Consolidating the public debt markets of Asia

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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This proposal was originally made with reference to East Asia, especially Indonesia, Korea, Malaysia, Taiwan (China)[2] and Thailand (McCauley (2003)).[3] Recently, the People's Bank of China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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[2] Hereinafter Taiwan.

[3] 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.[4]

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.[5] 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.[6] 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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[4] 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)).

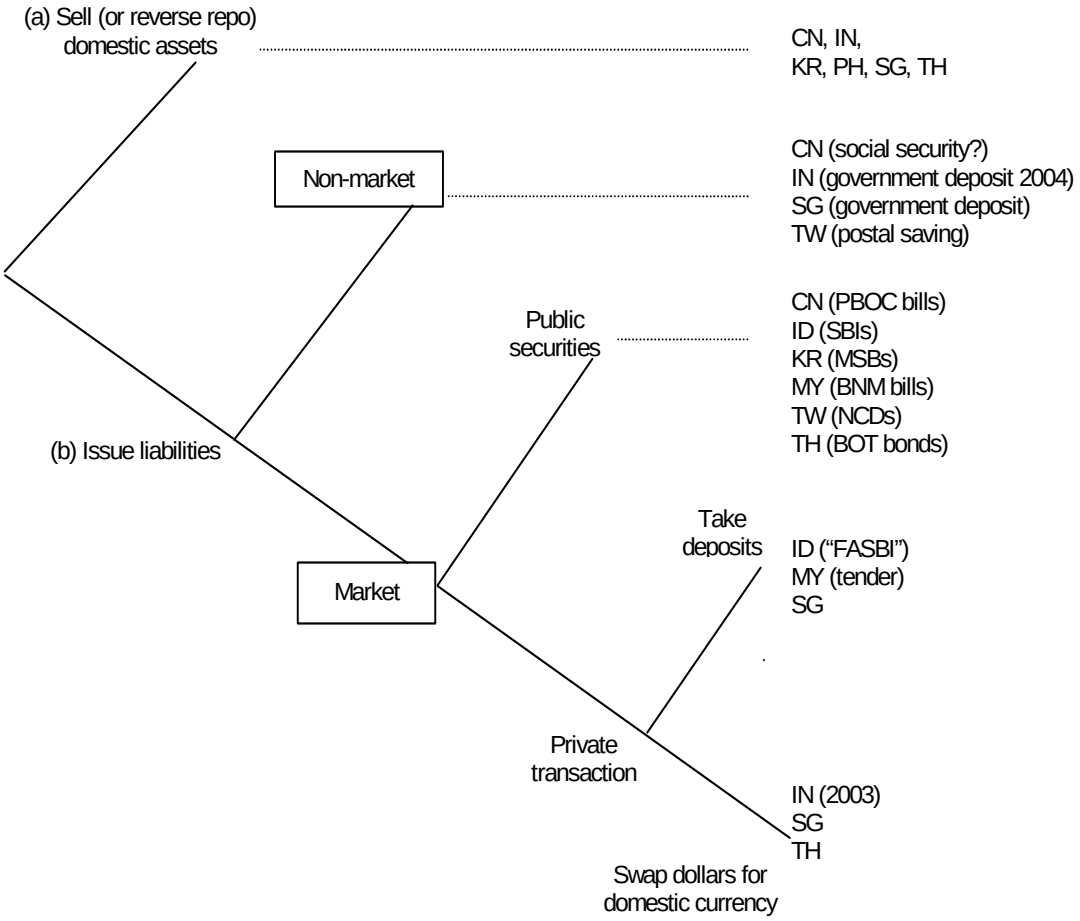
[5] The RBI (2004b) notes: "In case CRR [cash reserve ratio] is not remunerated, it has the distortionary impact of a 'tax' on the banking system. CRR is also discriminatory in that it has an in-built bias in favour of financial intermediaries that are not required to maintain balances with the Reserve 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."

[6] 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.[7] 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.

[7] 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

Government *overfunds its deficits and places the proceeds on deposit with the central bank*	
Assets	**Liabilities**
+ deposits due from central bank	+ government securities
Central bank *shifts its liabilities from market participants to the government*	
Assets	**Liabilities**
Foreign exchange reserves + government securities	Monetary base + 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".[8] 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.

[8] 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[1]	+23,967	Provisions and other liabilities ("largely … borrowings from banks")	−10,866
Singapore government securities	+118	Deposits of Singapore government	+21,699

[1] 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.[9]

[9] 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

27 December 2003-27 March 2004			
Assets		**Liabilities**	
Foreign assets	+461.71	Reverse repos	+319.10
Indian government securities	–53.32	Deposits of Indian government	–66.85
27 March-25 June 2004			
Assets		**Liabilities**	
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[10]

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

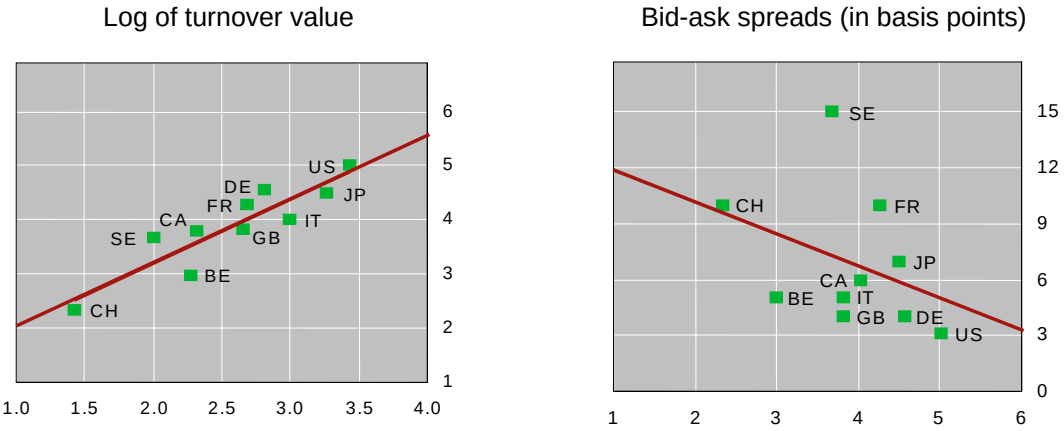
[10] This section draws on McCauley and Remolona (2000) and Jiang and McCauley (2004).

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.[11] 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.[12] 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.

[11] See CGFS (1999a).

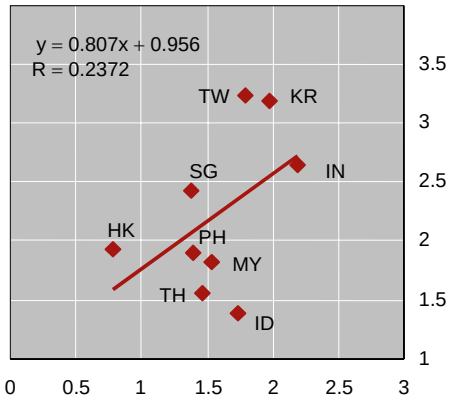
[12] The bid-ask spread measures only one dimension of liquidity, since it does not capture market depth or resilience in respect of absorbing large orders. See CGFS (1999a,b) for a discussion.

Graph 2

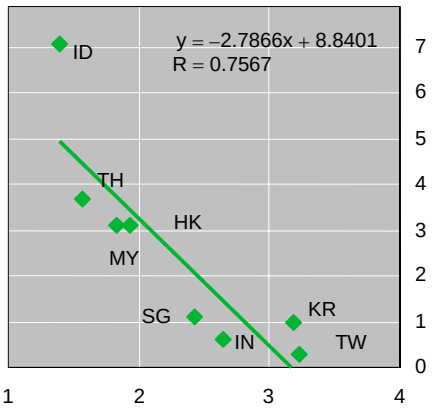
Liquidity in East Asian bond markets

Size, trading, issue size and concentration

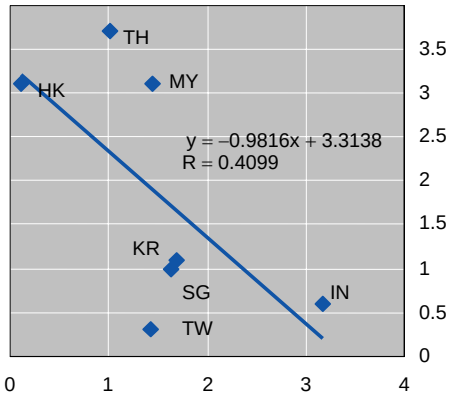
Size (x-axis) and trading volume (y-axis)[1]



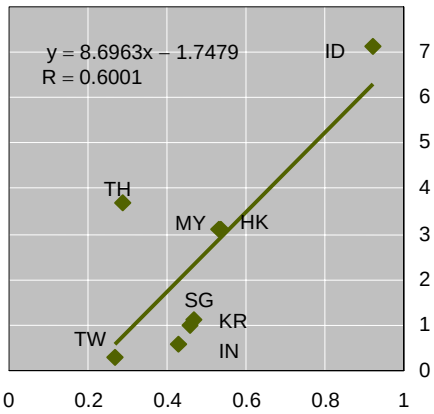
Trading volume (x-axis)[1] and bid-ask spread (y-axis)[2]



Issue size (x-axis)[1] and bid-ask spread (y-axis)[2]



Concentration of bond holdings (x-axis)[3] and bid-ask spreads (y-axis)[2]



[1] In billions of US dollars; in logs. [2] In basis points. [3] 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.[13] 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

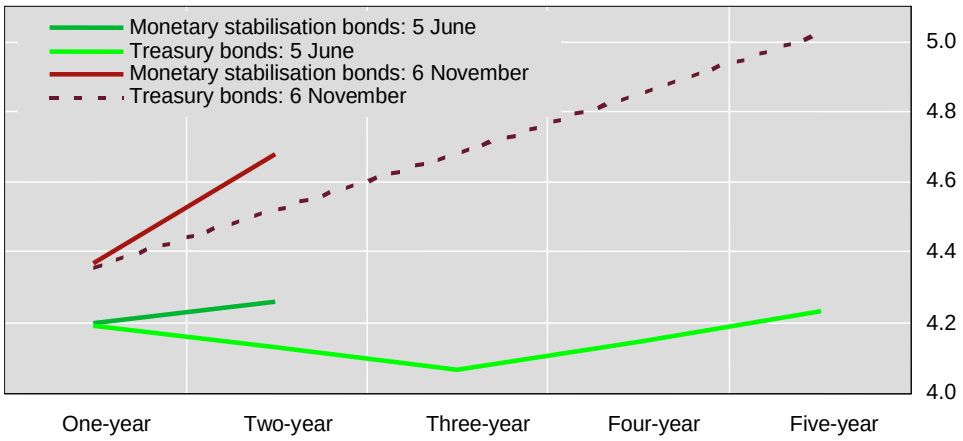
[13] I am indebted to Kyunjik Lee for pointing out to me that the data from the Korea Money Broker Corp and Korea Securities Dealers Association quoted by Reuters are inconsistent or otherwise erroneously suggest minor differences in yields on the two public bonds.

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.

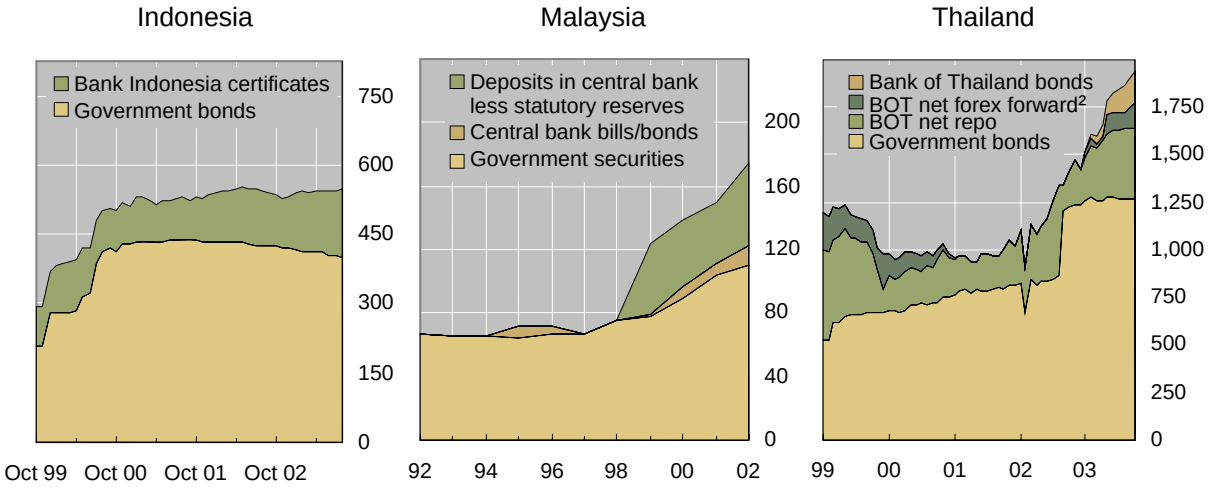
3.2 Prospective increase in the size of government bond markets in East Asia

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[1]



[1] For Indonesia, in trillions. [2] 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		*Memo: Size of combined market as a % of current*
	Domestic currency	**$ billion**	**Domestic currency**	**$ billion**	
Indonesia[1]	398.2 trillion	47.1	147.3 trillion	17.3	*137*
Korea[2]	81.5 trillion	69.0	98.9 trillion	84.0	*222*
Malaysia[3]	109.6 billion	28.8	77.9 billion	20.5	*171*
Taiwan, China[1]	2.5 trillion	73.5	2.8 trillion	82.4	*212*
Thailand[2]	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.

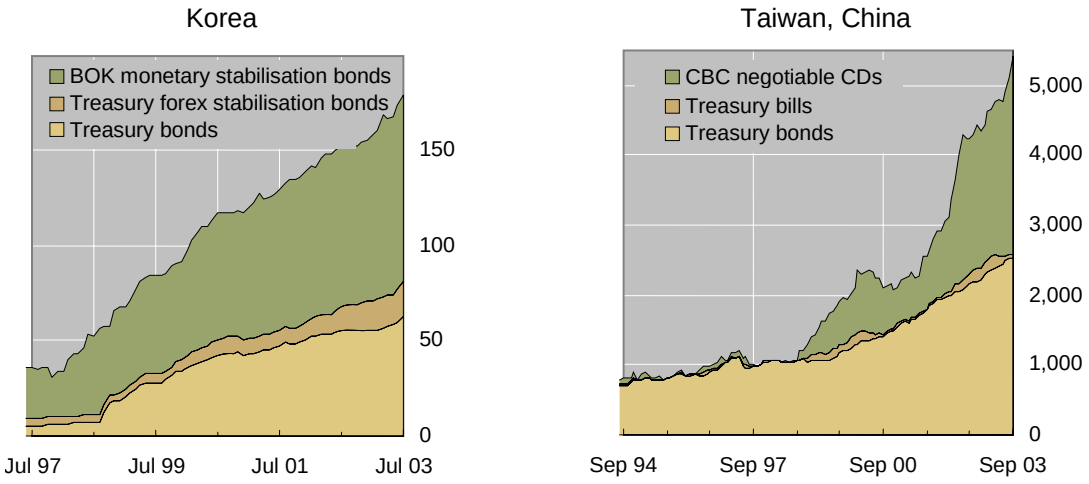
[1] End-September 2003. [2] End-July 2003. [3] End-December 2002.

Sources: CEIC; national data.

Graph 5

Outstanding public debt in two Northeast Asian economies

In billions of domestic currency[1]



[1] 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.[14] 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.[15] 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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[14] 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.

[15] 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.[16] 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.[17]

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.[18] 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.[19]

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[16] 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.

[17] 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.

[18] 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-commerical off-budget and quasi-fiscal activities" included in the general government concept.

[19] 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.[20]

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)).[21] 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.[22] 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?

[20] 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].

[21] 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).

[22] 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.[23] 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.[24] 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.[25]

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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[23] 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.

[24] 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".

[25] 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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