Recent trends in bond markets

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1. Introduction[1]

This paper reviews recent trends in the development of debt markets in the emerging economies. The paper is divided into two main parts: the first part analyses the size and growth of debt markets and the macroeconomic aspects of their development; and the second discusses the main microeconomic and institutional characteristics of emerging debt markets. The analysis in both parts focuses on domestic debt markets. The paper shows that, despite considerable growth, domestic debt markets in the emerging economies remain small compared to industrial countries – on average, equivalent to about one third of GDP. Debt issued by the public sector on average accounts for two thirds of domestic debt market volume. The main forces underlying the growth of emerging debt markets have been public sector deficits associated with fiscal adjustment and related banking and corporate sector reforms, and the need to sterilise large capital inflows associated with freer movement of capital worldwide. Efforts to develop primary government bond markets have been fairly successful, but secondary market liquidity remains poor in most emerging economies. There has been much less success in developing corporate bond markets. While banks on average hold the largest proportion of bonds in domestic markets, institutional investors have become key holders of domestic debt securities in both Latin America and central Europe.

2. Size and growth of emerging debt markets

Debt markets in the emerging economies have expanded considerably since the mid-1990s. At the end of 2000, the emerging economies covered in this note had a total of $1.9 trillion in domestic and international bonds outstanding, double the amount in 1994 (Table 1).[2] This corresponds to annual growth of 12% in US dollar terms. As a proportion of GDP, debt markets grew by 50% over this period, to 36% of the emerging economies' GDP in 2000.

Domestic bonds on average accounted for 79% and public sector bonds for 64% of bonds outstanding at the end of 2000 (Table 2). Public sector bonds issued in domestic markets remain the most widespread type of bonds in the emerging economies, followed by private sector domestic bonds and public and private sector international bonds (Graph 1).[3] The share of international bonds increased over time in Latin America and central Europe, while in Asia it remained unchanged.[4] The share of public sector bonds increased in Latin America and, to a lesser extent, in Asia, while it decreased slightly in central Europe.

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[1] Opinions expressed are those of the authors and not necessarily shared by the Bank for International Settlements. Thanks are due to Palle Andersen, Matthias Arzbach, Jacob Gyntelberg, Katarina Ott and Philip Turner for helpful comments.

[2] Statistical data in this section refer to 21 emerging market economies grouped in three regions: Asia (China, Hong Kong, India, Indonesia, Korea, Malaysia, the Philippines, Singapore, Thailand); Latin America (Argentina, Brazil, Chile, Colombia, Mexico, Peru); and central Europe (the Czech Republic, Hungary, Poland and Russia) plus Israel and South Africa. The starting year (1994) was chosen because data on bonds for earlier years are not available for many countries, and because it preceded the major emerging market crises of the second half of the 1990s, starting with the crisis in Mexico in 1995.

[3] By "private sector domestic bonds" are understood to mean all bonds issued by the private sector, whether held privately or traded publicly (data on the type of bonds traded are generally not available).

[4] The increase in public sector international bonds outstanding partly reflects statistical classification: Brady bonds are not included in the BIS statistics because they represent repackaged bank loans; however, when emerging economies started buying back Brady bonds and issuing in their place global bonds, these bonds were included in the BIS statistics. The amount of Brady bonds, mostly issued by Latin American borrowers, thus fell from $160 billion in 1994 to $83 billion in 2000.

Table 1

International and domestic bonds outstanding[1]

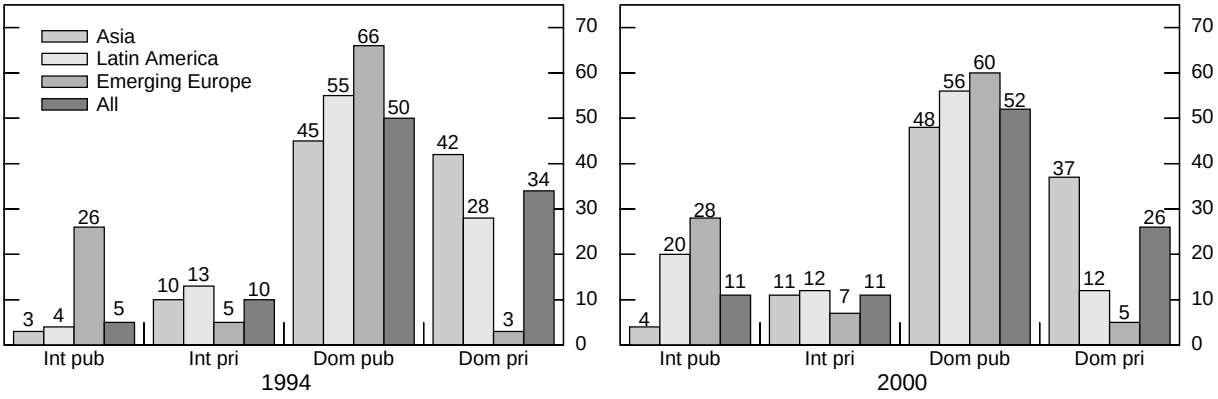
	Total		International public sector bonds		International private sector bonds		Domestic public sector bonds[2]		Domestic private sector bonds[2]	
	1994	**2000**	**1994**	**2000**	**1994**	**2000**	**1994**	**2000**	**1994**	**2000**
Asia	494	1,058	12	30	53	117	223	533	206	377
Percentage of GDP	*26*	*39*	*1*	*1*	*3*	*4*	*12*	*20*	*11*	*14*
Latin America	316	657	11	131	43	80	176	366	86	81
Percentage of GDP	*22*	*37*	*1*	*7*	*3*	*5*	*12*	*21*	*6*	*5*
Other[3]	158	179	17	34	3	8	127	124	11	12
Percentage of GDP	*24*	*24*	*3*	*5*	*0*	*1*	*19*	*17*	*2*	*2*
Total	**968**	**1,894**	**40**	**195**	**99**	**205**	**526**	**1,024**	**303**	**470**
Percentage of GDP	***24***	***36***	***1***	***4***	***2***	***4***	***13***	***20***	***7***	***9***

[1] In billions of US dollars. [2] Data on domestic bonds outstanding not available for the Philippines; breakdown between domestic public and private sector bonds not available for Thailand. Data on domestic private sector bonds not available for Poland and Russia. [3] Including central Europe, South Africa and Israel.

Sources: IMF; BIS.

Graph 1

Composition of bonds outstanding in 1994 and 2000[1]



Note: int = international; dom = domestic; pub = public sector; pri = private sector.

[1] As a percentage of the total.

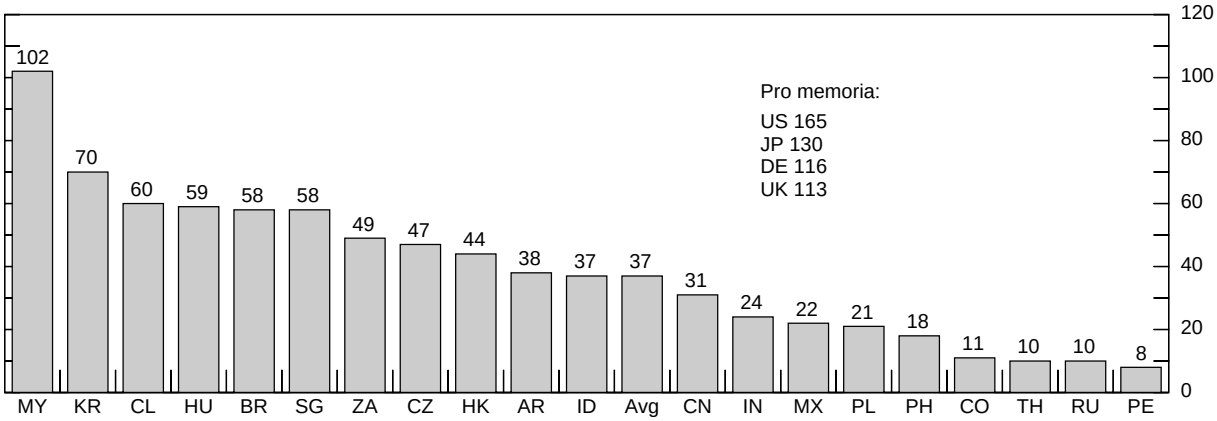
Sources: IMF; BIS.

Despite considerable growth, debt markets in emerging economies remain small compared to those in industrial countries (Graph 2). Total bonds outstanding for economies in the sample amounted on average to 37% of GDP at the end of 2000. Malaysia was the only country with total bonds outstanding greater than its GDP. Other emerging economies with relatively large debt markets included Korea, Chile, Hungary, Brazil and Singapore. Also small in size relative to those in industrial countries – on average, one third of GDP for the emerging economies in the sample – are the domestic bond markets. Malaysia and Korea are the only countries with domestic bond markets comparable in size to those in Germany and the United Kingdom. The emerging economies are lagging behind the industrial countries even more in terms of the size of the private sector debt market, which accounts for only 18% of GDP on average. Malaysia and Korea are again the only economies with private sector bond markets comparable in size to those in industrial countries.

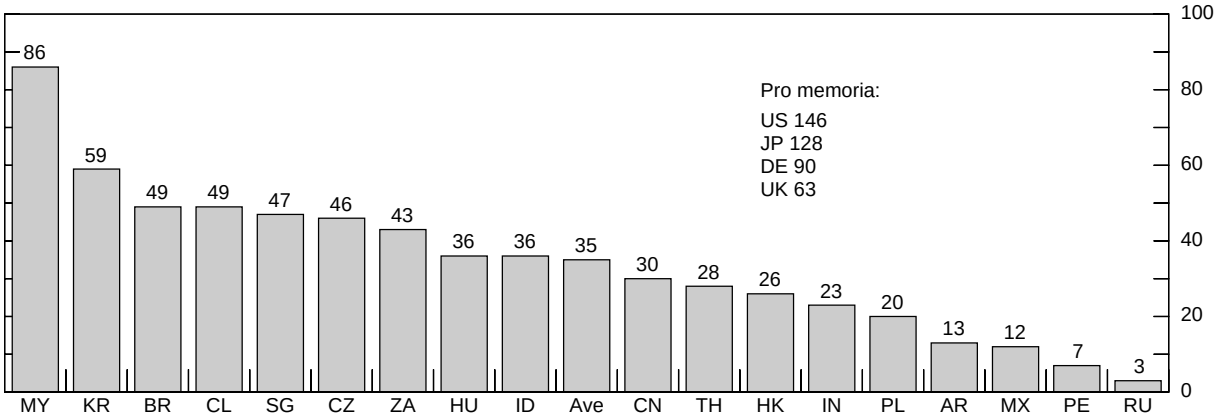
Graph 2

Amounts outstanding in 2000[1]

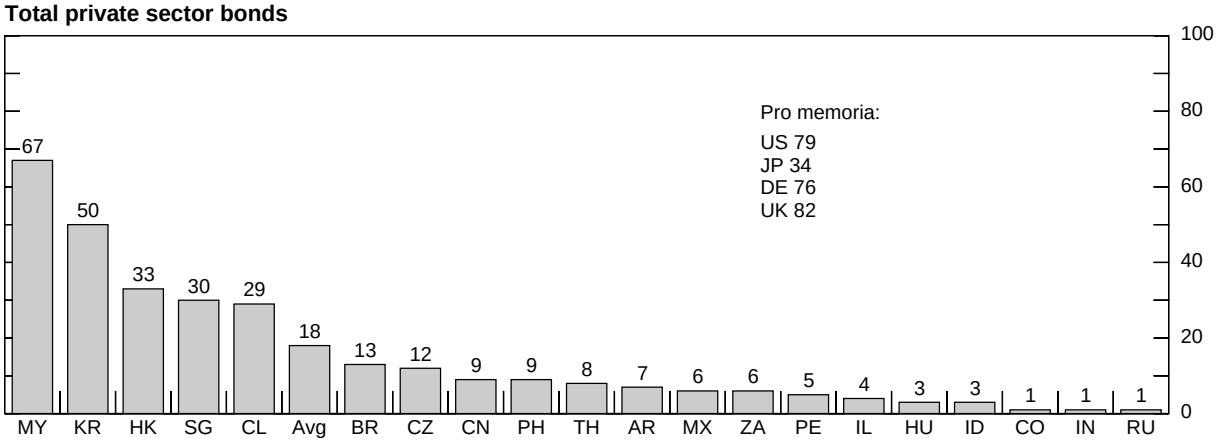
Total bonds



Domestic bonds



Total private sector bonds



[1] As a percentage of GDP.

Sources: IMF; national data; BIS.

Table 2

Structure of bonds outstanding, 1994 and 2000

(as a percentage of total)

	International bonds		Domestic bonds[1]		Public sector bonds		Private sector bonds	
	1994	**2000**	**1994**	**2000**	**1994**	**2000**	**1994**	**2000**
Asia	13	14	87	86	48	53	52	47
Latin America	17	32	83	68	59	76	41	24
Central Europe and other[2]	13	24	87	76	91	89	9	12
Total	**14**	**21**	**86**	**79**	**59**	**64**	**42**	**36**

[1] Data on domestic bonds outstanding not available for the Philippines; breakdown between domestic public and private sector bonds not available for Thailand. Data on domestic private sector bonds not available for Poland and Russia. [2] Including South Africa and Israel.

Sources: Central banks; BIS.

Further insight into the size and growth of emerging debt markets can be obtained by considering debt issuance activity. Over 1994–2000, emerging market debt issuance amounted to $2.2 trillion, on average $300 billion a year (Table 3). Latin America accounted for one half of total issuance, and Asia for the bulk of private sector issuance. Central Europe and South Africa lagged considerably behind Latin America and Asia, in particular in terms of private sector issuance. Largest issuers of bonds include Brazil (a total of $122 billion issued since 1994, of which $105 billion was in domestic markets and $38 billion in private sector issues), Malaysia, Hungary, Hong Kong and Korea (Graph 3).

Table 3

International and domestic bonds issued, 1994–2000[1]

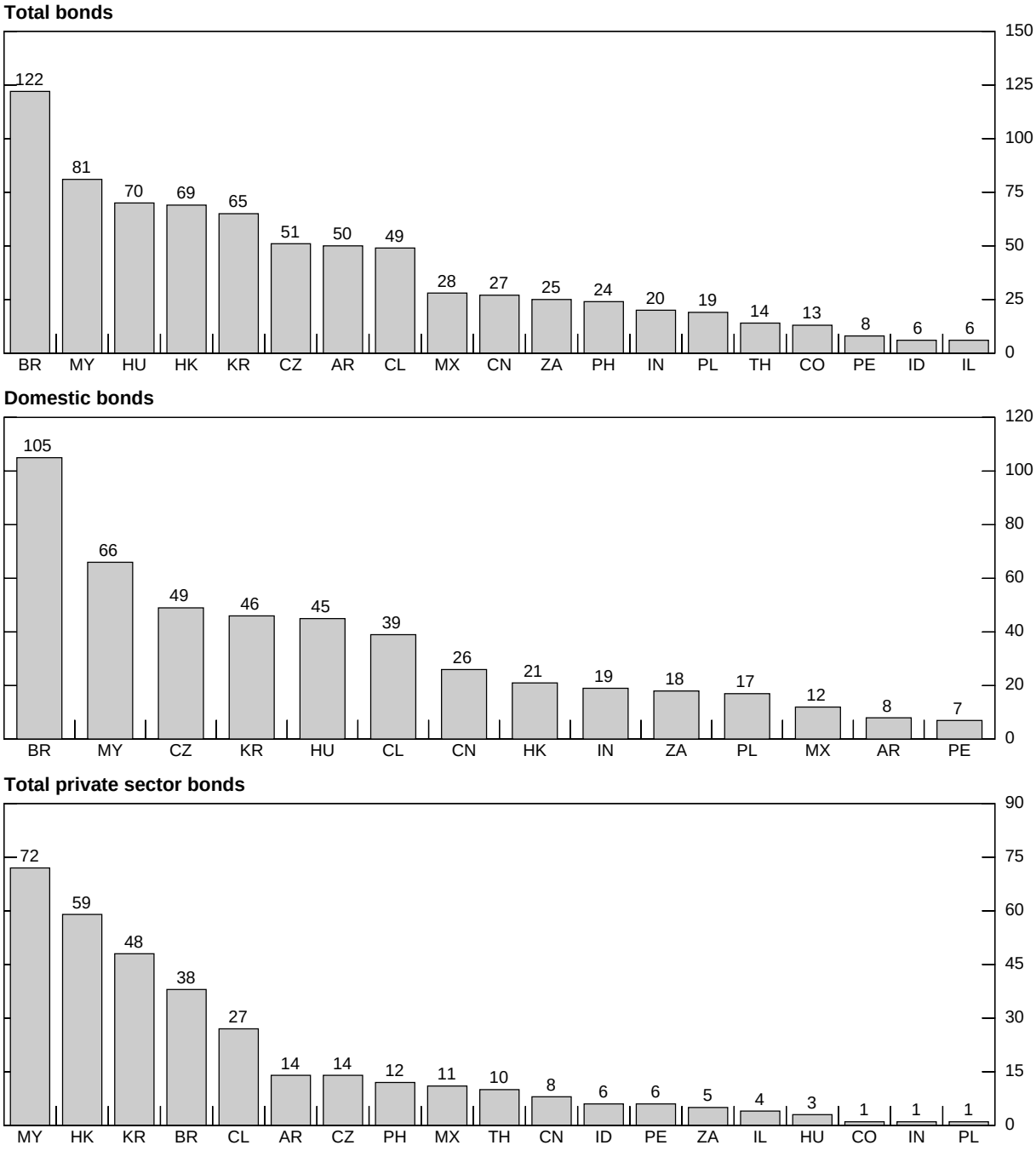
	Total issued		Total issued		International bonds		Domestic bonds		Total issued 1994–2000
	Public sector	**Private sector**	**Inter-national**	**Domestic**	**Public sector**	**Private sector**	**Public sector**	**Private sector**	
Asia	389	533	260	661	37	223	352	309	922
Percentage of total	*42*	*58*	*28*	*72*	*4*	*24*	*38*	*34*	
Latin America	734	359	345	747	173	172	561	186	1,092
Percentage of total	*67*	*33*	*32*	*68*	*16*	*16*	*51*	*17*	
Other[2]	171	19	48	141	37	11	134	7	189
Percentage of total	*90*	*10*	*26*	*74*	*20*	*6*	*71*	*4*	
Total	**1,293**	**910**	**654**	**1,549**	**247**	**407**	**1,046**	**503**	**2,203**
Percentage of total	***59***	***41***	***30***	***70***	***11***	***18***	***47***	***23***	

[1] In billions of US dollars. For international bonds, gross issuance; for domestic bonds, net issuance. Data on bond issuance not available for Colombia, Israel, Indonesia, the Philippines and Thailand. Data on domestic private sector bonds not available for Poland and Russia. [2] Central Europe and South Africa.

Sources: Data provided by central banks; BIS.

Graph 3

Cumulative bond issuance, 1994–2000[1]



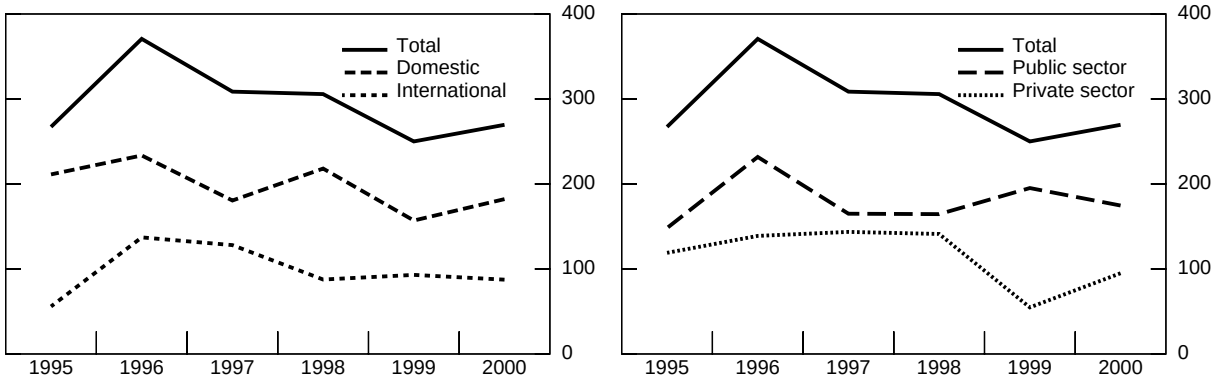
[1] As a percentage of GDP.

Sources: IMF; BIS.

Total emerging market bond issuance was roughly the same in 2000 as in 1995 (Graph 4). Annual issuance activity peaked at $370 billion in the aftermath of the Mexican crisis in 1996. Following the Asian and Russian crises it declined to a low of $250 billion in 1999. Private sector issuance declined sharply after 1998, reflecting post-crisis corporate and bank restructuring in Asia.

Graph 4

Bond issuance, 1995–2000[1]



[1] In billions of US dollars.

Sources: IMF; BIS.

3. Macroeconomic aspects of debt market development

As in industrial countries, debt markets in the emerging market economies have been changing under the influence of both endogenous and exogenous forces. Chief among endogenous forces has been development of the institutional structure and microstructure of bond markets, as well as the development of financial markets more generally. In particular, domestic and external financial liberalisation and deregulation have intensified competition among issuers, portfolio adjustments among investors, innovations by providers of financial services, and improvements in risk management practices. These developments are discussed in the next section. But perhaps even more important for overall growth of the debt markets have been the exogenous forces of fiscal adjustment, macroeconomic stabilisation, large capital inflows, and the financial market crises of 1997–98, with related banking and corporate sector reforms. The relationship between these macroeconomic factors and the size, growth and main characteristics of debt markets are discussed in this section.

It should be noted that, despite a variety of theories of debt market development, there have been relatively few rigorous empirical analyses of actual developments in emerging bond markets. The analysis that follows is an attempt to start filling this gap. But the intention is not to test the various hypotheses of bond market development advanced in the literature. Moreover, several potentially relevant issues, including the role of external financial liberalisation and foreign investors in debt market development, are considered only in passing. The focus is instead on domestic macroeconomic determinants of debt market development.

Fiscal deficits and debt markets

Based on the experience of industrial countries, in particular the United States (see Box 1), the need to finance large public sector budget deficits and the avoidance of monetary financing have generally been viewed as key macroeconomic forces underlying the development of debt markets. Several country papers in this volume also note that the social security reforms implemented during the 1990s often had the clear intention of boosting local capital market development (see the section on institutional investors).

One could expect the reliance on bond finance in the emerging economies to have become even greater during the 1990s. Most governments in emerging economies stopped monetising their deficits during the 1990s – partly as a result of greater independence of central banks and their increased

focus on price stability as the main objective of monetary policy – while the deficits themselves have declined more slowly due to ongoing structural reforms.[5]

Box 1

US experiences with the development of bond markets

Two centuries ago, the United States was a small underdeveloped country with serious financial problems. Under the 1777 Articles of Confederation, the only financial power given to the central government was the printing of paper money, the so-called "Continentals". Congress had not been granted tax powers by which it might meet appropriations or pay off borrowings and bills of credit. Instead, the funds to cover Confederation expenditures were to be obtained by requisitions on the states. But the Articles of Confederation failed to provide a mechanism to compel the states to comply with their obligation. During this period, the borrowing requirement of the Confederation was sharply increasing and Congress accumulated substantial arrears of pay owed to the soldiers of the Revolutionary Army. Although Congress had the power to borrow the funds, there was no one in America who would willingly lend to it. Many creditors, though, had no choice, and were forced to accept the Revolutionary Debt Obligations. When interest on these bonds came due, the holders had to accept *indents*, promises to pay at an uncertain time in the future, when and if the government became solvent. Speculators willing to take the chance that Congress might eventually pay off its debts fully bought up indents at a heavy discount and soon held a large part of the national debt. Besides the Treasury, many individuals were in debt as well. In 1786, the national financial system broke down completely. Further borrowing at home or abroad was almost impossible, requisitions were of almost no avail, creditors became alarmed, and when the efforts to secure unanimous consent for a national tax failed, it was agreed that, if a federated republic were to continue, the government, particularly in relation to finance and commerce, must be remodelled. This agreement paved the way for a new Constitution that became effective in March 1789.

Federal powers were greatly enhanced in the new Constitution. Congress received the power to levy and collect taxes, duties, imposts and excises, to pay the debts and provide for the common defence and general welfare of the United States, subject to the proviso that all duties, imposts, and excises shall be uniform throughout the United States. These changes at once began to bring in badly needed revenue and soon the debts of the Confederation were repaid. The government bond market prospered and attracted foreign investors. As a result, US residents were able to borrow from older and richer European countries. During the 1820s and 1830s, the United States – usually state governments – borrowed large sums from foreign investors to build roads, canals and railroads, and to recapitalise state banks. Still larger sums from overseas went into private US railway companies and other corporations. Most of this borrowing took the form of state and corporate bond sales to overseas investors. The strong public finances established by the new Constitution thus had positive spillover benefits for US state and corporate debt. Other securities markets followed, aided by the absence of restrictive regulations on the formation of corporations and, over time, generation and dissemination of standardised information.

The experience of the United States raises the question of whether governments, once they have set their public finances in order, established effective regulation for information disclosure and removed tax and other obstacles to the development of markets, need to become further involved in the development of securities markets. Some would argue rather that governments should let the markets develop on their own; the paper by Jiang et al in this volume raises a similar issue. In particular, it is not clear whether providing various incentives to firms and savers to issue or invest in long-term instruments, or requiring banks and other financial institutions to invest in government bonds, is necessary – or indeed desirable – to develop the securities markets.

Sources: Caprio and Vittas (1997); Mihaljek (1998); Sylla (1995).

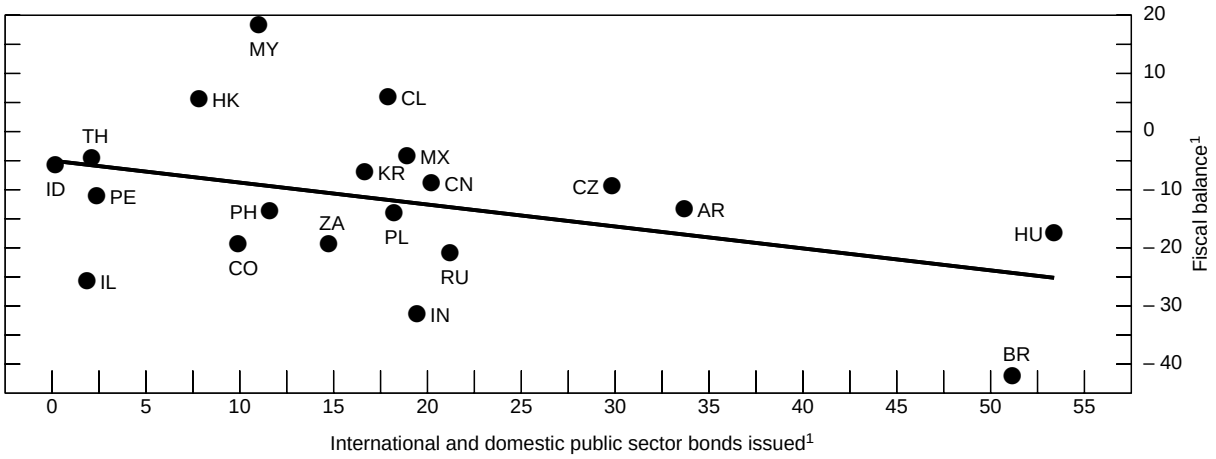
[5] The clearest evidence that the emerging economies no longer view monetisation as an option for financing public sector deficits is the observed decline in inflation: for the emerging economies in this note, average annual inflation declined from 137% during 1990–94 to 9.6% during 1995–99, and to 5% in 2000 (unweighted averages). For detailed discussion, see Mohanty and Klau (2001).

The cross-country relationship between fiscal deficits (as a percentage to GDP) accumulated since 1995 and the size of the public sector debt market confirms that countries with larger fiscal deficits have issued more public sector bonds in domestic and international markets (Graph 5). Chile, Hong Kong and Malaysia have been issuing public sector bonds primarily for the purpose of debt market development, as all three economies accumulated large public sector surpluses during 1995–2000.

Financial crises in the second half of the 1990s and the resulting need to finance very large extraordinary expenditure for bank and corporate restructuring provided another major motive for debt market development. In many emerging economies, the costs of bank restructuring alone have been estimated at more than 10% of GDP. Governments have typically financed these costs by issuing long-term government bonds in domestic markets. In Indonesia, for example, domestic debt markets took off only after the 1998 crisis, when the government issued $60 billion in bank restructuring rupiah bonds. When the data on general government balances are supplemented with the costs of bank restructuring, the estimated cross-country relationship in Graph 5 becomes much steeper.

Graph 5

Fiscal balance and size of public sector debt market

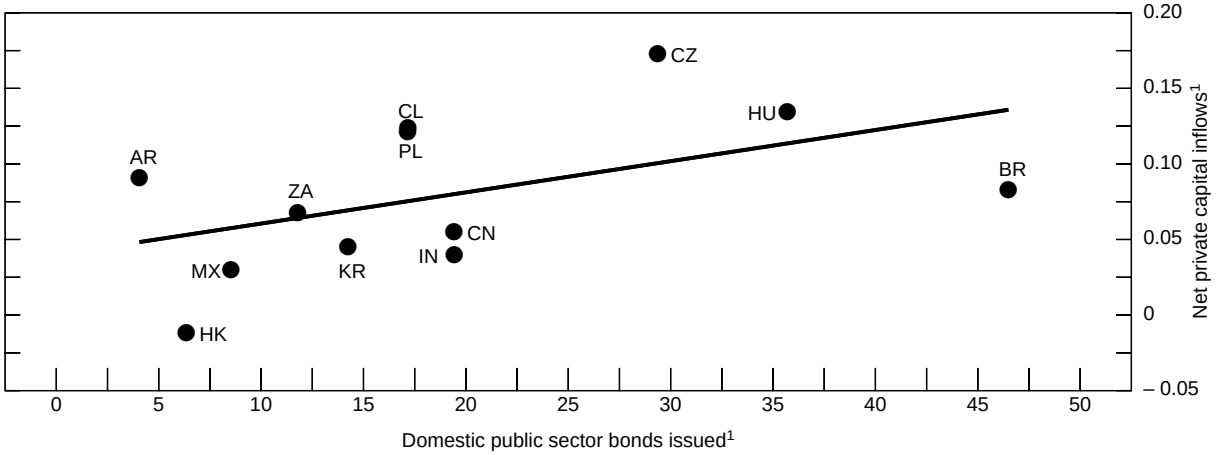


[1] As a percentage of GDP. Cumulative; calculated over the period 1995–2000.

Sources: IMF; BIS.

Graph 6

Private capital inflows and size of public sector debt market



[1] As a percentage of GDP. Cumulative; calculated over the period 1995–2000.

Sources: IMF; BIS.

Capital inflows and debt markets

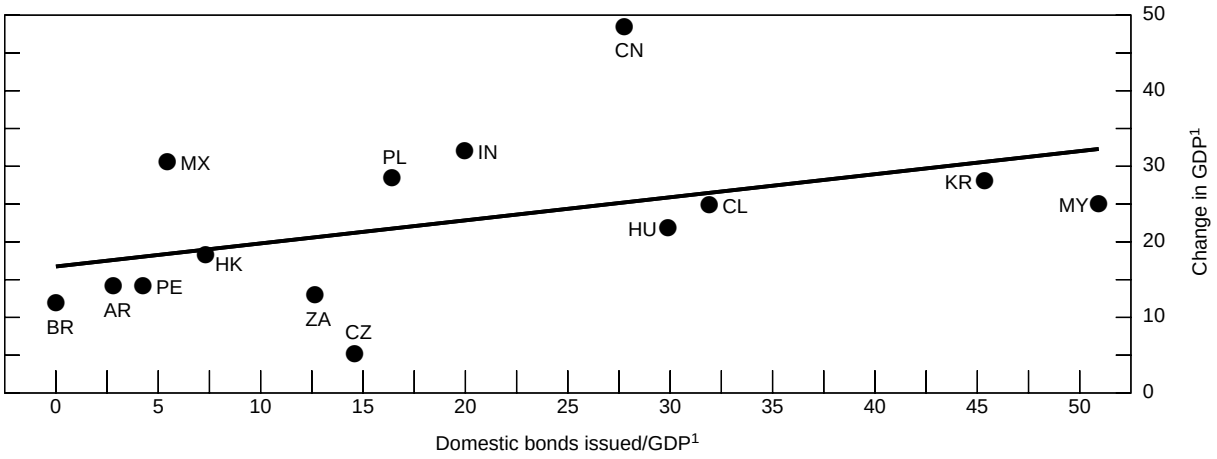
The need to sterilise large capital inflows during the 1990s, often related to privatisation programmes, provided another major motive for debt market development. In most countries, central banks were initially sterilising these inflows with their own short-term bills, but gradually most emerging economies switched to issuing longer-term government paper for this purpose. Data in Graph 6 clearly show a positive relationship between net private capital flows and the size of the public sector debt market.

Economic growth and debt markets

In addition to the motives noted above, debt markets have historically developed in response to corporate sector demand for investment finance. As they grow, many firms sooner or later approach the debt markets for additional capital with which to finance their assets. This should imply a positive cross-country relationship between real economic growth and the size of debt markets. For the emerging market economies covered in this note, such a relationship holds in the aggregate, when both private and public sector issuance in domestic markets is considered – as the emerging economies expanded their output, they also tended to rely more heavily on domestic public and private sector issuance to finance growth (Graph 7).

Graph 7

GDP growth and size of domestic debt market



[1] Cumulative; calculated over the period 1995–2000.

Sources: IMF; BIS.

When only the corporate bond market is considered, the cross-country relationship between economic growth and the size of the corporate debt market becomes much weaker. Only Korea and Malaysia stand out as high-growth countries that have developed relatively large corporate bond markets. On the other hand, companies in China, India, Mexico and Poland have been able to finance rapid growth without relying heavily on bond finance.

Strong cross-country relationship between economic growth and total size of the debt market on the one hand, and weak relationship between growth and the size of the corporate debt market on the other, imply that real growth is fairly strongly correlated with the size of *public* debt markets. One possibility – noted already in the historical experience of the United States (see Box 1) and further discussed below – could be that markets for public debt generate positive externalities for the development of other modes of financing, such as bank credit and equity financing, and thus indirectly contribute to growth.[6]

[6] There is also evidence that public and private debt issuance are highly correlated: for the countries in the sample, the coefficient of correlation between domestic public and private sector issuance during 1994–2000 is 0.5, and the coefficient of correlation between international public and private sector issuance is 0.7.

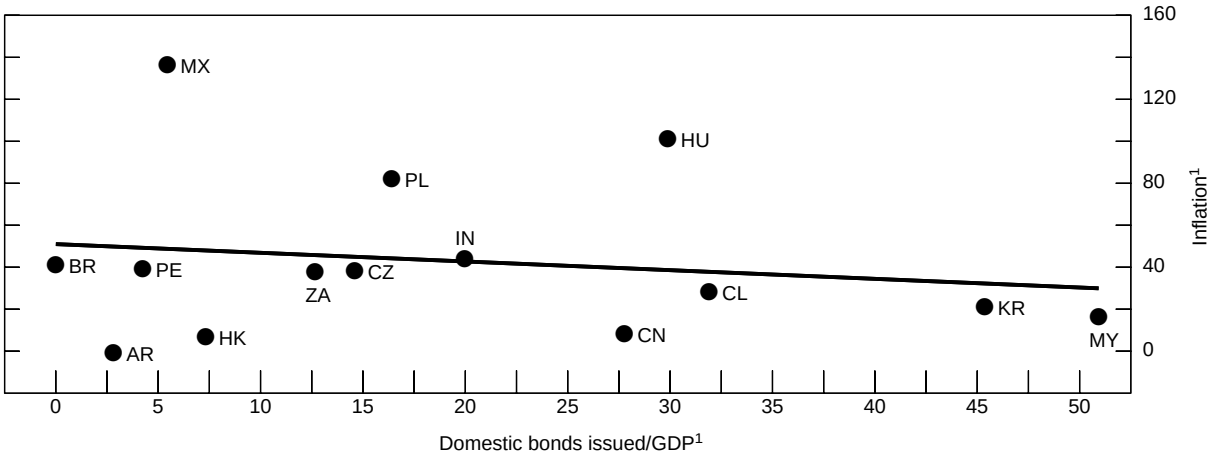
Inflation and debt markets

Low inflation has been identified in the literature as an essential precondition for the development of debt markets. Like sound public finances, low inflation is deemed to be important for creating the right incentives for investors and for facilitating the development of markets in fixed income securities.[7] High inflation and large fiscal deficits, it has been argued, distort economic behaviour in favour of short-term speculative projects and discourage the long-term investment projects conducive to sustainable economic development. A second hypothesis is that, in addition to greater reliance on the domestic bond issuance, lower inflation should also lead to smaller international bond issuance.

During 1995–2000, however, the cross-country relationship between inflation and size of the debt market appears to be weak (Graph 8). Among countries with a low cumulative increase in inflation one can find those with large domestic debt markets (Korea and Malaysia) as well as those with small debt markets relative to GDP (Argentina and Hong Kong). However, only one country with a high cumulative increase in inflation (Hungary) was able to issue a relatively large amount of bonds (about 30% of GDP) in domestic markets during this period. Regarding the second hypothesis, there is no indication that low inflation in the second half of the 1990s has led to lower issuance of international bonds by emerging economies – a line showing cross-country regression of cumulative inflation on international bonds-to-GDP ratios is flat.

Graph 8

Inflation and size of domestic debt market



[1] Cumulative; calculated over the period 1995–2000.

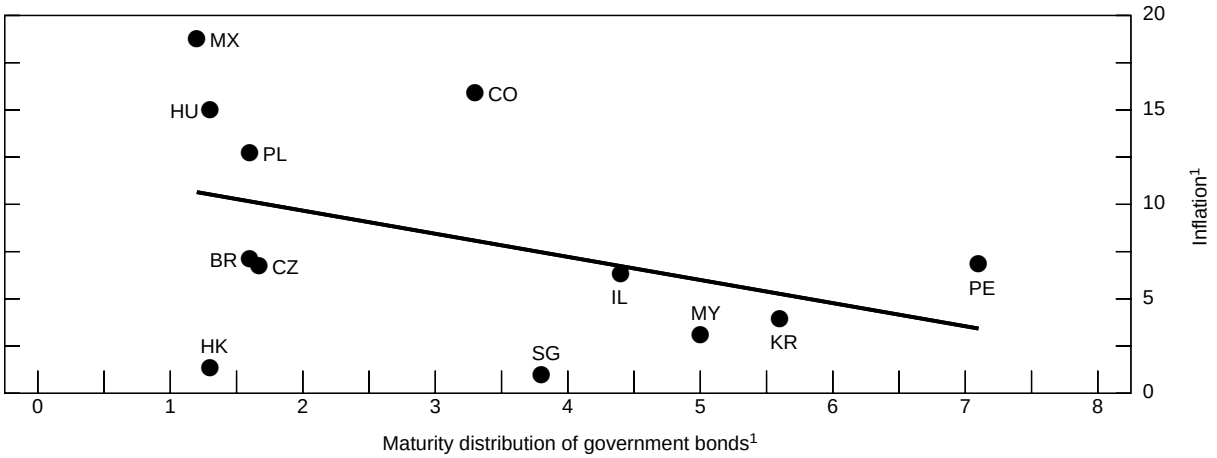
Sources: IMF; BIS.

A related question is whether low inflation has made it possible for countries to lengthen the maturity of government debt securities. This relationship seems to be more robust: when inflation performance over 1995–2000 is related to the average maturity of government bonds (Graph 9), lower inflation is associated with longer maturities. However, several countries – including Brazil, Colombia, Hungary and Mexico – have been able to lengthen the average maturity of government bonds despite relatively high inflation, indicating that other factors have also played a role in extending the maturity profile of government securities.

[7] See IMF and World Bank (2001).

Graph 9

Inflation and average maturity of government bonds



[1] Average over the period 1995–2000.

Sources: IMF; BIS.

Debt markets and alternative sources of corporate finance

The above discussion has noted the impact on bond market development of a shift from monetary to debt financing of public sector deficits. One important issue is whether bond market development has also been associated with changes in patterns of financing for the private sector. Since the Asian financial crisis it has been argued that the emerging economies should rely more on domestic debt markets so as to avoid concentrating intermediation uniquely on banks. In particular, a developed corporate bond market can help avoid a credit crunch during periods of weakness in the banking sector. Private debt markets are also expected to instil more competition into the financial system and offer longer-term financing. It has also been argued that firms may face a higher effective cost of funds in the absence of the bond market; that business investment policies may be biased in favour of short-term projects and away from entrepreneurial ventures; and that firms can expose themselves to excessive foreign exchange risks if they attempt to compensate for the lack of a domestic bond market by borrowing in international bond markets.[8]

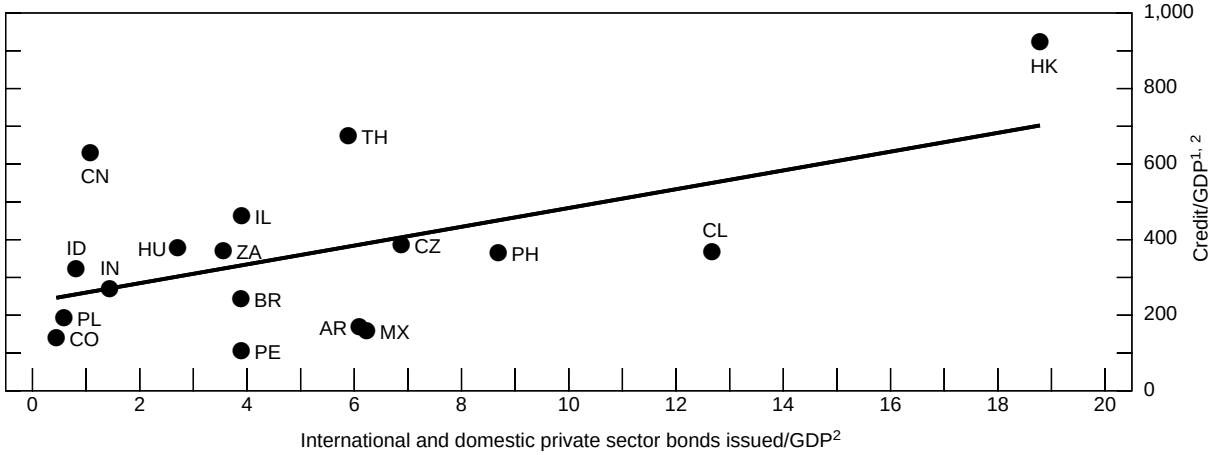
However, changing the structure of domestic borrowing towards more long-term, fixed rate, domestic currency instruments, so as to enable the private sector to hedge its currency, interest rate and maturity exposures, has proved difficult. In countries with stable macroeconomic conditions, one of the main reasons has been that banks are generally quite efficient in meeting the needs of borrowers, while savers often prefer bank deposits. The demand for finance in the emerging economies is usually very large, while the supply is limited given the low level of financial intermediation. Thus, as new channels of intermediation open up through the development of corporate debt markets, bank lending does not necessarily decline; companies that previously had limited access to bank credit can easily take up any slack left by larger corporations that have turned to bond issuance. In addition, as noted above, there may be spillover effects from the development of government bond markets on other forms of financing. These effects probably emanate from the development of the yield curve on government bonds, which helps identify the economy-wide opportunity cost of funds for investors as well as savers. These considerations partly explain why in a cross-country context the growth of private sector debt issuance and the growth of bank credit to the private sector are positively related (Graph 10).[9] The relationship is even stronger when public debt issuance is included.

[8] See Yoshitomi and Shirai (2001).

[9] The relationship in Graph 10 also holds when only *domestic* private sector issuance is considered. Korea and Malaysia are not shown because their corporate bond markets have grown much faster (by 25% and 55% of GDP, respectively) than in any other emerging economy. However, the results are similar when Korea and Malaysia are included in the sample.

Graph 10

Domestic bank credit and size of private sector debt market



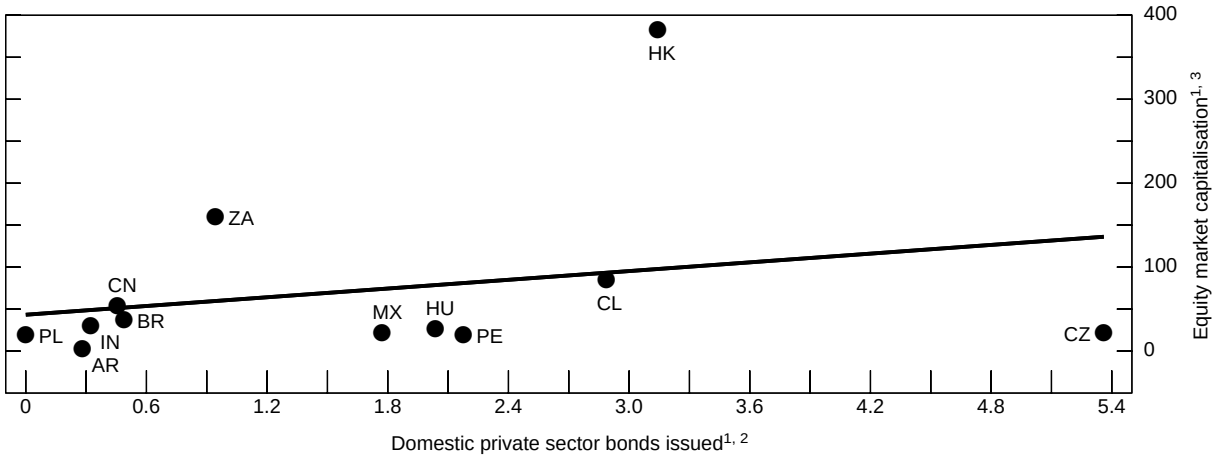
[1] Total domestic private sector bank credit. [2] Cumulative; calculated over the period 1995–2000.

Sources: IMF; BIS.

Next, the relationship between debt and equity finance is considered. It has been argued that, in environments with weak financial infrastructure, equity markets may thrive while bond markets fail to develop (see Box 2). Based on these arguments, one would not expect to observe a positive correlation between stock market capitalisation and the size of the debt market in a cross-country context. Nevertheless, such a positive relationship emerges for the countries in the sample (Graph 11). Again, this relationship may be part of positive spillover from the development of domestic debt markets on other forms of financing.

Graph 11

Equity market capitalisation and domestic private sector debt



[1] As a percentage of GDP. [2] Cumulative; calculated over the period 1995–2000. [3] End of 2000.

Sources: Standard & Poor's; BIS.

Furthermore, when spreads on international bonds and domestic equity prices are compared, the resulting correlations are in most emerging economies highly negative: a widening of the spread on sovereign bonds is usually associated with a decline in local equity prices, and vice versa (Table 4). This result should be interpreted with caution: bond spreads in domestic markets do not necessarily reflect spreads on international sovereign issues, in particular for corporate bonds, nor do spreads on international corporate bonds necessarily reflect sovereign spreads. Moreover, few companies in the

emerging economies have access to both financing alternatives.[10] Nevertheless, the absence of a single positive correlation coefficient in Table 4 indicates that financing opportunities in emerging bond and equity markets to a large extent tend to move together. These negative correlations seem to reflect the influence of idiosyncratic factors such as sentiment, perceptions of risk in specific countries, etc. Frequent co-movements of bond and equity financing in a domestic setting – as well as instances of contagion in international capital markets, which are not discussed here in detail – also raise the issue whether the bond market really constitutes an effective alternative source of corporate financing for the emerging economies; see the paper by Jiang et al in this volume.

Box 2

Why equity markets may exist where bond markets fail to thrive

What are the main obstacles to developing an efficient bond market? Why do equity markets flourish in environments with weak financial infrastructure while bond markets fail to take off? Part of the answer is inherent in the difference between debt and equity contracts. Debt claims promise repayment of principal and interest, while equity claims promise payment of a prorated share of profits and usually convey a proportionate vote in important corporate governance matters. In particular, the maximum return on a bond purchased at par value is the promised interest payments. The main challenge in pricing a bond is thus setting an interest rate that will compensate for the opportunity cost of funds, default, purchasing power and liquidity risk, as well as any idiosyncratic features the bond may have (such as a call option or a sinking fund). In environments with weak financial infrastructure these challenges are often overwhelming:

- In the absence of a secondary market in risk-free debt of a comparable maturity, it will be difficult to identify the appropriate opportunity cost of funds.
- Estimating the probability of default and the expected recovery from the liquidation or sale of the firm in the event of default will also prove difficult in the absence of credible accounting, auditing and disclosure practices, and without reliable bond ratings.
- The challenge is even greater in the absence of clear laws setting out the bondholders' rights in the event of default, when the enforcement mechanism for such rights is weak, or if the judiciary that should oversee the enforcement of creditor rights is inefficient.

In contrast to a bond, for which the upside is limited by the promised interest rate, an equity claim has an unlimited upside return, which can compensate for the perceived riskiness of the claim. Although minority shareholders will experience the same frustrations as bondholders in evaluating a firm's current condition and its earning prospects, they share an interest with the controlling shareholders and management in a rising share price. Thus, if there is an active secondary market and reliable clearing and settlement procedures for buying and selling equity claims, an active market may develop for a firm's equity even though investors would not be willing to buy its debt.

Source: Herring and Chatusripitak (2000).

[10] For a subset of countries in the sample, it was possible to calculate correlations between the spreads on selected corporate bonds (some of which are used as benchmarks) and equity prices during 1999–2001. However, the results were mixed: the correlations were negative for some countries, in line with the results observed in Table 4, but positive for others, an outcome which normally does not hold in the long run and probably represents temporary phenomena.

Table 4

Correlation between sovereign bond spreads and equity prices[1]

Argentina	Brazil	Chile	Colombia	Mexico	Peru	Russia
–0.86	–0.37	–0.79	–0.75	–0.59	–0.67	–0.53
China	**India**	**Indonesia**	**Korea**	**Malaysia**	**Philippines**	**Thailand**
–0.19	–0.50	–0.55	–0.66	–0.62	–0.86	–0.20
Czech Republic	**Hungary**	**Poland**	**Asia**	**Latin America**	**Central Europe**	**All countries**
–0.24	–0.20	–0.21	–0.74	–0.88	–0.66	–0.75

[1] Calculated over the period August 1998–October 2001; monthly averages; equity prices in national currency; bond spreads over benchmark US Treasury bonds.

Sources: Bloomberg; Datastream.

Besides the limitations of data noted above, one reason for negative correlations between bond spreads and equity prices could be any remaining foreign capital controls. To check for this possibility, correlations between yields on short-term sovereign bonds denominated in US dollars were compared with the yields on equivalent bonds denominated in local currency. The countries chosen were Argentina, which had no capital controls prior to 2002, and Hungary and Poland, which until recently had restrictions on foreign investment in short-term government bonds (Hungary lifted these restrictions in October 2001). As can be seen from Table 5, domestic and international sovereign bonds are basically perfect substitutes in the absence of capital controls (as in Argentina), but the coefficient of correlation declines sharply in the presence of such controls (as in Hungary and Poland).

Table 5

Correlation between yields on US dollar and local currency sovereign bonds[1]

Argentina	Hungary	Poland
0.91	0.29	0.49

[1] Calculated over the period January 1999–October 2001 (for Poland, August 2000–October 2001); weekly averages.

Source: Datastream.

Finally, the trade-off between international and domestic bond issuance is considered. The development of local debt markets is expected to enable governments and the private sector to reduce international bond issuance. For the sample as a whole, domestic and international bond issuances are negatively correlated (with a coefficient of correlation of –0.4). Domestic and international bond issuance are also negatively correlated when public sector and private sector securities are considered separately – the coefficient of correlation in both cases is –0.3. The development of local debt markets indeed helps reduce the reliance on international debt issuance.

4. Main characteristics of domestic debt markets

Main types of domestic debt securities

The emerging economies issue a wide array of domestic debt securities on a regular basis (Table 6). Most diversity can be found in Latin America, where floating rate, inflation-indexed, fixed rate and exchange rate linked securities are all widely represented. In Asia, central Europe and the Middle

East, fixed rate securities are most common, although Israel is an exception. The largest share of fixed rate debt is being issued in Hong Kong, Korea and Singapore. In Singapore a significant amount of other money market instruments (commercial paper, zero coupon bonds, certificates of deposits) is also issued. The proportion of fixed rate securities in Indonesia is probably underestimated, as the breakdown of domestic corporate debt by type of instrument is not available. Floating rate debt is of secondary importance in Asia while indexed debt is very rare.

Table 6

Type of domestic debt securities on issue, end-2000

(as a percentage of total)

	Floating rate	Fixed rate	Inflation-indexed	Exchange rate linked	Other
Hong Kong	29	71	0	0	–
Singapore	2	36	0	0	62[1]
Indonesia	50	0	0	7	43[2]
Korea	10	90	0	0	–
Asia	***24***	***48***	***0***	***2***	**–**
Brazil	57	15	6	22	–
Chile	1	4	89	6	–
Colombia	31	56	10	3	–
Mexico	79	6	15	0	–
Peru	1	0	13	48	38[3]
Latin America	***34***	***16***	***27***	***16***	**–**
Hungary	20	77	3	0	–
Poland	35	64	0	0	–
Israel	5	8	66	5	16[3]
Saudi Arabia	8	92	...	...	–
Central Europe and other[3]	***12***	***66***	***17***	***1***	**–**
Total sample	**22**	**40**	**15**	**6**	**–**

[1] Commercial papers and T-bills. [2] Corporate and public sector debt (other than central government debt) for which information about the type of instrument is not available. [3] Including Israel and Saudi Arabia.

Source: National data.

The share of fixed rate securities is lowest in Latin America. This is a legacy of macroeconomic instability that has resulted in large, frequent and unanticipated swings in interest rates or exchange rates in the past. Only Colombia has managed to preserve a measure of macroeconomic stability and issue a larger proportion of fixed rate bonds, although in Chile, another stable economy, almost 90% of debt is inflation-indexed. In some countries, the debt management strategies of the largest borrowers (usually governments) have aimed explicitly at raising the share of fixed rate debt. For example, Mexico increased the share of fixed rate instruments in 2001, including the issuance of 10-year bonds.

Inflation-indexed bonds are prominent in Chile and Israel. Both countries have for some time followed strategies targeting the rate of inflation. In Chile, a relatively large proportion of inflation-indexed bonds has been regarded as a sign of commitment on the part of the government to its anti-inflation strategy, as it reduces the incentives for the government to inflate its debt and thus feeds back positively into the inflation expectations of the private sector. In Israel, government debt securities have also been indexed to inflation to provide a measure of inflationary expectations. However, investors have shown a preference for fixed rate securities, so the government has issued more fixed rate bonds in recent years. The demand for floating rate securities usually comes from investors who are sensitive to interest rate swings, eg banks and investment or trust companies that finance themselves with liabilities carrying a fixed nominal value. Exchange rate linked domestic bonds are more common among Latin American issuers. Peru and Brazil maintain the largest proportion of this type of debt. In

the case of Peru, this practice is related to the high degree of dollarisation. In the case of Brazil, the motivation is less clear: it could be the backlog of previous debt management policies before the floating of the exchange rate.[11] However, during 2001, the central bank and the government increased the issuance of exchange rate linked debt to contain a sharp depreciation of the domestic currency. Chile also increased the issuance of central bank securities linked to the exchange rate in 2001, partly in response to the private sector demand for hedging instruments. Issuers in emerging markets face a trade-off: they must decide between issuing long-term bonds in foreign currency (domestically or abroad) and issuing short-term securities at home taking the interest rate risk.

Issuers and holders of domestic debt securities

Main issuers of domestic debt securities for a subset of emerging economies covered in this note for which data are available are the public sector (accounting for about one half of bonds outstanding), the corporate sector (one quarter of the total) and central banks and financial institutions (about 15% each) (Table 7). Asian economies had the largest corporate issuance. In Latin America, the proportion of bonds issued by the public sector is the same as in Asia, but financial institutions and central banks are on average larger and the corporate sector a smaller issuer of domestic debt than in Asia. The public sector is the dominant issuer in Thailand, Mexico, Poland and Israel. In Chile, the largest issuer is the central bank, which has used its paper to sterilise large capital inflows in the past. Corporate issuers account for the bulk of domestic debt issuance in Singapore, Korea, Malaysia and Peru. In Hong Kong and Korea, financial institutions seeking to comply with capital requirements by issuing subordinated debt have been prominent issuers in domestic markets.

Table 7

Issuers of domestic debt securities, end-2000[1]

	Financial institutions	Central bank	Public sector	Corporate sector
Hong Kong	64	23	5	8
Singapore	4	0	3	93
Korea	13	16	31	40
Malaysia	0	2	39	59
Thailand	1	0	83	15
Asia	***16***	***8***	***32***	***43***
Chile	27	55	4	14
Mexico	20	2	63	14
Peru	30	10	28	32
Latin America	***26***	***22***	***32***	***20***
Poland	1	14	73	12
Israel	0	16	79	5
Total sample	**14**	**15**	**47**	**24**

[1] As a percentage of total domestic debt issued in a country.

Source: National data.

The distribution of holders of domestic debt securities is shown in Table 8. Although banks on average hold the largest proportion of domestic bonds (36% of the total), institutional investors have become key holders of domestic debt securities in both Latin America and central Europe (including Israel and

[11] Because the economy is operating under a floating exchange rate, depreciation of the currency will raise the proportion of dollar-linked debt in the total.

Saudi Arabia). Other financial institutions are on average the third largest group of domestic bondholders, followed by other residents, central banks, and non-residents, who on average hold only 3% of domestic debt securities for a subset of countries shown in Table 8.

Table 8

Holders of domestic debt securities, end-2000[1]

	Central bank	Banks	Institutional investors	Other financial institutions	Non-residents	Others
Hong Kong[2]	1	65	34	–	–	–
India	7	61	19	–	–	–
Indonesia	–	96	–	4	–	–
Korea	2	63	20	14	2	–
Malaysia	7	–	–	24	1	68
Thailand	11	39	26	24	–	–
Asia	***5***	***54***	***17***	***11***	***1***	***11***
Brazil	22	30	0	49	–	–
Chile	–	31	62	7	–	–
Colombia	25	20	46	2	–	7
Mexico	–	57	13	29	1	–
Peru	3	16	43	14	–	24
Latin America	***10***	***31***	***33***	***20***	***0***	***6***
Hungary	8	23	26	2	15	23
Poland	12	34	17	26	12	–
Israel	4	16	52	7	–	20
Saudi Arabia	–	23	36	41	–	–
Central Europe and other[3]	***6***	***24***	***33***	***19***	***7***	***11***
Total sample	**7**	**36**	**28**	**17**	**3**	**9**

[1] As a percentage of total domestic debt issued in a country. [2] Data refer only to HK$ debt securities lodged with the Central Money Markets Unit at the end of September 2000, which accounts for about 70% of the total domestic debt securities outstanding. [3] Including Israel and Saudi Arabia.

Source: National data.

Institutional investors are large holders of domestic bonds in Chile, Colombia, Hong Kong, Hungary, Israel, Peru, Saudi Arabia and Thailand. In Asia, banks on average hold between two thirds and 95% of domestic debt securities (with the exception of Thailand). Other residents – which include retail investors and corporations – are significant domestic bondholders in Malaysia, Hungary, Israel and Peru. Hungary and Poland have the largest proportion of non-residents among holders of domestic bonds; they hold on average about 15% of domestic bonds outstanding.

Additional information on the structure of domestic debt holdings is provided in Table 9. The following patterns of holdings are of particular interest.

- In Asia, central banks on average hold a fairly large proportion of their own debt securities and bonds issued by the public sector. It is not clear why Asian central banks stand out in this respect compared to other emerging market regions. Furthermore, Asian commercial banks are on average the largest holders of all four types of domestic debt – securities issued by financial institutions, central bank, and the public and corporate sector – both among bondholders in Asia and compared to other regions. Asian institutional investors hold for the most part corporate bonds and debt instruments issued by financial institutions, but other investors hold on average even larger proportions of these securities. In particular, non-financial resident investors ("Others" in Table 8) have on average very large holdings of public and corporate sector bonds.

- In contrast to Asia, central banks in Latin America hold only public sector securities. Latin American commercial banks hold in their portfolios a large proportion of central bank and financial institutions' securities, and a smaller proportion of public sector and corporate bonds. As noted above, central bank securities have been widely used for sterilising capital inflows in the past. In addition, central bank paper has been regarded as a better collateral to access the liquidity facilities at the central bank, partly reflecting the 1980s experience with government debt defaults. Institutional investors hold mostly corporate and financial sector bonds. Large holdings of financial sector bonds partly reflect close association in ownership between institutional investors and banks in the region.
- Banks in other regions hold for the most part central bank bonds, and to a lesser extent public and corporate bonds. Institutional investors have on average large holdings of all four types of domestic debt securities. In some countries, institutional investors hold a large proportion of short-term central bank and financial institutions' paper because of inverted yield curves. Compared to other emerging markets, non-residents in these regions hold a relatively high proportion (on average, 10%) of public and corporate sector bonds.

Table 9

Structure of domestic debt holdings by type of securities issued[1]

	Central bank	Banks	Institutional investors	Other financial institutions	Non-residents	Others
Asia						
Debt securities issued by:						
financial institution	–	51	37	12	–	–
central bank	29	75	21	38	5	8
public sector	24	59	19	14	1	83
corporate sector	5	43	46	23	–	61
Latin America						
Debt securities issued by:						
financial institution	–	43	50	20	1	33
central bank	–	68	23	27	–	–
public sector	29	28	29	25	1	14
corporate sector	–	30	62	34	–	16
Central Europe[2]						
Debt securities issued by:						
financial institution	–	10	40	50	–	–
central bank	2	46	49	5	–	25
public sector	8	25	32	20	9	21
corporate sector	–	23	48	13	10	20
Total sample						
Debt securities issued by:						
financial institution	–	35	42	27	–	11
central bank	15	63	31	23	2	11
public sector	18	37	27	24	4	39
corporate sector	5	32	52	23	3	32

[1] Entries in this table represent the percentage of bonds issued by different issuers (financial institutions, central banks, public and corporate sector) that is on average held by different holders of domestic bonds (central banks, banks, institutional investors, etc). Because the entries represent country averages, rows and columns do not add up to 100. [2] Including Israel and Saudi Arabia.

Source: National data.

Maturity structure of domestic debt securities

The maturity structure of the stock of debt is of key importance for the development of domestic bond markets in the emerging economies. A high proportion of short-term debt tends to increase the refinancing risk and adds to macroeconomic instability. While debt stocks tend to be lower in emerging markets relative to industrial countries, average debt maturities are much shorter, making the emerging economies more vulnerable to sudden changes in financial conditions.

The proportion of short-term debt has declined for both international and domestic securities since 1995, in particular in Latin America, and it is significantly lower for international than domestic securities (Table 10). The longer maturity profile of international securities is not necessarily a source of strength: while the longer maturity profile reduces the refinancing risk, it increases the exchange rate risk, given that most international securities are denominated in foreign currency.[12] In the short-term sector of the yield curve – usually the most exploited in emerging markets – one can find both government (treasury and central bank bills) and corporate sector instruments (bills of exchange, commercial paper, certificates of deposit).[13] Short-term securities account for a larger proportion of marketable debt in emerging economies than in industrial countries because of the relatively large proportion of domestic borrowing carried out by governments in domestic markets and placed with the banks.[14] As a result, in most emerging economies debt maturity profiles are defined in domestic markets for government securities. In Latin America, central banks have also issued significant amounts of short-term paper to mop up liquidity created by capital inflows. In recent years, however, efforts directed at containing the effects of capital inflows on domestic liquidity have changed. The volatility previously experienced in interest rates has passed to the exchange rates as floating exchange rate arrangements have become prevalent in the region.

Table 10

Share of short-term debt securities

(as a percentage of total)[1]

	Domestic securities			International securities		
	1995	**1998**	**2000**	**1995**	**1998**	**2000**
Asia	19	23	22	5	7	6
Latin America	53	41	37	12	6	7
Central Europe and other[2]	15	12	15	...	...	...
Total Sample	**29**	**25**	**25**	**9**	**7**	**6**

[1] Country averages. [2] Including Israel and Saudi Arabia.

Source: National data.

Although recent issuance has lengthened the maturity profile of international and domestic debt, the share of short-term debt in Latin America and central Europe remains high compared to Asia, where the average ratio of short-term debt has remained fairly stable at around 22%. At the country level, there are considerable differences in trends: the proportion of short-term debt fell in Brazil (from 95% in 1995 to 42% in 2000) and Poland, while it rose in Chile (from 28% to 45%) and Hungary.

[12] This is sometimes referred to as “original sin”: developing countries cannot issue (long-term) international securities in their own currency. The Chilean government has been very proactive in marketing international issues of its bonds or other investment grade issuers in domestic currency. Much of this paper is in portfolios of domestic pension funds.

[13] Securities in this sector of the yield curve reach up to a maturity of two years.

[14] Countries with developed bond markets (Hong Kong, Singapore) also have higher ratios of short-term debt (about 70% and 31%, respectively) than countries with less developed financial markets.

As noted above, the debt maturity profile in emerging economies largely reflects the maturity structure of their government debt (Table 11; see also the table on page 66). Even where government securities with maturity between one and five years account for a large proportion of debt (Korea, Indonesia, Thailand), a significant proportion of these securities mature between one and two years. The long and very long part of the maturity spectrum (ie bonds with maturity of 15–30 years) is non-existent in most emerging economies. The lack of mortgage-backed securities of a meaningful size and zero coupon bonds is another noticeable gap in the product range in emerging bond markets.

Table 11

Distribution of government bonds outstanding by remaining maturity, 2000

(as a percentage of bonds outstanding)

	Less than 1 year	Between 1 and 5 years	Between 5 and 10 years	Over 10 years	Average maturity (years)
India	4	36	37	23	7.1
Hong Kong	74	20	6	0	1.2
Singapore	31	38	31	0	4.1
Indonesia	4	34	62	0	6.0
Korea[1]	20	56	18	6	3.4
Malaysia	18	52	20	10	4.7
Philippines	9	27	30	34	14.7
Thailand	15	48	37	0	...
Brazil	42	42	6	10	2.5
Chile	45	20[2]	35[3]	0	...
Colombia	30	42	20	8	3.5
Mexico	58	40	2	0	1.5
Peru	2	56	42	0	6.4
Czech Republic	79	11	10	0	1.7
Hungary	44	45	11	0	2.3
Poland	20	71	9	0	2.6
Israel	18	54	27	2	11[4]/3.6[5]
Saudi Arabia	7	34	30	29	6

[1] Distribution by original maturity. [2] Maturity between one and three years. [3] Maturity over three years. [4] International. [5] Domestic.

Source: National data.

Corporate bonds

Corporate bond markets grew strongly over the second half of the 1990s. While in Asia most of this growth took place in domestic bond markets, in Latin America issuers maintained access to international bond markets (see Table 1 above) until 1998. Asian corporate bond markets are the fastest growing, with over 60% of the domestic bonds outstanding in Malaysia and Hong Kong being corporate bonds, and Singapore's deep bond market attracting many offshore issuers, including multilateral organisations.[15] Risk diversification away from banks and the need for a different source of

[15] Earlier this year, the African Development Bank became the first supranational to issue in the Singaporean bond market.

finance for the economy have been important drivers of the process. Korea, where corporate bond issuance accounts for 45% of the market (this proportion was even larger before the recent financial restructuring of Daewoo Group), and India also have relatively large domestic corporate bond markets. In Latin America, corporations tend to issue bonds in international markets, but the rapid growth of the pension fund industry has also stimulated domestic corporate issuance in recent years. In central Europe, Israel and Saudi Arabia, domestic corporate bond markets are not well developed.

Several country papers in this volume suggest that slow growth of corporate bond markets has been due to restrictive investment regulations applying to institutional investors and financial institutions, and the lack of investment grade companies. As a result, primary placements of corporate bonds are often sporadic, usually from companies with high credit ratings, and geared towards specific segments of the market, frequently the pension funds.[16]

Corporations usually rely on underwriting or syndication to sell and distribute their securities. Underwriting may be conducted on a firm commitment basis so that the securities are effectively bought for selling on by the intermediary institution that advises the issuer. Alternatively, banks may sell bonds under a best efforts agreement for a fee. Investment banks specialise in credit analysis of securities offered and issuers. Because information gathering and dissemination have a fixed cost, it is possible for some market participants (brokers and investment banks) to specialise in bringing the securities of less frequent borrowers to the market (the more issues brought to the market, the lower the average cost). Investment bank techniques might be difficult to build up and it might be sensible to acquire them at an early stage of development of the bond market.[17]

The expansion of corporate issuance has generated a significant demand for credit analysis. Regulators have increasingly demanded more transparency and this has led to a steady rise in the number of credit ratings. Most emerging market economies are aware of the need to establish a credit rating industry and in most countries private rating agencies operate in national frameworks. The exception seems to be China, where credit rating agencies do not seem to operate. In some countries, ratings are obligatory in order to be able to offer the security publicly (eg Mexico). It is somewhat odd that in some countries ratings do not suffice for the securities to be acquired by qualified investors such as pension funds or insurance companies. Moreover, the specific regulator must approve the prospective investment. This may affect the public perception about the quality of ratings.

If credit quality is a major concern of domestic regulators, asset-backed securities have the potential to provide a significant boost to the development of the bond market. A few governments in emerging markets have been reviewing the experience of economies where mortgage-backed securities have evolved into a benchmark for domestic debt markets (eg Norway and Denmark). In emerging markets, mortgage and car loans receivable are the most common credits to be securitised.[18] Some argue that securitisation of mortgages owes much to government guarantees. In this way, the implicit subsidy granted could be taking a significant share of profitable business away from banks. This cost has to be weighed against the cost of providing liquidity and guarantees for banks' liabilities.

Trading, liquidity and marketable debt

Since the Asian crisis in 1997, trading in domestic debt rose from 25% to 44% of total trading in emerging market bonds (Table 12).[19]

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[16] See, for example, the paper prepared by Sidaoui in this volume.

[17] Many analysts argue that consolidation among international banks and brokers in industrial countries was prompted by the lower cost of expanding business through acquisition compared with the build-up of own capabilities. For a detailed analysis of the recourse to underwriting and private placement in emerging markets, see the paper by Hawkins in this volume.

[18] See the paper by Hawkins in this volume.

[19] The analysis on trading is based on figures for a subset of bonds issued by emerging economies' residents (the government or the corporate sector).

Table 12

Emerging market tradable debt: composition of turnover

(face value amounts, as a percentage of total)

	1997	2001
Brady bonds	41	16
Non-Brady bonds	23	36
Local market instruments	25	44
Debt options and warrants	6	3
Loans	5	1

Sources: EMTA (1998); EMTA (2001).

Trading in local instruments has gained share at the expense of Brady bonds, international bonds, debt options and loans. This shift reflects the increase in the stock of domestic debt instruments since 1996 (see Graph 1 on page 3), as well as the sharp drop in turnover of most bonds following the market turmoil in 1998. In particular, transaction velocity of Brady bonds fell from 16 to 8 between 1997 and 2001 (Table 13). Transaction velocity also fell for non-Brady international bonds and local securities, but this has partly reflected a sharp increase in the outstanding stocks of these bonds. It should be noted that the rise to pre-eminence of domestic debt as the most widely traded debt has not come with a degree of liquidity comparable to that achieved by foreign debt (and in particular Brady bonds).

Table 13

Emerging market tradable debt

(face value amounts, in billions of US dollars)

	1997			2001		
	Turnover	**Stock**	**Ratio**	**Turnover**	**Stock**	**Ratio**
Brady bonds	2,403	150[1]	16	573	71	8
Non-Brady bonds	1,335	249	5	1,255	421	3
Local market instruments	1,506	927	2	1,517	1,087	1
Debt options and warrants	365	–	–	102	–	–
Loans	305	40[1]	8	37	5	7
Total	**5,914**			**3,484**		

[1] 1996 figures.

Sources: EMTA (1998); EMTA (2002); Merrill Lynch (2002).

The increase in the share of domestic debt trading took place at a time when total trading in emerging debt contracted, local bond issuance rose and a wave of consolidation reduced the number of international financial institutions dealing with emerging market securities. Total trading in emerging debt securities amounted to $3.5 trillion in 2001, some 66% lower than the peak volume in 1997 (Table 14). As Russia defaulted on its domestic and part of its foreign debt in 1998, trading volumes

and issuance of international securities contracted sharply and net portfolio debt flows to the emerging economies were severely hit.[20]

Table 14

Emerging market tradable debt

(in billions of US dollars)

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Annual turnover	1,978	2,766	2,738	5,296	5,914	4,174	2,184	2,846	3,483
Debt stock	–	645	725	940	1,241	–	1,495	1,620	1,627
Ratio	–	4	4	6	5	–	1	2	2

Source: BIS calculation based on EMTA and Merrill Lynch.

Local bond issuance continued to increase after a pause in 1999, which helps explain the sustained growth in total tradable debt. The rise of domestic bond issuance in Latin America and Asia has been driven by sovereign issuance. In Asia, and to a lesser extent Latin America, governments have continued to repay international debt while issuing domestic debt. The pattern of expanding domesticmarkets is common across all regions but not across all issuers. In particular, corporate external debt has continued to grow. As a result, Latin America and Asia have increased their share of emerging market tradable debt (Table 15). Meanwhile, in central Europe equity financing has become more important and several transition economies have substantially reduced their debt in recent years, so that bond financing has declined relative to other regions.

Table 15

Emerging market tradable debt

(regional breakdown as a percentage of total)

	1997	2000	2001
Latin America	35	48	47
Asia	22	29	31
Central Europe	33	14	14
Middle East / Africa	10	9	9

Source: Merrill Lynch (2002).

Institutional investors

The growth of institutional investors, particularly pension funds, has led to a significant boost in domestic bond markets in emerging economies. As already noted, institutional investors now hold a significant share of domestic securities (Table 8). In particular, pension funds managed assets worth almost $280 billion in 2000 (12% of GDP on average for a group of countries for which data were available) (Table 16). Institutional investors have a longer investment horizon, driven by their ability to

[20] Hedge funds were not large players in emerging market debt markets and their activities seem to have been restricted to some episodes during the Asian financial crisis of 1997. However, the reduction of proprietary trading and treasury operations of large financial institutions did lead to a reduction in emerging market trading and liquidity. The drop in net portfolio flows has also been linked to the maturing of large amounts of tradable debt, so that higher repayments contributed to lower net flows.

pool investments and thus improve total return, and by virtue of holding somewhat more certain and longer-term liabilities. Because they are not subject to liquidity constraints as stringent as banks or retail investors, their investments can be channelled to assets with longer-term repayments. Although there is no clear evidence that social security reforms have increased saving rates, the rise of pension funds (and to a lesser extent insurance companies and mutual funds) is an important factor explaining the shift in the composition of saving in emerging economies towards the longer term.

Table 16

Pension fund assets under management, end-2000

	billions of US$	percentage of GDP
Argentina	20	7
Brazil	74	12
Chile	36	51
Colombia	4	4
Mexico	28	5
Peru	3	5
Latin America	**165**	**14**
Korea	55	14
Indonesia	0	0
Asia	**55**	**7**
Hungary	1	3
Poland	2	1
Israel	26	23
Saudi Arabia	30	17
Central Europe and others[1]	**59**	**11**
Total sample	**279**	**12**

[1] Including Israel and Saudi Arabia.

Sources: Salomon Smith Barney (2001); national data.

In addition to providing for the depth and breath of domestic financial markets in general, and of bond markets in particular, institutional investors are a force for change for other reasons as well. First, the development of the asset management industry brings along higher standards for investor protection, transparency and governance practices. Second, many observers regard institutional investors as a countervailing force to existing commercial and investment banks, arguing that pension funds foster competition and improve the efficiency of loans and primary securities markets. Third, institutional investors are a paramount force in promoting financial innovation and the modernisation of trading systems. It should be noted, however, that in some instances institutional investors face restrictions of an institutional or regulatory nature that may hamper their appetite for innovation.

The role of institutional investors in emerging economies varies across countries. Publicly run pension funds have, for several years, been the backbone of the social security systems in Singapore and Malaysia. In Korea, the Philippines and Thailand, pension funds do not cover a large proportion of the population, although recently there has been a shift to improve their coverage and the way they operate. In Hong Kong, the mandatory provident fund scheme began operating in 2001, while in China legislation has been passed to implement a three-tier pension system. In Poland and Hungary, pension funds have grown significantly after social security systems were reformed in the mid-1990s. In Latin America, social security reforms created many new privately run institutional investors in Argentina, Colombia, Mexico and Peru. Most of these reforms followed the model implemented successfully in Chile in the second half of the 1980s.

Several obstacles continue to hinder the development of a domestic institutional investor base. Pension funds continue to face the competition of pay-as-you-go systems. In addition, pension funds are subject to strict licensing requirements and excessive portfolio investment restrictions. While there is an obvious concern for the safety of investments, in some cases the regulation of institutional

investors seems to be geared to other objectives: in Mexico, for example, pension fund investments are restricted to government bonds. Just a handful of emerging markets keep a regulatory approach that does not distort significantly the choice of investments. Even in Chile, pension funds are required to invest at least 50% of their assets in government paper. Insurance companies are also subject to very strict portfolio investment rules that create a bias towards investing in domestic debt, but there are a few countries where "prudent man rules" schemes are in place.

The investments of pension funds are frequently biased towards domestic securities (Table 17).[21] The proportion of foreign assets in pension fund portfolios is relatively small, particularly bearing in mind that local markets for bonds and equities are a tiny proportion of world securities markets. According to one estimate, emerging bond markets account for just 6% of global bond markets.[22] Pension funds in Colombia, Chile and Peru hold the largest proportion of foreign assets.[23] Saudi Arabia is another interesting case, with foreign assets held by institutional investors dropping from 50% to 10% between 1995 and 2000.

Latin American pension funds seem to be more diversified than Asian and central European funds. Pension funds in Asia invest heavily in equity, as Asian equity markets are quite deep. But in recent years, Asian pension funds have been diversifying into private sector bonds. Pension funds in central Europe and the Middle East invest heavily in government paper.

Regulators often require institutional investors to diversify their holdings of assets out of concern for the safety of investments. In particular, diversification can reduce idiosyncratic risks. However, regulators in emerging markets have generally opted for strict quantitative limits on investments rather than a prudential approach that favours diversification and avoids risk concentration (Table 18). These limits work reasonably well when funds are young, but as their assets grow the risk of the portfolio increases because the diversification properties of the portfolio are reduced. In Chile, where the system has operated for over 20 years, pension funds have accumulated a significant share of assets in the equity market. As a result, their buying or selling decisions have a significant effect on asset valuations. To overcome this effect, the government recently increased the permitted limit on foreign asset holdings.

One approach to asset diversification is to allow institutional investors to internationalise their portfolios. Regulations in most emerging markets tend to restrict such a move. Diversification into foreign assets is forbidden in Korea, Mexico and Thailand. Other countries (eg Chile and Peru) limit investments in foreign assets or restrict investments in certain types of assets. For example, in Thailand at least 60% of assets have to be invested in government or government-guaranteed bonds, while in Colombia and Israel portfolio managers often hold only foreign assets "approved" for investment, which might effectively tilt the portfolio toward domestic assets. In Singapore, the government is seeking to encourage individuals to take a more active role in the management of their portfolios. This move should be facilitated by the differential in return between a government bond (between 2% and 4%) and alternative investments available under authorised investments.

Public sector pension funds are subject to significant political pressure. The interests of their beneficiaries might not be fully taken into account if there is a concentration of investment risk or investments are conducted on non-economic grounds. This is independent of whether pension funds are publicly or privately run. In Singapore, Malaysia and Brazil, where pension funds are run by government agencies, resources are channelled to specific assets whose rates of return are below those of other competitive assets. A recent study found that the Central Provident Fund of Singapore had a cumulative rate of return of –0.3% between 1987 and 1996.[24] In Brazil, resources from the social security trust fund are channelled through the government-owned development bank, which provides project financing at subsidised interest rates. In Malaysia, the provident fund lent money for an international airport and to a local steel maker that the government has already bailed out twice.

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[21] This is also true in many developed countries.

[22] Merrill Lynch (2001).

[23] In the case of Colombia, this is explained by the large holdings of government bonds issued in international markets and held by domestic pension funds.

[24] See World Bank, *Asia Pensions* (1998); quoted in East Asia Analytical Unit (1999), p 149.

Table 17

Structure of pension fund assets

(as a percentage of total securities holdings)

	Foreign securities	Domestic securities		
		Public sector bonds	Other bonds	Other securities
Indonesia				
1995	...	...	30	70
2000	...	...	42	58
Korea				
1995	...	2	25	73
2000	...	2	43	55
Chile				
1995	0	39	7	54
2000	11	36	6	45
Colombia				
1995	...	...	...	...
2000	23	35	18	24
Peru				
1995	...	22	31	47
2000	7	9	36	48
Hungary				
1995[1]	0	73	3	1
2000	2	66	12	18
Poland				
1995	...	...	...	...
2000	0	92	0	8
Israel[2]				
1995	0	67	3	30
2000	1	71	5	23
Saudi Arabia				
1995	50	50	...	...
2000	10	90	...	...

[1] 1998. [2] Average of pension funds.

Source: National data.

Another important issue is the way fund managers are rewarded. In most emerging market economies fund managers charged with managing institutional investors' assets are rewarded with a share of fee income from contributions. In these circumstances, fund managers tend to increase their commercial expenses, as attracting more members to their scheme increases contributions. In Chile, Argentina and Mexico, expenses incurred in marketing are a significant share of fund managers' total operating costs. A performance-related compensation scheme, together with greater freedom in the choice of the optimal investment portfolio, might help profitability and financial strength. In Singapore, the government has started to farm out some portfolios of the central provident fund so as to improve investment performance. Fund managers' fees are tied to investment performance, which provides an incentive for better credit analysis and greater efficiency.

Table 18

Investment limits applying to pension funds

Asia		
China	Institutional investors can hold bonds denominated in foreign currency or issued by foreign tenders.	
India	Non-government provident funds can hold:	
	• Central government securities (including limits on 100% Gilt Mutual Funds): up to 25%	
	• Provincial government securities and central provincial government guaranteed securities: up to 15%	
	• Public sector bonds and CDs issued by public sector banks: up to 40%	
	• None of the above three categories: up to 20%	
Hong Kong	Limits in terms of types, currency and original or remaining term to maturity of assets.	
Indonesia	Bonds: 20% (except for government bonds)	
	Corporate bonds: 10%	
	Equity: 10%	
Korea	Investments in sub-investment grade bonds not allowed.	
	Acquisition of securities issued by non-residents in local currency with a maturity shorter than one year must be approved by the central bank.	
Thailand	Investments in foreign assets are not allowed.	
	At least 60% of assets in T-bills, government bonds and bonds issued by a state-owned enterprise and guaranteed by the government.	
	No more than 40% in other securities.	
Latin America		
Chile	Limits in terms of investments in foreign assets and credit risk.	
Colombia	Public sector:	MBS: 40%
	Treasury: 50%	ABS: 20%
	Central bank: no limit	Corporate bonds issued by:
	Deposit insurance: 10%	financial institutions: 30%
		others: 30%
		Sight deposits: 2%
		Foreign fixed income: 10%
Mexico	Investments in foreign assets are not allowed.	
Peru	Up to 7.5% in foreign securities rated as investment grade.	
Emerging Europe		
Hungary	Investments in foreign assets: 30%. Investments in non-OECD countries: 20% of the previous limit.	
Poland	Investments in:	
	foreign assets: up to 5%	
	bank deposits: up to 20%	
	equity: up to 40%	
	mortgage letters: up to 30%	
	Treasury and central bank: no limits	
Middle East		
Israel[1]	Provident funds: at least 50% in government bonds or corporate bonds with at least Aa rating or deposits with a bank with a credit rating of at least Aa.	

[1] Funds of individuals near to retirement: 93% in government bonds. Funds of young contributors: 70% in government bonds.

Source: National data.

Other aspects of domestic bond markets

Bonds in emerging economies are generally traded in the over-the-counter market supported by dealers and brokers. This is mainly due to the diversity of characteristics of bonds traded (coupon, maturity, sinking fund, fixed or floating rate, etc) and calls for some degree of specialisation. As from the mid-1990s, inter-dealer screens have offered the bond market a number of advantages, including facilitating swifter and more accurate trading, and the anonymous conduct of large-scale business.

However, in emerging markets inter-dealer screens are not well developed and sometimes pose a risk for the development of the markets because of the lack of infrastructure. In particular, the successful completion of trades is highly dependent on the development of payment and settlement systems, centralised depository institutions, and efficient clearing systems for securities. For these reasons, several central banks have taken a proactive approach in developing market infrastructure and institutions. The experience of more developed economies shows a similar development path for the market, but central banks gradually withdrew from this role once the market gained maturity. Stock exchanges have kept a significant share of corporate bond trading in Poland, Malaysia and Korea, although over-the-counter trading in Korea is also permitted.

The efficient pricing of risk and liquidity are directly linked to the sound functioning of secondary markets. Cash, repo and forward markets most often develop with the deepening of the market and the increase in liquidity.[25] This has led some policymakers to emphasise a level playing field for the development of the bond markets. Central bank intervention, particularly in price setting, is generally deemed undesirable, as it could confuse the market about the central bank's true intentions. It is important to recognise that the liquidity of a market depends on several factors, some of them cascading from the primary markets, and that central banks should focus on daily liquidity management operations to smooth fluctuations in key money market rates. The pre-eminent role of governments as issuers may allow them to play a significant role. It is very often the case that the short term of the yield curve is crowded with a large number of issues from different issuers, occasionally in amounts that exceed the underlying demand. The governments should therefore consider leaving this part of the market to the corporate sector. In Poland, for example, the share of short-term government issues has halved since the mid-1990s.

There are other factors that help boost liquidity in bond markets. A diversified and heterogeneous investor base enhances market liquidity. Diversity of investment horizons, risk tolerance levels, and investment objectives among investors provides opportunities for trading, while larger flows help with the efficiency of pricing. The benefits of diversification of the investor base could be achieved through indirect means. The development of the fund management industry could help channel retail investors to the bond markets, notwithstanding the use of retail schemes in primary markets, as the latter generally make available a limited set of government securities and do not help in expanding the investor base for other fixed income instruments.

Two long-standing difficulties for the trading of bonds in emerging economies are clearing systems and central depository institutions. Poor clearing systems tend to hamper trading as transactions are settled on a bilateral basis among market participants. In this way, trading credit lines are quickly exhausted unless clearing and settlement takes place on a continuous basis. Furthermore, systemic risk issues may arise when clearing and settlement systems are poorly run. In Chile, the central bank is revamping the clearing and payment system infrastructure to reduce inefficiency and pyramiding of risks. In Brazil, the payment system is undergoing a radical change that will improve risk management and reduce the pyramiding of risk on the central bank. In central and eastern Europe, central depositories were built from scratch and are operating with high levels of efficiency. It has been more difficult to reform systems already in place to catch up with new developments. In Korea, the attempts to introduce securities registries for corporate bonds have been held back by vested interests.

The lack of efforts to foster the development of repo markets in emerging economies is in sharp contrast to the efforts undertaken to reform primary markets. Several emerging economies have repo markets but they are dominated by trading between the central bank and financial institutions rather than between financial market participants, even though repo operations are a cost-effective means to finance bond portfolios and hedging. In other cases, lack of good collateral has been identified as one of the main factors adversely affecting their development. No significant repo market exists in central Europe. In the Czech Republic, the size of the market is the main obstacle, while in Poland there is competition from an incipient commercial paper market and additional settlement charges are imposed on repo transactions. In Korea, a failed experiment in 1998 and withholding taxes discouraged the repo market until recently. Partly as a result, Korea has seen a worsening in secondary market

[25] Repo stands for sale and repurchase agreement, a money market financial transaction structured as a contractual agreement for the sale of a security today and the purchase of the same security in the near future, most generally up to a year. In developed financial markets many observers regard repos as risk-free credit. There are three types of repos: classical repo, sell/buyback and securities lending.

conditions despite a large increase in issuance. While repos are the most widely used instrument in money markets, they are not the only one. In Hong Kong, a liquid market in bills and notes is at the centre of the money markets.

Another important element for the development of secondary markets is the amount of capital committed to trading activities by dealers and brokers. The trading volume is directly related to the capital base of the trading business, and there is evidence that severe shocks tend to reduce the risk capital base of banks in developed economies. In the presence of a major shock, there may be a sharp increase in trading activity at the same time that risk capital decreases and a contraction of credit takes place. This may result in wider variations of prices or could even cause a market disruption. One way of providing a wider capital base is to involve internationally diversified financial institutions that may face less severe constraints in their provision of capital in response to adverse domestic developments.[26]

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[26] This might depend on the nature of the shock.