatives<sup>10</sup>

Since the mid-1990s, banks have been turning to credit derivatives to more actively manage the concentration and correlation risk inherent in their loan portfolios. But before the Russian default in August 1998, many investors viewed credit derivatives as a curious but highly specialised and exotic corner of the bond market. When suddenly faced with the prospect of deteriorating credits and bond market illiquidity worldwide following Russia's default, investors could see in a very tangible way the attraction of a market where one can buy protection to reduce risk, and sell protection to diversify a dangerously concentrated portfolio.

According to the latest British Bankers Association (BBA) credit derivatives report 2001/2002,<sup>11</sup> the total notional outstanding for credit derivative products stood at USD 1.19trn at the end of 2001. By the end of 2004, the total notional outstanding is expected to increase to USD 4.8trn. Banks are the most important players in this market, capturing 52% of the protection buying and 39% of the protection selling. Among a variety of products, single name credit default swaps (CDSs) continued to be the most popular product with 45% of the market share in 2001. Sovereign single-name CDSs represents the most actively traded credit derivative instrument in emerging markets. There is an active broker market for Asian sovereign CDSs. Two-way pricing is generally available for the most liquid sovereign names in the one to 10 year range. The standard inter-dealer notional trade amount tends to be USD 5m.

Credit derivatives provide many investment and hedging opportunities that are impossible in the cash market. Some general uses of credit derivatives in emerging markets include:

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<sup>8</sup> BIS (2003).

<sup>9</sup> An estimate from *Prebon Yamane Hong Kong*.

<sup>10</sup> Xu and Wilder (2003).

<sup>11</sup> BBA publishes its report every two years. The latest available numbers are for the year 2001.

- Given the difficulty in shorting bonds due to underdeveloped repo markets, hedging through credit derivatives is especially attractive for emerging markets investors.
- Credit derivatives allow investors to exploit illiquid points in the yield curve and provide access to points on the yield curve where bullet bonds do not exist in the cash market.
- Investors can sell credit protection and earn a risk premium on an unfunded basis.
- Emerging markets investors can use credit derivatives to exploit relative value opportunities, express a directional view on a particular market, take advantage of changes in the shape and structure of the yield curve and efficiently monetise certain risk characteristics or pricing inefficiencies prevailing in different markets.
- Banks can use credit derivatives to hedge loan portfolio exposure, resulting in a more efficient use of credit lines and economic capital.
- Credit default swap premiums quoted in the dealer market provide a very accurate indicative measure of sovereign credit risk. Debt originators can use default swap pricing as a tool to assist in pricing new bond issues, while potential investors can use default protection premiums as a benchmark for measuring the fair value of new debt issues.

CDSs allow counterparties to buy and sell protection on the credit risk inherent in a bond, loan or guarantee/swap counterparty exposure. A key benefit of CDSs is the ability to create maturity and credit exposure that are unavailable in the cash market. Aside from CDSs, credit-linked notes (CLNs), total return swaps (TRSs) and synthetic collateralised debt obligations (CDOs) are the other major credit derivative products. CLNs can be viewed as a securitised default swap, whose performance depends primarily on the performance of the imbedded default swaps. CLNs appeal to investors who seek customised credit exposures but cannot deal directly in the credit default swap market. TRSs are most widely used in emerging markets where leveraged investors seek to synthetically own and fund high yielding investments without the overhead of investing directly in the underlying assets. In a synthetic CDO, securitisation and credit derivative technologies are combined to provide a more efficient way to structure CDOs, where the reference pool is a portfolio of protection selling positions through CDSs.

Table 7

**Emerging market sovereign credit default swaps**

| <b>Tier 1<br/>Most liquid</b>                                                                                | <b>Tier 2<br/>Less liquid</b>                                             | <b>Tier 3<br/>Sporadic activity</b>                                                                     |
|--------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| Mexico, Brazil, Colombia, Venezuela, Russia, Turkey, Bulgaria, <i>Philippines, Korea, Malaysia, Thailand</i> | Chile, Peru, Panama, Poland, Hungary, Croatia, South Africa, <i>China</i> | Ecuador, Qatar, Czech Republic, Israel, Romania, Lithuania, Slovenia, Morocco, Tunisia, Egypt, Slovakia |

Source: DB Global Markets Research.

An active credit derivatives market can improve the stability and efficiency of the financial system by its pricing and diversification of credit risk. It also provides tools to securitise credit risk that will help develop the overall bond market. The flip side is the potential moral hazard of the protection buyers and the difficulty of the stakeholders in monitoring the activities. At present, there are no developed local currency credit derivatives markets in Asia.

## Conclusion

Growing local bond markets and the rapid accumulation of FX reserves highlight the potential for active intra-regional local currency bond investment in Asia. For this purpose, the availability of standard hedging tools surfaced as a particularly important factor to access each bond market. So far, we have observed a couple of basic patterns in the growth of Asian FX and interest rate derivatives markets.

- FX market liberalisation, although it should be the first step to facilitate cross-border trades, remains incomplete in many countries. Many Asian central banks continue to prefer the accumulation of FX reserves. Although underlying economic conditions are ripe, the signs of further FX deregulation are yet to be seen in some countries. Free capital mobility would be helpful in improving market efficiency by attracting foreigners to the local markets.
- Exchange-traded futures are open in six countries, but except for the three-year bond futures in Korea, liquidity is extremely limited. Two main issues are the lack of a broad investor base (including foreign participation) and the market-unfriendly structure of some products.
- In the OTC market, swap markets are either underdeveloped or inactive in many countries. Reliability in reference rates and regulatory restrictions could be the main reasons.

The choice between diversity and focus should be based on the maturity of each market. While advanced markets like Hong Kong and Singapore may continue to develop a variety of hedging tools, most other Asian countries may want to focus on a small number of basic products. As mentioned before, interest rate options trade frequently only in Hong Kong and Singapore. Although many Asian countries have recently launched an array of derivative products, virtually none of them has good liquidity. Generally, investors would welcome a simple and straightforward product. In those countries, focusing on a few liquid products might be more effective in accelerating market development.

In this regard, the importance of exchange traded markets should not be underestimated, at least for the initial stage. An exchange product can provide players with transparency and an efficient price discovery process, and allow derivatives dealers to hedge their OTC positions more efficiently. In addition, financial instability may arise in the OTC market when shocks such as credit events and sharp movement in underlying asset prices occur. When underlying asset prices change rapidly, the size and configuration of counterparty exposures can become unsustainable and provoke a rapid unwinding of positions. In general, liquidity in vanilla derivatives markets is likely to drive product innovation. Major benefits of exchange-traded derivatives compared to OTC products are:

- no credit exposure with the settlement guaranteed;
- transparency and anonymity;
- lower transaction cost;
- less severe information asymmetry as OTC derivatives activities tend to concentrate in major institutions.

Development of bond and derivatives markets are mutually reinforcing processes. By definition, “derivatives” cannot exist without “underlyings”. The transparency and liquidity of the underlying markets are the fundamental success factors for derivatives markets. A reliable benchmark yield curve should be the main focus for nearly all Asian fixed income markets, but probably with higher priority to China, Indonesia and the Philippines. Pricing of a derivative product is subject to manipulation without solid reference rates, which will subsequently limit the liquidity of the derivative product. Liquid short-term benchmark rates are especially important for pricing swaps.

Finally, the problem of broadening the investor base is a common theme in most Asian derivatives markets. In the case of Singapore and Hong Kong, liquidity in futures markets remains low as there are other liquid OTC derivatives. If somehow more participants become interested in futures, increased liquidity will likely bring more participants into the market in a virtuous circle. In the futures market, the general issue is the lack of ability for market makers or dealers to hedge their position in an efficient manner. For example, in Malaysia, if investors were to sell dealers a futures position, there is no real way for the dealers to hedge their long position by shorting it in the underlying bond market or in the swaps market, which is only liquid out to three-years. Currently, investors in Malaysia are mainly banks and the Employee Provident Fund (EPF), with life insurers and asset managers being small investors. The Malaysian government may need to encourage hedge funds and more asset managers to enter the market just as neighbouring Singapore did. In India, foreign institutional investors (FIIs) are not allowed to trade in interest rate derivatives while they are allowed to trade in equity derivatives. Moreover, large corporates who have the requisite skills to manage or take risk are still subject to strict rules on hedging requirements, which is hampering the improvement in market liquidity. Policy consistency is another important issue. Many Asian governments aggressively introduced exchange-traded derivatives, but they also maintain a variety of policies that discourage the demand for derivatives, such as capital controls, restrictions on short sales and a lack of accounting or legal standards. In order to bring investors into the derivatives market and facilitate sustainable market growth, the authorities should consistently improve market infrastructure, enhance monitoring and supervision systems and provide a fair and reliable regulatory environment.

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# Comments on Martin Hohensee and Kyungjik Lee's paper "Survey of hedging markets in Asia"

Aaron Low

Current growth in global derivatives markets makes this a timely and important topic. The authors have chosen well. With a diverse region and an increasing variety of instruments, such a study is not easily undertaken. The paper is structured along different instruments and makes specific assessments which render it easy to read like a good textbook. Rather than addressing the specifics, which were amply discussed, I would like to concentrate more on general market and development issues in the following sections. In particular, the first section concerns market factors while the second section is focused on the regulatory impact and implications. I conclude with a wish list of questions that may allow us to understand the future direction of derivatives in Asia.

## 1. Hedging volumes and market factors

The growth in global derivatives has surpassed that in most other instruments in interest rate space and has increased "spanning" in the global fixed income world. Given the fledgling nature of Asian bond markets and the plain vanilla nature of Asian foreign exchange instruments, it is not surprising that the authors find a great disparity in regional derivatives market development and a general lack of open interest in futures contracts. It was also emphasised that regulatory restrictions, a lack of market sophistication and low turnover in the underlying instruments contributed to the slow pickup in derivatives activity. While these are important factors, I would like to point out two more structural market drivers - correlation and volatility.

Asian interest rates are highly correlated with US Treasuries, which is natural since monetary policy has generally targeted currency levels. Foreign exchange trading volumes have recovered slowly but are still driven by large regional currencies like the yen and the renminbi. Not surprisingly, it is more efficient for large corporations to hedge these major currency drivers (the high correlation across regional currencies makes it cheaper to hedge exposures on a net basis and through the most liquid instrument) rather than independently on a gross basis using less liquid Asian bilateral indirect cross rates. With increasing convergence of monetary and fiscal policies, this trend in correlation looks likely to remain intact.

The second factor, market volatility of both interest rates and currencies, has also diminished since the crisis. A good recent example would be the Chinese renminbi. Before the G7 Dubai meetings, we found that deal flows in the renminbi NDFs and Hong Kong dollar forwards were relatively thin. This changed immediately after the Dubai meetings with a significant pickup in activity with strong flows from both hedgers and speculators. Since then, flows and positions have generally kept pace with volatility.

Also observed, as noted in the paper, is the important role played by the underlying instruments. The recent success of the Korean swap markets arose from an increase in corporate dollar issuance and the subsequent swapbacks into local currencies, which led to further swap trading when cross-currency swap curve spreads widened. But I would disagree with the authors that the potential for derivatives depends primarily on the liquidity of the "underlying". This is evidenced by the success of "non-underlying"-based instruments like

weather derivatives and the recently introduced economic derivatives. What is more important in our view is the acceptance of the underlying reference rate or instrument.

## **2. Regulatory controls and restrictions**

Differences in regulatory restrictions also affect the attractiveness of markets. The authors make some comments on the differences in regulatory restrictions but could have gone further in providing some assessment of costs and benefits, not necessarily quantitative, of those regulations. Derivatives markets are generally supported by (but not restricted to) several legs - hedging, speculative flows and arbitrage. Asian capital controls, some of which were put in place to stem speculative flows, also serve to limit arbitrage possibilities and leave hedgers as the main generators of flows. Understandably this makes liquidity difficult to sustain, especially when hedgers tend to be on the same side of the trade (as in the case of Korean corporations issuing dollar bonds and swapping back into won), creating price distortions and reducing hedging efficiency.

Capital account closure is arguably beneficial in times of market stress, but it would be difficult to argue that such closure would be beneficial if extended indefinitely. Rules and regulations serve some market conditions well but do not provide first-best solutions all the time.

Regulatory restrictions give rise to offshore instruments, which tend to circumvent some regimes and thereby to extend market participation. In many cases, the offshore-onshore spreads are indicative of market frictions with asymmetric volumes. This split in liquidity pools certainly does not help in overall trading efficiency and price discovery, creating entrenched clientele segments in the process. With further capital market development, such segmentation will probably be reduced, as witnessed by the elimination of many of the Asian A and B class equity share structures. It would certainly be interesting if the authors could document examples of trade volumes before and after imposition and removal of restrictions. Such an extension would provide an interesting assessment of the impact of specific market rules and regulations.

## **3. Conclusions**

The paper is an excellent survey of regional market structures for futures, swaps and credit default swaps. There are good examples, highlighting the areas of success as well as the instruments or countries that have lagged in performance or activity. However, the arguments are rather dispersed, and the paper lacks a cohesive proposal on how we can improve liquidity and participation for derivatives trading in the region. Should we concentrate on a smaller but more focused subset of instruments to pool liquidity? Are markets too fragmented to benefit from any returns to scale? Should more players be involved and who should be targeted? Is there sufficient awareness or should there be more education in the marketplace on the availability and suitability of such instruments for various types of investors and traders? These are questions the answers to which may point to avenues for growth. Ultimately, such growth may fortify the entire asset class.

# Clearing, settlement and depository issues<sup>1</sup>

Francis Braeckevelt<sup>2</sup>

## 1. Executive summary

Once neglected as a boring but necessary element of dealing in the capital markets, the settlement process has caught the attention of both the public and the private sector.

The rise of emerging markets, the growth of financial markets, the increased focus on cross-border activity and financial market deregulation in different parts of the world made the settlement process considerably more complex but also made investors fully aware that operational support systems form a critical part of an effective and efficient capital market.

Today, the creation of a robust clearing and settlement environment has become the topic of many discussions and the recent technological innovation allowed for important rationalisation, integration and consolidation trends to emerge. The current fragmented infrastructure is increasingly perceived as a source of cost inefficiencies and significant risk. As a result, new models are being developed that aim at mitigating risks and containing or reducing costs.

In Section I, we highlight some of the current thoughts in today's clearing and settlement debate, the generally accepted roles and responsibilities of financial intermediaries, as well as recommendations made by various national, supranational or private organisations on how to develop robust and efficient clearing and settlement systems.

In Section II, we assess some selected central securities depositories in Asia. The most noteworthy observations we have made with regards to the settlement environment in Asia can, in our opinion, best be summarised as follows:

- The main barriers to developing an efficient bond market in Asia are mainly related to the trading environment (ie liquidity constraints and foreign investor restrictions) rather than to infrastructure issues.
- Today's clearing and settlement infrastructure in Asia is very fragmented. Even though the current setup operates well and conforms with the criteria outlined in the US Investor Act of 1940, the infrastructure is not cost efficient and does not mitigate risks in the settlement process in a comprehensive manner.
- Because of the central role central securities depositories play, it is important that the intermediaries be structurally, financially and operationally sound. This entails proper supervision by the public sector, an adequate capital base, stringent risk management tools (audits, insurance, etc) and business recovery plans.
- Central securities depositories should continue to develop and implement true delivery versus payment (DVP) systems and provide intraday settlement finality.

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<sup>1</sup> The information provided is derived from data received from various sources and from the respective depositories and is believed to be reliable and accurate.

<sup>2</sup> Francis Braeckevelt is responsible for Investor Services Product Management in Asia Pacific.

- The future Asian infrastructure will probably evolve gradually, based on the current setup. We anticipate further consolidation within the respective markets, with a gradual expansion of cross-border links.
- Alternatively, a “central utility” concept could be reviewed. This utility could act as a central access point to various markets, providing multicurrency, DVP settlement, ideally complemented by an automated securities lending and borrowing facility.

## 2. Introduction

Asia's domestic markets continue to recover from the fallout of the severe 1997 financial crisis and are, today, characterised by more stability and an expectation of growth. GDP in Asian countries is expected to expand considerably over the coming years and to outpace the growth in other regions, creating important funding and financing requirements. With the 1997 events fresh in mind, governments and private sector participants are acutely aware of the dangers of relying on short-term capital, bank financing and capital inflows denominated in foreign currency and subject to foreign exchange fluctuations.

Asian economies are therefore expected to limit their exposure to these traditional funding sources by supplementing them with domestic currency financing alternatives.

A key feature in creating an investor-friendly environment is the development of an efficient capital market, and more specifically a strong and liquid domestic debt market, allowing market participants (both borrowers and investors) to attract and invest in longer-term financial products.

Therefore, critical elements required for organising a sound capital market are:

1. the creation of a liquid government bond market, providing basic investment and funding possibilities and a credible benchmark yield curve to price corporate debt;
2. adequate credit rating coverage, by either global (S&P, Moody's, Fitch) or local credit rating agencies;
3. the implementation of a harmonised taxation and regulatory environment;
4. the establishment of operational infrastructure based on efficient and sound clearing and settlement mechanisms, central depositories and derivatives markets, as well as securities borrowing and lending and repurchase agreement facilities.

The main drivers of an effective capital market are pricing and demand and supply considerations. Increasingly, however, market participants appreciate the importance of an adequate support infrastructure. In other words, where capital markets provide the fundamental infrastructure to bring investors together, the clearing and settlement infrastructure ensures the effectiveness and efficiency of the system.

The clearing and settlement process is a series of complex tasks that start with trade confirmation and continue through the clearing process up to the actual settlement of a trade. The successful functioning of this system or series of systems is largely dependent on the close interaction of a number of intermediaries, each responsible for a distinct part of the process.

## 3. Definitions

The following list presents some of the definitions commonly used in discussion on clearing and settlement topics.

**Clearing.** Generally, clearing refers to the process of comparing trades before settlement date or the determination of the net obligations of the broker participants (for both securities and cash). In certain publications, clearing may be used synonymously with settlement.

**Settlement.** The settlement process refers to the exchange of cash and securities on the contractual settlement date. The settlement date can be agreed upon at trade execution or can be prescribed by local trading conventions. Settlement may be processed on a provisional or a final basis.

**Settlement finality.** The exchange of cash and securities is final when a settlement can no longer be unwound. Finality eliminates the main legal risks of payment and settlement systems, reduces systemic risk and ensures the smooth operation of a system.

**Provisional settlement.** Provisional settlement allows for onward delivery of securities which were not received on a final and irrevocable basis. Systemic risk is introduced in the system if the unwinding of a specific settlement has a cascading effect on other previously settled transactions.

**Gross settlement.** Gross settlement systems settle transactions on an instruction by instruction and real-time (RTGS) basis throughout the day. RTGS systems are costly due to the need for collateral or available cash balances to cover payment obligations during the day or for securities lending programmes to cover short securities positions. RTGS systems, however, typically reduce systemic risk.

**Net settlement.** In net settlement systems, obligations are settled at the end of the business day on a net basis. The net process is subject to potential systemic risk, due to the contagion effect where incoming funds are relied upon to make onward payments when a participant cannot meet his obligations. As there is no requirement to post collateral or keep cash balances readily available during the day, net systems tend to be less costly.

**Central securities depository (CSD).** A CSD is either the physical entity or the system that facilitates the settlement and safekeeping of securities and ensures the reconciliation of participant accounts. Securities can be safekept in immobilised or dematerialised form. Settlement generally occurs in book entry form.

**International central securities depository (ICSD).** An ICSD is a depository settling trades in international and various domestic securities, usually through direct and indirect links with agents in the domestic markets. The best known ICSDs are Euroclear Bank and Clearstream International. The eurobond market developed in part in response to operational and regulatory inefficiencies in domestic bond markets.

**Central counterparty (CCP).** A CCP acts as counterparty to every buy and sell trade, a process known as “novation”. This process concentrates counterparty risk and provides multilateral netting.

**Vertical integration.** Vertical integration refers to the merger of institutions providing different services in the value chain (eg trading, clearing, CSD). Vertical integration offers advantages of scope.

**Horizontal integration.** Horizontal integration refers to the merger of institutions providing similar services (eg clearing services for equities, derivatives and fixed income instruments). Horizontal integration offers advantages of scale.

**Continuous Linked Settlement (CLS™).** CLS is a unique process that enables cross-border currency transactions to be settled intraday. CLS enables settlement to be final with payout from central bank funds. As it is a real-time, global settlement system, it will significantly reduce the settlement risk caused by delays arising from differences in time zones, legal jurisdictions and operating procedures.

**Delivery versus payment.** Delivery versus payment (DVP) is the simultaneous, final, irrevocable and immediately available exchange of securities and cash on a continuous basis throughout the day.

**Straight through processing.** Straight through processing (STP) is defined in many different ways by different segments in the financial industry. In general, it is considered to be a process that improves the efficiency of the securities industry by eliminating trade and settlement failures, reducing manual processing, decreasing settlement time, etc.

## **Section I: Current trends in clearing and settlement**

### **1. Clearing and settlement infrastructure**

#### **1.1 Introduction**

It is difficult to unambiguously define the scope or the roles and responsibilities of a clearing and settlement intermediary by analysing the current operating models. Market practices, CSDs, clearing houses, CCPs and other parts of the clearing and settlement infrastructure have developed at different rates, resulting in distinct regulatory, tax and technical environments.

In the infrastructure section, we will cover:

- basic clearing and settlement services;
- the central counterparty concept;
- the clearing and settlement service model;
- rationalisation/integration/consolidation: public or private initiatives?

#### **1.2 Basic clearing and settlement services**

The analysis of various domestic market systems does identify some common and basic roles and responsibilities of clearing and settlement providers.

These services include but are not necessarily limited to:

- trade matching;
- trade confirmation;
- clearing activities (ie netting of obligations);
- cash flow distribution;
- trade settlement (either on a final irrevocable or provisional basis);
- registration (beneficial owner's name or in a nominee name);
- safekeeping of assets and holdings;
- messaging/reporting;
- other services, such as account reconciliation, which are often provided in conjunction with local or global custodians.

#### **1.3 Central counterparty**

The use of a central counterparty is most prevalent in clearing activities, where, through novation, counterparty risk is effectively mitigated on a centralised and cost-efficient basis. It

is commonly recommended that clearing houses be organised as separate legal entities from the securities depositories. Even though the CCP can be closely related to a CSD, each fulfils different functions and has a distinct role and responsibilities in the clearing and settlement process.

A central counterparty should maintain an adequate capital base and strong risk management tools to mitigate its own risks and deal with adverse situations. These tools may include, but are not limited to, margin call procedures, settlement of margin calls in central bank money, exposure limits, guarantee funds, securities lending and buy-in procedures or the use of collateral or daylight overdraft arrangements.

Introducing a central counterparty has the most tangible effect where trading anonymity is required. In market segments where trading occurs over the counter or through market-makers, traders can effectively mitigate the exposure and risk through a careful selection and due diligence of their counterparties.

The concept has gained importance worldwide and central counterparties have been introduced in a number of Asian markets. As illustrated in Annex 4, countries like China (all bonds), Indonesia (corporate bonds), Malaysia (corporate bonds) and Thailand (all bonds) have integrated a central counterparty into the clearing and settlement infrastructure.

#### **1.4 The clearing and settlement service model**

Traditionally, clearing and settlement systems have been geared towards the domestic market, organised around instrument types (equities, derivatives, fixed income, etc) and primarily focused on overcoming imperfections and providing tailor-made solutions to market-specific issues.

However, this resulted in a highly fragmented infrastructure, typically exposed to significant operating inefficiencies, technical inconsistencies, high cost structures or disparate regulatory environments.

Today, market participants recognise the need for a rationalised or integrated infrastructure allowing for an efficient exchange of securities and payments, while at the same time ensuring that risks are mitigated and costs are reduced or contained.

In a fragmented model, several intermediaries each provide part of the clearing and settlement services. The challenge, therefore, is to effectively integrate this infrastructure by introducing expensive but required regulatory and operational changes.

In a cross-border trading and settlement context, integration also involves creating full interoperability between different domestic systems and providing access to systems outside the domestic market.

Recent technological innovation has made this integration process a more realistic exercise as countries continue to adopt international standards and conventions (International Securities Identification Number (ISIN) standards or Bank Identification Codes (BIC)), and have considerably increased investments in straight through processing (STP) solutions (SWIFT or FIX (Financial Information eXchange) protocols).

#### **1.5 Rationalisation/integration/consolidation: public or private initiatives?**

With all the challenges and expenses to overcome, it is important to identify and assign responsibilities to the various participants driving the rationalisation process forward.

Looking at the various initiatives that have been or are being introduced, the success of the clearing and settlement infrastructure rationalisation process is highly dependent on the interaction between the private and public sectors. This close cooperation will help achieve risk reductions, cost controls and infrastructure efficiencies, as well as system stability and robustness.

In general, the private sector focuses primarily on:

- analysing and improving market practices and technical requirements;
- the consolidation process itself.

The public sector, in contrast, tends to be predominantly involved in issues pertaining to:

- the harmonisation of tax legislation;
- the reconciliation and harmonisation of national laws in a cross-border environment;
- the creation of an integrated regulatory and oversight framework;
- the implementation of the most cost-efficient, competitive and sound infrastructure;
- the oversight of the private sector (intervening if required) to ensure the process is resulting in increased efficiencies;
- the creation of regulations that provide incentives for providers to innovate.

As a result, capital markets have evolved significantly over time. In a traditional infrastructure, intermediaries are closely related to the government or the main capital market participants and operate as a natural or a de facto monopoly. In the government bond market, for example, central banks generally provide the central securities depository functions. In the more recent models, intermediaries are operating in a market-based environment characterised by rationalisation, integration and consolidation.

## **2. Clearing and settlement infrastructure**

### **2.1 Introduction**

Seeing the importance of the clearing and settlement process in maintaining the systemic soundness of the global financial markets, the operating environment has been analysed by many international committees and working groups from both the public and private sectors.

As a result, a range of projects have been initiated to develop and promote securities clearing and settlement systems that can operate in a stable and robust environment while at the same time reducing risks and costs for their participants.

The operating, monetary, regulatory and infrastructure observations of individual markets are also relevant in a regional context. The barriers encountered in the rationalisation or integration process have not halted the progress, but have in some instances slowed it down, resulting in regional clearing and settlement systems that are currently at varying stages of development, sophistication and integration.

We will review the clearing and settlement infrastructure and recent developments in:

- the United States;
- Europe;
- Asia.

### **2.2 United States**

In the United States, a relatively homogeneous clearing and settlement infrastructure has been created thanks to the single currency and harmonised regulatory and tax environment.

US Treasuries are generally settled on an RTGS basis through the Federal Reserve book entry systems and are held in dematerialised form. Settlement occurs on a rolling TD+1 basis, unless otherwise negotiated at the time of trading. The transfer of securities and cash occurs immediately upon settlement, on a final and irrevocable basis.

To maintain confidence in the US financial markets, the Federal Reserve Bank continues to participate in private sector initiatives and to explore ways of streamlining the design and operation of the clearing and settlement process.

The most recent initiatives are related to CLS procedures and the introduction of Fedwire-like services in the settlement procedures of additional instrument types.

### **2.3 Europe**

In Europe, the introduction of the euro provided important momentum to the rationalisation process of stock exchanges, payment systems and securities clearing and settlement structures. Apart from the single currency, the following developments also accelerated the process:

- the creation of a single integrated and efficient European capital market;
- an increase in international capital movements;
- technological progress;
- financial deregulation.

The European public institutions involved in this rationalisation effort are the European Commission, the European Parliament (as the European legislator) and the European System of Central Banks/Committee of European Securities Regulators (ESCB/CESR), which combines both central banks and securities regulators. The main requirements that have been identified for successfully constructing an integrated clearing and settlement model are:

- the removal of technical, legal and fiscal barriers, to lower the costs and reduce inefficiencies of cross-border settlement;
- the removal of competitive distortions/unequal treatment of entities performing similar clearing and settlement activities;
- the creation of clearing and settlement industry standards to ensure a sound system in which risks can be mitigated, reduced or controlled;
- a market-led rationalisation process with oversight from the public sector, which covers:
  - following through on changes in local laws and regulations, if required;
  - remaining vigilant to a particular intermediary emerging as a monopolistic entity and ensuring that a system for balancing stakeholders' interests is provided for;
  - paying special attention to the soundness of the clearing and settlement system and to the low-probability catastrophic risks that can introduce systemic risks.

The diagrams in Annex 1 represent the current and future state of the European clearing and settlement system, illustrating the complex nature and the extent of the consolidation and integration.

### **2.4 Asia**

Unlike the United States or Europe, Asia does not have a single currency or a unified market. This lack of a homogeneous regulatory and operational environment results in a wide range of different market practices and allows "domestic" systems to exist side by side. Where the clearing and settlement systems supporting equity trading in Asia have evolved, the fixed

income markets remain significantly less sophisticated, from both an execution and a support perspective.

Despite the many differences, however, Asia is subject to the same general trends as the United States and Europe. Technological advances, deregulation and globalisation increase the need to introduce or develop sound capital market and operating systems. The current highly fragmented infrastructure, however, is prone to adverse risk factors and high costs.

Considering the current constraints, it may not be possible or necessary for Asia to introduce a fully integrated US- or European-type clearing and settlement model. It would be beneficial for Asia, however, to move towards a gradual rationalisation of the domestic and regional infrastructure, introducing interoperability between domestic and cross-border systems as well as leveraging the various global and private sector initiatives like CLS.

In the interim, the predominantly domestic infrastructure should focus on increasing transparency and implementing optimal execution and operational mechanisms. This will allow the current system to increase cost efficiency, provide investors with fast and robust execution and processing mechanisms and align the local market with international standards.

Certain countries have started to integrate parts of the clearing and settlement infrastructure, achieving economies of scale (horizontal integration) or scope (vertical integration). Examples of horizontal integration can be found in Korea, where the Korea Securities Depository (KSD) acts as the central depository for all instruments in the market, or in Australia, where government bonds were transferred to Austraclear in 2002. The benefits of vertical integration are clearly illustrated in Indonesia where, since the introduction of the Bank Indonesia - Scripless Securities Settlement System (BI-SSSS), securities are cleared and settled in scripless form at Bank Indonesia (BI) and payments occur through the central bank's RTGS system. This is an encouraging trend provided the market remains vigilant in assessing the associated risks, related to the creation of a de facto monopolistic situation (higher costs) or to the introduction of contagion risk through increased system concentration.

We therefore conclude that due to the specific developments in the Asian markets, domestic systems will probably prevail, but that some form of integration can optimise the services offered to both local and foreign investors. Another option that could possibly be introduced in an Asian context is the utility-type approach, where a central, preferably user-owned, entity provides multicurrency central depository services.

### **3. Regulations concerning clearing and settlement structures**

#### **3.1 Introduction**

The challenges that regulators and market participants face in building a robust and efficient infrastructure are numerous and complex. Many working groups and regulators have contributed extensively to the creation of an operational and regulatory framework in which this process can be conducted.

In the next section, some recommendations and research papers published on the subject have been brought together. The main reports that will be briefly discussed are:

- Global publications:
  - G30 recommendations;
  - CPSS/IOSCO report.
- European publications:
  - Giovannini report(s);

- ESCB/CESR report;
- the Lamfalussy process (“Committee of Wise Men”).
- US rules and regulations:
  - Rule 17f-7 of the Investment Company Act of 1940.

### **3.2 Global recommendations**

#### *3.2.1 G30 recommendations (Annex 2)*

The Group of Thirty (G30) is a private, not-for-profit, international institute composed of senior representatives from the private and public sectors and the academic world. The G30 has been instrumental in creating a common understanding about the structure of a secure and efficient clearing and settlement infrastructure.

The G30 issued a first report on clearing and settlement in 1989, with the principal objective of improving local market practices. A second report (Plan for Action) issued in January 2003 contains 20 recommendations designed to create a robust interoperable global network, mitigate risk and improve governance.

#### *3.2.2 CPSS/IOSCO recommendations (Annex 3)*

In December 1999, a task force launched by the Bank for International Settlements (BIS) reviewed and consolidated the work performed by the International Organization of Securities Commissions (IOSCO) and the Committee on Payment and Settlement Systems (CPSS).

As a result, in 2002, the task force issued 18 recommendations to enhance the safety of, and reduce the system risk inherent in, central securities depositories.

### **3.3 European initiatives**

#### *3.3.1 Giovannini report(s)*

The first Giovannini report was issued in November 2001 and identified 15 technical, market practice, legal and fiscal barriers to creating a low-cost cross-border settlement system. Out of these 15 barriers, 10 were deemed to be of a legal and regulatory nature (and not due to technical constraints or market practice), emphasising the importance of close interaction between the public and private sectors.

A second Giovannini report, issued in April 2003, presented a road map for removing the barriers identified in the first report, and assigned action and follow-up responsibilities. Finally, the report contained a detailed description of possible consolidation models and policy responses.

#### *3.3.2 ESCB/CESR report (European System of Central Banks/Committee of European Securities Regulators)*

In early 2002, the ESCB/CESR consulted the financial industry on how the global CPSS/IOSCO recommendations for securities settlement systems should be adapted and strengthened to apply to the European marketplace.

An extra standard has been added to the existing 18 CPSS/IOSCO recommendations covering the “custodians operating systematically important systems” notion.

#### *3.3.3 The Lamfalussy process (“Committee of Wise Men”)*

The Committee of Wise Men was appointed in July 2000 by the European Council of Finance Ministers (ECOFIN) out of concern that the existing regulatory and legislative framework

hampered the growth and competitiveness of European securities markets. The committee was mandated to identify all obstacles in the securities markets that impede cross-border transactions and to suggest remedial actions.

The final report, issued in 2001, found that important gaps persist in European legislation and that the conventional legislative process of the EU is too slow, complex and cumbersome.

### **3.4 US rules and regulations**

#### **3.4.1 Rule 17f-7 of the Investment Company Act of 1940**

In 2000, the US Securities and Exchange Commission (SEC) adopted Rule 17f-7, which governs the circumstances under which US investment companies may hold securities through the facilities of non-US central securities depositories.

The key requirement of Rule 17f-7, by reference to Rule 17f-4, is that an investment company must receive from its “primary custodian” an analysis of the custody risks associated with maintaining assets with each depository it uses.

Rule 17f-7 does not provide specific guidance concerning the content of these analyses of depository custody risk, but in the release announcing the adoption of the rule, the SEC stated:

“As a general matter, we expect that an analysis will cover a depository’s expertise and market reputation, the quality of its services, its financial strength, any insurance or indemnification arrangements, the extent and quality of regulation and independent examination of the depository, its standing in published ratings, its internal controls and other procedures for safeguarding investments, and any related legal protections.”

The Bank of New York, as a primary custodian, reviews all depositories in its global custody network on their eligibility under Rule 17f-7 of the Investment Company Act of 1940. The eligibility requirements as detailed in the rule are that depositories must:

- act or operate a system for the central handling of securities or equivalent book entries in the country;
- be regulated by a foreign financial regulatory authority;
- hold assets for the custodian that participates in the system under safekeeping conditions no less favourable than the conditions that apply to other participants;
- maintain records that identify the assets of each participant and segregate the system’s own assets from the assets of participants;
- provide periodic reports to its participants with respect to its safekeeping of assets, including notices of transfers to or from any participant’s accounts;
- be subject to periodic examination by regulatory authorities or independent accountants.

## **Section II: Analysis of Asian settlement infrastructure**

### **1. Asian infrastructure review: methodology**

#### **1.1 Introduction**

In Section II, we shift our attention and assess the situation in Asia, identifying areas of strength or potential improvement.

Similar to the other regions, the clearing and settlement infrastructure in Asia has been developed and is being continuously refined to reduce the inherent clearing and settlement risks and to contain or lower the cost structure.

When reviewing the specific Asian situation, we focus on risk management aspects, as this constitutes a critical component of the investment decision process. In addition, investors' awareness of market infrastructure risk continues to grow.

## **1.2 Framework and scope of the Asia review and analysis**

- As a global custodian, the Bank of New York (BNY) is most intimately involved with the settlement and safekeeping functions in the domestic custody markets. As such, our analysis will focus on central securities depositories and not on the clearing infrastructure.
- The review pertains to the fixed income market (government and corporate bonds) only.
- The analysis is based on BNY's research on the central depositories' compliance with Rule 17f-7 of the US Securities Investment Act of 1940. Generally, the information provided is derived from data received from the respective depositories and is believed to be reliable and accurate.
- The decision to use the 17f-7 rule criteria in our analysis does not imply any opinion on the value and usefulness of the other recommendations as described in the first section, but is made primarily based on BNY's expertise in this area.

## **1.3 Risks associated with central securities depository infrastructure**

In general, we believe investors should review and be aware of five broad risk categories when assessing whether a central securities depository meets their infrastructure risk tolerance. Even though each risk category is reviewed separately, it should be noted that risks are typically cumulative and should therefore be looked at on an aggregate basis.

Risk is only one, albeit critical, part of every due diligence. In addition, it is important to remain vigilant to other factors that may impact the depository activity, like scalability and remaining excess capacity. This becomes especially important if a depository is considering expanding its responsibilities and activities, either by accepting new instruments, through the consolidation of depository functions within a given market, or if cross-border activity is expected to add substantial volumes to the domestic activity.

The five broad risk criteria to be reviewed are:

### **1.3.1 Market risk**

Market risk is probably the broadest category and covers generic elements related to the market as a whole. In the context of the Asian depositories review, this section will focus on:

- the organisational structure of the depository;
- immobilisation/dematerialisation of securities.

### **1.3.2 Legal risk**

The regulatory environment and the legal structures covering central securities depositories are critical to ensure the safety of the assets and contract enforceability. Features of the legal risk review include:

- regulations and governance rules covering the depository activity;
- enforcement history in case of non-compliance;

- compulsory use of the depository;
- the liabilities assumed by the central securities depositories;
- the asset segregation policies of the depository system;
- recourse options when accounts are blocked and assets frozen;
- central depository asset lien provisions.

### 1.3.3 Credit risk

Credit risk is a third important aspect of the risk framework and is considered as a combination of:

- *principal risk*: counterparty default.
- *replacement risk*: in case of failed settlement, counterparties may be compelled to acquire securities in the marketplace, where prices may have fluctuated.
- *liquidity risk*: required funding is not available to fulfil the payment obligations.

When looking at credit risk in an infrastructure context, we will focus on:

- the membership criteria established by the depository;
- the compliance monitoring process;
- the disciplinary action available to the depositories when rules are breached;
- the existence of guarantee funds and insurance policies;
- the credit facilities extended by the depositories to their participants.

### 1.3.4 Operational/custody risk

This section describes how depositories handle operations risks, and reviews:

- the depositories' performance and functionality;
- guarantee funds and insurance policies;
- the availability of delivery versus payment (DVP) settlement.

Table 1

#### The BIS settlement models

|         |                                                                                                                                                                                                                                                                                                                                                         |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Model 1 | Systems that settle transfer instructions for both securities and funds on a trade by trade (gross) basis, with final (unconditional) transfer of securities from the seller to the buyer (delivery) occurring at the same time as final transfer of funds from the buyer to the seller (payment).                                                      |
| Model 2 | Systems that settle securities transfer instructions on a gross basis, with final transfer of securities from the seller to the buyer (delivery) occurring throughout the processing cycle, but settle funds transfer on a net basis, with final transfer of funds from the buyer to the seller (payment) occurring at the end of the processing cycle. |
| Model 3 | Systems that settle transfer instructions for both securities and funds on a net basis, with final transfers of both securities and funds occurring at the end of the processing cycle.                                                                                                                                                                 |

### 1.3.5 Systemic risk

Eliminating systemic risk allows depositories to ensure the soundness and robustness of their systems, especially to cope with adversities or business interruptions. The question of whether a contagion effect can occur through the unwinding of settled transactions is addressed in the operational/custody risk section, where we review the settlement methods. In this section, we will focus on the central securities depositories' business recovery plans.

## 2. Asian infrastructure depository analysis

### 2.1 Introduction

We reviewed the risk management tools and processes adopted by selected central securities depositories in a country by country analysis. We believe the group of selected central securities depositories, although not exhaustive, is representative for the Asian region and includes a mixture of entities serving both the government and corporate bond market segments.

Table 2

#### Country by country assessment: markets and depositories

| Country       | Central securities depository                                                            |
|---------------|------------------------------------------------------------------------------------------|
| Australia     | Austraclear                                                                              |
| China         | CSDCC Shanghai and Shenzhen <sup>1</sup>                                                 |
| Hong Kong SAR | Central Monetary Unit (CMU)                                                              |
| India         | Reserve Bank of India (RBI)<br>National Securities Depository Limited (NSDL)             |
| Indonesia     | Bank Indonesia (BI)                                                                      |
| Japan         | The Bank of Japan (BOJ)                                                                  |
| Korea         | Korea Securities Depository (KSD)                                                        |
| Malaysia      | Bank Negara Malaysia (BNM)                                                               |
| Philippines   | The Bureau of Treasury (BTR)<br>The Philippine Central Depository Inc (PCD) <sup>2</sup> |
| Singapore     | The Monetary Authority of Singapore (MAS)                                                |
| Taiwan, China | Central Bank of China (CBC)<br>Taiwan Securities Central Depository (TSCD)               |
| Thailand      | The Bank of Thailand (BOT)<br>The Thailand Securities Depository Co Limited (TSD)        |

<sup>1</sup> The current QFII scheme in China may be subject to further changes by the regulators and may affect the risk assessment of the China Securities Depository and Clearing Corporation Ltd (CSDCC). <sup>2</sup> The PCD received a temporary operating licence for debt securities in March 2002 and is expected to become a subsidiary of the Fixed Income Exchange, when established (due date 2004). Even though part of the initial analysis, all observations concerning the PCD have been excluded from the results, as the PCD is currently not used for the safekeeping or settlement of fixed income instruments.

## 2.2 Government bond trading mechanisms

Even though trading falls outside the scope of this analysis, we found that in certain cases the trading and settlement environments are highly correlated and that trading restrictions may largely affect the mechanics of the settlement process and the attractiveness of a given market.

When appraising the trading process in the government and corporate bond market, we found that fixed income markets are generally less developed compared to the more active domestic equity markets.

Some of the major limitations to foreign investor participation in the markets reviewed are:

### *Liquidity constraints*

Bond issues are, for a variety of reasons, taken up by local investors and held to maturity. In addition, because of the countries' budgetary surpluses, Asian governments have traditionally not issued large quantities of government paper. Both of these trends have affected the development of the market infrastructure considerably and have negatively impacted market liquidity.

- *Australia:* Commonwealth Government Securities are popular amongst banks/local institutions and form a large part of their statutory liquidity requirements.
- *Korea:* Government bonds are acquired by large investment trust companies, banks and life insurance companies to satisfy reserve requirements. The same investors also acquire corporate bonds.
- *Malaysia:* Both Malaysian Government Securities (MGS longer tenures) and private debt securities (PDS) are typically held till maturity. The local Employees Provident Fund (EPF) is a big investor in the fixed income market.
- *Singapore:* About 80-90% of all corporate bonds are acquired by banks and insurance companies and are typically held as proprietary positions until maturity.
- *Thailand:* The Bank of Thailand (BOT) generally issues BOT bonds only to financial institutions, which use them to satisfy reserve and liquidity requirements.

### *Foreign investor restrictions*

In selected countries, foreign investor regulations, restricting foreign participation in the market, still apply. Most of these require foreign investors to obtain prior approvals from the central bank (mainly foreign exchange-related) or from the regulators (investor status).

- *China:* Foreign participation is only allowed through the QFII (qualified foreign institutional investor) scheme and is restricted to exchange-listed Treasury and convertible bonds. Stringent capital controls are still in place.
- *India:* Foreign institutional investors (FIIs) must be registered with the Securities and Exchange Board of India (SEBI) and the Reserve Bank of India (RBI). Approved investors are allowed to invest up to 30% of the total portfolio in debt instruments. Separate approval is required to start a 100% debt fund.
- *Indonesia:* Foreign participation is subject to prior approval from Bank Indonesia (BI) and/or Bapepam, the capital markets supervisory agency. Foreign exchange transactions must be approved and supported by underlying trade evidence.
- *Japan:* No direct restrictions apply but foreign investors are subject to stringent foreign indirect participant and qualified foreign intermediary rules.

- *Korea*: Investors must obtain an investment registration certificate from the Financial Supervisory Service (FSS). Korean won can only be purchased to meet exact payment obligations.
- *Philippines*: Inward/outward remittances of funds are subject to central bank approval.
- *Taiwan, China (hereinafter Taiwan)*: Until the new FINI rules replaced the existing QFII/non-QFII regulations, foreign investors were only allowed to hold a single cash account. As this account was generally used for equity-related transactions, access to the fixed income market was effectively barred. Foreign participation in the repo market is capped and foreign exchange transactions must be reported to the central bank.
- *Thailand*: Same day and next day foreign exchange transactions are prohibited.

### **2.3 Current clearing and settlement infrastructure in Asia**

Before taking the analysis to an individual country level, let's look at the clearing and settlement infrastructure in the region as a whole.

Annex 4 presents a summary of the clearing and settlement infrastructure in selected Asian countries for government and corporate bonds. For each country, the central securities depositories, the payment system operator, the central clearing counterparty (if applicable) and the clearing houses (if applicable) for government and corporate bonds have been tabulated.

Without focusing on specific roles or responsibilities, some interesting trends and observations about the organisation of the Asian domestic market infrastructure appear.

- A positive trend that has developed in most countries is the creation of formal central securities depositories to settle and safekeep all types of securities. In some countries, physical scrip still exists, but these instances are generally exceptional, and physical securities are being gradually phased out.
- Payments are processed either electronically or by cheque. Cheques are used in China (partly), Taiwan (partly) and India (across instruments). A further move towards the implementation of electronic payment systems, in our view, should be encouraged.
- Central clearing counterparties are not common. In countries where the concept has been introduced, CCPs remain closely linked to either the exchange or the clearing house. The feasibility and implications of introducing a central counterparty need to be explored in further detail, taking into account specific market mechanics and conditions.
- Securities clearing generally occurs through separate entities (India, Hong Kong SAR, Philippines, Malaysia), licensed clearing banks (Taiwan), depositories (Taiwan - selected corporate bonds; Thailand, corporate bonds) or the exchange (Korea).
- Usually, different institutions assume the role of CSD, payment system operator, CCP and clearing house, depending on the underlying instrument, resulting in a highly fragmented environment, which may lead to significant market inefficiencies. Exceptions are Australia, China and Korea, where infrastructure is consistent across segments.
- Within a specific asset class, infrastructure may differ based on the trading methods (on exchange or OTC), eg government bonds in Hong Kong or corporate bonds in Malaysia, further contributing to the market fragmentation and potential inefficiencies.

- Even though payment systems may also differ across segments, the cash infrastructure is less fragmented due to central banks' involvement in the payment side. In Malaysia and Thailand, for example, although instruments are held in different depositories, payments are processed through the central bank's RTGS system (RENTAS and BAHTNET respectively).
- Government bonds are commonly deposited at central banks or their affiliates (Hong Kong, India, Indonesia, Malaysia, Philippines, Thailand), providing the market participants with an additional level of comfort with the depository infrastructure.
- In the other markets, fixed income instruments are held at depository and clearing corporations (China, Hong Kong (selected issues) and Korea), limited liability companies (Australia) or licensed clearing banks (Taiwan).
- Due to the similar trading conventions, the corporate bond intermediaries are generally more closely aligned with the equity than with the government bond infrastructure.

In summary, the domestic clearing and settlement infrastructure in Asia is very fragmented and differs significantly across markets and instruments. Central banks play an important role as depositories for government bonds, while the corporate bond market infrastructure follows the equity market practices and infrastructure setup more closely.

#### **2.4 Risk reviews of the selected Asian central depositories**

In our assessment, the organisation and structure of the central securities depositories have been tested against the various risk categories discussed in Section II.1.3:

- market risk;
- legal risk;
- credit risk;
- operational/custody risk;
- systemic risk.

Before going into the specifics of each risk component, it is important to highlight a unique aspect of the relationship between the CSD, the local custodian (domestic settlement and safekeeping agent) and the global custodian.

Even though the assets of a particular beneficial owner are held at a CSD, this investor has not necessarily entered into a direct contractual relationship with the market provider. If a beneficial owner uses a global custodian for its back office operations, these services are governed by a specific global custody agreement.

Generally, to complete the chain through to the CSD, two more contractual/service relationships have been set up to service the assets. First, there is the link between the local and global custodian, based on a legal contract, and secondly, the relationship between the CSD and the local custodian, generally covered by a participant agreement.

Considering the breadth and width of these cascading relationships, it is critical to adopt a strict and continued due diligence process. This review and due diligence practice is important not only with regard to the entities with which a direct contractual relationship has been established, but also, and probably even more so, with regard to the other intermediaries (such as CSDs, payment systems, etc) with which no legal link exists. To do this effectively, market specific features must be reviewed carefully and local legal opinions may be required in certain cases to validate generally accepted practices in a local market context.

### 2.4.1 Market risk

As part of the investment decision, investors participating in cross-border trading have to be aware of the market risks that investing in foreign markets and jurisdictions may entail. As elements related to the organisation and governance of the securities depository may contribute to the overall market risk, this section will focus on some of those specific elements.

#### *The organisational structure of the depository*

Understanding the ownership structure of a central securities depository is important for assessing its financial strength and support structure. Central banks or government-owned entities usually receive the implicit or explicit backing of the government, whereas it is important to analyse the financial statements for private entities to fully assess the financial soundness of these providers and their ability to deal with default or other adverse event risk.

From the selected central securities depositories:

- three are organised as for-profit private limited liability companies (Austraclear (Australia), NSDL (India), TSD (Thailand));
- three are non-profit organisations partly or wholly owned by the exchange (CSDCC (China), KSD (Korea), TSCD (Taiwan); the KSD has the widest ownership structure);
- nine central banks, units of a central bank or entities fully owned by the government provide government bond depository services and operate on a non-profit basis (CMU (Hong Kong; cost recovery basis), RBI (India), BI (Indonesia), BOJ (Japan), BNM (Malaysia), BTR (Philippines), MAS (Singapore), CBC (Taiwan), BOT (Thailand)).

#### *Immobilisation/dematerialisation of securities*

Physical securities are almost non-existent in today's markets. In general, fixed income paper deposited at the CSDs is either held in dematerialised or immobilised form, or a combination of the two (depending on the issuer or instrument):

- Securities are held in dematerialised form at the CSDCC (China), NSDL and RBI (India), BI (Indonesia; for current issues), BOJ (Japan), BNM (Malaysia), BTR (Philippines), MAS (Singapore; insignificant portion of physical shares still exists), CBC (Taiwan), TSD and BOT (Thailand).
- Securities are held in immobilised form at the TSCD (Taiwan).
- Instruments deposited at the following depositories are held in either immobilised or dematerialised form, depending on the issuer or the instrument: Austraclear (Australia), CMU (Hong Kong; EFBs and EFNs are dematerialised, other instruments are held in immobilised form at two external settlement banks), KSD (93% is dematerialised, the remainder is held in immobilised form).

### 2.4.2 Legal risk

#### *Regulations and governance rules covering central depository activity*

Considering that the rules under which the depositories are governed may affect the outcome of legal disputes or other adverse situations, it is important to gain a fair understanding of the depositories' legal foundation and oversight structure.

- Central banks and other government-owned institutions, which are widely represented in our selection, are generally self-regulated entities, incorporated under the central bank laws of their respective countries and subject to oversight

and supervision of government-linked commissions or ministries. Examples are CMU (Hong Kong), RBI (India), BI (Indonesia), BOJ (Japan), BNM (Malaysia), BTR (Philippines), MAS (Singapore), CBC (Taiwan) and BOT (Thailand).

- Supervision of the non-central bank entities (Austraclear (Australia), CSDCC (China), NSDL (India), KSD (Korea), TSCD (Taiwan), TSD (Thailand)) generally falls under the purview of the financial market regulators or government entities (ministries or government departments). A common regulator is the Securities and Exchange Commission (SEC) or its local equivalent.

Even though the financial regulators in each market keep close oversight over the depositories, it remains prudent to ensure that specific contracts entered into by investors or their representatives are enforceable under the local laws and regulations.

#### *Enforcement actions in case of non-compliance*

If central securities depositories fail to comply with the statutory or regulatory requirements, the supervisory authorities may resort to remedial or enforcement actions such as imposing fines or restricting, suspending or terminating the activities of the depository. All depositories in the review stated that no such action had been brought against them in the past three years.

#### *Compulsory use of the depository*

The use of central securities depositories for safekeeping and settlement is required either by law or by local market practice. This improves transparency and reduces the risks of settlement fails due to timing issues related to the withdrawal or lodgment process.

The use of the central depository for *safekeeping* is:

- not compulsory: none;
- compulsory by law: CSDCC (China); CMU (Hong Kong; EFB/EFN); BI (Indonesia; verbal confirmation); BNM (Malaysia); BTR (Philippines); KSD (Korea); CBC (Taiwan; government bonds issued after September 1997);
- consistent with prevailing market practice: Austraclear (Australia); CMU (HK; other); RBI and NSDL (India); MAS (Singapore); TSCD (Taiwan); TSD and BOT (Thailand).

The use of the central depository for *settlement* is:

- not compulsory: none;
- compulsory by law: CSDCC; CMU (EFB/EFN); RBI; NSDL; BI (verbal confirmation); BOJ; BNM; BTR; PCD; KSD; TSCD; TSD; CBC (government bonds issued after September 1997);
- consistent with prevailing market practice: Austraclear; CMU (other); MAS; BOT.

#### *The liabilities assumed by central securities depositories*

The liability question is important in view of the compulsory nature of safekeeping and settlement through most depositories. Apart from the fact that none of the depositories assume liability for force majeure, political risks or acts of God, liability language may differ substantially across central depositories:

- The CSDCC (China), RBI and NSDL (India), BI (Indonesia), BOJ (Japan) and KSD (Korea) assume liability for their own performance.
- The TSCD (Taiwan) assumes liability for its own performance to the extent that the loss is covered by insurance, and MAS in Singapore assumes liability for its own

performance, limited to an amount not exceeding the value of the non-recoverable amount plus interest.

- Other depositories do not assume liability for their own performance: Austraclear (Australia), CMU (Hong Kong: “unless the error is caused by wilful default or gross negligence of the HKMA or its servants or agents”), BNM (except for loss of participant’s securities) and BTR (Philippines).
- In addition, the CMU (Hong Kong), which safekeeps physical certificates for bonds and money market instruments at two subcustodians, states that, in the event of a loss, the CMU will in the first instance recover its own damages from the payment received from the subcustodian, and subsequently distribute compensation to affected CMU members.
- The Bank of Thailand (BOT) states that it is liable for direct losses related to reconciliation errors with registrars and theft of securities, but that it does not assume liability for its errors and omissions or failure of its systems, and that it is immune from legal action in its own jurisdiction.

#### *The asset segregation policies of the depository system*

In countries where nominee registration is very common, it is important to understand the account setup and asset segregation policies adopted by the depositories, as this may have important consequences in cases of default or insolvency.

- In all countries reviewed, the depository’s proprietary assets (if any) are separated from the participant’s assets. Austraclear, the BOJ and the KSD, explicitly state that they do not hold any proprietary assets in the depository system.
- In most countries, participants are required to segregate their proprietary and client assets. Exceptions are Australia (Austraclear), where segregation at the participant level is optional, and Indonesia (BI), where segregation is not allowed.
- In general, setting up omnibus accounts is a common market practice. Assets in omnibus accounts are usually held on a fully fungible basis and are not identified as resident/non-resident holdings, or are not linked to a specific individual investor.
- In China (CSDCC), India (NSDL) and Korea (KSD), where foreign investors are subject to prior investment approval from the authorities or regulators, assets are unambiguously linked to the accounts of an approved underlying foreign investor.
- In Japan, the account structures at the BOJ allow for the identification of non-resident holdings and the beneficial owner’s tax status and liabilities.
- In Malaysia (BNM), assets are identified as either resident or non-resident holdings.
- In Thailand (BOT), proprietary assets are segregated from client assets. Client assets must be segregated per underlying client.

#### *Recourse options when accounts are blocked or assets are frozen*

Accounts may be blocked or assets frozen when disciplinary action (default/rule violations) is brought against a depository participant. It is important for the underlying investors to understand how this affects the protection of and access to assets:

- In Australia (Austraclear), Hong Kong (CMU) and the Philippines (BTR), access to the account by the underlying client is subject to the approval of an administrator/liquidator.
- In China (CSDCC), India (RBI) and Japan (BOJ), prior approval from the securities depository is required.

- In Korea (KSD), approval is granted by the securities regulators (FSS).
- In Indonesia (BI), Malaysia (BNM) and Thailand (TSD), access is subject to the relevant (bankruptcy) legislation.
- In India (NSDL), Taiwan (TSCD) and Thailand (BOT), assets are unambiguously linked to the underlying investor through the segregated account setup. Client accounts, therefore, remain fully accessible at all times.

#### *Central depository asset lien provisions*

Generally, a depository does not hold liens on assets, except in cases like:

- the payment of fees/expenses;
- securities encumbrance issues (Austraclear);
- settlement defaults (Thailand).
- Bank Indonesia stipulates that it has the authority to exercise a lien on a participant's proprietary assets (if required).

#### *2.4.3 Credit risk*

##### *The membership criteria established by the depository*

Participant eligibility criteria may vary from market to market. In all the countries analysed, however, applicants are subject to stringent rules and regulations outlined in the depository membership rules and/or imposed by the applicant's specific regulator (eg banks must be approved by the central bank). In addition, in certain markets, the depository's parent company (Austraclear), the exchange or the securities market regulator (CSDCC) must also approve all new membership applications.

In general, the legal framework governing the relationship between the depository and a participant comprises:

- a standard participation contract;
- terms and conditions of participation;
- rules and by-laws of the depository;
- relevant domestic laws and regulations.

##### *The compliance monitoring process*

- Usually, the depository monitors its participants' adherence to the membership criteria.
- In China (CSDCC), India (NSDL), Korea (KSD) and Taiwan (TSCD), the securities regulators assist the depository in the monitoring process.

##### *Disciplinary actions available to the depositories when rules are breached*

It is relatively rare that central securities depositories have to resort to disciplinary action to address non-compliance with the rules and regulations governing the CSD/participant relationship. However, in cases where action was deemed necessary, appropriate action was taken. No details about the specific cases have been disclosed. In cases of non-compliance, the central depositories can:

- impose fines;
- restrict, suspend or terminate the participant's membership.

In addition, the depositories in Japan (BOJ), India (RBI and NSDL), Korea (KSD) and Taiwan have also issued rules that specifically address disciplinary or remedial action in case of participant defaults or insolvency.

During the past three years:

- CSDCC Shanghai has taken action to address payment defaults;
- RBI (India) took action against participants that did not meet their settlement obligations;
- the NSDL (India) terminated or suspended seven participants that no longer met the net worth criteria or were disbarred from the exchange;
- BNM (Malaysia) resorted to disciplinary action and fines (no further details have been disclosed);
- all other depositories confirmed that no disciplinary or remedial actions have been taken against any of their participants.

#### *The credit facilities extended by the depositories to their participants*

Credit facilities and overdraft lines are important tools in mitigating liquidity and counterparty risk as they prevent the settlement activity from being disrupted even if there are not sufficient funds available. In most cases, the CSD does not directly extend credit facilities to its participants, who must enter into overdraft and credit arrangements with the local commercial banks.

- Austraclear (Australia), CSDCC (China), CMU (Hong Kong), BOJ (Japan), BTR (Philippines), MAS (Singapore), KSD (Korea) and TSCD (Taiwan) specifically indicated that they do not extend any credit or overdraft facilities to their participants.
- Only BNM (Malaysia) stipulated that it does extend intraday credit to its participants, provided sufficient collateral has been posted.

#### *2.4.4 Operational/custody risk*

##### *Establishment of guarantee funds and insurance policies*

###### *Guarantee funds*

Most central depositories do not guarantee settlement (as a central counterparty or otherwise), but act as agents in the settlement and safekeeping process. As such, they have not created any guarantee funds, but mitigate settlement risks through the adoption of true delivery versus payment settlement methods.

- Austraclear (Australia), CMU (Hong Kong), RBI and NSDL (India), BI (Indonesia), BNM (Malaysia), BTR (Philippines - even though settlement of matched transactions confirmed by both parties is guaranteed), MAS (Singapore) and the KSD (Korea) have not established guarantee funds to cover their daily activities.
- CSDCC (China) has set up both a settlement risk (systemic failure) and a settlement guarantee fund (participant default).
- BOJ (Japan) maintains an investor protection trust (participant default).
- TSCD (Taiwan) contributes 5% of its operating income to a “default damaged reserve fund” to cover losses of or damage to share certificates under custody.
- TSD (Thailand) acts as a central counterparty to trades between clearing members of the exchange only, and has established a credit line with the settlement banks to cover settlement default. Settlement between custodian banks and their counterparties is not covered.

Guarantee funds are more common in a trading and clearing environment. If a guarantee fund has been created, it is important to evaluate the fund's size, payout criteria and replenishment schedules to ensure the available resources are adequate to mitigate the risks they cover.

- In India, CCIL (Clearing Corporation of India Ltd) and the respective clearing houses related to the respective stock exchange assist the depositories in the settlement process and maintain guarantee funds to mitigate associated risks.
- In Korea, Taiwan and Thailand, the stock exchanges maintain guarantee funds to compensate losses resulting from a member's default.

#### *Insurance policies*

If guarantee funds are not available, it is important to review the insurance policies a CSD has arranged to protect itself and its participants against adverse events. When analysing the available policies, it is important to focus on the policy coverage and carrier, the amounts insured and the applicable deductible amounts to assess the risk-mitigating capacity of the specific policies.

- The central banks or linked depositories in our review (CMU (Hong Kong), RBI (India), BI (Indonesia), BOJ (Japan), BNM (Malaysia), BTR (Philippines) and MAS (Singapore)) typically do not maintain third-party insurance policies.
- Of the non-central banks, only CSDCC (China) does not maintain insurance.
- NSDL (India), KSD (Korea), TSCD (Taiwan) and TSD (Thailand) maintain insurance policies to meet claims arising from their depository services and performance.

#### *Performance and functionality*

##### *Functionality*

For participants and underlying investors, it is important to understand how a CSD is organised from a functional point of view, and whether risk is concentrated within the CSD or is further disseminated to third-party providers through outside vendor/contractor relationships.

- Austraclear (Australia), CSDCC (China), NSDL (India), BNM (Malaysia), BTR (Philippines), MAS (Singapore), KSD (Korea), TSCD (Taiwan) and the TSD (Thailand) handle all functions related to depository responsibilities in-house and do not outsource any activities to third party providers.
- CMU (Hong Kong) provides all depository functions in-house except for the safekeeping of physical certificates (private subcustodians) and computer processing (HK Interbank Clearing Limited).
- RBI (India) provides services internally except for netting services and the computing of participant obligations of certain trades, which is outsourced to the clearing house CCIL.
- BOJ (Japan) performs all functions internally except for communications, for which it employs NTT, the national telephone carrier.

##### *Communication procedures*

Most depositories communicate with their participants through either:

- proprietary technology;
- secure dial-up or leased connections;
- a combination thereof.

### *Control procedures and performance history*

All depositories have implemented stringent internal control procedures, mitigating operational risk. During the past three years, no adverse performance has been reported that resulted in system disruptions of significant proportions.

### *Audits*

When reviewing the performance, functionality and overall stability of market intermediaries and providers, it is important to complement proprietary due diligence results with feedback provided in both internal and external (independent) audit reviews:

- Central banks, as self-regulated entities, are generally subject to statutory audit reviews by the government and to internal audit reviews.
- Some central banks (eg RBI - India) reported only a statutory audit requirement.
- Austraclear (Australia), CSDCC (China) and CMU (Hong Kong) are subject to both internal and external audits.
- The NSDL (India) is subject to regular external and ad hoc regulatory (SEBI) audits.
- The KSD (Korea) is subject to annual internal/external and regulatory (FSS) audits.
- The TSCD (Taiwan) is subject to four levels of audit (internal, external and regulatory (SFC), as well as an operational audit on its computer systems).
- The TSD (Thailand) is audited annually by the SET internal auditor (operational), twice a year by external auditors (financial), and is subject to an occasional audit by the SEC.

In addition, risk management policies of the CSDCC (China), CMU (Hong Kong), NSDL and RBI (India) and the BOJ (Japan) are reviewed separately by specifically appointed risk review committees.

Even though audit reports were not always made available for review, the depositories stated that during the last audit no material exceptions were found. Only the NSDL (India) reported that minor exceptions were found (no further details are available).

### *Data security*

All depositories have implemented rigorous safeguards to ensure data security and protection, such as unique passwords and user IDs (subject to regular change) and lockout facilities, and depositories holding physical certificates employ guards to protect the vaults.

### *Availability of delivery versus payment settlement*

The settlement process is the source of a variety of important risks and should therefore be carefully analysed when assessing the soundness and safety of a central securities depository. In view of the importance of this section, a detailed description of the settlement process and some of the risk mitigators addressing certain aspects of the operational processes for each country/depository in the analysis has been included in Annex 5.

#### *2.4.5 Systemic risk*

##### *The establishment of business recovery plans*

All depositories have detailed business recovery plans in place covering physical equipment, software and data security as well as organisational structure. Most depositories also have backup locations where business can be resumed if normal activity has been disrupted. Exceptions to this rule are the KSD (Korea; planned for 2004) and the RBI (India), where both the main and the backup centre are located at the same premises. Generally, the full

details of the business continuity and recovery plans are not divulged to the public for security reasons.

In most instances, data are backed up electronically and stored off-site. Most depositories have a documentation retention policy ranging between five (one case) and 20 years (one case). The most common retention periods are either seven or 10 years. RBI (India) and BI (Indonesia) did not disclose their retention policy guidelines.

Operational procedures are generally tested on a regular basis (at least once a year). Results are usually not disclosed, or disclosed only in broad terms or in local language (CSDCC (China), BOJ (Japan)). In some cases, testing frequencies are not divulged (CSDCC Shanghai). MAS (Singapore) publishes full test results.

In case of a failure, the depositories have comprehensive communication policies to inform the public and the authorities as well as the regulators.

The backup facility can generally be activated within one to four hours. KSD (Korea) confirmed backup facilities can be made operational within three hours, NSDL (India) reported a 24-hour required lead time and the TSCD (Taiwan) a four-to eight-hour required lead time.

None of the depositories has had to activate the emergency plans during the past three years, except for the TSCD (Taiwan; no details have been provided).

#### 2.4.6 Conclusion

The analysis of Asian central securities depositories reveals, in our opinion, that the depositories reviewed comply with the criteria outlined in Rule 17f-7 of the US Investment Act of 1940. The structural and operational framework appears to be on a level consistent with that of other central securities depositories serving comparable securities markets.

As outlined, the broad criteria that depositories must comply with to be considered an eligible central securities depository under rule 17f-7 are:

- acting as a system of central handling of securities;
- being regulated by a financial regulatory authority;
- holding assets of all participants on equivalent terms;
- identifying and segregating participant assets;
- reporting periodically to participants;
- being examined at regular intervals by a regulator or independent accountant.

Some of the most noteworthy criteria we should retain from the above analysis are that depositories should:

- consolidate the depository functions to service all securities in a domestic market;
- create real-time RTGS processing models, as these effectively mitigate risks, even though they tend to be more costly due to the liquidity requirements;
- set up effective support systems, such as securities lending and access to credit facilities, to ensure the system's efficiency and effectiveness;
- confirm trade details early on in the process and harmonise settlement cycles to allow further efficiencies;
- establish integrated and real-time links with the payment systems;
- remove physical certificates from the financial system and keep securities in immobilised or dematerialised form (where legally possible);

- safeguard the soundness of the system by segregating proprietary and client assets and by adopting enhanced risk management tools, such as insurance or guarantee funds;
- subject the infrastructure and its external links to periodic independent reviews.

Payment systems should:

- be centralised, with a single payment system responsible for settlement-related payments;
- be fully integrated with the securities depository;
- still be owned, operated or closely linked with the central bank to allow payments to be made in central bank funds;
- be structured as RTGS or continuous net settlement systems;
- allow for electronic transfers using secure systems achieving same day value and finality.

Other important observations we made relate to:

- *Validation of a depository's financial strength:* This validation is made either through the review of financial statements, ownership structure or risk management tools. Asia's government bond settlement infrastructure is still largely concentrated with central banks or affiliates, for which this information may not be readily available.

Central banks remain fundamental to the servicing of government bonds and for the operation of the payment systems because they:

- act as neutral participants at the centre of the system;
- receive a seal of confidence from the market;
- retain important oversight functions in order to:
  - maintain the safety of payments and the payment system;
  - maintain the safety of the clearing and settlement system;
  - promote the clearing and settlement system's efficiency.

The corporate bond market has evolved towards the use of non-central bank intermediaries, in line with the practices identified in the equity markets, for which financial statements and ownership information can be more easily obtained.

- *Mitigation of systemic risk:* A critical element in an environment where CSDs become more widespread and the technology advances rapidly. Default in one part of the payment, clearing, settlement and safekeeping system may cause a contagion effect and affect the entire clearing and settlement infrastructure.

The soundness of the overall operating and regulatory framework and the depositories' business recovery plans are important elements in all due diligence reviews. We have not found any major shortcomings with regard to regulatory or business recovery issues in our analysis. Only the fact that the KSD (Korea) and RBI (India) have their main and backup centres on the same premises is perceived as a potential source of risk.

- *Internal and external audit reviews:* these reviews are important in assessing the depositories' operating processes. Traditionally, central banks have not been subject to the same rigorous audit requirements as privately operated intermediaries. However, the assumption that they enjoy the backing of their respective governments in case of adverse events alleviates some of these concerns.

Possible general areas for improvement on the audit requirement are to:

- include audit reviews of the interlinked operating systems, such as payment systems or clearing houses;
- publish the audit results to make them freely available for external review.
- *Asset exposure risk:* These risks are mainly contained through the implementation of true DVP and RTGS systems. Austraclear (Australia), CMU (Hong Kong; real-time settlement), BOJ (Japan; DVP settlement), BNM (Malaysia), MAS (Singapore) and TSD (Thailand) have implemented real-time gross settlement systems.

In countries where no true DVP systems are available, additional measures have been put in place to address the liquidity and asset exposure risk.

- In Hong Kong (CMU), under the batch settlement mode, securities are put on hold until payments have been confirmed.
- In the Philippines (BTR) and Thailand (BOT), investors face intraday exposure due to the timing differences of the cash and securities settlement process.
- In China (CSDCC) and Taiwan (TSCD), securities, transferred on settlement date, become available to the investor the next day, when the payment has been confirmed.
- In India at the NSDL, an intraday exposure exists due to the timing differences between the pay-in and payout schedules.
- At the Reserve Bank of India, if settlement occurs through RBI accounts, no exposure exists. However, if cash settlement occurs outside the RBI, timing lags and exposures exist.
- *The applicable settlement cycles:* Most countries have adopted a TD+3 (at the latest) rolling settlement cycle for fixed income instruments, which corresponds to the generally accepted G30 time frame.

Some authorities are considering shortening the settlement cycle to limit the market and foreign exchange risks created by possible price fluctuations. Even though this risk reduction effect is highly desirable, in order to attract foreign investors, it is important to keep settlement cycles aligned with the foreign exchange contract timing to allow timely and proper funding of the cash accounts.

- *Liquidity risk:* Gross and net settlement systems are subject to different risks. The mechanics of a gross RTGS settlement system, for example, create larger liquidity exposures, which call for proper risk management tools.
  - In most countries, credit facilities are not available through the central depositories directly, but through the domestic commercial banks.
  - In Malaysia, lending facilities are not available to foreign investors.
  - In India (NSDL), there is only limited securities lending activity (not allowed for foreign investors) and the access to credit is uncertain.
  - In China (CSDCC), liquidity risk is mitigated through securities lending programmes and the existence of guarantee funds.
  - In Japan (BOJ), liquidity risk may arise under the non-DVP settlement method. These risks are addressed by making intraday credit limits available.
  - Both in Thailand (BOT), for BAHTNET users, and Malaysia (BNM), the depositories themselves extend credit to their participants.
  - In Indonesia, access to credit facilities is restricted, even through commercial banks.

- In Taiwan (TSCD), some risk elements are present, as participants only have limited access to securities lending facilities.
- In Korea (KSD), the fail-related lending programmes maintain stability in the market.
- In the Philippines and India, the use of cheques to make settlement-related payments introduces a risk element in the settlement process.
- The introduction of a repo market in China is considered as a positive development.
- *Counterparty risk:*
  - Through their design, RTGS settlement systems eliminate counterparty risk.
  - Central depositories typically mitigate counterparty risk by implementing rigorous participant membership criteria and adopting stringent membership monitoring tools.
  - If settlement is postponed due to insufficient balances of securities or cash, principal risk is taken out of the system but is replaced by market risk.
  - Failed settlements may attract market risk and expose counterparties to consequential losses. In Hong Kong (CMU), for example, failed trades are automatically cancelled from the system at the end of the day and must be re-entered.
  - Central depositories generally do not act as a central counterparty, except for TSCD (Taiwan), CSDCC (China) and BOT (Thailand; payments only). As such, counterparty exposure is reduced and guarantee funds have generally not been put in place.
  - Where guarantee funds have been implemented to safeguard financial stability, it is important to analyse the size, payout criteria and loss-sharing provisions of the fund.
  - Central banks typically do not enter into settlement assurance provisions or guarantee fund arrangements.
  - In both India and the Philippines, cheque use creates counterparty risk on payment banks.

In summary, we believe it is fair to conclude from the analysis that most countries are continuously looking at enhancing the clearing and settlement infrastructure to mitigate risks and reduce or contain costs. An illustration of this trend can be found in the implementation of the BI-SSSS in Indonesia. With the introduction of this scripless settlement system, the DVP, liquidity and operational risks inherent in the previous manual processes have been effectively mitigated.

## **2.5 Possible future central securities depository models for Asia**

### *2.5.1 Introduction*

After reviewing a selected number of central depositories in the region and the conclusions we have drawn, it is important to look at how the infrastructure could evolve over time.

Based on the observations about the current Asian models and taking into account trends around the world, we would like to review the following three options:

- interlinked depositories supported by open access to different domestic systems;

- a full integration/consolidation model;
- a private, central institution linked to the domestic market infrastructure.

### 2.5.2 *Interlinked depositories with open access*

In this model, links are established between the different providers, allowing for partial consolidation and a high degree of interoperability. This model can be seen as a first step towards full integration (please refer to the next paragraph).

#### *Advantages*

- Compared to a highly fragmented infrastructure, this model allows for partial risk mitigation (systemic, market, operational and liquidity risks) and potential cost efficiencies.
- Competitive element is retained through the coexistence of several providers.
- Implementation of increased transparency.

#### *Disadvantages*

- Investors/participants are required to establish memberships at various systems.
- Investment in interoperability is required - interoperability refers to technical compatibility of systems but also includes standardised communication/messaging, fees, contracts and procedures.
- Each component of the system must be efficient to ensure stability and robustness of the entire system.
- The ongoing costs of existing separate entities (maintenance and innovation) remain - there are few economies of scale.
- The costs associated with linking multiple back office systems are important.
- The integration of the component systems may be complex.

### 2.5.3 *Full consolidation*

A fully consolidated model, either within a given market or regionally (United States/Europe) requires close oversight by the authorities and the regulators to ensure a smooth functioning of the system. The integrated entity must be sound, backed with the necessary financial strength, and have stringent risk management tools and a strong and wide acceptance from participants. Generally, standardised and integrated processes reduce some of the major risks created in a fragmented environment.

#### *Advantages*

- Full integration provides important economies of scale.
- Economies of scale promote cost efficiencies. The absence of duplication of processes and investment reduce the required fixed and ongoing maintenance costs.
- Largest incentive to innovate and provide wider range of services (eg portfolio services).

#### *Disadvantages*

- Most expensive/complex structure to develop (system and processing re-engineering).

- Political/regulatory support required. Need for complex regulatory/taxation change.
- Important trade-off between full integration and increased systemic risk due to over-reliance on a single system and increased risks related to a lack of competition.
- Oversight is required to promote and ensure continued improvements to the system. The monopolistic situation may result in a lack or absence of incentives to innovate.
- On a pan-Asian basis, harmonised or streamlined processes within a given asset class (eg settlement cycles) are preferred as this facilitates the consolidation process and achieves the highest savings for the investors.

#### 2.5.4 *Private, central institution linked to domestic market infrastructure*

The option of a central institution linked to the local market infrastructure (CSD, CCP, clearing house) is most valuable in a multicurrency environment (cross-border), and mimics the setup of an international central depository.

The utility should establish links through its local agents and its users, should be industry-owned and should either provide all services in-house or contract with various third-party entities to provide selected services. In order to provide all services in-house, this utility has to be organised as a bank to offer cash and credit-related services.

Where traditionally domestic central depositories do not have a banking licence and settle cash through central bank accounts, the central banks' involvement in a multicurrency environment becomes impractical, due to differences in time zone, timing and cutoff time. The utility could address this by offering settlement services using commercial bank money, through the recently launched Continuous Linked Settlement (CLS) infrastructure.

The utility model requires complex regulatory arrangements, stringent and multiple risk/concentration/ business recovery measures and acceptance from the participant and user communities.

#### 2.5.5 *Conclusion*

When reviewing the outlook for Asia, it is important to evaluate risks in an integrated environment and in the current context. Today, Asia is a very fragmented region with large differences between the infrastructures servicing specific instrument types.

The domestic markets are continuing to evolve, as witnessed by the introduction of certain functionality or initiatives in various markets:

- establishment of rating agencies for corporate bonds (India and Indonesia);
- implementation of the BI-SSSS (Indonesia).

Future enhancements are being prepared to further enhance the development of the bond markets:

- STP processing (Australia);
- the expansion of international links and cooperation agreements (Hong Kong);
- introduction of the central counterparty concept for bond clearing (Japan, Thailand);
- a proposal to develop a long-term bond market and benchmark yield curve (Korea);
- introduction of a local fixed income exchange (Philippines);
- launch of 10-year government bond futures contract in January 2004 (Taiwan);
- a plan to move the TSD towards a T+2 settlement cycle (Thailand);
- TSD's development of a Post Trade Integration Project, aimed at integrating all system functions and centralising systems linked to market participants (Thailand);

- TSD's plan to extend its service offering to include bonds and to focus on STP processing initiatives (Thailand).

These initiatives streamline the domestic markets and offer a more robust and efficient infrastructure, focused on risk reduction and cost efficiencies.

The choice of the future path for the clearing and settlement infrastructure will be based on a trade-off between risk management, efficiency and costs, while at the same time implementing a system best suited for potential growth of the market.

Where domestic markets become more sophisticated, depositories could start playing a bigger role in the servicing of foreign investors' portfolios.

To be successful, Asian markets must overcome certain barriers, such as:

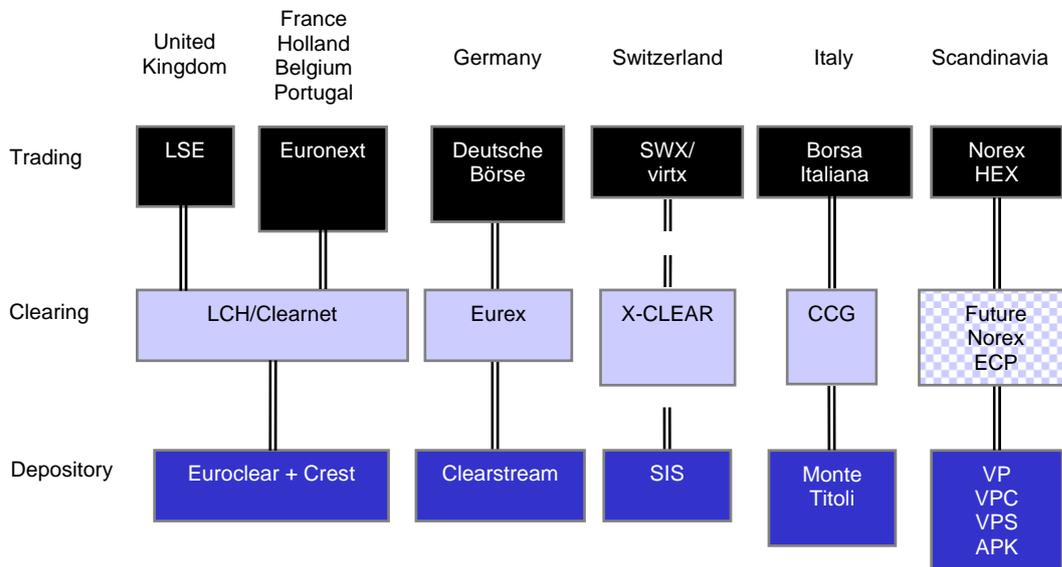
- *technology interfaces*: standardised communication and automation are critical in the development process and proprietary systems should be phased out.
- *need for intraday finality*: this will eliminate the need for expensive collateral or maintaining idle cash balances, reducing both funding cost and liquidity risks.
- *systems linkage*: links must be established allowing information transfers on a risk-free and efficient basis.
- *differences in market mechanics*: eliminate differences in settlement periods between instruments and adopt common market practices.
- *regulatory divergence*: harmonise the legislation applicable to all relevant market segments and encourage cooperation between the public and private sectors.

Rationalising the depository functionality may lead to integration or consolidation, but could potentially give rise to monopolistic issues, especially if the remaining entity is organised as a private, for-profit entity. Authorities must therefore implement appropriate oversight procedures to prevent upward cost pressures and to encourage continued innovation.

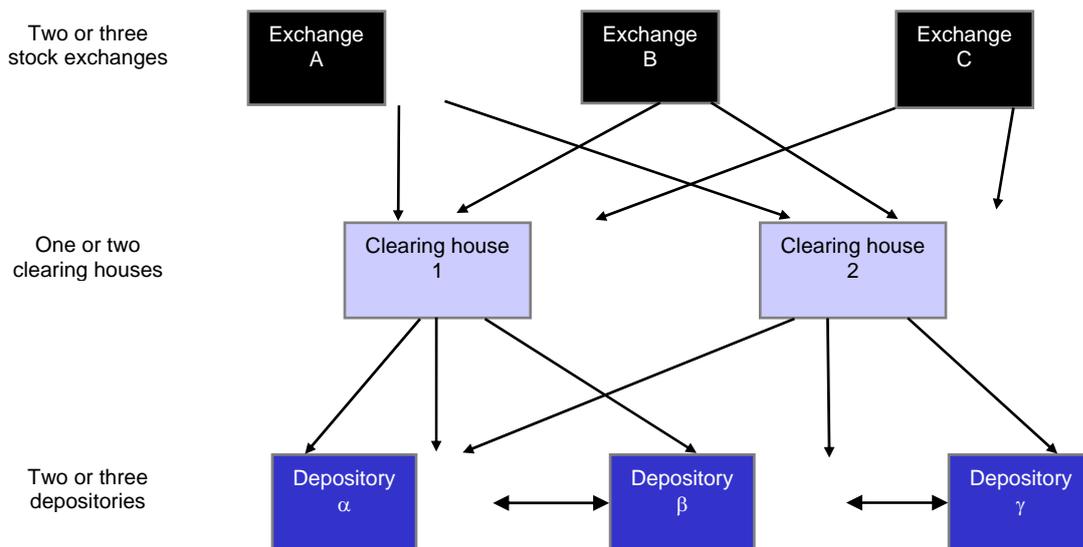
Taking into account the highly fragmented environment, we believe it is fair to say that the clearing and settlement environment is most likely to develop gradually, either by linking the local infrastructures or by introducing a "central utility". A steady move towards closer consolidation may be a next logical next step, but based on the important differences between the regulatory, operational and taxation laws in the respective markets, it is unlikely that a full regional consolidation/integration is possible.

# Annex 1: European clearing and settlement environment

## Current situation in Europe



## Future outlook of the European marketplace



## Annex 2: G30 recommendations

Table 3

### G30 recommendations (1)

|                   |                                                                 |
|-------------------|-----------------------------------------------------------------|
| Recommendation 1a | Trade comparisons between direct market participants by T+0     |
| Recommendation 1b | Matched trade details should be linked to the settlement system |
| Recommendation 2  | Indirect market participants to achieve affirmation by T+1      |
| Recommendation 3a | Central depository, broadest possible participation             |
| Recommendation 3b | Widest possible range of depository eligible instruments        |
| Recommendation 3c | Immobilisation/dematerialisation to the utmost extent possible  |
| Recommendation 3d | Compatible rules and practices in case of multiple CSDs         |
| Recommendation 4a | Real-time gross settlement system                               |
| Recommendation 4b | Trade netting system as per “Lamfalussy recommendations”        |
| Recommendation 5  | Delivery versus payment as defined by ISSA                      |
| Recommendation 6a | Same day funds for securities settlement                        |
| Recommendation 6b | Same day funds for the servicing of securities portfolios       |
| Recommendation 7a | A rolling settlement system should be adopted by all markets    |
| Recommendation 7b | Final settlement for all trades by T+3                          |
| Recommendation 8a | Securities lending and borrowing should be encouraged           |
| Recommendation 8b | Existing regulatory and taxation barriers should be removed     |
| Recommendation 9a | ISO Standard 7775 (securities messages)                         |
| Recommendation 9b | ISO Standard 6166 (ISIN numbering system)                       |

Table 4

**G30 recommendations (2)**

|                   |                                                                                                                                                |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommendation 1  | Eliminate paper and automate communication, data capture and enrichment                                                                        |
| Recommendation 2  | Harmonise messaging standards and communication protocols                                                                                      |
| Recommendation 3  | Develop and implement reference data standards (SWIFT, ISIN, BIC)                                                                              |
| Recommendation 4  | Synchronise timing between different clearing and settlement systems and associated payment and foreign exchange systems                       |
| Recommendation 5  | Automate and standardise institutional trade matching                                                                                          |
| Recommendation 6  | Expand the use of central counterparties                                                                                                       |
| Recommendation 7  | Permit securities lending and borrowing to expedite settlement                                                                                 |
| Recommendation 8  | Automate and standardise asset servicing processes, including corporate actions, tax relief arrangements and restrictions on foreign ownership |
| Recommendation 9  | Ensure financial integrity of providers of clearing and settlement services                                                                    |
| Recommendation 10 | Reinforce the risk management practices of users of clearing and settlement service providers                                                  |
| Recommendation 11 | Ensure final, simultaneous transfer and availability of assets                                                                                 |
| Recommendation 12 | Ensure effective business continuity and disaster recovery planning                                                                            |
| Recommendation 13 | Address the possibility of failure of a systematically important institution                                                                   |
| Recommendation 14 | Strengthen assessment of the enforceability of contracts                                                                                       |
| Recommendation 15 | Advance legal certainty over rights to securities, cash or collateral                                                                          |
| Recommendation 16 | Recognise and support improved valuation and closeout netting arrangements                                                                     |
| Recommendation 17 | Ensure appointment of appropriately experienced and senior board members                                                                       |
| Recommendation 18 | Promote fair access to securities clearing and settlement networks                                                                             |
| Recommendation 19 | Ensure equitable and effective attention to stakeholder interest                                                                               |
| Recommendation 20 | Encourage consistent regulation and oversight of clearing and settlement service providers                                                     |

### Annex 3: CPSS/IOSCO recommendations

Table 5

#### CPSS/IOSCO recommendations

|            |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standard 1 | <p><i>Legal framework</i></p> <p>Securities settlement systems should have a well founded, clear and transparent legal basis in the relevant jurisdictions.</p>                                                                                                                                                                                                                                                                               |
| Standard 2 | <p><i>Trade confirmations and settlement matching</i></p> <p>Confirmation of trades between direct market participants should occur as soon as possible after trade execution, but no later than trade date (T+0). Where confirmation of trades by indirect market participants (such as institutional investors) is required, it should occur as soon as possible after trade execution, preferably on T+0, but no later than T+1.</p>       |
| Standard 3 | <p><i>Settlement cycles</i></p> <p>Rolling settlement should be adopted in all securities markets. Final settlement should occur no later than T+3. The benefits and costs of a settlement cycle shorter than T+3 should be evaluated.</p>                                                                                                                                                                                                    |
| Standard 4 | <p><i>Central counterparties</i></p> <p>The benefits and costs of a CCP should be evaluated. Where such a mechanism is introduced, the CCP should rigorously control the risks it assumes.</p>                                                                                                                                                                                                                                                |
| Standard 5 | <p><i>Securities lending</i></p> <p>Securities lending and borrowing (or repurchase agreements and other economically equivalent transactions) should be encouraged as a method for expediting the settlement of securities transactions. Barriers that inhibit the practice of lending securities for this purpose should be removed.</p>                                                                                                    |
| Standard 6 | <p><i>Central securities depositories</i></p> <p>Securities should be immobilised or dematerialised and transferred by book entry in CSDs to the greatest extent possible.</p>                                                                                                                                                                                                                                                                |
| Standard 7 | <p><i>Delivery versus payment</i></p> <p>CSDs should eliminate principal risk by linking securities transfers to funds transfers in a way that achieves delivery versus payment.</p>                                                                                                                                                                                                                                                          |
| Standard 8 | <p><i>Timing of settlement finality</i></p> <p>Final settlement should occur no later than the end of the settlement day. Intraday or real-time finality should be provided where necessary to reduce risks.</p>                                                                                                                                                                                                                              |
| Standard 9 | <p><i>CSD risk controls to address participant defaults</i></p> <p>CSDs that extend intraday credit to participants, including CSDs that operate net settlement systems, should institute risk controls that, at a minimum, ensure timely settlement in the event that the participant with the largest payment obligation is unable to settle. The most reliable set of controls is a combination of collateral requirements and limits.</p> |

Table 5 (cont)

**CPSS/IOSCO recommendations**

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standard 10 | <p><i>Cash settlement assets</i></p> <p>Assets used to settle the ultimate payment obligations arising from securities transactions should carry little or no credit or liquidity risk. If central bank money is not used, steps must be taken to protect CSD members from potential losses and liquidity pressures arising from the failure of the cash settlement agent whose assets are used for that purpose.</p>                                               |
| Standard 11 | <p><i>Operational reliability</i></p> <p>Sources of operational risk arising in the clearing and settlement process should be identified and minimised through the development of appropriate systems, controls and procedures. Systems should be reliable and secure, and have adequate, scalable capacity. Contingency plans and backup facilities should be established to allow for timely recovery of operations and completion of the settlement process.</p> |
| Standard 12 | <p><i>Protection of customer's securities</i></p> <p>Entities holding securities in custody should employ accounting practices and safekeeping procedures that fully protect customers' securities. It is essential that customers' securities be protected against the claims of a custodian's creditors.</p>                                                                                                                                                      |
| Standard 13 | <p><i>Governance</i></p> <p>Governance arrangements for CSDs and CCPs should be designed to fulfil public interest requirements and to promote the objectives of owners and users.</p>                                                                                                                                                                                                                                                                              |
| Standard 14 | <p><i>Access</i></p> <p>CSDs and CCPs should have objective and publicly disclosed criteria for participation that permit fair and open access.</p>                                                                                                                                                                                                                                                                                                                 |
| Standard 15 | <p><i>Efficiency</i></p> <p>While maintaining safe and secure operations, securities settlement systems should be cost-effective in meeting the requirements of users.</p>                                                                                                                                                                                                                                                                                          |
| Standard 16 | <p><i>Communication procedures</i></p> <p>Securities settlement systems should use or accommodate the relevant international communication procedures and standards in order to facilitate efficient settlement of cross-border transactions.</p>                                                                                                                                                                                                                   |
| Standard 17 | <p><i>Transparency</i></p> <p>CSDs and CCPs should provide market participants with sufficient information for them to identify and evaluate accurately the risks and costs associated with using the CSD or CCP services.</p>                                                                                                                                                                                                                                      |
| Standard 18 | <p><i>Regulation, supervision and oversight</i></p> <p>Securities settlement systems should be subject to transparent and effective regulation and oversight. Central banks and securities regulators should cooperate with each other and with other relevant authorities.</p>                                                                                                                                                                                     |
| Standard 19 | <p><i>Risks in cross-border links</i></p> <p>CSDs that establish links to settle cross-border trades should design and operate such links to effectively reduce the risks associated with cross-border settlements.</p>                                                                                                                                                                                                                                             |

## Annex 4: CSDs/CCPs and payment systems in Asia

Table 6  
CSDs/CCPs and payment systems in Asia

|           | Government bonds                                                                          |                                                                                                                                                                                                          |                               |                          | Corporate bonds          |                          |                               |                          |
|-----------|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------|--------------------------|
|           | CSD                                                                                       | Payment system                                                                                                                                                                                           | Central clearing counterparty | Clearing house           | CSD                      | Payment system           | Central clearing counterparty | Clearing house           |
| Australia | Austraclear                                                                               | RTGS                                                                                                                                                                                                     | n/a                           | Austraclear              | Austraclear              | RTGS                     | n/a                           | Austraclear              |
| China     | The China Securities Depository and Clearing Corp (CSDCC), Shanghai and Shenzhen branches | Two payment systems are used to settle cash: a paper-based credit advice collected by the central bank (PBOC), and an electronic real-time payment system, China National Advance Payment System (CNAPS) | CSDCC Shanghai/ Shenzhen      | CSDCC Shanghai/ Shenzhen | Same as government bonds | Same as government bonds | Same as government bonds      | Same as government bonds |

Table 6 (cont)  
CSDs/CCPs and payment systems in Asia

|               | Government bonds                                                                                                                   |                                                                                                                     |                                                                                                                                                                                      |                                                                                          | Corporate bonds                                                                              |                                                                                                                     |                               |                                                                                                                                                                                                                             |
|---------------|------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               | CSD                                                                                                                                | Payment system                                                                                                      | Central clearing counterparty                                                                                                                                                        | Clearing house                                                                           | CSD                                                                                          | Payment system                                                                                                      | Central clearing counterparty | Clearing house                                                                                                                                                                                                              |
| Hong Kong SAR | Central Moneymarkets Unit (CMU)/ Central Clearing and Settlement System (CCASS) (selected Exchange Fund Notes are traded on CCASS) | Clearing House Automatic Transfer System (CHATS), operated by Hong Kong Interbank Clearing Limited (HKICL)          | None for those settled via CMU<br><br>Settlement via CCASS: under continuous net settlement system, HKSCC settlement counterparty to both buying and selling broker through novation | n/a<br><br>HKSCC clearing house for securities traded on the Stock Exchange of Hong Kong | CMU                                                                                          | Clearing House Automatic Transfer System (CHATS), operated by Hong Kong Interbank Clearing Limited (HKICL)          | n/a                           | n/a                                                                                                                                                                                                                         |
| India         | Reserve Bank of India - Public Debt Office                                                                                         | Cheque, pay-order, banker's cheque or Reserve Bank of India cheque<br><br>Interbank clearing - RTGS (expected 2004) | n/a                                                                                                                                                                                  | Clearing Corporation of India Limited (CCIL)                                             | National Securities Depository Ltd (NSDL) and Central Depository Services (India) Ltd (CDSL) | Cheque, pay-order, banker's cheque or Reserve Bank of India cheque<br><br>Interbank clearing - RTGS (expected 2004) | n/a                           | BOI Shareholding Ltd (BOISL) is clearing house for trades on the Stock Exchange, Mumbai (BSE), National Securities Clearing Corporation Limited (NSCCL) is clearing corporation for trades on National Stock Exchange (NSE) |

Table 6 (cont)  
CSDs/CCPs and payment systems in Asia

|           | Government bonds |                                                                                                                                               |                                                      |                                                      | Corporate bonds                                                      |                                                                                                                                               |                                                                            |                                                                            |
|-----------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------------------|
|           | CSD              | Payment system                                                                                                                                | Central clearing counterparty                        | Clearing house                                       | CSD                                                                  | Payment system                                                                                                                                | Central clearing counterparty                                              | Clearing house                                                             |
| Indonesia | Bank Indonesia   | Bank Indonesia through interbank clearing - real-time gross settlement (RTGS) system                                                          | n/a                                                  | Bank Indonesia                                       | KSEI (scripless)                                                     | C-BEST (scripless)                                                                                                                            | KPEI (scripless)                                                           | KSEI (scripless)                                                           |
| Japan     | Bank of Japan    | (a) BOJNet<br>(b) FXYCS (Foreign Exchange Yen Clearing System)<br>(c) Zengin System (online domestic yen fund transfer and remittance system) | n/a<br>Future 2005: JGBCC (JGB Clearing Corporation) | n/a<br>Future 2005: JGBCC (JGB Clearing Corporation) | CBs: JASDEC (Japan Securities Depository Center, Inc)<br>Others: n/a | (a) FXYCS (Foreign Exchange Yen Clearing System)<br>(b) BOJNet<br>(c) Zengin System (online domestic yen fund transfer and remittance system) | On-market: JSCC (Japan Securities Clearing Corporation)<br>Off-market: n/a | On-market: JSCC (Japan Securities Clearing Corporation)<br>Off-market: n/a |

Table 6 (cont)  
**CSDs/CCPs and payment systems in Asia**

|          | Government bonds                     |                                                           |                               |                | Corporate bonds                                                                                                                  |                          |                                                                                                                                                                                                                   |                                                                          |
|----------|--------------------------------------|-----------------------------------------------------------|-------------------------------|----------------|----------------------------------------------------------------------------------------------------------------------------------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
|          | CSD                                  | Payment system                                            | Central clearing counterparty | Clearing house | CSD                                                                                                                              | Payment system           | Central clearing counterparty                                                                                                                                                                                     | Clearing house                                                           |
| Korea    | KSD<br>(Korea Securities Depository) | BOK-Wire<br>(Bank of Korea-Wire)                          | KSE<br>(Korea Stock Exchange) | KSE            | KSD                                                                                                                              | BOK-Wire                 | KSE                                                                                                                                                                                                               | KSE                                                                      |
| Malaysia | Bank Negara Malaysia (BNM)           | RENTAS (real-time gross settlement system managed by BNM) | n/a                           | n/a            | (a) KLSE eligible bonds - Malaysian Central Depository Sdn Bhd (MCD)<br><br>(b) SSTS eligible bonds - Bank Negara Malaysia (BNM) | (a) RENTAS<br>(b) RENTAS | (a-i) Securities Clearing Automated Network Sdn Bhd (SCANS) only for trades settling via Institutional Settlement Services (ISS).<br><br>(a-ii) n/a for trades settling via MCD transfer mechanism<br><br>(b) n/a | (a) Securities Clearing Automated Network Sdn Bhd (SCANS)<br><br>(b) n/a |

Table 6 (cont)  
CSDs/CCPs and payment systems in Asia

|             | Government bonds                        |                                                                                                                                               |                               |                  | Corporate bonds                     |                     |                                |                                |
|-------------|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|------------------|-------------------------------------|---------------------|--------------------------------|--------------------------------|
|             | CSD                                     | Payment system                                                                                                                                | Central clearing counterparty | Clearing house   | CSD                                 | Payment system      | Central clearing counterparty  | Clearing house                 |
| Philippines | Registry of Scripless Securities (RoSS) | Payment settled between counterparties via cheques<br><br>Optional:<br>Bangko Sentral ng Pilipinas (BSP - central bank)<br><br>RTGS (Q1 2004) | n/a                           | n/a              | n/a                                 | Over the counter    | n/a                            | n/a                            |
| Singapore   | MAS                                     | MEPS                                                                                                                                          | n/a                           | MAS              | CDP (scripless)                     | MEPS (scripless)    | n/a                            | CDP (scripless)                |
| Thailand    | Bank of Thailand *(1)                   | BAHTNET (RTGS)                                                                                                                                | Bank of Thailand              | Bank of Thailand | Thailand Securities Depository *(2) | BAHTNET (RTGS) *(2) | Thailand Securities Depository | Thailand Securities Depository |

## **Annex 5: Settlement process in Asian countries**

BIS settlement models:

Model 1: Securities and funds are transferred on a simultaneous, irrevocable and real-time gross settlement (RTGS) basis.

Model 2: Securities are settled on a gross basis and cash is settled on a net basis.

Model 3: Both securities and cash are exchanged simultaneously on a net basis once a day.

### **Australia: Austraclear**

Settlement process: BIS Model 1

- Settlement cycle: negotiable but generally on a rolling TD+3 basis.
- Availability of securities is checked in seller's account and position earmarked.
- If sufficient funds are available, settlement occurs in Austraclear.
- Transactions which would create a securities shortfall are rejected.
- Payment: via a feeder system to the central bank's RTGS system.

Risk mitigators

- Matching: required but not legally binding. Matched but unsettled trades are automatically deleted at the end of the settlement day.
- Securities lending: allowed in the market but not offered by Austraclear.
- Buy-in: there are no established buy-in procedures for debt instruments.

### **China: China Securities Depository and Clearing Corporation Ltd (CSDCC)**

Settlement process: similar to BIS Model 2. Note: net fund movement occurs on the day after the final movement of securities.

- Settlement cycle: securities are settled on TD on a gross trade-by-trade basis; cash is paid on a net basis on TD+1.
- On the evening of TD, CSDCC transfers shares on a final and irrevocable basis.
- On TD+1, funds are transferred to and from the clearing bank designated by the CSDCC.

Risk mitigators

- Matching: unclear whether a prematching or affirmation process is active.
- Brokers check the availability of securities/cash with the QFII's appointed custodian bank before executing trades. Trades are rejected in the event of insufficient holding.
- Once executed, the trades are binding on the brokers.
- Securities lending: short-selling, securities lending and borrowing are not allowed.
- Buy-in: no buy-in/sell-out rules. In case of overdraft, CSDCC imposes interest penalties based on the amount of the overdraft and holds securities as collateral.

- The depository acts as the central counterparty for all participants and guarantees both securities and cash settlements.

### **Hong Kong: Central Monetary Unit (CMU)**

#### Settlement process

- Settlement cycle: negotiable. Generally, trades executed in the morning are settled on the same day, while those executed in the afternoon are usually settled the next day.
- Settlement can be effected using the real-time or the batch settlement method. Under both methods, cash and securities move simultaneously. Transfers are final and irrevocable.
- Payment happens through CMU interface with the real-time interbank payment system, known as the Clearing House Automatic Transfer System (CHATS).

#### Settlement process: real-time settlement - BIS Model 1

- Instructions are automatically matched by CMU and securities are put on hold.
- Once payment is confirmed to the CMU, the securities are released.
- In the event of insufficient securities, trades are transferred to the end-of-day batch settlement process.
- If insufficient funds are available, transactions remain pending until funds are available.

#### Settlement process: batch settlement - BIS Model 3

- At 3.30 pm, the end-of-day batch run starts.
- Net settlement obligations (securities and cash) calculated and available balances checked.
- Settlement occurs if sufficient funds and securities are available.
- Failed transactions are cancelled at the end of each day.

#### Risk mitigators

- Matching: automatically upon receipt of settlement instruction.
- The CMU monitors participants' cash and securities accounts on a continuous basis.
- Securities lending: in December 1997, HKMA introduced a securities lending programme for eligible private debt instruments held through the CMU.
- Buy-in: no established buy-in procedures. Generally, counterparties renegotiate the settlement of any failed trades.

### **India: National Securities Depository Limited (NSDL)**

#### Settlement process

- The inter-broker settlement model is similar to BIS Model 3, whereas the broker-custodian settlement process resembles BIS Model 2.
- Settlement does not occur on a simultaneous basis.

#### Settlement process: clearing house trades

- Settlement cycle: TD + 2 rolling settlement basis.

- Custodian banks advise the clearing house on TD+1 of its intent to settle on TD+2.
- Once a custodian confirms the trade to the clearing house, settlement is binding.
- To effect settlement, the custodian delivers cash or securities to the clearing house during pay-in and receives securities or cash from the clearing house during payout.
- The period between pay-in and completion of payout is four to eight hours.
- On pay-in date, securities are transferred to a “pool” account at the NSDL for further credit to the clearing house’s account during the day.
- The net cash amount is paid by cheque to the clearing house on TD+2 (at 10.30 am).
- On TD+2, the clearing house transfers securities through the NSDL (at 2 pm).

#### Settlement process: hand delivery trades

- Settlement occurs outside of the clearing house.
- To settle a trade, both delivery and receipt instruction have to be put in NSDL system.
- On settlement date, brokers initiate payment either by account transfer or by cheque.
- Cheques (over INR 100,000 (about USD 2,050)) submitted prior to 10.30 am on SD or cheques (under INR 100,000), presented on SD–1 before noon receive same day value.
- As soon as the investor receives cleared funds or securities, delivery of securities or payment to the broker is initiated (no fixed cutoff time).
- Transfer of securities is final and irrevocable.

#### Risk mitigators

- Matching: not mandatory and outside the depository. Generally, only matched instructions are entered in the depository system for settlement.
- Securities lending: While securities lending exists, foreign investors cannot borrow securities in accordance with local regulations.
- Buy-in: Short positions between brokers are resolved through auctions on SD+1 for settlement on SD+2. If securities cannot be bought in the auction, the trade is closed out as per SEBI guidelines. Special rules apply for failed trades near ex-date.

### **India: Reserve Bank of India (RBI)**

#### Settlement process

- For larger trades (above NIR 200 million), the counterparties must indicate whether settlement will occur through the clearing house, CCIL or directly with RBI.
- As all participants maintain cash accounts with the RBI, payments are settled through the central bank accounts.

#### Settlement process: settlement via CCIL - BIS Model 2

- The CCIL generates a securities and cash obligations report for each participant.
- CCIL sends details of the participants’ gross securities and net cash obligations to RBI.

- Upon verification that the securities and cash are available, the RBI debits and credits securities on a gross basis and subsequently processes the net cash settlement.
- CCIL receives settlement confirmation from RBI and informs its members.

Settlement process: settlement with RBI directly - BIS Model 1

- On SD (no specific time), RBI initiates simultaneous transfer of securities and cash if sufficient positions are available.

Risk mitigators

- Matching: between counterparties. The matching is binding and the trade is designated “ready for settlement” on the system, viewable by both the RBI and the CCIL.
- Securities lending: Repos exist, foreign investors are not permitted to borrow securities.
- Buy-in: under both methods, if sufficient balances are not available, settlement is postponed until the counterparties resolve the discrepancies and/or shortages (this eliminates principal risk, but not market risk).
- RBI levies strict penalties on participants for settlement failures.

### **Indonesia: Bank Indonesia (BI)**

Settlement process: in February 2004, BI introduced its BI-SSSS (Bank Indonesia - Scripless Securities Settlement System). Even though it is still too early to assess the performance of this new system accurately, a few general observations can be made:

- The scripless system is a big step forwards from the previous manual process.
- The new scripless settlement model conforms with BIS Model 1.
- With the implementation of SSSS, government bonds and SBIs are settled on a DVP basis, through the securities and payment systems, SSSS and RTGS.
- The scripless system is expected to reduce operational risk and improve the efficiency of the government bond settlement infrastructure.
- Paper forms are eliminated and securities module linked to the RTGS payment system.

### **Japan: Bank of Japan (BOJ)**

- Settlement at the BOJ occurs in book entry form either on DVP or non-DVP basis.

Settlement process: DVP basis - BIS Model 1

- Settlement cycle: rolling TD + 3 settlement basis via the new JGB book entry system.
- Settlement occurs on a real-time gross DVP basis between 9 am and 3 pm.
- Due to the real-time nature of the process, sufficient securities/cash balances are required.
- Pending securities receipts, pending receipts of funds or pre-advised funds are not considered good securities or funds until received.

- Prearranged credit line can be arranged to cover cash obligations, restricted to JGB settlement only. The use of the credit facility must be fully collateralised and will incur an intraday funding costs.

Settlement process: non-DVP basis - no BIS model applies - cash settled on a net basis on SD by 2.30 pm and securities on an RTGS basis by 12 pm.

- Securities are settled on an RTGS basis at the BOJ. Cash settlement usually occurs on a net basis via the Foreign Exchange Yen Clearing System (FXYCS).
- If the cash account is not properly funded, an intraday overdraft limit will be used.
- Cash is settled during a batch run at the end of the day, therefore, no intraday funding cost or intraday line usage charges apply.

Risk mitigators

- Matching: either by phone or through the NTT matching system on TD+1. Not binding.
- Securities lending: lending is allowed in the Japan market, subject to stringent conditions with regards to tenure and collateral requirements.
- Buy-in: no formal buy-in practices. JGB fails are generally resolved directly by the counterparties through mutually negotiated interest claims. If a trade fails and remains outstanding for more than 10 business days, a buy-in may be initiated.

### **Korea: Korea Securities Depository (KSD)**

Settlement process: BIS Model 3

- Settlement cycle: negotiable but generally on a rolling TD+2 basis.
- Securities are settled on a gross basis through the KSD whilst the cash transfers occur through BOKWire (amounts above KRW 1 billion) or manager's cheque (amounts less than KRW 1 billion).
- Under the Institutional Affirmation & Settlement System (INAS), KSD acts as an intermediary to all payment obligations through its account with the Bank of Korea, but does not assume participants' default risk.
- Brokers use proprietary holdings to settle if investors hold insufficient positions.

Risk mitigators

- Matching: indirect participants prematch trades against the electronic trade report received from KSD. If discrepancies occur, amended details are sent to the KSD and new trade reports are generated.
- Unmatched transactions which were not rectified are not included in the net position report and can only be settled directly between the broker and the underlying investor.
- Buy-in: as per local regulations, buy-in/sell-out on SD+2.
- If an investor continues to fail his obligations, the regulator may impose sanctions, including the suspension of the Investment Registration Card (IRC).
- Securities lending/borrowing: KSD established detailed procedures/acts as intermediary.

## **Malaysia: Bank Negara Malaysia (BNM)**

Settlement process: BIS Model 1

- Settlement cycle: negotiable but generally occurs on TD + 1.
- Once a trade is completed, details are uploaded and validated in SSTS.
- SSTS transmits an unconfirmed sale/delivery advice to the receiving party.
- On SD, the receiving party confirms the transaction in SSTS.
- SSTS initiates the transfer in book entry form in the accounts with BNM.
- Securities are transferred within SSTS; cash is transferred via BNM's RTGS payment system, RENTAS, by debiting or crediting the participants' cash accounts held at BNM.

Risk mitigators

- Matching: no matching procedures.
- Buy-in: in the event a settlement fails, BNM initiates a buy-in. If the securities cannot be bought in by 6 pm on settlement date, BNM may reverse the original transaction.
- Trades not confirmed by the receiving party remain in the system until cancelled.
- Securities lending: lending and borrowing have currently been suspended.

## **Philippines: Bureau of Treasury (BTR)**

- Settlement cycle: same day settlement, ie on trade date (TD).
- Cash payments are generally made outside the Registry of Scripless Securities (RoSS) and are settled directly between the counterparties. Cash can be settled by the BTR but this is very uncommon.

Settlement process: cash settlement outside RoSS

- Upon trade execution, cash is paid on a gross basis by manager's cheque or cashier order.
- Cheque or cashier orders deposited before 12 noon are given same day value.
- Once payment is made, settlement details are uploaded and confirmed into RoSS and transactions are matched by the BTR.
- Matched trades are settled on a gross basis before the end of the day (no specified time).

Settlement process: cash settlement through the central bank - BIS Model 2

- For matched trades, the BTR prepares payment obligations and instructs the central bank to make the appropriate cash transfers.
- The BTR transfers securities on a gross settlement basis in RoSS.
- Although lines of credit are available to cover insufficient cash balances, generally, instructions are not uploaded into RoSS if funds are not available.

Risk mitigators

- Matching: through RoSS on trade date. Unmatched trades are considered as failed and are automatically deleted from the RoSS system.
- Buy-in: no established procedures.

- Securities lending/borrowing: no established procedures.

### **Singapore: Monetary Authority of Singapore (MAS)**

Settlement process: BIS Model 1

- Settlement cycle: (TD + 1) for regular trades and on trade date (TD) for cash trades.
- Regular trades, affirmed on TD, settle at 9 am on TD+1 on a true DVP basis. In the event of disagreement, buyer can resolve issues with seller up to 4.30 pm on TD+1.
- Cash trades, once confirmed, settle on a true DVP basis.
- Settlement (securities and cash) occurs on a gross basis.
- Settlement occurs through MAS Electronic Payment System (MEPS), an RTGS system for high value interbank fund transfers (IFT) and scripless Singapore Government Securities (SGS).

Risk mitigators

- Matching: trade affirmation/confirmation via MEPS. Amendments subject to mutual agreement, provided settlement has not occurred. If a dispute is not resolved, the matter is referred to the SGS Market committee for a final decision.
- Buy-in: no established buy-in procedures.
- Securities lending: a repo facility is available for primary dealers, allowing them to borrow benchmark issues.

### **Taiwan: Taiwan Securities Central Depository (TSCD)**

Settlement process: BIS Model 3

- Settlement cycle: TD+1.
- Matched transaction reports are sent to the TSCD, the direct and the indirect participants.
- TSCD prepares summary reports with matched trades and net securities/cash obligations for every broker. Discrepancies must be reported to TSE/TSCD before the end of TD+1.
- On SD (TD+1), participants verify and confirm settlement details. If verification is not possible before the settlement cutoff time, brokers may cancel the trade, or settle it with an undertaking to resolve any disputes with the investor at a later date.
- Securities are automatically transferred into the buyer's account at the TSCD during the overnight batch-run, unless a failed trade is reported by the broker to the TSE.
- The securities are available only if payment has been confirmed on SD+1. Any delivery failure should be reported to the TSE in the evening of SD.
- Cash is settled via an electronic interbank wire transfer system on SD+1 based on the net cash obligations indicated on the summary report for on-exchange trades.
- The TSE reports any payment defaults to the TSCD, which puts a hold on the securities in the defaulting broker/ investor's account at the TSCD.

Risk mitigators

- Matching: automated and binding between brokers through FAST trading system. Indirect participants prematch trades based on the brokers' trade execution report.

- Buy-in: failed trades are prohibited and may cause the investor's investment license to be revoked for three years.
- Securities lending: TSCD does not have any securities lending and borrowing programme. However, foreign investors are allowed to lend stocks to local borrowers (ie brokers) who need to cover settlement shortfalls due to failed trades or transaction errors.

### **Thailand: Bank of Thailand (BOT)**

Settlement process: BIS Model 1

- Settlement cycle: rolling TD + 2 settlement basis.
- On SD, for matched instructions, BAHTNET/2 checks the availability of securities and cash and settles securities only upon receipt of funds.
- Government securities are cleared and settled electronically on a gross delivery versus payment (DVP) basis through BOT's BAHTNET/2 system, the country's RTGS system.
- Matched instructions that were not settled due to insufficient cash or securities are automatically deleted at the end of the day.

Risk mitigators

- Matching: via phone. Matched instructions can be deleted only upon mutual agreement.
- Buy-in: no established procedures.

### **Thailand: Thailand Securities Depository Co Limited (TSCD)**

Settlement process: BIS Model 3

- Settlement cycle: rolling TD + 3 settlement basis.
- On SD, the TSD nets securities and cash obligations. The TSD effects net cash transfers from the TSD BAHTNET account at BOT about 45 minutes after the transfer of securities and only upon ascertaining the availability of the securities.
- If the event shares or funds are not available, the TSD must be informed and a new net report is generated before settlement.
- If there are insufficient funds, the TSD uses the Equity Clearing Fund to settle the trade. On SD + 1, the TSD will sell the securities to reimburse the Clearing Fund and related costs and impose a fine on the defaulting broker.

Risk mitigators

- Matching: through the TSD Net Clearing system. The matching process is not binding for custodian banks.
- Buy-in: initiated on TD + 5 for settlement on TD + 8.
- Securities lending: mandatory borrowing programme. TSD acts as a principal, for the account of the broker. This programme is subject to stringent rules and penalties.

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# **Comments on Francis Braeckeveld's paper "Infrastructure in the Asian bond markets: clearing, settlement and depository issues"**

Aaron Low

This paper provides an excellent and comprehensive survey of the differences in mechanisms of Asia's bond settlement and clearing systems. More importantly, the author goes on to propose various models for achieving a coherent structure that could alleviate some of the problems plaguing the current infrastructure.

It is easy to agree that the successful evolution of an efficient Asian bond market depends on demand and supply side dynamics. And it is also well acknowledged that poor liquidity conditions and investor (in many cases in Asia, offshore investor) restrictions are constraining the ability of regional and international players to transact in Asian bonds, especially local currency issues. Slow acceptance of Asian bond benchmarks is also a major stumbling block. And on the supply side, the lack of issues and the competition with excess liquidity in loan markets limit the playing field.

Naturally, good infrastructure, like settlement and clearing systems, facilitates transactions, increases trading efficiency and minimises costs and risks. Although these issues are secondary, they are also important in minimising overall development costs in an industry where yields are at historical lows and in a region where standards are extremely heterogeneous.

## **1. Differences in Asian clearing and settlement systems**

Francis begins by highlighting the historical evolution of clearing and settlement systems in the United States, Europe and Asia. While the benefits from homogeneity are evident in the United States, Europe is still going through a rationalisation and consolidation process that is aided by capital market deregulation and public sector oversight. While Europe provides the best learning curve for Asia, the regions have different starting points, although the initial market structures have similarities. First, Europe is ahead in its convergence, with financial market integration being an intermediate stage towards a true union. Asia undeniably shows diversity in standards and regimes. And while the European standardisation process is proving very costly in terms of efficiency and distortions, the costs for Asia are likely to be at least comparable if not higher.

The author concludes that domestic systems would probably emerge, with limitations on convergence in standards. I would be more hesitant to make that prediction. But I would agree with the author that some form of integration is likely to evolve. With more global institutional custodians expanding into the region and increasing global capital flows, it may well be that domestic systems will eventually converge to a global or regional standard. It just makes market sense for them to do so simply because the successful development of an embryonic asset class is extremely sensitive to costs in terms of both transaction and spreads. And with yields at historically low levels, cost consideration is too important a factor to ignore. An example is the prevalence of multiple layers of custodian services in some sectors due to divergence in expertise, sophistication or breadth of services offered. It is costly both for clients and for investment managers to contend with both local and global custodians, in terms of not only fees, but also risk management, efficiency, time, and instruction flows. One issue we have found to be pervasive in the region is the lack of

understanding and maturity among institutional investors in the asset class that still prevails. Naturally, this can only be addressed in time, but it does pose a challenge that cannot be underestimated.

## **2. Applicable models for Asia**

The paper then proceeds to propose three possible models for Asian bond markets, taking into account regional differences in existing infrastructure, current transformation trends in the region, and the basic compatibility of most systems with Rule 17f-7 of the US Investment Act. The models differ in the extent of integration across the system.

The first proposal, which the author terms the “Interlinked Depository” model, essentially retains domestic differences while allowing for some degree of integration across the region between sovereign entities. Absent regional leadership, I would agree that this is the most realistic and achievable option. While the attraction of this model would be its limited “direct” costs, its “indirect” costs from the structural inefficiencies that may arise in the “interlinking” process and its limited scalability in the system are ultimately less attractive.

The second model, the “Full Consolidation” approach, provides more complete integration and scalability but incurs more direct or developmental costs. The requirement would be the presence of an oversight body that may be difficult for sovereign countries to agree on.

Third, and perhaps most improbable at this stage, would be the “Private Central Institution” proposal, which operates seamlessly as if the region were one bloc. The author rejects this model due to the difficult arrangements that are required from various countries.

While I would agree that the first model presents the most feasible and realistic option, I would postulate that the overall costs (direct and indirect) might prove higher. Clearly, with the relatively short period that local economies have had to incubate their bond markets, an important question that arises is whether this short history constitutes an advantage for the region in making it possible to bypass the standard domestic development in favour of a more standardised platform. Global standards are evolving and generally converging to a commoditised structure, but it does take time to gravitate to an “end equilibrium”. If this were a process governed by pure market forces, then the speed and direction of that gravitation would be obvious. But given the structural differences in the region in terms of regulation, tax and operational issues, it would be hard to disagree with the paper.

## **3. Conclusions**

This paper points to a “first-best” solution that could be reached if Asia were a homogenous region. But it highlights issues that suggest extremely challenging work to seriously address the limitations of the current financial infrastructure. A comforting point is the speed at which some countries have addressed these issues and restructured their systems. The hope is that while we have seen the impressive speed in the convergence of the real Asian economies, the day may not be too far away when we finally witness the convergence of the Asian financial sector.

# Bond market regulation and supervision in Asia

Bernhard Eschweiler<sup>1</sup>

## Executive summary

Modern economies need efficient financial markets. In Asia, financial market development has primarily been centred around banking and to some degree equity markets. Bond markets always played a smaller role and some people believe that the absence of large and robust local bond markets may have helped to cause the Asian crisis. True or not, Asian policymakers have focused on local bond market development since the crisis. Indeed, local bond markets have grown in size, but are still viewed as underdeveloped.

This has raised the question, on the one hand, of whether there are too many restrictions that hamper market development. On the other hand, there is also the question of whether current prudential regulatory standards are sufficiently sound. The purpose of this paper is to analyse and compare the different degrees of liberalisation of Asian local bond markets and their prudential standards. The key findings are as follows.

- The extent of bond market liberalisation and prudential regulation varies substantially within the region. Only Hong Kong SAR and Singapore are on a par with global standards and best practices.
- There is ample room for liberalisation and deregulation in most countries to promote the development of local bond markets.
- Prudential standards are not grossly out of line with the respective degrees of bond market liberalisation, but that is no reason for complacency since there is a need for regulators not to fall behind the changes and developments in the marketplace.
- The basic structure and content of securities regulation in Asia looks increasingly similar to the model adopted in most other parts of the world, but there are notable deficiencies in some countries concerning enforcement. On the one hand, supervisors are often too bureaucratic. On the other, they often lack the ability or even the will to enforce basic standards.
- A key factor undermining the effectiveness of prudential regulation in some countries is the general weakness of the legal and accounting infrastructure, which is partly a function of the prevailing attitude towards common rights versus special interests.
- The two areas with the biggest weaknesses are issuer disclosure and the prevention of systemic risks. Disclosure standards for new issues are largely observed, but regular reporting is weak. Supervisors' understanding of market positions and related risks, with regard to both individual investors and intermediaries, is often not sufficient, largely due to resource issues.

In summary, there is clearly a need to strengthen prudential standards in most countries. However, this may be better achieved and have a greater impact on bond market

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<sup>1</sup> The views expressed in this report are those of the author and not necessarily those of JPMorgan.

development if it takes the form of adoption and implementation of global best practices rather than attempts to harmonise bond market rules and regulations within the region.

## Defining regulation

Any meaningful discussion of financial market regulation first requires a description of the basic regulatory framework. Not so long ago, financial market regulation in Asia consisted primarily of a set of rules and restrictions that were mostly aimed at ensuring market (and broader macroeconomic) stability and protecting onshore financial institutions from offshore competition. In the late 1980s and early 1990s, some of these rules and restrictions, especially capital controls, were eased. This led to a surge in offshore borrowing and what followed is well known history.

One of the key lessons of the Asian crisis is that financial liberalisation should not occur in isolation. Critical for success is the existence of adequate prudential regulation and supervision that protects investors, ensures that markets are fair and transparent and reduces systemic risks. Equally important is that the policy regime, especially the exchange rate regime, is sufficiently flexible to cope with increased capital mobility.

In the years since the Asian crisis, there has been sustained effort in every country to improve the prudential regulation and supervision of the financial sector and progress has been made everywhere, although to different degrees. Some countries have also adjusted their monetary policy frameworks to cope better with the rise in capital mobility, but the preference for tight monetary policy control, especially over the exchange rate, has remained strong. As a result, many countries have been slow to ease the foreign exchange and capital controls they imposed during the Asian crisis.

Another popular conclusion from the Asian crisis is that financial intermediation relied too much on traditional commercial banking and that most countries lacked strong local capital markets. In response, every country in the region has made efforts to promote its local bond market. These markets have grown substantially compared with the years before the Asian crisis (on average, more than tripling in size), but most people would still view them as underdeveloped. Much of the market growth has been driven by government issuance, which in turn was largely a legacy of the Asian crisis. Buy-and-hold investors, mostly commercial banks, still dominate markets and liquidity is low, while corporates still struggle to raise funds in the domestic bond market and rely on bank loans or offshore borrowing.

The recognition that local bond markets remain underdeveloped has more recently led to several regional efforts to promote their development, including the Asian Bond Fund (ABF) initiative by the 11 EMEAP central banks. A number of issues have been identified as hampering the development of local bond markets, including access barriers, especially for foreigners, lack of funding and hedging instruments, inadequate clearing, settlement and trading systems, lack of liquid benchmark curves, and last but not least insufficient prudential regulation and supervision.

This paper will focus on the regulatory aspects and compare the degree of financial liberalisation of local bond markets with the relevant prudential regulatory and supervisory conditions. The study focuses on eight local bond markets in non-Japan Asia which are in EMEAP economies, namely China, Hong Kong SAR, Indonesia, Korea, Malaysia, the Philippines, Singapore and Thailand.

First, however, some more clarification of the term “regulation” is required. The usage of this term still creates some confusion and often has a negative connotation. On the one hand, people talk about regulatory restrictions that hamper market development and the need for deregulation and market liberalisation. On the other hand, there is growing demand for more sound regulation and supervision of market practices, especially following the Asian crisis

and the corporate governance scandals of recent years. To provide a framework, this paper differentiates between two types of regulation, namely economic regulation and prudential regulation.

### **Economic regulation**

The motivation behind economic rules and restrictions often varies, but the end effect is that they undermine the free operation of market forces by prohibiting certain business activities or making them difficult. Good examples are market entry restrictions, capital controls, price controls and certain taxes. Often, economic regulations are used to support macroeconomic policy objectives, like financial market or foreign exchange stability. But while such regulations may help governments achieve their policy objectives, they are typically inefficient and lead to a misallocation of resources. Moreover, market participants often seek loopholes to circumvent these restrictions, which leads to a whole new set of problems. Another motive behind economic regulations, especially entry barriers, is to protect domestic financial institutions from foreign competition. However, such protection typically leads to inefficiencies and preserves poor market practices.

The aim of any developing economy should be to gradually reduce economic regulations and open up its markets. The only caveat is that such liberalisation should not run ahead of other economic, policy and market reforms, including the establishment of strong prudential regulation. Thus, when comparing the different degrees of financial liberalisation in the region, one needs to be mindful of the circumstances and the feasible extent of deregulation against the background of economic, policy and market conditions. In other words, the current degree of financial liberalisation in Hong Kong or Singapore is not a realistic near-term goal for countries like China or Indonesia.

### **Prudential regulation**

Prudential regulation and supervision are meant to protect investors, ensure that financial markets are fair, transparent and efficient and reduce systemic risks. A strong prudential regulatory environment is the key to a successful financial centre. Contrary to popular wisdom, most financial institutions do not want lax regulation. The customers of financial firms need the assurance that the institutions with which they do business have high ethical standards, are prudently run, have high-quality staff, and adhere to the highest business standards. Unless they have confidence in these factors, they will simply take their business elsewhere.

Most financial institutions recognise that good regulation is a valuable asset which raises the value of their services in the eyes of their customers. It is no accident that the most successful financial centres, New York, London, Hong Kong and Singapore, all have rigorous supervision. Even so, detailed mechanical rules and ratios enforced by frequent checking are undoubtedly burdensome. When these rules constrain otherwise desirable transactions, they can contribute to driving business away.

Good prudential regulation works with the grain of market forces and should provide incentives to reinforce prudent instincts. This is why the trend of regulation and supervision is towards encouraging high-quality risk management processes, and away from detailed monitoring of balance sheet ratios. It stresses transparency, market discipline and self-regulation, and not just compliance with formal rules. In this spirit, the relationship between the regulatory agency and the regulated entity should not be adversarial.

The financial sector should regard the supervisor as a partner and counsellor, rather than as a policeman enforcing rules. The supervisor should be able to offer guidance to the financial institution when it falls short of best practice elsewhere in the industry, or when the business model being followed seems to have under-appreciated risks. Only when the institution

concerned has taken on unacceptable risks, misled investors or violated the law in any other way should the supervisor forcefully intervene in the public interest.

Having said that, it is also critical for effective regulation that the supervisory institutions are empowered to do their job, have the right people and resources, and are supported by sound legal and accounting standards. This means that objectives and responsibilities must be well defined, especially when there is more than one supervisory authority. Supervisors must have the training and background to deal with their private sector counterparts on equal terms and their compensation should not lag too far behind private sector standards. Legal, accounting and other financial infrastructure elements are often outside the scope of financial regulation, but supervisors need to impress on other public bodies the need to establish robust standards.

## **Economic regulation and local bond markets**

There are many types of economic regulations in the region that have some restrictive impact on the development of local bond markets. This study focuses only on those that are the most common and have the most disruptive impact. In no particular order, these economic regulations are:

- Rules that limit foreign participation in the local bond market;
- Bond issuance restrictions;
- Price and interest rate controls;
- Rules that limit the use of hedging instruments;
- Taxation;
- Custody, settlement and clearing restrictions.

## **Foreign access**

There are still substantial restrictions in several countries on access by foreign investors, issuers and intermediaries who want to participate in the local bond markets (Table 1). At one extreme, China is currently the most closed market. Investors can only enter the local bond market if they apply for a Qualified Foreign Institutional Investor (QFII) licence, which is a laborious process. On the issuance side, the government now seems willing to open the local market to multilateral agencies, but no bonds have been issued so far. And for intermediaries, access is currently only available through joint ventures. Even so, the schedule of China's WTO agreements and the current reform drive promise more opening of China's capital markets to foreign participation in the next few years. Only the move to full capital account convertibility probably remains many years (if not decades) away, given the poor health of many domestic financial institutions, especially the state-owned commercial banks.

At the other extreme, Hong Kong and Singapore are the most open financial centres in the region. The main difference between the two is the non-internationalisation policy of the Singapore dollar, which in practice only means that foreign bond issuers must swap the bond proceeds that are not used for domestic investment purposes into another foreign currency. Getting an intermediary licence is also a bit more difficult in Singapore compared to Hong Kong. In between these extremes, Korea, and to a slightly lesser extent Thailand, are more accessible, especially for investors. Indonesia, Malaysia and the Philippines are more on the closed side, in particular in terms of issuer access, which, as with China, is limited to multilateral agencies on a case by case approval basis.

Table 1  
**Foreign access**

|                                       | <b>China</b>    | <b>Hong Kong SAR</b> | <b>Indonesia</b> | <b>Korea</b>    |
|---------------------------------------|-----------------|----------------------|------------------|-----------------|
| Investor access                       | Very limited    | Very open            | Limited          | Open            |
| Issuer access                         | Very limited    | Very open            | Very limited     | Limited         |
| Intermediary access                   | Very limited    | Very open            | Limited          | Limited         |
| Foreign exchange/<br>capital controls | Heavy           | None                 | Some             | Some            |
|                                       | <b>Malaysia</b> | <b>Philippines</b>   | <b>Singapore</b> | <b>Thailand</b> |
| Investor access                       | Limited         | Limited              | Very open        | Open            |
| Issuer access                         | Very limited    | Very limited         | Open             | Very limited    |
| Intermediary access                   | Limited         | Limited              | Open             | Limited         |
| Foreign exchange/<br>capital controls | Some            | Some                 | None             | Some            |

### **Issuance restrictions**

Bond issuance restrictions not only affect foreign issuers, but domestic issuers as well. Protection of investor interests is often the motivation behind these rules, but this may come at the expense of unnecessarily constraining an issuer's ability to go to the market. There are two types of issuance models: disclosure-based and merit-based.

- In the disclosure-based model, which is increasingly becoming the global standard, the issuer is required to disclose all relevant information, but investors have to decide themselves whether the bond is fairly valued.
- In the merit-based model, a regulator decides whether an issuer is fit to launch a bond. The regulator's decision may be based on pure discretion, but more typically is based on a number of criteria, like the issuer's past financial performance, capitalisation, size of the issue, rating and so on.

In Asia, Hong Kong, Malaysia and Singapore have adopted the disclosure-based model (Table 2). For Malaysia, the main deviation is that issuers have to be rated before they can launch a bond. How restrictive the merit-based models in the rest of the region are depends largely on the regulatory requirements. The recently released new issuance rules in Thailand, for example, have become more issuer-friendly for large and frequent borrowers, but create a higher hurdle for small and infrequent borrowers.

Korea's issuance requirements have also become more liberal, but arrangers still have to commit to fully underwrite the bond. China has the most restrictive issuance requirements. Issuers must be rated at least AA and have to get approval from two or sometimes three regulators. In addition, the central bank sets or approves the interest rate level of the new bond.

Table 2  
Issuance rules

|                                    | China      | Hong Kong SAR | Indonesia  | Korea    |
|------------------------------------|------------|---------------|------------|----------|
| Issuance model                     | Merit      | Disclosure    | Merit      | Merit    |
| Mandatory rating                   | Yes        | No            | Yes        | Yes      |
| Number of domestic rating agencies | 2          | None          | 1          | 3        |
|                                    | Malaysia   | Philippines   | Singapore  | Thailand |
| Issuance model                     | Disclosure | Merit         | Disclosure | Merit    |
| Mandatory rating                   | Yes        | Yes           | No         | Yes      |
| Number of domestic rating agencies | 2          | 1             | None       | 2        |

The mandatory rating requirement, which is standard in almost every economy except for Hong Kong and Singapore (note that both these economies are also the only ones without at least one domestic rating agency), is undoubtedly meant as a protection for investors. This may put pressure on issuers in the less developed markets to comply with the disclosure requirements. However, this benefit declines and the rating requirement becomes more of an additional cost as the market develops and disclosure standards are generally met. Furthermore, investors may become complacent and rely too much on the judgment of the rating agencies instead of making their own assessments.

### Price and interest rate controls

Only China still has direct price and interest rate controls. The People's Bank of China (PBoC) effectively controls the cost of borrowing. For loans and bonds, the key rate is the central bank rate and the PBoC determines or approves the spread between this rate and the borrowing rates. The objective is to keep overall borrowing costs low, but also to leave enough margins for the banks between lending and borrowing rates. While interest rates are market-determined in the rest of the region, some countries still resort to moral suasion and other forms of indirect intervention to keep interest rates within desired ranges.

### Hedging instruments

Lack of hedging instruments is repeatedly listed as one of the top obstacles to the development of local bond markets. At the moment, only Hong Kong permits the full range of hedging instruments. To be sure, derivatives are complex financial instruments and need to be used with care, but the reluctance to approve their use often has more to do with the fear that they may be used to destabilise markets than real prudential concerns. It must also be recognised that hedging instruments can be unavailable despite a neutral stance by the authorities, owing to a lack of liquidity in the market.

After Hong Kong, Korea, Singapore and Thailand have taken the most steps to liberalise the use of derivatives in the local fixed income markets (Table 3). In China, the use of derivatives is still the least developed, but a new series of guidelines is currently paving the way for the introduction of basic interest rate derivatives. In Indonesia, Malaysia and the Philippines, the use of derivatives is highly restricted and, unlike in China, there are no signs that this will change soon.

Table 3

**Availability of hedging instruments**

| <b>Risk type</b> | <b>China</b>    | <b>Hong Kong SAR</b> | <b>Indonesia</b> | <b>Korea</b>    |
|------------------|-----------------|----------------------|------------------|-----------------|
| Foreign exchange | Limited         | Yes                  | Yes              | Yes             |
| Duration         | No              | Yes                  | No               | Yes             |
| Yield curve      | No              | Yes                  | No               | Yes             |
| Credit           | No              | Yes                  | No               | No              |
| <b>Risk type</b> | <b>Malaysia</b> | <b>Philippines</b>   | <b>Singapore</b> | <b>Thailand</b> |
| Foreign exchange | Limited         | Yes                  | Yes              | Yes             |
| Duration         | Limited         | No                   | Yes              | Yes             |
| Yield curve      | No              | No                   | Yes              | Yes             |
| Credit           | No              | No                   | No               | No              |

**Taxation**

The issue as regards taxation is not so much one of principle (whether capital income and gains should be taxed), but one of distortion. There are legitimate reasons why governments want to tax capital income and capital gains. The problem is that it is difficult, if not impossible, to tax the different forms of capital income and capital gains equally. Moreover, there is a growing global trend not to tax foreign investors. So investors are likely to avoid those countries that still do so. Finally, even if there are tax treaties in place, the paperwork is often so laborious and refunding takes so long that many foreign investors stay out of the market.

In Asia, taxation is still a key factor that keeps many foreign investors away from local bond markets. Only Hong Kong and Singapore effectively do not tax foreign investors (Table 4). China has also done away with the withholding tax and only taxes capital gains if bonds are not held until maturity. Korea now has tax treaties with many countries, but the high amount of taxes initially withheld and the long time period until refunds are paid out still deter many foreign investors.

Table 4

**Taxation**

| <b>Tax type</b>   | <b>China</b>     | <b>Hong Kong SAR</b> | <b>Indonesia</b>  | <b>Korea</b>              |
|-------------------|------------------|----------------------|-------------------|---------------------------|
| Withholding tax   | None             | None                 | 20% <sup>1</sup>  | 27.5% <sup>1</sup>        |
| Capital gains tax | 33% <sup>2</sup> | None                 | None              | 11% or 27.5% <sup>3</sup> |
| <b>Tax type</b>   | <b>Malaysia</b>  | <b>Philippines</b>   | <b>Singapore</b>  | <b>Thailand</b>           |
| Withholding tax   | 15% <sup>1</sup> | 20-32% <sup>1</sup>  | None <sup>4</sup> | 15% <sup>1</sup>          |
| Capital gains tax | None             | None                 | None              | 15% <sup>1</sup>          |

<sup>1</sup> Can be reduced or waived by tax treaty with certain other countries. <sup>2</sup> If bonds are not held until maturity (plus 5% profit tax). <sup>3</sup> The lower of 11% of gross sales proceeds or 27.5% tax on net capital gains. <sup>4</sup> Originally 10% but waived for all bonds issued after 1998. Singapore also has the most tax treaties of any country in the region.

## **Custody, settlement and clearing**

Custody, settlement and clearing are the last areas one should highlight where restrictions are undermining local bond market activity and development. Settlement and clearing systems and conventions have substantially improved throughout the region (delivery versus payment and real-time gross settlement systems are standard in most countries), but they remain much localised.

Foreign investors that are active in local bonds have to use a local custodian and settle and clear their trades locally. Besides entailing extra effort and cost, the often short settlement periods in the local markets leave little time for foreign investors to process their trades (in Hong Kong, Korea, Malaysia, the Philippines and Singapore, local currency bonds settle either on the same day or the day after).

For the providers of custody services, another issue is the reluctance of local authorities to allow them to outsource part of their activities, especially to processing centres outside of the country. This also often applies to banks and securities firms that intend to move their back and middle offices to a central location outside the country. China currently prohibits the offshoring of any processing activities, while most other countries require approval. In some economies, for example Hong Kong, obtaining approval is primarily a matter of proving that the data and information are properly protected, while some other authorities tend to reject outsourcing requests simply to keep the business onshore.

## **Prudential regulation and local bond markets**

The three broadly accepted objectives of prudential regulation and supervision for financial markets are the protection of investors, ensuring fair, transparent and efficient market practices and reducing systemic risks. Financial regulation and supervision is typically divided into three main sectors: banking, insurance and securities markets. Bond markets fall under the scope of securities market regulation and supervision, but there is typically some overlap with banking and insurance regulation. The regulatory structure varies from country to country, but basically evolves around one main law that contains most parts of the securities market regulation and one main agency that is responsible for supervision. In some countries, one agency supervises all financial sectors (banking, insurance and securities markets), but most countries have separate agencies overseeing each sector.

Securities regulation and supervision are broader in scope and more complicated than banking and insurance regulation and supervision. In banking and insurance, regulation and supervision deals almost entirely with the intermediary (ie banks and insurance companies), while securities regulation and supervision has a much broader scope, including securities intermediaries (eg brokers, dealers and investment advisers), exchanges, collective investment schemes and issuer disclosure.

The roots of securities market regulation and supervision in Asia go back to well before the Asian crisis, but have undergone substantial changes since then. Today, the basic framework of securities regulation and supervision in the region looks very similar to the standards in the rest of the world. In each country, there is typically one main law that governs securities regulation and one main authority that supervises the sector, although there are typically other relevant laws and supervisory authorities (Table 5).

Table 5

**Securities regulation - laws and authorities**

|                                                                      | <b>China</b>                     | <b>Hong Kong SAR</b>  | <b>Indonesia</b>                              | <b>Korea</b>          |
|----------------------------------------------------------------------|----------------------------------|-----------------------|-----------------------------------------------|-----------------------|
| Main securities laws                                                 | China Sec Law                    | Sec & Fut<br>Comm Ord | BAPEPAM<br>Rules, Cap Mkt<br>Law <sup>1</sup> | Sec & Exch Law        |
| Number of other laws<br>relevant for securities                      | 7                                | 4                     | 3                                             | 4                     |
| Main securities<br>supervisor                                        | China Sec<br>Reg Comm            | Sec & Fut Comm        | BAPEPAM                                       | Fin Supv Comm         |
| Year established                                                     | 1992                             | 1989                  | 1976                                          | 1998                  |
| Accountable to                                                       | State Council                    | Fin Secretary         | MoF                                           | MoFE                  |
| Staffing <sup>2</sup>                                                | 1,525                            | 361                   | 443                                           | 1,670                 |
| Funding                                                              | Gov & fees                       | Self-funded           | Gov & fees                                    | Gov & fees            |
| Other relevant<br>regulatory authorities                             | CBRC, PBoC,<br>SAFE <sup>3</sup> | HKMA <sup>4</sup>     | Bank Indonesia                                | FSS, SFC <sup>5</sup> |
| Structure of overall<br>financial sector<br>supervision <sup>6</sup> | Multiple                         | Multiple              | Multiple                                      | Single                |
|                                                                      | <b>Malaysia</b>                  | <b>Philippines</b>    | <b>Singapore</b>                              | <b>Thailand</b>       |
| Main securities laws                                                 | Sec Ind Act                      | Sec Reg Code          | Sec Ind Act                                   | Sec & Exch Act        |
| Number of other laws<br>relevant for securities                      | 7                                | 5                     | 6                                             | 4                     |
| Main securities<br>supervisor                                        | Sec Comm                         | Sec & Exch<br>Comm    | MAS <sup>7</sup>                              | Sec & Exch<br>Comm    |
| Year established                                                     | 1993                             | 1936                  | 1971                                          | 1992                  |
| Accountable to                                                       | MoF                              | MoF                   | MoF                                           | MoF                   |
| Staffing <sup>2</sup>                                                | 549                              | 361                   | 987                                           | 391                   |
| Funding                                                              | Self-funded                      | Gov & fees            | Self-funded                                   | Self-funded           |
| Other relevant<br>regulatory authorities                             | BNM, CCM <sup>8</sup>            | BSP <sup>9</sup>      | None                                          | Bank of Thailand      |
| Structure of overall<br>financial sector<br>supervision <sup>6</sup> | Semi                             | Multiple              | Single                                        | Multiple              |

<sup>1</sup> BAPEPAM = Badan Pangawas Pasar Modal, the capital market supervisory agency. <sup>2</sup> See Central Banking Publications (2004). <sup>3</sup> CBRC = China Banking Regulatory Commission; PBoC = The People's Bank of China; SAFE = State Administration of Foreign Exchange. <sup>4</sup> HKMA = Hong Kong Monetary Authority. <sup>5</sup> FSS = Financial Supervisory Service; SFC = Securities and Futures Commission; the FSS and SFC are executive bodies of the Financial Supervisory Commission. <sup>6</sup> Integration/division in the supervision of the three main financial sectors (banking, insurance and securities): multiple = at least one supervisor for each sector; semi = one supervisor for two sectors; single = one supervisor for all sectors. <sup>7</sup> MAS = Monetary Authority of Singapore. <sup>8</sup> BNM = Bank Negara Malaysia (Central Bank of Malaysia); CCM = Commission Companies of Malaysia. <sup>9</sup> BSP = Bangko Sentral ng Pilipinas (Central Bank of the Philippines).

## Legal and accounting standards

Securities regulation and supervision cannot be seen in isolation from the broader legal framework and accounting requirements. Appropriate and effective legal and accounting standards form the foundation for the regulatory and supervisory framework. In some places, it is a lack of sound legal and accounting standards that undermines what on paper looks like good regulation and supervision. In many parts of Asia, legal and accounting standards were poor before the 1997-98 crisis and, while reform is under way, six years is not a long time in which to make the types of structural and behavioural changes that typically require more than one generation.

Only Hong Kong, Singapore and to some extent Malaysia had robust legal standards before the Asian crisis. All three also practise *common* law. The legal code in the rest of the region is based on forms of European *civil* law, which is often complicated by the inclusion of other legal cultures, like socialist law in China, customary law in Indonesia, classical Chinese law in Korea, or Buddhist law in Thailand. In general, the quality of the law is improving in most parts of the region, but there are still some notable gaps, like private property law in China and Indonesia.

Table 6  
Legal and accounting standards

|                                                           | China                     | Hong Kong SAR             | Indonesia               | Korea                   |
|-----------------------------------------------------------|---------------------------|---------------------------|-------------------------|-------------------------|
| Type of law                                               | Civil                     | Common                    | Civil                   | Civil                   |
| Legal opacity index <sup>1</sup>                          | 100                       | 55                        | 86                      | 79                      |
| Formal compliance with International Accounting Standards | Some material differences | Closely aligned           | No material differences | No material differences |
| Accounting opacity index <sup>1</sup>                     | 86                        | 53                        | 68                      | 90                      |
| Corruption opacity index <sup>1</sup>                     | 62                        | 25                        | 70                      | 48                      |
| Corruption perceptions index <sup>2</sup>                 | 3.4                       | ...                       | 1.9                     | 4.3                     |
|                                                           | Malaysia                  | Philippines               | Singapore               | Thailand                |
| Type of law                                               | Common                    | Civil                     | Common                  | Civil                   |
| Legal opacity index <sup>1</sup>                          | ...                       | ...                       | 32                      | 65                      |
| Formal compliance with International Accounting Standards | No material differences   | Some material differences | Closely aligned         | No material differences |
| Accounting opacity index <sup>1</sup>                     | ...                       | ...                       | 38                      | 78                      |
| Corruption opacity index <sup>1</sup>                     | ...                       | ...                       | 13                      | 55                      |
| Corruption perceptions index <sup>2</sup>                 | 5.2                       | 2.5                       | 9.4                     | 3.3                     |

<sup>1</sup> See PricewaterhouseCoopers (2001); the index ranges from 0 (least opaque) to 150 (most opaque). <sup>2</sup> See Transparency International (2003); the index ranges from 10 (highly clean) to 0 (highly corrupt).

As important as the quality of the law is the quality of the legal system (eg judges, lawyers, etc). Before the Asian crisis, the quality of the legal system was well behind the capital market development in most countries. The crisis revealed the inadequacy of most legal systems in the region, although one should be mindful that any existing legal system would have been severely challenged if faced with the kind of systemic insolvencies seen during and after the crisis.

Since the Asian crisis, there have been widespread efforts by all countries to improve their legal systems and progress is visible. However, one fundamental problem is that the prevailing political, social and economic power structures in some countries continue to work against efficient legal systems. Not coincidentally, this bias to resist efficient legal systems correlates with the persistence of corrupt practices in several countries (Table 6).

On the accounting side, most countries in the region comply largely with International Accounting Standards (IAS) and/or US GAAP. Only China and the Philippines still have significant gaps, such as in the measurement of fair market value, but both are working to converge to international standards over the next few years. As with the legal standards, the problem lies less in the quality of the accounting rules than in their implementation. To some extent, this is a resource and training issue. But the more fundamental problem is whether there is the political will to change old habits.

### **IOSCO principles of securities regulation**

All countries in this study are members of the International Organization of Securities Commissions (IOSCO) and subscribe to its principles of securities regulation. These 30 principles are grouped into eight categories (Table 7):

- Principles relating to the regulator;
- Principles for self-regulation;
- Principles for the enforcement of securities regulation;
- Principles for cooperation in regulation;
- Principles for issuers;
- Principles for collective investment schemes;
- Principles for market intermediaries;
- Principles for the secondary market.

The first four categories concern the regulatory and supervisory institutions directly, while the remaining categories outline the regulatory principles for the four main areas of securities regulation (ie issuers, collective investment schemes, market intermediaries and the secondary market). It is beyond the scope of this paper to assess in detail to what extent these principles have been implemented by each country - the IMF and the World Bank are currently leading a project to assess the observance of the principles - but some preliminary observations can be made.

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Table 7

**IOSCO principles of securities regulation**

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**Principles relating to the regulator**

1. The responsibilities of the regulator should be clear and objectively stated.
2. The regulator should be operationally independent and accountable in the exercise of its function and powers.
3. The regulator should have adequate powers, proper resources and the capacity to perform its functions and exercise its powers.
4. The regulator should adopt clear and consistent regulatory processes.
5. The staff of the regulator should observe the highest professional standards, including appropriate standards of confidentiality.

**Principles for self-regulation**

6. The regulatory regime should make appropriate use of self-regulatory organisations (SROs) that exercise some direct oversight responsibility for their respective areas of competence, to the extent appropriate to the size and complexity of the markets.
7. SROs should be subject to the oversight of the regulator and should observe standards of fairness and confidentiality when exercising powers and delegated responsibilities.

**Principles for the enforcement of securities regulation**

8. The regulator should have comprehensive inspection, investigation and surveillance powers.
9. The regulator should have comprehensive enforcement powers.
10. The regulatory system should ensure an effective and credible use of inspection, investigation, surveillance and enforcement powers and implementation of an effective compliance programme.

**Principles for cooperation in regulation**

11. The regulator should have authority to share both public and non-public information with domestic and foreign counterparts.
12. Regulators should establish information sharing mechanisms that set out when and how they will share both public and non-public information with their domestic and foreign counterparts.
13. The regulatory system should allow for assistance to be provided to foreign regulators who need to make inquiries in the discharge of their functions and exercise of their powers.

**Principles for issuers**

14. There should be full, timely and accurate disclosure of financial results and other information that is material to investors' decisions.
15. Holders of securities in a company should be treated in a fair and equitable manner.
16. Accounting and auditing standards should be of a high and internationally acceptable quality.

**Principles for collective investment schemes**

17. The regulatory system should set standards for the eligibility and the regulation of those who wish to market or operate a collective investment scheme.
  18. The regulatory system should provide for rules governing the legal form and structure of collective investment schemes and the segregation and protection of client assets.
  19. Regulation should require disclosure, as set forth under the principles for issuers, which is necessary to evaluate the suitability of a collective investment scheme for a particular investor and the value of the investor's interest in the scheme.
  20. Regulation should ensure that there is a proper and disclosed basis for asset valuation and pricing and the redemption of units in a collective investment scheme.
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Table 7 (cont)

**IOSCO principles of securities regulation**

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**Principles for market intermediaries**

21. Regulation should provide for minimum entry standards for market intermediaries.
22. There should be initial and ongoing capital and other prudential requirements for market intermediaries that reflect the risks that the intermediaries undertake.
23. Market intermediaries should be required to comply with standards for internal organisation and operation conduct that aim to protect the interests of clients, ensure proper management of risk, and under which management of the intermediary accepts primary responsibility for these matters.
24. There should be procedures for dealing with the failure of a market intermediary in order to minimise damage and loss to investors and to contain systemic risk.

**Principles for the secondary market**

25. The establishment of trading systems, including securities exchanges, should be subject to regulatory authorisation and oversight.
  26. There should be ongoing regulatory supervision of exchanges and trading systems which should aim to ensure that the integrity of trading is maintained through fair and equitable rules that strike an appropriate balance between the demands of different market participants.
  27. Regulation should promote transparency of trading.
  28. Regulation should be designed to detect and deter manipulation and other unfair trading practices.
  29. Regulation should aim to ensure the proper management of large exposures, default risk and market disruption.
  30. Systems for clearing and settlement of securities transactions should be subject to regulatory oversight, and designed to ensure that they are fair, effective and efficient and that they reduce systemic risk.
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Source: IOSCO (2003).

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**Principles for the regulator, self-regulation, enforcement and cooperation**

First, many of the principles relating directly to the regulatory and supervisory institutions have generally been implemented in the region. Nevertheless, there are some notable differences between countries. Second, implementation is often narrow and lacks effectiveness. A good example is the spread of regulatory responsibilities across several agencies or the lack of clarity of roles. To be clear, though, this is not to suggest that all countries should create a single regulator for the whole financial sector as adopted by Korea and Singapore. Whether there are multiple regulators or only one, most important is that responsibilities are clearly defined and standards and rules are consistent across sectors and institutions.

In that respect, the most confusion still exists in China. The patchwork of eight securities laws leaves gaps and is not entirely consistent, while overlapping responsibilities with the other three authorities involved in securities supervision often undermine the effectiveness of the China Securities Regulatory Commission. Korea, on the other hand, is a good example of the fact that even the single regulator model can have its problems. The trifurcated structure of the Financial Supervisory Commission appears cumbersome and in some cases gets in the way of regulatory effectiveness.

A different issue that is often raised by people familiar with securities regulation in Asia is that the supervisory authorities are often not sufficiently independent from the government or

other public authorities (like the central bank) to fulfil their roles. The desire for operational independence is understandable, and so is the desire to reduce the degree of political influence over regulatory decisions. In many countries, the government often interferes with the supervisory agency in respect of enforcing laws and regulations.

At the same time, it is only appropriate that a supervisory agency be accountable to a government body, typically the Ministry of Finance, and that it closely coordinate with other relevant government bodies, especially in times of crisis. More broadly, coordination and cooperation with other regulatory authorities and government institutions, both domestic and foreign, is an area where more progress is needed. This is even true for Hong Kong, whose regulatory framework is generally viewed as one of the best in the world. A case in point is the growing number of transactions and relationships between Hong Kong and the mainland. The supervision of the Hong Kong affiliates of mainland companies is no doubt strong, but little is typically known about the financial conditions of the parent companies.

Resources are another area where conditions differ. In terms of number of staff, supervisory agencies in the region have sufficient manpower to do their jobs. The problem is not quantity but quality, in terms of basic training as well as ongoing training to stay in touch with financial developments. Another issue in this regard is staff retention, which is not only a matter of pay but also motivation. In fact, even Hong Kong and Singapore, which have the highest quality of staff and the best pay, have difficulty retaining their top people.

Resource constraints are not limited to people. Another issue, especially for the less developed countries, is the technical ability to closely monitor markets and trading positions to detect manipulation and systemic risks. Interestingly, resource constraints occur everywhere, no matter what the type of funding. For those agencies that depend primarily on government funding, the message is that more is needed. For those agencies that are self-funded, the message may be that other sources may be needed, even if that may somewhat undermine the public image of independence.

Large differences in regulatory standards are also apparent in the area of enforcement. While most regulators have formally adequate powers of inspection, investigation and surveillance, they are often constrained in their ability to require compliance and impose penalties. Moreover, some regulators appear complacent and seem to deliberately overlook violations. Supervisors in Hong Kong and Singapore have the best reputation and there are few violations (if any) that go undetected and unpunished. Supervisors in Korea and Malaysia have sufficient regulatory authority and recent actions point to a growing commitment to enforcement, but there is still a sense that supervisors occasionally turn a blind eye to apparent regulatory violations.

In terms of style and procedures, Hong Kong and Singapore have the highest standards, but Hong Kong's securities supervisors are viewed as more user-friendly than their Singapore colleagues, who still have a reputation for being somewhat paternalistic. At the other end of the spectrum, China still struggles with many basics. In general, the rule in China remains that, if the law does not already approve a transaction, then it cannot be done. Another issue in China is poor documentation of new procedures and guidelines, which places demands on the experience of financial intermediaries, investors and issuers.

Korea's securities supervisors have made good progress in issuing appropriate and timely rules and procedures. Market perception, however, is that there are too many rules of sometimes mixed quality, while implementation is still very bureaucratic. Obtaining broader public comment would also help Korea's supervisors to dispel the sense that certain groups within the financial sector disproportionately influence some policies.

Use of self-regulatory organisations (SROs) in securities regulation is mostly limited to public exchanges, which usually have SRO status. In practice, exchanges focus primarily on stock market activity and less on bond markets, where secondary market trading takes place mostly over the counter. One exception is Thailand, where the Thai Bond Dealing Centre (an SRO) is responsible for monitoring activity in the bond market. The typical issue with an SRO

like a public exchange is that its own capability to regulate, monitor and discipline its members or market segments is often limited, while the relevant regulator does not always exercise full and consistent oversight over the SRO.

### **Principles for issuers**

Disclosure standards, accounting and auditing practices and investor protection are issues that have received much attention around the world following the series of corporate governance scandals in recent years. In Asia, these concerns are compounded in many countries by prevailing legal uncertainties. Most countries in the region fulfil the basic disclosure requirements for new issues, but there are concerns regarding the timeliness and accuracy of reporting of new material information. Even in Hong Kong and Singapore, which have the soundest disclosure standards in the region, the release of non-periodic information is sometimes slow.

Issuer adherence to disclosure standards is often lax because of limited civil liability. Issuers in Malaysia, for example, face little or limited consequences if they are slow to disclose vital information or make false or misleading statements. The other main shortcoming in many countries relates to accounting and audit. The issues here concern both the quality of staff and the oversight of those staff by the professional associations and their respective official regulators. Only Hong Kong and Singapore are on a par with global best practices in this area.

In some cases, however, disclosure requirements are too stringent. In the new Thai issuer and disclosure guidelines, for example, the financial adviser, who is typically the underwriter, has the same responsibility and liability to ensure the correctness of all information provided in the prospectus as the issuer. The intention behind this is to make sure the underwriter undertakes proper due diligence. However, this does not conform to global best practices and may lead to higher transaction costs.

### **Principles for collective investment schemes**

Regulation and supervision of collective investment schemes is mixed in the region, largely as a result of the recent development of this industry in many countries. In the least developed markets, proper product descriptions, clear definition of principal and agent, and risk warnings fall short of global standards. In some countries, retail investors are often not sufficiently advised about the differences between bond funds and regular bank deposits, which leads to an underestimation of the potential risks and an overestimation of the potential returns.

In contrast, some countries are clearly too strict in the way they regulate collective investment schemes, which undermines their growth potential. This is, for example, the case in Korea. Another issue concerns the growing internationalisation of fund management. Hong Kong, for example, currently has the largest fund management industry in the region, but many funds distributed in Hong Kong are managed offshore, which creates challenges for local supervisors.

### **Principles for market intermediaries and the secondary market**

The licensing process for new market intermediaries appears sound from a prudential perspective. In fact, the issue is more that some countries are still too stringent in giving new licences, especially for foreign intermediaries. However, other aspects of the ongoing supervision of market intermediaries, such as the monitoring of capital requirements, risk management, governance, failure procedures and other prudential controls, still require strengthening in many countries.

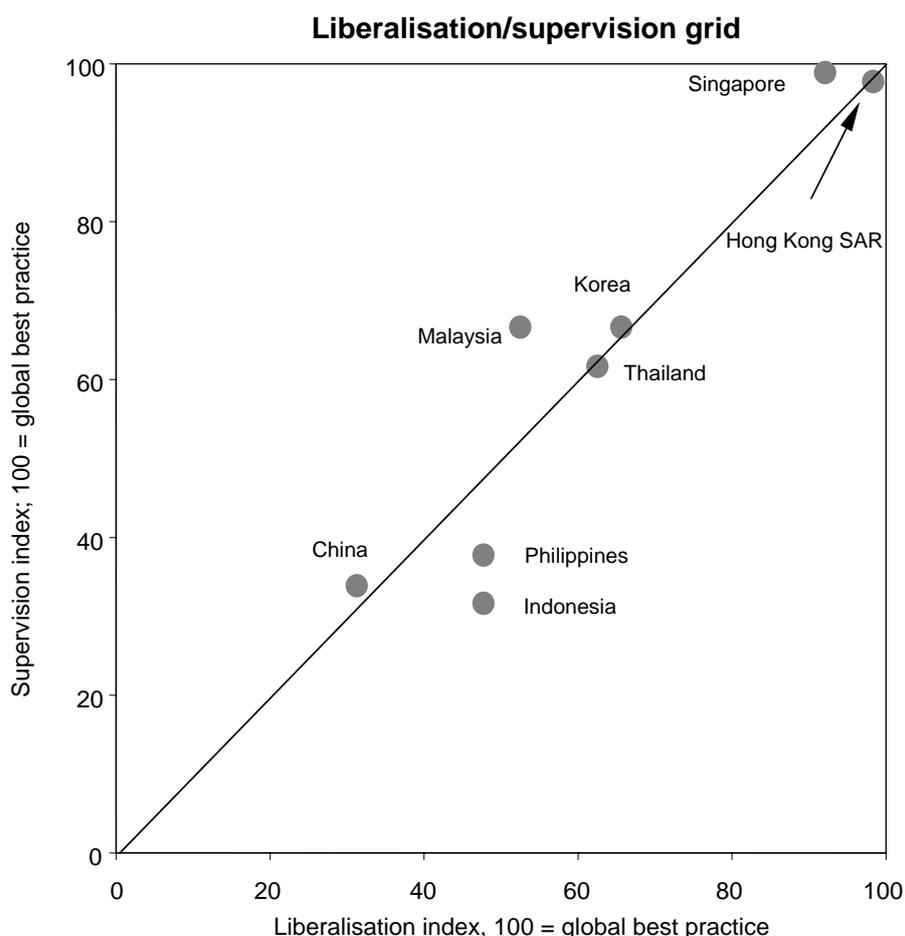
Related to the regulation of market intermediaries is the supervision of secondary market activities. The regulation of public exchanges in the region is generally approaching global standards, but the detection and prosecution of manipulation and other unfair trading practices are not consistently enforced in all countries. Partly, this is a resource problem, with modern surveillance systems lacking. In addition, some countries need to step up enforcement of the self-regulatory responsibilities of their exchanges.

In the local bond markets, the large majority of secondary market trading is over the counter. Price transparency is low, given the low liquidity of most local bond markets. Not surprisingly, supervisors struggle in their efforts to monitor the markets and prosecute in the event of market manipulation. This is also true for many interest rate derivatives and, among other reasons, has made many regulators reluctant to approve new products.

## Conclusion

Comparing the degree of local bond market liberalisation with prudential regulatory and supervisory standards reveals three clusters (Graph 1). Hong Kong SAR and Singapore are the most advanced economies in the region and essentially in line with best standards in the rest of the world. Both have superior prudential regulatory and supervisory systems, but Hong Kong is slightly more liberal in terms of market access and product innovation. The main challenge for Hong Kong is to improve cooperation with the mainland authorities in order to better understand the credit quality of the Chinese parent companies of Hong Kong affiliates.

Graph 1



Note: The scatter chart above represents the author's judgment of the degree of market liberalisation and supervision based on the analytical framework outlined in this study and informal feedback from market participants.

The next cluster consists of Korea, Malaysia and Thailand. Of the three, Korea undoubtedly has the most developed bond market. In fact, the bond market probably plays a more important role in Korea's economy than in Hong Kong's or Singapore's. However, there is room to liberalise the market more and to strengthen supervision. Thailand's bond market is visibly smaller than Korea's, but not much behind in terms of deregulation and supervision. Malaysia's prudential regulatory and supervisory standards are largely on a par with Korea and Thailand, but the bond market is much more closed, in terms of both foreign access and product innovation. Given Malaysia's advanced supervision, liberalisation could accelerate bond market development without creating immediate prudential concerns.

China, Indonesia and the Philippines are at the low end of the scale. All three countries have improved prudential regulation and supervision, but China has come from further behind and has made the most progress. If this trend continues, China may leave behind Indonesia and the Philippines, which have fewer resources with which to improve prudential regulation and supervision. The main constraint for China is the low probability that it will achieve full capital account convertibility in the next few years.

Overall, it is probably fair to say that general prudential standards governing local bond markets in Asia are not grossly insufficient when set against the degree of market development and liberalisation. In fact, Malaysia and Singapore could immediately ease restrictions without creating any prudential concerns. However, there is no cause for complacency. First, given the development and sophistication of market practices and cross-border flows, regulation and supervision cannot stand still. Second, the current efforts in the region to promote local bond markets will probably lead to more liberalisation and market activity and, thus, require stronger prudential standards.

Whether this requires extensive harmonisation of bond market regulation and supervision within the region, as is often called for, is not clear. Different political, legal and economic structures make it very difficult to strive for a high degree of harmonisation. More important than efforts to harmonise all aspects of regulation and supervision within the region is that each country aims for global best practice and unbureaucratic rules and procedures.

Having said that, there are some areas of more practical concern where harmonisation and cooperation would undoubtedly be welcome.

- More cooperation around clearing, settlement and custody would greatly facilitate cross-border investment.
- Integration and linking of trading platforms would also help cross-border investment and boost price transparency.
- Concerning taxation, harmonisation towards the lowest common denominator (ie zero withholding and capital gains taxes) would be consistent with trends in most other parts of the world and help market development.

Finally, adopting common standards in line with global best practices could further enhance the value and credibility of local rating agencies.

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## Panel discussion: questions to be analysed

Yung Chul Park

It is my honour and privilege to serve as the moderator of this panel of distinguished experts on capital markets. Over the last two days, we have listened to presentations and discussions about 13 papers analysing many issues involved in developing regional bond markets in Asia. In order to summarise and better understand what we have learned in this conference, we have organised this panel discussion with the expectation that the panel members will help us chart a course of development that will establish deep and liquid regional bond markets in Asia. For this purpose, I would like to ask the panel members for their views on some issues that are crucial for Asian bond market development.

The first question I would like to raise is: does Asia need regional bond markets?

- Would it be easier and cheaper to issue local currency bonds in regional bond markets than in global bond markets?
- Would these regional markets help diversify the foreign exchange reserve portfolios of Asian countries?
- Would regional bond markets improve resource allocation and stimulate investment in the region?

The second question refers to the ideal structure of Asian bond markets: what types of regional bond markets would best serve the bond financing needs of Asian governments and corporations? Possible approaches are:

- Improving and expanding existing regional bond markets such as the samurai market in Japan
- Creating an offshore bond market (replication of the old eurobond market)
- Promoting regional financial centres through competition

Finally, I would like to ask the panel members: what could ASEAN+3 do to develop deep and regional bond markets in Asia? Aspects to consider:

- Develop and open local bond markets - a prerequisite to the promotion of regional bond markets in Asia
- Facilitate regulatory, tax, and other institutional harmonisation and policy coordination
- Construct regional capital market infrastructure, including clearing and settlement, regional rating and credit enhancement institutions

## Panel discussion

Tom Byrne

This conference addressed issues concerning the development of an Asian bond market. Moody's view is that governments and corporations in Asia will continue to seek access to the global capital market, but that national markets in the region will develop and mature, allowing firms to increase their funding in domestic debt markets. As in other regions, Moody's has in recent years expanded in Asia, by building up its offices in Tokyo, Hong Kong and Singapore, as well as by buying into local rating agencies. For example, Moody's has majority ownership in KIS, one of the national rating agencies in the Korean market. The use of a national rating scale in Korea - although not integrated into Moody's global rating scale's default and expected loss probabilities - provides local investors with valuable distinctions of relative creditworthiness in a credit rating convention they are more familiar with.

I think it is important to consider the role of a rating agency, which is valid in any market, regional or global. In Moody's view, the main and proper role of credit ratings is to enhance transparency and efficiency in debt capital markets, by providing an independent opinion of relative credit risk, reducing the information asymmetry between borrowers and lenders. This function enhances investor confidence and allows creditworthy borrowers broader marketability of their debt securities.

Moody's believes that there is room to enhance the disclosure of its own rating processes. Moody's does not believe the accusation that it is a "black box" to be fair or accurate. Moody's rating methodologies and practices have been published periodically, and senior officers of the firm have made speeches to professional forums and made presentations to government regulators concerning this issue. Moody's has codified core principles of good rating practices; they are:

- Ratings must be independent of commercial relationships with an issuer.
- No forbearance: Moody's shall not refrain from taking a rating action out of concern for the potential effect it may have on the issuer or the market.
- Controlling conflicts of interest: Moody's does not give investment advice.
- Confidential information is not disclosed, and used only internally for rating decisions.
- Judicious consideration will be taken in assessing all the circumstances relevant to an issuer's creditworthiness.
- Rating committees make rating decisions that reflect the collective experience of judgment of the organisation, not the opinion of any single person.

Furthermore, Moody's believes that independence, objectivity and reliability have been the heart of the rating agency's role in credit markets for nearly a century. Moody's would be concerned if additional regulatory oversight were to reach into the underlying methodology and practices of the credit rating practice - particularly if regulation were to change the nature of the product offered by the rating agency from one based on credibility with the investor community to one of a licensing function for the government.

Moody's believes that innovation and competition between rating agencies better serve the market than harmonisation or cooperation with the industry. Well functioning rating agencies, in the manner described above, will help improve market transparency and efficiency in allocating capital.

## Panel discussion

Aaron Low

### 1. Does Asia need regional bond markets?

There is no disputing the need for Asian bond markets to provide sources of financing for Asia's capital needs and instruments for investing Asia's savings. The economic concept of "market completeness" comes to mind. A more critical question is whether issuance should be through local or hard currency. Asia's situation is somewhat similar to some emerging markets, where sovereigns prefer to issue in hard currency, in contrast to the G5 economies, where sovereigns typically issue in local currency to the natural, local investors. Valuations that influence the choice between local and hard currency issuance tend to vary across the region, depending on domestic monetary policy as well as on demand and supply conditions. For example, it is currently cheaper for Korean corporations to issue long-dated bonds in dollars due to US-Korea yield curve spreads and currency swap spreads. Another important consideration is that global demand is generally better for longer-term maturities while local investor demand tends to be concentrated on the shorter end.

Naturally, increasing the opportunity set with Asian bonds will help diversify foreign exchange reserve portfolios. My view is that additional return/risk benefits would accrue from credit risk diversification rather than from currency/interest rate diversification. As long as Asian exchange rate policy targets the US dollar with full capital account convertibility, local yields will be highly correlated with US interest rates in terms of systematic movements. Diversification benefits will then arise from sovereign or credit risks.

### 2. What types of regional bond markets will best serve the bond financing needs of Asian governments and corporations?

Absent a common regional currency, the Asian dollar bond market is perhaps the most attractive alternative to a regional bond market. This approach does imply an additional set of costs that includes issues of corporate governance, disclosure, rating fees, etc. As long as developed Asia relies on the external sector and hard currency earnings for its growth, it would be natural to finance that growth with hard currency debt. Corporations and governments also look closely at the cheapest form of financing. Local currency and even offshore issuance increases the financing opportunity set and should be an important priority, especially for firms that do not have foreign revenues or operations. Regulatory bodies can facilitate and improve market infrastructure, but markets will gravitate to the cheapest and most efficient alternative.

### 3. What could ASEAN+3 do to develop deep and regional bond markets in Asia?

Building acceptance for regional benchmarks would be a good start. We have seen the introduction of two recent local currency benchmarks in the region that include issues with acceptable liquidity and size. These are in addition to a couple of dollar issue regional benchmarks that were more in demand when the dollar was strong. If the recent weak dollar outlook continues, local currencies will probably face more demand.

An important yardstick of success would have to be the depth of liquidity in Asian bonds, both for local and for hard currencies. The current lack of liquidity in secondary issues poses problems for active managers, pricing vendors, market-makers and traders. There are naturally some exceptions, but illiquidity is the rule. The need to boost liquidity and trading is a paramount concern, and any bond market cannot be considered a success if most bonds are held to maturity. Fortunately, there are options available to address this matter.

Using active external fund managers, traditional or hedge fund types, would be a big boost. Conventional fears of market volatility are overblown, in my view. First, fundamentals look positive with the excess pool of Asian savings and improving regional fiscal discipline providing strong support against trading volatility. The real sources of volatility will more likely prove to be G3 interest rates and spreads. Second, the real source of volatility in Asia is equities rather than bonds, and with excessive pools of savings channelled into real estate and stocks, the lack of a bond market increases systematic risk.

Asian investors are also heavily invested in global bonds, using global benchmarks. These do provide both interest rate and currency diversification, but there is also a need for a meaningful regional component, especially if local investors are to internalise asset and liability management practices.

## Panel discussion

Robert N McCauley<sup>1</sup>

In his remarks, Sang Yong Park offered a counsel of despair. Only an offshore regional market, he argued, could break the vested interests that are preventing the development of domestic bond markets. The flaw in this prescription, however, is that governments have to allow their currencies to be used offshore, and the same vested interests that block domestic market development will prevent offshore market development. The US dollar was already internationalised when the US government made the policy errors that encouraged the development of the offshore eurodollar bond market. Offshore markets in the Deutsche mark or Swiss franc were limited by restrictions imposed by the German and Swiss authorities, with the effect of protecting vested interests. Offshore regional markets do not, in my view, offer the way forward.

The real choice is between the global bond market and domestic bond markets. As debt managers, governments need to recognise that global securities firms naturally argue for global markets. They cannot be expected to give full weight to the direct costs, and perhaps more importantly, the indirect costs, of going global. Debt managers need to exercise discipline in choosing between global and national markets. Consider the example of the last Korean sovereign issue.

Last June, the Republic of Korea sold a \$1 billion dollar bond due in 2013 in the global market. Underwriters Barclays, Citigroup and Goldman Sachs were paid to distribute the bond to global investors. The trade press, in particular *FinanceAsia* (June 2003, page 8), reported that about 75% of the bonds were placed in Asia, with less than 10% in Korea, 15% in Europe and 10% in the United States.

It is widely believed that, owing to secondary market purchases, Samsung Insurance has become the largest holder of this dollar bond. Since the insurer has Korean won liabilities to its policyholders, it has reportedly converted the dollar cash flows from this bond into won with a cross-currency swap.

Consider the Rube Goldberg contraption that this circuit of transactions represents. The Republic of Korea pays underwriters a fee to place the bond with global investors. Samsung Insurance pays half the bid-ask spread to the bond's market-maker and half the bid-ask spread to the derivatives dealer who arranged the cross-currency swap. Would it not have been easier and cheaper to sell a 10-year Korean won government bond in the Seoul bond market?

Look at the transaction from another perspective. The Republic of Korea paid 92 basis points over the yield on a 10-year US Treasury note on its bond. This was a vast improvement on the 355 basis points paid in April 1998 on a 10-year bond. Following the money, the \$1 billion is added to Korean foreign exchange reserves. There, Korea's reserve managers will try to earn returns over US Treasury yields by investing the \$1 billion proceeds. If they are able to obtain a return of 40 basis points over US Treasury yields by buying agency paper or bonds backed by credit cards or mortgages, they would be doing well. But this would imply a net cost of something like 50 basis points per year, or around \$50 million over the life of the

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<sup>1</sup> Views expressed are those of the author and not necessarily those of the Bank for International Settlements.

10-year bond. The good news is that, in buying the bond, Samsung Insurance recaptures some of this sum for Korea as a country.

Again, would it have made more sense for the Korean government to have added another \$1 billion to the domestic bond market? There, could these bonds have satisfied pension funds' and the insurers' need for long-duration, won-denominated assets? Could they have added to the mass of bonds available for trading and repoing? Could they have helped lengthen and deepen the won benchmark yield curve?

Global securities firms highlight the externality of having the sovereign bond set a benchmark in the dollar (or euro) market for other issuers. Why? With a sovereign benchmark, Korea Development Bank or Korea Export Import Bank bonds can be properly priced by international investors. Indeed, *FinanceAsia* reported that the success of the sovereign deal led to a repricing of the Korea Development Bank from US Treasury plus 120 to US Treasury plus 107 basis points. Why? With a well developed agency dollar yield curve, bonds for Korean corporations and banks can be properly priced by international investors. As *FinanceAsia* noted, "the sovereign does not need the money, but was merely keen to create a new tighter benchmark from which corporate Korea could benefit". Such externalities come at a price, however, which can be measured not only in terms of the direct cost, but also in terms of the opportunity cost.

That is, the benefits of setting such benchmarks come at the missed opportunity of more issuance in domestic currency in the domestic market. In late 2002, the Kingdom of Thailand came close to issuing a \$1 billion bond in the global market. At the last minute, the deal was cancelled, although the Kingdom has done a pair of floating rate dollar deals. Consistent with Fernandez and Klassen's result that the sovereign and corporate choice of currency is similar, Thai bond issuance in foreign currency since the crisis has been more limited than Korean bond issuance in foreign currency. Ultimately, there are positive externalities to corporate issuance from government issuance within limits in dollar or domestic currency. Given limited amounts of government debt and a policy preference for domestic bond issuance, debt managers should think twice before selling dollar bonds.