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The Growth in Government Domestic Debt:

Changing Burdens and Risks

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Abstract

This paper analyzes the recent growth of government domestic debt, including central bank debt, using a new data base on government domestic debt in developing countries with large, open financial systems. On average, government domestic debt grew much faster than GDP between 1994 and 2004 and became larger than foreign debt. The rapid growth of domestic debt reflects financial crises, the growth of central bank debt and the greater attractiveness to governments of issuing domestic debt as well as the recent increase in demands for it. Both its attractiveness and the increased demands for it reflect the current benign international environment to some degree.

The main risk of government debt, domestic or foreign, remains its overall size relative to a country's fiscal, financial, and political institutions. While government domestic debt can help the domestic private capital market, large domestic debt, like large external debt, has risks. For example, there can be "sudden stops" in the demand for domestic debt as well as in foreign lending. Governments need to be aware of the risks and burdens in domestic debt issue—crowding out small borrowers, transferring risks to banks when issuing longer maturity, fixed-interest domestic debt and reducing returns, and imposing risks on holders of pensions, annuities, and life insurance policies. Growth of central bank debt can divert central banks from pursuit of the objective of price stability.

This paper—a product of the Economic Policy and Debt Department, Poverty Reduction and Economic Management Network—is part of a larger effort in the department to analyze the impact of debt on economic development. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at jhanson@worldbank.org.

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1. Introduction

The focus of interest in emerging market countries' debt is shifting to government domestic debt. In the past, developing countries suffered numerous foreign exchange crises that were often associated with large foreign debt. Correspondingly, interest in their debt was focused on foreign debt. However, since the mid-1990s, government domestic debt has grown in importance in developing countries, as has researchers' interest in it.[1]

The growth in government domestic debt reflects various factors. The banking crises of the last 15 years led to substantial issuance of government domestic debt, both to recapitalize banks and to fund governments when the supply of foreign loans declined. Since then, governments in both crisis and non-crisis countries have continued to rely increasingly on domestic debt. It is attractive to governments because its costs have fallen compared to the past and relative to foreign debt. These lower costs partly reflect improvements in their macroeconomic situation and the growth of new buyers, domestic and foreign. Governments also may perceive domestic debt as less volatile than foreign debt after the experience with the crises of the last 15 years and matching the currency of their revenues. In addition, the growth of government domestic debt has well-known positive spillovers in the development of private capital markets. Growing academic interest in government domestic debt reflects the possibility that it may reduce some of the problems associated with the crisis-generating cutoffs of international capital flows – "Sudden Stops"—and with borrowing in foreign currency — "Original Sin".[2]

Many authors nonetheless argue that the main risk related to government debt remains its size relative to a country's GDP and, probably more importantly, the country's fiscal, financial, and political structure, not the location or currency of debt issue.[3] This paper argues that while the composition of debt, for example, foreign or domestic, may have some importance, it should not be overstated. For example, excessive debt and negative shocks can contribute to a "Sudden Stop" in the demand for government domestic debt as well as for a country's foreign debt. To some extent, the current attractiveness and low cost of domestic debt may reflect the benign international environment, not fundamental changes. In addition, not only is domestic government debt not a clear solution to the aforementioned problems, it carries its own risks and burdens within the economy through its potential impacts on the financial system. This paper examines these risks and burdens and makes suggestions to reduce them.

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[1] See for example, Borensztein, Chamon, Jeanne, Mauro, and Zettelmeyer. 2004; Borensztein, Levy-Yeyati, and Panizza, 2006; Cowan, Levy-Yeyati, Panizza, and Struzenegger, 2006, IMF, 2003; Jeanne, 2006, and Mehl and Reynaud, 2005. Christensen, 2005, looks at issues associated with government domestic debt in African countries. Hanson 2003 included a discussion of the growth of holdings of government debt by banks in developing countries in the 1990s. World Bank IMF 2001 and World Bank 2007a, and 2007b discuss ways to develop the government debt market and manage government debt.

[2] See for example Calvo, 1998 and Eichengreen and Hausman, 2004.

[3] See for example, IMF, 2003 and Gill and Pinto, 2005. Reinhart, Rogoff, and Savastano, 2003 focus more on high foreign debt and raise the issue of the difficulty of reducing it and the problems of serial default. Borensztein, Levy-Yeyati, and Panizza, 2006, recognize the importance of political and fiscal structure in the risks associated with debt, but also raise the importance of the structure of debt.

The outline of the paper is as follows: First, the paper examines the growth of government domestic debt over the period 1990-2004 using a new data set.[4] The data set covers 25 large banking systems in the developing countries.[5] The paper also compares the growth of government domestic debt to government foreign debt in this period.

The analysis is based on the definition of government debt as central government debt (including government debt to the central bank) and central bank securities and other non-reserve liabilities to banks, a type of debt neglected in previous studies. Government debt is in turn divided into liabilities issued in domestic markets and liabilities issued internationally.[6] Domestic debt includes marketable and non-marketable securities and similar government obligations, but not capital in public institutions, nor guarantees. International debt includes liabilities to the IMF, the international financial institutions, and public and publicly guaranteed bank loans and market debt. Short-term foreign debt is not included because of the lack of comparable data.[7]

The paper then argues that the growth of government domestic debt broadly reflects the interaction of three supply factors and one demand factor. The supply factors are: the bond issues associated with the financial crises of the 1990s, the growth of central bank debt, and the increased attractiveness of borrowing domestically to the issuing governments. The demand factor is the growth of new sources of demand for government domestic debt. Domestically, new sources of demand include pension and investment funds. Internationally, non-residents have become more interested in

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[4] The data differs from the studies listed in footnote 1, in terms of the countries studied, the use of publicly available data sources rather than questionnaires to governments, and the inclusion of central bank debt.

[5] The countries are listed in Table 1. In 2000, the 25 countries' banking systems accounted for 89 percent of banking system deposits in developing countries; the countries also have relatively large equity markets and are open to capital flows (See Hanson, Honohan, and Majnoni, 2003). Seventeen of the countries are outside Latin America and the Caribbean, an area that has drawn much of the recent focus on government debt, e.g., Borensztein, et al, 2006. In addition, the paper sometimes mentions Costa Rica and Jamaica, two smaller countries with debt histories that illustrate some of the major issues, and South Africa, which has a large banking system, but is atypical because it was excluded from external borrowing until the early 1990s. Lebanon, a country with a large banking system is excluded because of the importance of offshore deposits. The data are drawn from the IMF's *International Financial Statistics*, the World Bank's *Global Development Finance*, national sources, academic articles, and Cowan, et al, 2006. The data set is available from the author.

[6] The data and the analysis of this paper do not distinguish between the currencies of the issues, which would be another paper in itself. Some governments have issued domestic debt in foreign currency and, recently, a few countries have issued foreign debt in their own currency. As discussed below, there are advantages and disadvantages in issuing debt in foreign currency.

[7] Obviously the domestic and foreign debt figures are not strictly comparable. An important issue in comparisons is the conversion of government debt, including domestic debt, into a single currency, which depends substantially on the exchange rate used. Substantial variations in the exchange rate lead to substantial variations in the ratio of debt to GDP, independent of borrowing and repayment. Second, the foreign debt figure understates foreign debt by including only medium- and long-term debt. Third, the foreign debt figure includes publicly guaranteed debt and well as government debt; the domestic debt figures do not. This tends to reduce the estimated importance of government domestic debt relative to foreign debt. However, this issue is mitigated by the increased government limitations on public enterprises' borrowing and the privatizations since 1990. Finally, there may be differences in the valuations of government debt between the government and the holders of its debt, both because of marking to market and differences in the recognition of obligations.

developing countries' domestic debt as industrial countries' interest rates have declined and developing countries became characterized by greater macroeconomic stability, higher international reserves, and exchange rates with some appreciation potential.

The paper then turns to a relatively un-discussed topic: the potential burdens and risks associated with government domestic debt in developing countries. One set of issues is macroeconomic: the standard issues of domestic versus foreign debt, the potential for crowding-out and who is likely to be crowded out, and the distribution of the macroeconomic burdens of the debt. A second set of issues relates to the risks and burdens that arise from the growth of domestic debt in banks and in the non-bank sectors such as pension funds, insurance companies, and investment funds. A third set of issues relates to the issues associated with the rise in central bank debt and the potential effect it may have on central banks' ability to focus on price stability. In each of these areas, the paper briefly discusses the issues and the policy options that may ease the risks and burdens. The paper concludes with a brief summary.

2. The Growing Importance of Domestic Debt

2.1. Government Domestic Debt

In the early 1990s, government domestic debt averaged about 26 percent of GDP in the 25 countries (Table 1). Countries as diverse as Brazil, Chile, Hungary, India, Pakistan, and Malaysia had substantial domestic debt. Countries with only small amounts of government domestic debt —for example, Bangladesh, China, and Indonesia—were exceptions.[8]

Government domestic debt was held mainly by the central bank and the commercial banks in the early 1990s and was usually quasi-marketable at best. Governments forced banks to hold its domestic debt through reserve requirements and liquidity requirements, which generated a larger demand for government debt and eased the funding of state-directed development strategies.[9] For example, in India, the liquidity requirement on deposits was increased from 25 percent in the 1970s to 38.5 percent by 1990; the reserve requirement was raised from 4 percent to 15 percent over the same period. Governments also were financed by central banks' creation of money in exchange for government debt—inflationary finance. In some cases, for example, Chile, much of the government debt in the early 1990s was central bank debt, related to earlier crises.

Governments also often placed domestic debt directly with captive buyers. Examples include state-owned pension funds, insurance companies, and non-financial public enterprises. These institutions were often legally required to hold government debt and could not invest offshore. In Malaysia, for example, government debt to the

[8] Bangladesh financed its fiscal deficit with concessional foreign funding; China and Indonesia ran negligible fiscal deficits, although loans to China's large public enterprise sector accounted for most of the assets of its banking system.

[9] Reserve requirements divert commercial bank deposits to the central bank, which can then use them to buy government debt, in effect generating more demand for (low interest rate) government debt.

employees' provident pension fund represented about 50 percent of the government's outstanding domestic debt in the early 1990s (Salleh Harun, 2002).

Table 1

Selected Large Financial Systems
(Percent of GDP)

	Domestic Debt			Domestic/ Total Government Debt		
	1990	1995	2004	1990	1995	2004
Argentina	32.2	9.0	51.2	0.480	0.267	0.455
Bangladesh	3.5	5.7	9.2	0.074	0.119	0.205
Brazil ('94)[b]	40.8	32.5	50.8	0.640	0.694	0.690
Chile	56.7	36.2	26.8	0.573	0.778	0.747
China	4.2	5.1	20.0	0.273	0.308	0.829
Colombia	3.4	12.7	32.3	0.136	0.387	0.516
Czech Rep.('93)[b]	12.1	9.8	16.9	0.412	0.356	0.637
Egypt	61.4	45.8	72.8	0.517	0.446	0.767
Hungary ('91)[b]	69.3	80.4	44.2	0.550	0.600	0.678
India	49.8	46.7	61.9	0.680	0.656	0.833
Indonesia	2.9	4.5	34.3	0.063	0.119	0.504
Malaysia	58.8	35.1	44.2	0.698	0.585	0.843
Mexico	22.7	15.6	32.5	0.403	0.262	0.745
Morocco	27.0	33.2	50.5	0.323	0.323	0.647
Pakistan ('93)[b]	38.5	37.1	40.7	0.486	0.484	0.503
Peru ('91)[b]	12.3	2.4	12.4	0.194	0.071	0.264
Philippines	28.1	37.7	41.2	0.309	0.484	0.494
Poland	27.4	20.1	36.2	0.323	0.402	0.762
Russia Fed. ('93)[b]	10.2	14.1	6.9	0.119	0.281	0.292
Slovak Rep.('93)[b,c]	18.4	19.7	36.7	0.460	0.494	0.748
Thailand	12.7	2.0	26.8	0.467	0.165	0.744
Tunisia	14.9	19.1	21.9	0.220	0.269	0.306
Turkey	14.6	17.5	52.9	0.334	0.312	0.712
Uruguay ('91)[b]	24.6	17.2	29.5	0.506	0.440	0.287
Venezuela	12.1	14.0	17.2	0.183	0.193	0.402
Average	26.3	22.9	34.8	0.377	0.380	0.584

Sources: See Annex 1

[a] Includes Central Bank bills and bonds.

[b] Dates in parentheses refer to starting date, determined by data availability.

[c] Slovak Rep. data end in 2003.

2.2. Why Foreign Debt?

Although government domestic debt was large in the early 1990s, government foreign debt was larger on average (Table 1). Large government foreign borrowing reflected its many advantages to governments (and to private borrowers when they could get it). Some oft-cited macroeconomic advantages of government foreign borrowing were that it was not constrained by low domestic saving and small local bond markets and that it implied less crowding-out of private borrowers.

Some financial issues also favored foreign borrowing (and domestic borrowing in foreign currency or indexed to foreign currency), in particular, the longer effective maturity of foreign-currency denominated debt. Foreign currency borrowings have a longer effective maturity than domestic currency debt because their interest rates are lower than domestic currency debt, particularly in inflationary circumstances. The difference between foreign and domestic currency interest rates is due to expected inflation/depreciation and risk premia that reflect the effects of actual and potential controls on capital flows and differences in taxation.

More specifically, the difference in effective maturity reflects the large difference in the time pattern of payments on the two types of debt, even though in a perfect financial world the expected present value of the two types of debt with the same initial maturity would be equivalent. For domestic currency borrowing, the cost of the expected depreciation/ inflation is essentially paid up-front. For foreign currency borrowing the cost is paid only if depreciation actually occurs and then is spread-out over time in higher amortization payments (in domestic currency).[10] This difference means that to the borrower, foreign currency borrowing has a longer effective maturity than domestic currency borrowing. Moreover, for governments, from the standpoint of government accounting, the higher domestic currency cost of foreign debt amortizations generated by devaluations may go into a capital budget ("below the line" accounts), and not receive as much scrutiny as the operational budget ("above-the-line" accounts). The amortizations may also be financiable to the extent that the foreign debt can be rolled over.

A related advantage of government foreign debt in the early 1990s was its tenor. Domestic debt markets, to the extent they existed, typically dealt in short-term debt, particularly in inflationary situations. Potential buyers did not wish to hold longer-term government domestic debt voluntarily because of the risk of default, whether explicit or implicit through inflation.

The drawback of government foreign borrowing in the early 1990s, particularly from private sources, was of course its potential volatility. "Sudden Stops" of private capital inflows, meant an inability to even rollover existing government foreign debt. They were major factors in the depreciations, external defaults and costly crises of the 1980s, as well as in the crises that were to come in the 1990s.

[10] The same analysis applies to inflation indexed debt, such as has been used in Brazil.

3. The Growth of Government Domestic Debt and the Changing Composition of Government Debt

On average, government domestic debt averaged about 26 percent of GDP in the early 1990s, which was about 40 percent of total government debt (Table 1).[11] As shown in Figure 1, in eleven of the 25 countries (and in Jamaica), government domestic debt was half or less of government foreign debt. Only three of the 25 governments — Brazil, India and Malaysia—had domestic debt that was roughly twice their foreign debt.

Figure 1

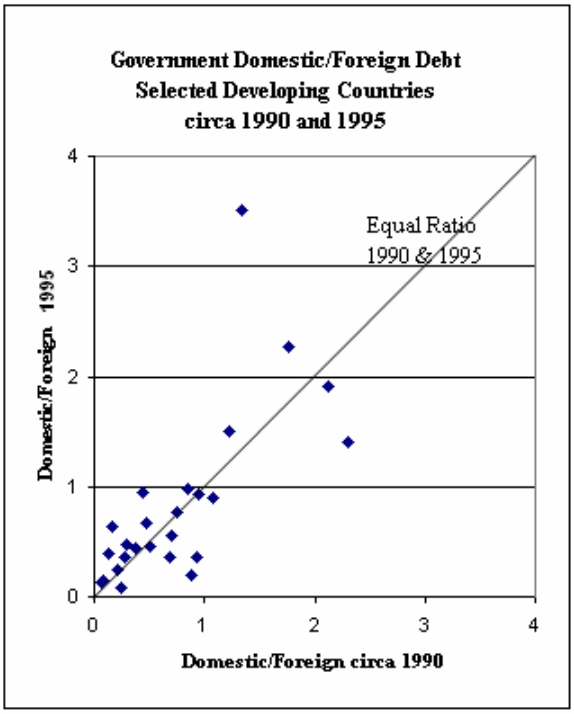
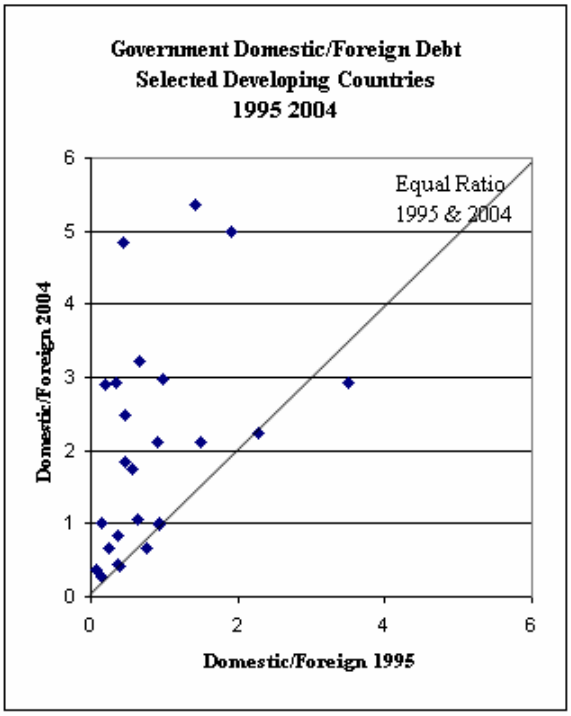


Figure 2



During the first half of the 1990s, government domestic borrowing strategies in the 25 countries remained roughly constant, with a mild tendency toward a decreasing ratio of domestic government debt to GDP. In the 25 countries, the average ratio of domestic to foreign debt fell from about 26 percent in the beginning of the 1990s to about 23 percent in 1995. In eleven of the 25 countries, plus Costa Rica and Jamaica, the ratio of government domestic debt to GDP changed by less than 5 percentage points; in ten countries the ratio decreased by more than 5 percentage points, while in four countries the ratio increased by more than 5 percentage points (Table 1).

Correspondingly, the ratios of government domestic debt to foreign debt in the 25 countries were also about the same in 1995 as in the early 1990s, as shown in Figure 1.

[11] The data is circa 1990 because of country differences in the availability of data in the early 1990s.

The constancy of this ratio is also shown in the 1.02 regression coefficient of the ratio of domestic to foreign debt in 1995 on the same ratio in early 1990 in the 25 countries.[12]

During this period, Argentina, Malaysia and Thailand were exceptions to the general trend; their ratios of government domestic to foreign debt fell substantially because of declines in the ratio of government domestic debt to GDP (Table 1). In Mexico, a crisis-related devaluation sharply raised the ratio of foreign debt to GDP. In Chile, the ratio of government domestic to foreign debt rose substantially because government foreign debt declined much more than government domestic debt, in terms of GDP.

In the latter part of the 1990s, the ratio of government domestic debt to GDP began to rise in most of the 25 countries and it has continued to rise since 2000. On average, the ratio rose from about 23 percent in 1995 to about 34 percent in 2004, a nearly 50 percent increase. Between 1995 and 2004 the ratio of government domestic debt to GDP increased by more than 5 percentage points in eighteen of the 25 countries (Table 1), as well as in Costa Rica and Jamaica that are not include in the basic data set. The ratio of government domestic debt to GDP declined in only three countries; all of which were pursuing a strategy of reducing overall government debt. In four countries the ratio of government debt to GDP remained roughly constant. [13]

As a result, by 2004, government domestic debt accounted for nearly sixty percent of total government debt in the 25 countries on average (Table 1). The ratio of government domestic to foreign debt was larger in almost every country than in 1995 (Figure 2). One exception was Uruguay, where the decline reflected its large borrowings from the IMF and multilateral institutions during its financial crisis as well as its large depreciation. A regression on the country-by-country ratio of domestic to foreign debt in 2004 compared to 1995 shows the ratio in 2004 was about 1.67 times the ratio in 1995, a figure that is significantly larger than one in a statistical sense.[14] This change in composition reflects the sharp rise in government domestic debt shown in Table 1, as well as the slow growth of foreign debt, because of more limited external borrowing and the eventual appreciations of the countries' exchange rates from crisis-depressed levels.[15]

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[12] The regression is: Dom/For. Debt in 1995 = 1.02 Dom/For. Debt in 1990 R^2_{adj}=.76
(S. Error of Coeff.= .12, *t* statistic =8.8, *P-value* =0.00000000049)
When the regression was run with a constant, the constant was very insignificant.

[13] South Africa experienced a fall in the ratio of government domestic to foreign debt in this period, but this probably reflects its adjustment once the ban on its access to international lending was removed.

[14] The regression is: Dom/For. Debt in 2004 = 1.67 Dom/For. Debt in 1995 R^2_{adj}=.58
(S. Error of Coeff. = .29, *t* statistic =5.7, *P-value* =0.00000069)
In a regression using a constant, the constant was 1.36 (significantly different from zero with a *P-value* of .0039) meaning even if domestic debt had been zero in 1995, it had risen, on average, to more than foreign debt in 2004, and the coefficient of domestic debt was 0.79 (significantly different from zero with a a *P-value* of .0036). Thus, the average ratio was much higher in 2004 than 1995.

[15] In Argentina, the sharp devaluation and the conversion of debts to pesos associated with the crisis raised the ratios of both domestic and foreign debt to GDP, then, as a result of the default and continued domestic borrowing, the ratio of government domestic debt to foreign debt increased.

Moreover, by 2007, the ratio of government domestic to foreign debt had risen even more. Argentina, Brazil, and Uruguay prepaid their IMF debts and Mexico swapped its World Bank and Inter-American Development Bank debt for domestic debt.

4. Why has Government Domestic Debt Grown?

The large growth of government domestic debt since the 1990s mainly reflects three supply factors and one demand factor:

Supply:

1) Financial crises led to large increases in government domestic debt.

2) Central bank debt has grown, often as a result of recent attempts to sterilize capital inflows and thereby limit both inflation and exchange rate appreciation.

3) Governments have found domestic debt issuance attractive, not only because of post-crisis concerns about the volatility of foreign debt but because of the decline in the relative cost of domestic debt owing to the rising cost/declining supply of foreign borrowing following the financial crises of the 1990s, decreased inflation, and the development of domestic government debt markets.

Demand:

4) Demand for government domestic debt has grown from new intermediaries, such as fully-funded pension funds and investment funds. In addition, non-resident demand for government domestic debt has grown recently, with the decline in interest rates in industrial country markets and emerging markets' greater stability, international reserves, and prospects for exchange rates appreciation.

The rest of this section discusses the role of these four factors.[16]

4.1 A. Financial Crises and Increases in Government Domestic Debt

Countries that experienced major financial crises represent the majority of countries with large increases in government domestic debt increases. Much of their debt increases appear to reflect their governments' recapitalizations of their banking systems after the crises. However, the crisis-related growth in their domestic debt appears to be well beyond the recapitalizations. Precisely determining the part of the increased domestic debt that was due to the crisis and precisely why the debt increases differ across crisis countries is practically impossible. The separation and analysis of the debt increases is complicated by theoretical and empirical issues related to the timing of the

[16] The section does not discuss in detail how these factors affect the ratio of government domestic to foreign debt. Nonetheless, it is interesting to note that the ratio of government domestic to foreign debt has increased (Table 1). This rising ratio reflects a mix of rising domestic debt (Figure 3); the slowing of many countries' foreign borrowing between the late 1990s and 2002 for both demand and supply reasons, as discussed in World Bank's *Global Development Finance* volumes between 2000 and 2003; and the real exchange rate appreciations that have occurred in some countries once the crises of the mid-1990s passed.

crises, the non-recapitalization debt issues that appear to be related to the crises, the types of crises, the different uses of debt and other instruments during the crises by the various countries, and financing the costs of the crisis-related debt.

Table 2 suggests a strong association between the countries with the largest increases in government domestic debt between 1995 and 2004 and those that had major financial crises—Argentina, Turkey, Indonesia, Thailand, Uruguay, and Mexico.[17] These crisis countries represent six of the ten countries with the largest increases in the ratio of government domestic debt to GDP between 1995 and 2004. Moreover, although Brazil is not judged to have sustained a major banking crisis, its government carried out substantial bank restructuring and took over state debts in banks, particularly in state- and federal-banks. In four of the six crisis countries, the rise in domestic debt accounted for almost all of the total increase in debt. Regarding the other two, Argentina, experienced a much larger rise in the ratio of total debt to GDP that reflected the large devaluation that occurred; in Uruguay the large rise in total debt reflected the large external borrowing from the IMF to meet capital outflows. In addition, Jamaica, which is not shown, suffered a severe financial crisis and Jamaica's ratio of government domestic debt to GDP increased over 50 percent during the latter part of the 1990s (World Bank 2004).

The rise in government domestic debt during the period 1995-2000 was, however, far from entirely due to crises. In many of the other 18 countries, the rise in domestic debt seems to reflect a conscious substitution of government domestic borrowing for foreign borrowing, which was not related to crises or banking sector developments. Even in the crisis countries, not all the domestic debt increase was crisis-related.

The first problem in separating increases in government domestic debt into crisis- and non crisis parts relates to the dating of the crisis and deciding to what extent government domestic debt issues were related to the crisis before the bank recapitalizations occurred. Dating of the start of the crises is inexact; it is usually taken to be the first concrete sign of severe liquidity problems in banks. However, governments often increased their dependence on domestic borrowing before this date, as well as during the period before bank recapitalization actually began, because of the rising cost/declining availability of foreign finance.[18] Counting these issues of debts as part of crisis-related debt is really a counterfactual question: to what extent did this domestic debt issue reflect the crisis because of a crisis-related decline in the supply of foreign loans. In addition, in some countries, government domestic debt also rose before

[17] Caprio and Klingebiel, 2002 and Hoelscher and Quintyn, 2003 estimate that the most costly financial crises were in Indonesia in 1997, estimated to have had a gross fiscal cost of about 50 percent of GDP; Thailand, 30-40 percent of GDP; Turkey, about 30 percent of GDP; and Mexico, about 19 percent of GDP. They differ on the estimated cost of Malaysia's crisis. Outside the sample period, Chile's crisis in the early 1980s was estimated to have cost about 50 percent of GDP. These costs are based on the estimated fiscal cost of bank recapitalization. Cost estimates are complicated by the difficulties of comparing these issues over time in a turbulent environment and do not reflect other issues of domestic debt around the time of the crisis that may be crisis-related, as discussed below. The costs of the recent crises in Argentina and Uruguay have not yet been widely estimated but appear to be large. Outside the countries studied here, Jamaica's crisis that began in 1994 is estimated to have cost about 50 percent of GDP (World Bank, 2004).

[18] See for example, de Brolle, et, al, 2006. Sometimes this borrowing was from the central bank because of the small size of the domestic market.

the bank recapitalizations because the central bank issued securities to offset some of the crisis-related liquidity credits it made.[19]

Table 2
Increases in Government Domestic and Total Debt[a]
1995-2004
(Change in percent of GDP)

	Domestic Debt	Total Debt
Argentina	42.2	78.7
Turkey	35.5	18.1
Indonesia	29.7	30.3
Egypt	27.0	10.3
Thailand	24.8	23.8
Uruguay	22.0	74.5
Brazil	19.9	26.8
Colombia	19.5	29.6
Mexico[b]	18.3	8.7
Morocco	17.3	-24.9
Slovak Rep.	17.0	9.1
Poland	16.1	-2.6
India	15.2	3.1
China	14.8	7.4
Peru	10.0	13.3
Malaysia	9.1	-7.5
Czech Rep.	7.1	-0.9
Pakistan	3.6	4.2
Philippines	3.5	5.5
Bangladesh	3.4	-3.3
Venezuela	3.2	-30.0
Tunisia	2.8	0.5
Russia Fed.	-7.1	-26.5
Chile	-9.5	-10.7
Hungary	-36.1	-68.8

[a] Includes central bank debt.

[b] Figures start in 1993. Mexico's crisis began at end-1994. The rise in domestic debt from 1995 to 2004 was 16.9 percentage points, total debt declined by 16.2 percentage points.

In any case, much of the growth of government domestic debt in the crisis countries studied here seems to have occurred as a result of bank recapitalizations. However, these recapitalizations were often well after the crisis began and not always in

[19] Note that liquidity credits are included in the estimated costs of the crises, but they do not increase government domestic debt. During crises, central bank debt increases during crises only from sales of debt to tighten monetary policy or debt issues to support banks.

one operation. Moreover, countries often used large contingent guarantees initially, rather than actual debt issues, to support their banks. These guarantees are not included either in the estimates of the cost of the crises, nor the increase in government debt. For example, many governments announced an official blanket guarantee of all deposits, in addition to the legal guarantee on state bank deposits, creating a new contingent liability. Examples include Indonesia (1998), Malaysia (1998), Mexico (1995), Thailand (1997), Turkey (2000), and Uruguay (2004).[20] Differences in the use of guarantees and their impacts on the banking system may explain some of the observed differences between debt issues across countries, notably in Uruguay. [21]

Recapitalization bonds had to be issued eventually because the deposit guarantees did not resolve the banks' underlying problems of bad loans, de-capitalization and low cash income and profits. In the case of state-owned banks, governments eventually took the bad loans off their books and recapitalized these banks by providing them with government debt, often non-marketable. Examples include Indonesia (Box 1), and Turkey.[22] The bad debts were often put into newly created asset recovery agencies.

Weak private banks typically received a more complicated mixture of treatments. Some banks were closed and depositors were sometimes paid-off by a deposit insurance fund—in the case of Peru in 2000, this entailed an issue of government debt to provide the funds to the deposit insurance fund. Some weak private banks were merged with public banks and their bad loans became part of the process described above. In other cases, the asset recovery agencies took over the management of private banks. The agencies took these banks' bad loans off the books, for recovery by the agency, and initially recapitalized the banks with the agency debt. However, the agencies' recoveries on bad loans were typically insufficient to cover the promised returns on the agency's bonds. In order to sell the intervened banks, the government eventually had to substitute its debt for the agency's debt—for example, in Indonesia, Jamaica, and Mexico.

All this meant that although the governments eventually had to explicitly recapitalize the banks by issuing debt, the recapitalization often occurred well after the crisis and at different times for different banks. For example, this process occurred in Indonesia, in 1998-99, although the crisis began in mid-1997; in Jamaica in the late 1990s, although the crisis began in 1994; and in Mexico when the banks were being re-privatized in the late 1990s, although the usual dating for the beginning of the Mexican

[20] See Hoelscher and Quintyn, 2003.

[21] The Uruguayan crisis differs from the others in that it involved more capital flight. Uruguay also used a complicated mixture of government guarantees to avoid domestic debt issuance and resolve problems in the state banks. Deposits were transferred from the state housing bank to the state commercial bank, backed by a bond of the housing bank that was guaranteed by the government. In addition, bad loans of the state commercial bank were transferred to an asset recovery agency, in exchange for a government-guaranteed bond. These two government-guaranteed obligations amounted to about US$800 million, a contingent liability equivalent to about 27 percent of government domestic debt in 2004. Thus far, the two bonds have been fully serviced, although a proposed law to further restructure the housing bank would formally transfer its government-guaranteed obligation to the government.

[22] Governments have also often issued bonds to recapitalize state banks even in non-crisis situations, for example, in India during the period 1994-2000, Indonesia prior to the 1997 crisis, and Brazil, as mentioned above. Such non-crisis recapitalizations add to government domestic debt.

crisis was end-1994.[23] The Indonesian case, described in Box 1 illustrates the process and many of the issues discussed above.

Two final issues exist in attributing domestic debt issues to crises and analyzing differences in crisis-related debt issues across countries. First, to what extent should the financing of the interest costs of the crisis-related debt be included as part of the debt issue related to the crisis? Second it is worth noting that in many cases central governments have not compensated the central bank for losses incurred during and after the crisis, for example on liquidity credits. Hence, part of the differences across countries in the impact of the crises on government domestic debt may reflect differences in the central bank's role in the crisis and the degree to which the government recapitalized the central bank.

BOX 1: INDONESIA'S APPROACH TO CLEANING-UP ITS BANK CRISIS AND THE COST

Indonesia was hit with a major financial crisis that began with pressure on the exchange rate in August 1997, after the devaluation of the Thai baht in July. In an effort to stem bank runs, the Central Bank provided massive liquidity support and the government declared a blanket deposit guarantee. The increased domestic credits of the Central Bank in the last quarter of 1997 and the first quarter of 1998 would have doubled the money base had international reserves not fallen by somewhat more (World Bank, 2000). In early 1998, the Indonesia Bank Reconstruction Agency (IBRA) was created. The bad debts of the state banks and the closed banks were transferred to IBRA for collection. Recapitalization of the state banks with government bonds was begun. Interventions in private banks continued through early 1999. Some small weak banks were merged into state banks, but the largest weak banks were taken-over by IBRA, which also took over the collection of both the obligations that various bank owners had made in exchange for liquidity support from the central bank and the bad loans that the private banks had made. The balance sheet of these banks was reconstituted with government recapitalization bonds that carried various terms. In 2002, IBRA began to sell the banks that it had taken over; by early 2004, IBRA was closed. The cost of the crisis was estimated as liquidity support equal to about 17 percent of 2001 GDP, mostly to the private banks, and recapitalization bonds equivalent to about 35 percent of 2001 GDP, the vast majority to the state banks. Some of the recapitalization bonds initially carried below-market interest rates and they had to be converted to more market indexed rates later, in order to make the IBRA-managed banks attractive to purchasers. IBRA eventually recovered some 20 percent of the face value of the bad debts it took over. These recoveries, plus the proceeds from the sales of the banks, were transferred to the government, to limit the need for additional government borrowing.

[23] These complicated transactions also often result in a substantial lag between the crisis and the appearance of government debt obligations in bank balance sheets in the *International Financial Statistics*. The data may also reflect other complications. For example, in Mexico for many years, some of the debt of the asset management company remained in the banking system with a government guarantee that had to be renewed annually by the congress.

In sum, the "boom in busts" during the last 15 years was associated with many of the largest increases in government domestic debt, mainly to recapitalize bankrupt banks. However, linking this increase exactly to the crises is difficult. Even when data are available on the exact increase in government domestic debt specifically allocated to a recapitalization (for example, Indonesia) there are methodological issues of timing, the extent to which other issues of domestic debt are related to the crisis, the use and implicit cost of guarantees that are made until the debt is actually issued, and the interactions between the central government and central bank. Nonetheless, the conclusions remain that a) many of the largest increases observed in domestic government debt were in crisis countries or those where state banks were recapitalized, and b) the increases in domestic government debt would have been much less in many countries between the mid-1990s and 2004 had there been no financial crises.

4.2 The Growth of Central Bank Debt

Many developing countries have issued central bank securities or non-reserve obligations to banks, as well as central government debt.[24] The initial rationale for these central bank liabilities was to implement monetary policy using market-based instruments. This approach replaced the use of more blunt instruments such as changes in reserve requirements and credit controls on individual banks—for example Indonesia in the early 1990s (Cole and Slade, 1998). The central banks, lacking a government debt market and ownership of a stock of marketable government securities to sell when they wished to tighten money, decided to set up a market in their own debt. Typically, the sales of these instruments began only to banks, but in some countries other financial institutions, notably pension funds, and even foreigners may now hold central bank securities. In addition to these securities, some central banks have also carried out monetary policy by creating a depository facility for banks' excess liquidity, in addition to, or instead of absorbing it by issuing marketable securities—for example, Egypt, Turkey and Uruguay.[25] Some central banks have also issued their liabilities as part of crisis resolution efforts, for example, Chile in the 1980s. Finally, the recent growth of these securities and depository facilities often reflects central banks' attempts to sterilize the impact of capital inflows—selling securities to offset the monetary impact of the purchases of foreign exchange that they make in order to limit appreciation.[26] Sterilization issues are discussed further in section 8.

In 2004, central banks had outstanding securities and other non-reserve obligations to banks in 15 of the 25 financial systems studied in this paper. The average amount of these obligations was nearly four percent of GDP in these 15 countries. In three of the countries, the increase in central bank debt was three percent of GDP or more

[24] This practice contrasts with the limited number of industrial countries with central bank debt.

[25] The central bank may set an interest rate for deposits in these facilities or auction the deposits. The rate usually becomes the effective base rate for the system, and the central bank may invest the funds in international reserves.

[26] Sterilization adds to government domestic debt as defined in this paper. To the extent sterilization is done to offset (fully) government external borrowings, it adds to total government debt twice. Such sterilization would change the ratio of domestic to foreign debt if the original ratio differs from 1:1. For most of the countries discussed in the paper, where the reason for sterilization is to offset private inflows, sterilization would increase the ratio of government domestic to foreign debt.

between 1995 and 2004 and accounts for a third or more of the increase in government domestic debt (Table 3).

Such central bank obligations compete with sales of central government domestic debt and the development of that market, as well as the short-term money market in general. In particular, depository facilities may be more convenient and safer for banks than inter-bank lending, or trading government debt through repos. As central banks have increased their debt, they have often extended its maturity to reduce their rollover risk. This policy further increases the competition between central bank debt and central government debt.

4.3 The Growing Attractiveness to Governments of Issuing Domestic Debt

The growing attractiveness of issuing domestic debt to governments reflects three elements. First, its costs have declined relative to foreign debt. Beginning with the financial crises that started in 1994, the costs of foreign borrowing from private sources rose sharply and their availability fell. The largest emerging market borrowers in international markets were severely affected and smaller countries who had begun to enter the foreign market had only limited possibilities to expand their foreign borrowings.[27] The crises also made clearer the costs/risks of excessive dependence on volatile foreign capital flows and currency markets. In this context, many governments borrowed more funds domestically, and slowed their borrowing in general. More recently, the relative borrowing cost of government domestic debt has been kept lower than in the past by the lower inflation and interest rates in developing countries and the rise in demand for government domestic debt, described in section 4.4.

Second, government domestic debt markets began to develop for many reasons, making domestic borrowing much easier for governments. One factor was the world-wide switch to a more market-based economy. In Eastern Europe, government domestic debt markets were set up as part of the transition process. India moved to an auction market for government domestic debt in the early 1990s as part of liberalization. A related factor was the development of markets for central bank debt. They provided an example that could be followed by national treasuries for central government domestic debt issues. In this process, many countries moved away from financing governments by directed credits from the banking system.

Another factor in the development of government debt markets was the large volume of recapitalization bonds. It made sense to allow the banks to sell them, in order to accommodate variations in their liquidity or to obtain funds for lending—as has occurred, for example, in Indonesia in the last few years. In addition, the sharp rise in government debt around the time of the crises often meant that governments had to issue new debt to pay interest, even though they ran primary fiscal surpluses.

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[27] The measurements of foreign borrowings and the stock of foreign debt, relative to GDP, are complicated by the sharp devaluations that occurred in many developing countries in the latter part of the 1990s. Measured in dollars, the stock of foreign private credits grew slowly after 1995. However, the depreciation of the currency kept-up the ratio of foreign borrowings and foreign debt to GDP for some time.

As a result of these factors, almost all of the larger developing countries and some of the smaller ones developed their government domestic debt markets during the latter part of the 1990s. The markets now involve various types of auctions, and may use primary dealer arrangements or allow general participation. [28] In parallel, market infrastructure was developed—for example, computerized book-entry and trading systems linked to improving real-time, gross settlement payments system infrastructure.

4.4 The Broadening Demand for Government Domestic Debt

To some degree the growth of government debt between 1994 and 2005 reflects a broadening of the demand for government debt beyond traditional holders—the central banks and commercial banks. Central bank holdings of government debt have actually declined over this period even though the average ratio of central government debt to GDP has risen by over 12 percentage points in the 25 countries studied (Table 3).[29] To some extent, the decline in central bank holdings of government debt may reflect legal limits that have been put in place on such holdings.

Government debt holdings in the commercial banks remain large but have grown less rapidly than holdings by others. Between 1995 and 2004, the average holdings of commercial banks have risen by over 5 percentage points of GDP (Table 3). The shares of outstanding central government debt held by commercial banks, and to some degree the percent of GDP, tend to be higher in Asia and Europe than in Latin America. Foreign banks in the countries have played a role in this growth. In India, for example, foreign banks were always allowed to hold government debt as part of their liquidity requirement. Once the government shifted to an auction system, foreign banks were allowed to participate directly in the auction. Foreign banks in India now hold about 20 percent of their assets in government debt (about the same as domestic private banks), which is equivalent to about 1 percent of GDP. Elsewhere, the development of auction markets for government bonds often involved substantial participation by foreign banks, in some cases as primary dealers—for example, in Pakistan and Peru.

The figures for the growth of bank holdings are not surprising given the banks' dominance of the financial sector in these countries, the use of recapitalization bonds after the crises, and the banks' new roles as primary dealers for government debt. What is surprising is that the rise is so small—less than half of the increase in central government debt on average. Of course these average figures on bank holdings are a mixture of large rises in countries that have experienced crises, such as Argentina, Indonesia, and Turkey, and smaller rises in non-crisis countries where the volume of central government domestic debt (and central bank debt) has risen but from a small base, or has even fallen, as in some transition countries.

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[28] The rise of banks as primary dealers tends to increase the banks' holdings of government domestic debt. Of course, the primary dealers can buy for their own accounts as well as for resale. Often many of the primary dealers are foreign banks and some of the large buyers are pension funds and insurance companies. Both banks and other intermediaries often tend to follow buy-and-hold investment strategies.

[29] The government and the central bank may sometimes have different estimates of the government's obligations to the central bank. This may reflect different interpretations of costs of crisis resolution and accumulated interest on these costs over time.

On average, and in many countries, government debt outside the central bank and the commercial banks has grown faster than debt in the commercial banks (Table 3). In some countries it is now larger than the holdings of the central banks. However, it is difficult to identify these new holders specifically, since in many cases governments do not keep records on holders over time and legal changes have sometimes made holders of marketable government debt anonymous. Much of the increased debt probably reflects the growth of non-bank financial institutions, since individuals' direct purchases of government debt are not easy in many countries.

Table 3
Changes in Government Domestic Debt and Its Major Holders 1995-2004
Selected Large Developing Countries
Change in Percent of GDP

	Total Gov. Dom. Debt	Total C. Gov. Dom. Debt	C. Gov. in C. Bank	C. Gov. in Com. Banks	C. Gov. in Pensions	Other[a]		Central Bank Debt
Argentina	42.2	42.2	11.4	18.7	7.5	4.6		0.0
Brazil[b]	19.9	27.2	12.8	14.5	0.0	0.0	*	-7.3
Mexico	16.8	14.8	-0.7	1.8	5.3	8.4		2.0
Chile	-9.5	-4.4	-7.7	0.4	2.9	0.0	*	-5.1
Colombia	19.5	19.8	-0.3	8.2	5.1	6.8		-0.3
Peru	10.0	6.9	-0.5	1.7	2.6	3.1		3.1
Uruguay[b]	22.0	19.2	6.0	3.9	9.3	0.0	*	2.8
Venezuela	3.2	4.2	-3.4	-1.5	0.0	9.1		-1.0
Average	**15.5**	**16.2**	**2.2**	**6.0**	**4.1**	**4.0**		**-0.7**
China	14.8	9.0	-0.7	9.7		0.0		5.8
Bangladesh	3.4	3.5	1.3	2.2		0.0	*	-0.1
India	15.2	15.2	-6.7	11.4		10.6		0.0
Pakistan	3.6	3.6	-7.5	-4.4		15.4		0.0
Average	**9.3**	**7.8**	**-3.4**	**4.7**		**6.5**		**1.4**
Indonesia	29.7	27.8	11.0	13.4		3.4		2.0
Malaysia	9.1	5.3	-0.9	2.3		4.0		3.7
Philippines	3.5	3.5	-10.4	7.1		6.8		0.0
Thailand	24.8	23.1	1.4	7.9		13.8		1.7
Average	**16.8**	**14.9**	**0.3**	**7.7**		**7.0**		**1.8**
Czech Rep.	7.1	7.1	-0.9	6.8		1.2		0.0
Hungary	-36.1	-35.4	-53.0	-2.6		20.2		-0.6
Poland	16.1	15.9	-3.4	-0.7		20.0		0.1
Russia	-7.1	-7.1	-7.2	0.1		0	*	0.0
Slovak Rep.[c]	17.0	10.5	-4.5	8.5		6.5		6.5
Turkey	35.5	34.6	4.5	22.5		7.6		0.8
Average	**5.4**	**4.3**	**-10.7**	**5.8**		**9.2**		**1.1**
Egypt	27.0	27.0	25.9	1.0		0	*	0.0
Morocco	17.3	17.3	-2.3	-1.3		20.9		0.0
Tunisia	2.8	2.8	-0.3	4.1		-0.9		0.0
Average	**15.7**	**15.7**	**7.8**	**1.3**		**7.2**		**0.0**
Overall Average	**12.7**	**12.1**	**-1.6**	**5.6**		**6.7**		**0.6**

* Country figures determined by sum of government debt in the central bank, commercial banks and pensions; by assumption other is ze

[a] Residual which includes investment funds, pension funds outside Latin America, foreign holders, etc.

[b] Total for C. Gov. Debt increase reflects changes in sum of central bank's, comm.banks and pension holdings

[c] 1995-2003

Sources: *IFS, country data, Cowan, AIOS.*

One example of institutional development that led to a larger demand for government domestic debt is the growth of defined-contribution, fully-funded pension systems in many countries. Participants in these systems contribute a portion of their salary into a fund and their pensions are determined by the amounts earned on these assets.[30] The funds' asset holding are largely limited to government debt.[31] In 1990, only Chile really had such a system. But, in Latin America, Colombia and Peru began such a system in 1993, Argentina and Colombia in 1994, Uruguay in 1995, and Mexico in 1996. Outside Latin America, many of the Transition countries started such pension systems (Fox and Palmer, 2001).[32] In the seven Latin American countries studied here, the average growth of the pension systems' holdings of government debt was equivalent to about two-thirds of the growth of commercial bank holdings between 1995 and 2004 (Table 3).

It is argued that these systems can have positive spillover effects in the development of markets for corporate bonds, for example, by creating a yield curve. Thus far, however, the hoped-for increase in holdings of corporate bonds from these systems has been limited, except in Chile, and to a lesser extent Peru. Thus, rather than making the government less responsible for pensions, as was hoped, most of these systems have so-far simply made the responsibility much more transparent.

Another example of institutional development raising the demand for domestic government debt is the growth of investment funds in many countries, for example, in Brazil, Costa Rica, and Turkey.[33] These funds mostly hold government debt. They are often owned by banks and allow businesses and individuals to invest in government debt easily. The funds' attraction is that they can offer higher returns than banks, even than bank certificates of deposits, because they have no reserve requirements and minimal capital requirements, are often are exempt from taxes on financial sector transactions or interest, and may provide anonymity to investors. Often funds can be easily shifted back and forth between the investment fund and deposits in the bank that manages it.

Recently non-resident demand for government domestic debt has grown. Information on direct holdings by non-residents is scarce, especially because such holdings can be volatile and the distinction between foreigners and national non-residents is not clear. In Brazil, it is generally estimated that non-residents hold about 10 percent of the stock of government domestic debt. In Mexico, foreign investors held 7% of the total stock of domestic government debt by the end of 2004, up from 2% at the end of 1999 (Jeanneau and Perez Verdia, 2005). Turkey's government estimates that non-residents held about 10 percent of the central government's domestic debt at the end of

[30] In some cases a minimum pension is guaranteed by the government.

[31] See, for example, Impavido, Musalem, and Tressel, 2003. In some cases, for example Uruguay, limits also exist on the funds' government debt holdings, to encourage demand for other types of debt. However, such restrictions may simply lead to investments in central bank debt and bank certificates of deposit, if no other instruments are available and offshore investments are limited. In the case of Uruguay, the lack of instruments and various restrictions on exposure forced pension funds to hold cash at one point.

[32] Many former English colonies have long had provident funds to which formal sector employees make contributions that serve as the basis for their pensions. They often hold mainly government debt, but figures on their asset holdings are difficult to find.

[33] The term "investment funds" refers to investment funds, mutual funds, and money market funds.

2005, compared to 1 percent in 2002. These figures are in addition to the holdings of foreign banks resident in Turkey.

The growth of non-residents' interest in emerging markets' government debt reflects the current benign conditions in international markets to some extent. Interest rates in industrial countries are low. At the same time, inflation has slowed in emerging markets and central banks have become more independent, making inflationary finance less likely. Moreover; exchange rates of some emerging market economies show signs of appreciating and reserves of emerging markets have grown, making it more likely that the countries can withstand any depreciation pressures on the exchange rate longer.[34] The attraction of emerging market debt is shown not only in the growth of foreigners' interest in domestic debt markets, but in a few countries' sale of bonds denominated in their own currencies in international markets (Tovar, 2005). The question remains how well these demands will withstand a worsening of the current benign environment.

To summarize section 4, government domestic debt grew as a result of crisis-related issues of domestic debt, including but not limited to debt to recapitalize banks; the increased use of central bank debt for monetary policy, and because governments found issuing such debt more attractive than in the past. Its attractiveness came from both the higher cost/lesser availability of foreign debt and, probably, increased concerns about the volatility of foreign flows and their cost after the crises of the 1990s. In addition, government domestic debt markets developed in the difficult, post-crisis international environment, both out of necessity and as a result of the growth of crisis-related government domestic debt. At the same time, new sources of demand developed, both from domestic and non-resident institutions and individuals. This growth, as well as improved macro-economic stability, helped make it easier to sell domestic debt at lower spreads over international rates compared to the past. The question remains how these firm these demands will remain if the current benign international environment worsens.

5. Changing Burdens and Risks of Government Domestic Debt

Government domestic debt has changed the characteristics and distribution of the macroeconomic burdens and risks of debt in the economy. For purposes of analysis, it is useful to divide these changes into five areas: 1) the potential for crowding-out of private sector credit; 2) the macroeconomic risks and burdens of government domestic versus foreign debt; 3) the risks and burdens associated with growth in government domestic debt in banks; 4) the risks and burdens associated with growth in government domestic debt in non-bank financial intermediaries; and 5) the potential risk of dual objectives in central banks because of central bank debt. The following sub-sections and sections discuss these problems and offer some policy suggestions for reducing them.

5.1 The Crowding-Out Burden of Government Domestic Debt

[34] Foreign holders of domestic debt may interpret the rise in reserves as greater ability and willingness to defend the nominal exchange rate. If this is true, then the foreign holders would have time to liquidate their domestic debt and buy foreign exchange at relatively stable prices, making domestic debt more attractive to them. The extension of maturities of domestic debt takes advantage of potential foreign holders with this view, although it may have impacts on domestic holders of domestic debt, as discussed in sections 6 and 7.

Bank credit to the private sector has been identified empirically as an important factor in growth by various studies.[35] The possibility that government domestic debt might crowd-out of bank credit to the private sector would thus raise a concern regarding the impact of the increased government domestic debt on economic growth.

The growth of government domestic debt is larger than the growth of bank credit to the private sector in many countries over the period studied (Table 4). Moreover, there seems to be a negative relationship between the growth of government debt and the growth of private sector credit.[36] Of course, the observed relationship reflects changes in many factors over the period studied, new financial developments, and statistical issues.[37]

[35] For example, see King and Levine, 1993; Levine and Zervos, 1998; and Levine, Loyaza, and Beck, 2000.

[36] A simple regression for the period 1994-2004 yields the following result:
Change in Bank Credit = 7.83 -0.55 Change in Government Domestic Debt '94-'04 $R^2_{adj.}$ = .21
to the Private Sector (S. Error of Coeff.=.24, *t* Statistic=-2.29, *P*-value=0.039)
Note the regression excludes countries that do not show private sector and public enterprise credits separately in the IFS—the Eastern European countries, China, India, Morocco, and Tunisia in the sample.

[37] The growth of government domestic debt partly reflects the resolution of financial crises that began after 1994, as discussed above, and the slow measured growth of private credit may also reflect the crises. There are also statistical issues. In the resolution of the crisis, injections of government domestic debt into the weak banks were matched by a withdrawal of weak loans from the banks. These credits may still exist outside the banks, in debt resolution agencies, or may have been bought-up, including by the original borrowers. Hence, although bank credit may have gone down, it may be in other hands. There is also the issue of liquidity credits granted by the central bank during the crisis that are not counted in bank credit to the private sector.

Table 4

Changes in Banks' Credit to the Private Sector and Total Change in Government Debt
Selected Countries 1994 to 2004
(Change in the percent of GDP)

	Change in Banks' Private Sector Credit	Change in Government Domestic Debt
Argentina	-9.7	42.9
Bangladesh	13.5	4.0
Brazil	-22.4	41.4
Chile	17.6	-12.5
Colombia	2.4	24.1
Egypt	25.6	10.3
Indonesia	-26.9	29.6
Malaysia	8.6	4.1
Mexico	-24.1	14.6
Pakistan	4.7	-0.4
Peru	4.8	10.3
Philippines	0.6	1.7
Russia Fed.	16.4	-9.4
Thailand	-33.3	23.4
Turkey	24.8	31.5
Uruguay	6.2	13.9
Venezuela	1.9	-5.4
Average	0.6	13.2

Note: Excludes countries that do not report bank loans to the private sector and public sector enterprises separately.

The growth of international and domestic capital markets may mitigate concerns about crowding-out of banks' credit to the private sector to some extent. While governments are borrowing relatively less internationally and more domestically, the private sector seems to be directly financing more of its needs internationally.[38] Similarly, the growth of domestic bond and stock markets would also mitigate the concerns about crowding-out to the extent that they attract new investors and not just divert savings from banks. However, it is unlikely that these markets have grown enough to offset the slow growth of private bank credit relative to GDP in some of the countries shown in Table 4.

Not only does there seem to be a burden of crowding-out in the growth of government domestic debt, but it may be falling heavily on small and medium enterprises (SMEs) and rural borrowers. In the past, some observers recommended that government should do much of its borrowing offshore because it had better access to foreign markets than the "average" private borrower. This policy provided "room" in the domestic market for private borrowers (reduced crowding-out). The recommendation certainly has less validity today for the larger corporations. With the globalization of international

[38] This argument neglects banks' net borrowings offshore, which have declined since the 1990s.

financial markets, larger private corporations can borrow internationally to offset crowding-out by government domestic debt.[39] However, only the best private companies can borrow offshore, or tap the growth in domestic capital markets.

Crowding-out from government domestic debt may thus fall heavily on borrowers that are less well-known and cannot borrow internationally or access domestic capital markets. Governments thus need to consider the potential implications of their decisions to borrow externally or internally on the burden of crowding-out.

The burden of crowding-out could be eased by improving the attractiveness of SME and rural borrowers to lenders, although this is not a simple task. First, better information on SMEs and rural borrowers, through improvements in credit bureaus, can make such lending more attractive. Credit information is already being used by banks in developing countries to expand consumer credit substantially. Of course, in the short-run, the development of credit information has made consumer lending more attractive than lending to SME and rural businesses, reducing their access.[40] And applying these techniques to SMEs and rural lending is more complex than applying them to consumer lending. Such businesses are *sui generis* and the required information on what exactly they are doing is more complex than simply looking at a consumer's assets, life style and history of debt repayment. Second, improvements in the titling of assets and collateral and in execution of collateral can make SME and rural lending more attractive. Finally, as such bank lending becomes more of a homogeneous product, it may be possible to securitize such loans, as is occurring with housing loans, or for micro-credit lenders to issue bonds (e.g., India). This would effectively open up the capital market to such borrowers as a group.

5.2 Changes in Macroeconomic Risk and Burdens

Recent discussions of the macroeconomic risks of government debt start, not surprisingly, with the numerous macroeconomic crises that occurred after the Mexican crisis that began at the end of 1994.[41] The recent discussion includes:

- Concerns about the magnitude of the debt relative to GDP ("Debt Intolerance"—see, for example, IMF, 2003; Gill and Pinto, 2005; Borensztein, Levy-Yeyati, and U. Panizza, 2006; and Reinhart, Rogoff, and Savastano, 2003, which focuses on foreign debt),
- The role of borrowing in foreign currency in the risk of debt ("Original Sin"—see, for example, Eichengreen and Hausman, 2004), and
- The disruptive impact of sharp contractions of international capital flows ("Sudden Stops"—see for example, Calvo, 1998; Calvo and Reinhart, 2000; and Calvo, Izquierdo, and Fernando-Mejía, 2004).

[39] It remains true that the credit rating agencies generally rate emerging market companies' bonds and borrowings markets at least one grade below than their country's sovereign ratings. This rating differential tends to mean private borrowers face higher interest rates and shorter maturities than their governments.
[40] Individuals can, of course, use consumer loans to finance their SME businesses, so the crowding-out problem from consumer credit may be less than it appears.
[41] A whole set of earlier crises took place in the early 1990s and generated their own analysis.

In simplest terms, these analyses argue that some developing countries have high levels of debt relative to their weak fiscal and financial systems, and more fundamentally, their political structures. These structural problems have manifested themselves in:

- domestic inflation (the inflation tax was needed to finance government),
- high foreign debt (domestic debt was costly to issue and the domestic debt market was not developed), and
- debt denominated in foreign currency (because potential lenders did not trust the domestic currency and borrowers found foreign currency debt more attractive, for the reasons discussed above).

Such countries were particularly subject to "Sudden Stops" in capital inflows[42] that led to large devaluations, major financial disruptions, and output declines. The countries have been forced to make (serial) defaults or reschedulings of international debt and increase their government domestic debt to clean up the domestic financial system as described in Section 4.1.[43]

It can be argued that many of the conditions that underlay these problems have changed and the growth of government domestic debt may reduce the future magnitude of these problems somewhat. Government domestic debt may also benefit from the home country bias of investors that is a well-established phenomenon in industrialized countries (Lewis, 1999). Moreover, financial development may be increasing the importance of large domestic holders of government domestic debt that have a bias toward buy-and-hold investment strategies. These include pension funds and insurance companies. In effect, these developments increase home country bias. Governments may also feel more in control with domestic debt and that domestic debt (in local currency) will reduce volatility, because it matches debt servicing costs with government revenues.[44] This is in contrast with the risks of volatility from external debt that were highlighted by the crises of the last 15 years.

At the same time, the changed conditions may merely reflect current benign international conditions and the legal restraints on the new domestic investors. The current international situation, the greater macroeconomic stability in developing countries and the appreciation of some emerging market currencies may be temporary. Hence it is difficult to judge whether the growing demand for government domestic debt by non-residents reflects a permanent or only a temporary shift. Indeed, the increased importance of non-resident holdings of government domestic debt, in denominated in local as well as domestic currency, and the increasing ability of large depositors to move

[42] Other explanations of sudden stops include shifts in world capital markets, concerns regarding changes in the borrowing country, and contagion from one country to another. The suddenness of the decline in inflows may reflect a change in lenders' expectations. It also may be related to a more fundamental concern about a shift in the ability of the country to cover its obligations as the environment changes. (See for example, Dooley, 2000)

[43] Much of this analysis focuses on Latin American countries. The countries involved in the Asian crises had large external debt but it was mostly private. Nonetheless, the Asian countries also suffered problems from "sudden stops" in capital inflows and borrowing in foreign currency, albeit by their private sector.

[44] This depends on the degree to which government domestic debt is in domestic currency and bears fixed interest rates, as discussed below.

funds on-shore and off-shore could actually make the demand for government domestic debt more volatile and increase the risk of sudden stops in this source of funding. And, it is difficult to assess home country bias given that in most countries restrictions on offshore investments limit diversification by pension funds and insurance companies.

In any case, government domestic debt still has a higher cost than international debt, though that cost difference has narrowed. This is because large amounts of government domestic debt raise the political temptation to inflate away the debt—a classic inter-temporal policy inconsistency issue. Potential holders of the government domestic debt recognize this temptation and demand an interest rate premium over international and foreign currency debt to compensate them for this risk. As a result, relying more on domestic debt to finance the government has a cost relative to foreign debt, although the risk premium has declined at least temporarily.

Second, the potential problems of "sudden stops" and volatility of debt servicing costs in domestic debt finance may be underestimated. Suppose for example, that international interest rates rise, or export prices fall or that concerns develop over political changes. In such cases, potential investors may perceive a greater risk of inflation, devaluation, and debt default, either implicitly or explicitly. If the domestic debt is in foreign currency, potential investors may perceive a risk that it will be converted to domestic currency by fiat. As a result, domestic and non-resident holders of government debt may sell it and take their funds overseas. The government would suddenly find it more difficult to obtain funding in domestic markets, not just in international markets. As noted above, all these issues may be accentuated by the growth of foreign investors in local debt markets.

The fundamental issue in "Sudden Stops" and volatility is the voluntary demand for government assets, whatever the locale of their issue and their currency denomination. If the demand for the obligations of a country declines, whether they were issued inside the country in local currency, inside the country in foreign currency, or externally, then the government will face a financing problem. A shock such as described above would produce such a decline in the demand for government debt.[45] In domestic markets, interest rates will increase. Domestic debt maturities, already shorter than foreign loans, will need to be shortened further to attract buyers. The government also may find it necessary to increase domestic borrowing in foreign currency to limit its short-run costs of finance. Moreover, as the cost of borrowing rises, potential buyers are likely to become concerned about the government's ability to pay and the temptation to default, further reducing the demand for domestic debt and raising borrowing costs. Such a process occurred in Brazil in the latter half of 2002 (Box 2).

[45] With financial intermediaries, such shocks would reduce the growth of or even the absolute demand for their liabilities, which would be translated into corresponding changes in their demand for government domestic debt.

Box 2. Brazil: The Mini Domestic Debt Crisis of 2002

During 2002, concern developed in Brazil's financial markets over the likelihood that President Cardoso would be replaced by a less market-friendly president and that a debt default might occur. Although Brazil was running a primary surplus of 3.75 percent of GDP, and over 60 percent of its debt was domestic, the overall debt to GDP ratio was high and over 80 percent of the domestic debt was indexed to dollars or short-term interest rates. In May, rating agencies began to downgrade Brazil and investment advisory services recommended cutting exposure. The floating exchange rate continued its depreciation, raising the debt ratio. In August, the IMF announced a $30 billion package for Brazil but it did not stem investors' concern for long. The government made a series of interest rate increases, with the rate reaching 25 percent in December and dollar rates on short-term corporate borrowing reached 20 percent. The government also increased reserve requirements and eased mark-to-market rules on short-term debt in mutual funds. However, funding difficulties continued and the government was forced to shorten debt maturities (including offering swaps of short-term for longer term debt) and further increase issues of dollar indexed debt. When the new government took office, it announced a continuation of the country's commitment to macroeconomic stability and the markets calmed. The currency appreciated, reducing the debt ratio, and it eventually became possible to lower interest rates.

Brazil's experience shows that volatility exists not only in the international flows of capital and in exchange rates but in the availability and cost of funds in domestic markets. Governments' may consider it attractive to match the location and currency of their funding with their revenues in an attempt to reduce volatility, particularly after the large crises of the last 15 years. This is especially true given the low interest rate premia that they currently face on domestic debt, which reflects the current benign international environment. However, this approach still means that borrowing will still cost more on average. Moreover, the approach has not been tested by a major crisis, when it is likely that domestic funding, like foreign funding, will still stop suddenly, or at least become much more expensive.

Ultimately, a large negative shock may force a government to default on its domestic debt, just as it would on foreign debt. The main macroeconomic difference, compared to foreign debt, is the different distribution of the burden of the default, leaving aside whatever difference might occur in impact on GDP. Default on externally-held debt generates a loss to foreigners.[46] Default on domestic debt—whether explicitly or through holding down interest rates or other changes in the conditions on domestic debt combined with inflation—has internal distributional impacts. It is a loss to the households and firms that hold the debt and a gain for the taxpayers who ultimately service the debt. It should be noted that the growth of more independent central banks and legal limits on their holdings of government debt have made it harder to inflate away domestic debt than in the past. Correspondingly, any defaults are probably more likely to

[46] The risk premium on international debt partly reflects the market's subjective expectation of this risk. It is often observed that a country's nationals hold a substantial portion of the foreign debt of the country. Their holding is probably explained by the likelihood that they have better information about the country's prospects than other potential buyers. However, this same information may allow them to sell off their holdings more in advance of default than other debt holders and thus suffer smaller losses.

be explicit than in the past. Not surprisingly, government default on its domestic debt is a major political issue and often results in the fall of the government.[47]

This discussion suggests that the macroeconomic policy implications of living with debt are straightforward, whether it is domestic debt or foreign debt. Whatever the composition of its debt, a country must develop a fiscal structure consistent with its debt and sustain it to develop credibility. Developing that credibility will take time. Until credibility is achieved, high public debt levels, whether domestic or external, represent a risk. The developing countries' dependence on highly variable commodity prices and their sometimes volatile domestic political structure worsens these risks.

The growth of government domestic debt probably does not, in broad terms, reduce the macroeconomic risks of high debt levels. Matching the location of debt issue and the currency of a government's debt with its revenue may seem like a solution to help reduce volatility. However, there is a cost to borrowing more domestically, in part because of the time-inconsistency issues inherent in macroeconomic policy. Moreover, benefits may be overestimated. The availability and cost of domestic finance, like foreign finance, are likely to become problems in a crisis. These both the cost of borrowing domestically, compared to foreign borrowing, and the potential volatility of domestic debt issues have been eased currently by the benign international environment. Nonetheless, many developing countries are still subject to the inherent risks of weak fiscal, financial, and political systems. Until government policies raise credibility and reduce the legacy of such issues in savers' minds, then the macroeconomic risks of high domestic debt are probably not fundamentally different than those of high foreign debt.

6. Changes in Banking Risks

The growth of government domestic debt held by the banking system complicates the macroeconomic risks discussed above. The complications arise because of the difference between debt held by individuals, and debt held by banks. Banks face the same risks of losses on debt as individuals but have fixed deposit obligations and liquidity issues that may lead to macroeconomic effects. Greater government reliance on domestic debt held by banks means that its debt management policy may simply transfer risks from the government to the banks. The resulting problems in the bank may eventually recur back to the government because of its explicit and implicit backing of bank deposits.

The initial growth of government domestic debt probably did not increase risks for banks much, and may even have eased them. In particular, the initial issues of marketable government debt tended to be of short maturity (or carry floating rates) and often were denominated in foreign currency—an obligation that the government usually

[47] Five different presidents were involved in Argentina's exit from its currency board and its explicit debt default that included a substantial default on domestic debt. Discussions of debt default have sometimes raised the question of how domestic debt would be treated, compared to foreign debt. In Argentina, all government debt received the same treatment initially but, in future defaults this issue could reappear.

could pay more easily than a private borrower. As a result, the initial development of government domestic debt may have reduced risks for banks.[48]

More recently, however, central governments' (and central banks') debt management policies may have been more risky for banks. Government debt managers have often tried to ease their own risks by extending the maturity of their debt instruments and selling more debt with fixed-interest rates and denominated in domestic currency. This policy increases banks' liquidity risk systemically to the extent that the changes in government domestic debt create a mismatch with bank deposits. Interest rate risk increases to the extent that the domestic debt instruments increasingly carry fixed rates and are of longer maturity than deposits. Currency risk increases to the extent that the government's transition to domestic currency debt instruments proceeds faster than the "de-dollarization" from a high level of dollar deposits. The policy also increases the risks to bank owners because the value of their capital will become more volatile as a result of fluctuations in the value of the banks' government debt portfolio because of interest rate fluctuations.[49]

In the case of a major rise in interest rates, these risks from debt management policies translate into actual bank liquidity problems, declines in banks' net income, and reductions in banks' capital.[50] These changes reduce the value of the portion of the banks' government debt portfolio that does not carry floating rates or is of long maturity. Banks will thus face liquidity problems relative to their fixed deposit obligations, to the extent that deposits have a shorter maturity or more floating rates than their holdings of government debt.[51] Banks will also lose income because they have to roll-over deposits before their holdings of government debt mature. In addition, measured capital will fall because any rise in interest rates reduces the value of marked-to-market domestic securities. More importantly, true capital falls because of the impact of higher interest rates on the whole portfolio of government debt.[52] Concerns about such problems may even reduce central banks' willingness to tighten monetary policy. These problems would not occur if interest rates on government debt were floating (or the maturities of government debt holdings and deposits were matched) and foreign currency deposits were matched by holdings of government debt denominated in foreign currency of equal maturity.

One proposal to reduce these problems has been to require banks to hold more capital against government debt.[53] However, it is unlikely that the actual additional

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[48] The growth of government debt was also beneficial to individual banks in temporary difficulties because of its liquidity.

[49] Bank's offers to buy debt will include a demand for a premium for bearing the expected risks. The risk issue is that the premium will not cover the costs if the actual outcome is much worse than expected.

[50] Moreover, if interest rate is sustained for some time and the central bank issues its own debt, then the central bank will also encounter a loss of income and concerns about its solvency and its ability to maintain a tight money policy, as discussed in the next sub-section.

[51] Similar problems will result from a depreciation in the currency.

[52] This issue is important because depositors, particularly large depositors, are likely to be well aware of the overall position of the banks and react to it, not just the marked-to-market portion of the portfolio.

[53] This could involve either increasing the required capital associated with holdings of government bonds, which is now very low or zero, or imposing a capital requirement for market risk, which de facto would be a requirement for the government bonds because they are the main market instruments.

capital requirements would ever offset the potential losses to banks' capital, given the banks' large holdings of government debt and the potential volatility of interest rates in many developing countries.[54]

The requirement might seem to transfer the costs of some of these new risks to the banks' owners but that neglects the impact of the regulation on the attraction of government debt and its pricing in the market. At a minimum the regulation will simply lead banks to build-in the higher capital cost of government debt in their bids for government debt. The higher interest on the debt would compensate the banks' owners for the higher capital requirement on government debt to some degree.

The regulation may also have unintended negative consequences on bank lending to the private sector if bank capital is limited. If the government did not reduce the amount of its domestic borrowing in these instruments—an inelastic supply curve of government domestic debt—the banks would have to allocate more capital to government debt. However, if the supply of bank capital were also inelastic, then the regulation will also reduce the banks' capital that is available to support private lending. The result would be a regulatory crowding-out of loans to the private sector.

In a more diversified financial system, the requirement would mean non-banks probably would end up with more of the government debt because of they would have no risk-related capital requirements. This would reduce the impacts on banks discussed above. However, such a shift to non-banks raises the issue of whether such falls in the market values of their government debt portfolio could be absorbed without a politically inspired government bailout, an issue that is discussed below.

A more fundamental policy to reduce these risks to banks would be to modify the government's approach to debt management policy. In particular, the government should consider not only the benefits to itself from longer-tenor, fixed-rate, local-currency debt, but also the corresponding increases in risks to banks (and mutual funds) if its domestic debt composition deviates too much from deposit composition.[55]

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[54] A simple example illustrates the problem. Suppose 20 percent of banks' assets are government domestic debt, government debt has a zero risk weight, and the required minimum capital is 8 percent of risk weighted assets. A bank holding minimum capital would have a ratio of capital to actual assets of 6.4 percent. In the case of a 25 percent change in average interest rates, from 10 to 12.5 percent p.a., for example, the value of government domestic debt holdings would fall by the equivalent of 4 percent of assets (using for simplicity of calculation the assumption that assets are infinitely lived). Obviously the example is only illustrative. Government debt has a much shorter average maturity that would correspondingly mean a much smaller loss, but the general issue of the volatility of low bank capital to asset ratios when interest rates are volatile is clear.

[55] Partly offsetting the new risks to the banking system associated with government domestic debt and its management are some possible gains associated with domestic debt in a crisis. In particular, holdings of government domestic debt may ease the ultimate financial cost of a crisis to the government, compared to the crises of the 1990s. First, the maturity of the government debt may be shorter, on average, than loans. Hence, rollovers of government debt come "sooner" than on loans, helping banks' income and capital and meaning banks would need less government support than if they had larger lending portfolios. Second, the costs of a run on the banks may be less. The banks' holdings of government domestic debt can be used for collateral for central bank liquidity support or sold to the central bank. From the standpoint of the central bank government, domestic debt represents much better collateral and is a much better asset than private loans or guarantees of bank owners, which after crises have typically yielded much less than the liquidity support provided by the central bank. Third, in the event of a bank closure, the government debt obligations

An issue also exists with regard to how bank supervision ought to respond in an environment of large government debt holdings and volatile interest rates. As discussed, in the event of a rise in interest rates, banks will probably experience both capital losses and a lower net income for a time.[56] One could imagine that these shocks might be the "final straw" for a weak bank and lead to the owners' looting of the bank. Thus, the reductions in capital and income, even if they are temporary, raise a bank supervisory issue: should the supervisor promptly request an increase in the affected bank's capital in these circumstances, or should it allow the bank's capital to be lower than the required capital temporarily, until the capital is restored by rolling over the government bonds at face value into new bonds with the higher rates?

The existence of bank-held government debt also raises an issue in the event of a government default because of the banks' fixed deposit obligations. Bank-held government debt means government domestic debt is technically not "owed to ourselves" and complicates any default by the government. The ultimate owners, the depositors, are protected by a fixed obligation from the bank. Moreover, bank deposits are often government guaranteed, particularly deposits in state banks that may enjoy substantial legal protection. A write-down or even an extension of government debt obligations alone would create a mismatch between banks' holdings of government domestic debt and banks' deposit liabilities, and would ultimately recur to the government. To resolve such issues, it was necessary for the parliaments of Argentina and Uruguay to take the politically unpopular step of extending maturities of and fixing interest rates on deposits, and in the case of Argentina, changing the currency obligations of banks to the depositor, in other words, essentially allowing a default on the terms of the deposit obligations.[57] In other words, government default on domestic debt requires an additional government write down of deposits to make it effective.

7. Changes in Risks and Burdens of Debt in Non-bank Intermediaries

The impacts of shocks and defaults on the non-bank' holding of government domestic debt create even more complex risks and burdens than those facing banks. Life insurance companies raise issues similar to banks. Investment funds and pension funds to some degree face issues more like those facing individual investors, but additional complications also exist.

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are typically worth more than the loans, meaning the cost to the government of bank closure will be less. Of course, set against these possible gains it the possible loss in growth from the replacement of loans by government debt in bank portfolios described above.

[56] Note these problems occur with respect to loans, they are just not as obvious because government debt has a well defined price and its stock, at least partly, is marked to market, while loans are not.

[57] Such defaults on Argentine domestic debt also occurred in the early 1990s (See, Beckerman, 1992, 1995). In the recent default, the switch from dollars to pesos was done asymmetrically—higher for deposits than for loans—which de-capitalized the banks. The banks were allowed to operate with low capital for a time, but eventually received some compensation. After the switch from the currency board, numerous court cases were brought against this action and often won. The Argentine courts recently decided the remaining cases in favor of the government's right to change the currency composition of the deposits and lengthen their maturities. In the early 1980s, Mexico also converted dollar deposits and loans into local currency at an asymmetric rate, and nationalized the banks. The banks were given funds to restore their capital, which contributed to a substantial inflation.

Regarding life insurance companies, it is important to note that they may suffer "runs" similar to banks. Policy holders may stop contributing, withdraw cash values of the policies, and request loans. The companies' holding of longer-term government domestic debt may prove difficult to sell. Hence, life insurance companies, like banks, may suffer liquidity as well as insolvency problems in the face of negative shocks and related declines in the value of government debt. The government may not only need to intervene, but may face political demands for a bail out from holders of policies and annuities issued by the life insurance companies.

Regarding pensions, holders of accounts in the standard, compulsory, fully funded pension funds are theoretically and legally almost equivalent to an individual's holding of debt.[58] Thus, holders of these accounts suffer losses if market prices of government domestic debt fall. They would also suffer from any default on domestic debt, which raises the politically difficult issues noted above.[59] These problems would be most serious for persons retiring in the midst of a crisis. The issue is complicated even more by the fact that in most of these pension systems, the retirement age is fixed and the retirees must convert their pensions into annuities. Thus, currently, no option exists to allow potential retirees to delay retirement and ride out the cycle in the values of their pensions. Moreover, the suppliers of annuities, insurance companies, may be become bankrupt. These problems may generate increased costs to the government from such pension systems in the event that the government guarantees a minimum pension. They may also generate demands for a more general bailout of the pension system, particularly if state-owned intermediaries are involved.

The structure of fully-funded pensions may produce some surprising results, however. For example, in Uruguay, the crisis led to a major fall in the value of pension assets. This hurt those who retired at that point, or soon after, as described above. However, those who remained employed continued to contribute to the pension. In recent years, as interest rates fell, the original holdings of these contributors returned to their former values and the contributions they had made during the high interest rate years not only received high returns but also registered capital gains. Largely as a result of the rebound, the Uruguayan pension system has produced one of the highest rates of return among the Latin American pension systems over its lifetime.

The problems in insurance and pension companies could be reduced by easing restrictions on them, but some of the changes in regulations would reduce the demand for government domestic debt. In the case of pensions, one possible way to ease the problems of volatile portfolio values in domestic currency would be to ease the legal requirement to retire at a fixed age. A more general solution to the problem of pension funds and insurance companies would be allowing greater portfolio diversification offshore. Currently the investors in these intermediaries are subject to the risks of seigniorage and defaults on the intermediaries' government domestic debt holdings. Allowing greater offshore diversification would reduce their demand for government

[58] These pensions may sometimes include a government guarantee of a minimum pension, as noted.
[59] Argentina's recent default is often considered to be a default on external debt, but the currency board approach made government's domestic debt dollar debt. A large percentage of the government's debt was domestic, held by banks and pension funds, and they bore some of the cost of the default.

domestic debt, but would provide more protection to the owners of pension obligations, insurance policies, and annuities.

It is not clear exactly how investment funds would be affected by negative shocks, and the possible political issues that might arise between the government and the investors in these funds. Legally, investors in these funds bear the risks of negative shocks to their portfolio values, as if they directly held the domestic government debt. In practice, the issue is more complex. In the event of negative shocks, or concerns about the government's ability to meet its debt service obligations, net redemptions would occur in the investment funds. Investors would shift to offshore assets, or to bank deposits, particularly in state banks, where deposits are generally guaranteed. This process would generate a fall in the asset value of the funds that perhaps could become cumulative. The shifts of funds to banks would be easy, given the ease of moving funds back and forth between the investment funds and the banks that own them. One question is exactly how this transfer would occur, and to what extent it might prejudice the banks, both immediately and over time. At a minimum, it would leave the banks with a larger volume of government debt that is declining in value, with all the issues discussed above.

How the government would respond to these developments politically is also not obvious. Although the funds have no legal guarantee, the government might be pressured politically to support them. This is particularly true if some of the funds were run by the government or state-owned financial institutions. Examples exist of governments' bailing-out investors in such public sector funds and resisting the pressures.[60] Thus, evaluations of potential risks from a "sudden stop" in demand for government domestic debt, should not take the shares of government debt held by different intermediaries as constant, nor assume that no risk to the government exists from intermediaries that pass through losses on government debt to investors.

To summarize the issues related to the risks and burdens of government domestic debt in the financial system, potential transfers of risk from governments to the financial system, particularly banks, are an important issue in government management of its domestic debt. Governments need to consider not only their own interests in reducing rollover and interest/currency risks, but also the risks that they may be imposing on the system if they get "too far ahead" of the public's (indirect) demands for floating rate, short maturity, and foreign currency assets. This is especially an issue for banks, but it also is an issue regarding insurance companies, pension funds, and investment funds. Investment funds may even transfer some of their problems to banks. In all cases large losses have the potential to generate significant political pressures for bailouts, a problem that should not be ignored. These issues cannot be solved solely by changes in regulation, although regulatory changes would help. More fundamentally, the problems

[60] In India, for example, the price of the state-run equity investment fund, the Unit Trust of India, was supported by the government in the 1990s for political reasons. Finally, however, the price was frozen. In 2002, the government compensated the remaining holders of the fund at some loss. In contrast, in the 2004 crisis in the investment funds in Costa Rica, the government resisted the pressures to bail out the investors. Nonetheless, the central bank bought back the funds' holdings of its debt and eased liquidity. In addition, the government banks were thought to be heavily involved in supporting the redemptions from the funds they managed. It is unclear whether marking-to-market of the banks' new holdings was as strictly enforced as it was in the investment funds. The resolution of the crisis was helped by the limited outflow of funds from Costa Rica; much of the redemptions were simply deposited into the state banks. See Carvajal, 2006.

can be eased by government debt management balancing own concerns as a borrower with the concerns of the public.

8. Central Bank Debt and Multiple Central Bank Objectives

Many central banks have used their own obligations as monetary policy instruments, or as part of the resolution of financial crises, as noted above. These activities are related to the pursuit of central banks' objectives. However, these central bank instruments also raise potential complications in macroeconomic policy by expanding central bank objectives.

Central banks are increasingly being given more independence and accountability and charged with the objective of maintaining low inflation and, more generally, macroeconomic stability. The traditional objectives of financing the government and developing the financial system have been or are being eliminated. The use of a single objective follows the Tinbergen rule of one objective—one policy instrument—and allows for greater accountability. This approach probably contributed to the substantial falls in inflation that occurred over the 1990s.

The inflation objective is complicated in small open economies by the importance of the exchange rate. Specifically, should the central bank focus on managing the exchange rate or the inflation rate? Central banks may also become involved in trying to avoid appreciation of the exchange rate, both because variation in the exchange rate may affect macroeconomic stability and because of the importance of exports and exporters in the country. Capital inflows, such as are occurring currently, will tend to appreciate the exchange rate and hurt exporters.

Such concerns about the exchange rate are likely to lead to both purchases of foreign currency inflows (adding to international reserves) and attempts to "sterilize"/ offset the corresponding issues of domestic currency through issues of central bank liabilities. Such policies may even encourage further inflows and create the need for further sterilization—additional foreign investors may be attracted by both the continuation of attractive interest rates and the "one-way-bet" that the exchange rate will appreciate.

The resulting growth of central bank liabilities in pursuit of such objectives also raises a major question—how to service the growing liabilities. This problem may worsen over time because it is hard to conceive of a situation in which the stock of these liabilities will be reduced that will not involve an undesirably large loss in international reserves. The problem arises when there is a negative spread between the domestic cost of the new central bank liabilities and the earnings on the increases in reserves, as is the case today. The negative spread reflects the interest rates on reserves compared to the interest rates on the instruments used to conduct the sterilization activities. As a result, central banks' net incomes are squeezed.

This squeeze means central banks are increasingly facing an additional objective—selling new liabilities to cover the cost of the old ones—that may interfere with the pursuit of monetary policy objectives. Concerns about future costs of central bank debt may conflict with the need to raise interest rates on central bank liabilities.

Central banks may also become concerned about rollover risk and correspondingly extend the maturity of their liabilities well beyond one year, as has occurred, for example, in Costa Rica and Peru. This extension of maturities directly conflicts with government debt.

Resolving these problems cannot be done by the central bank alone. This is particularly the case in some countries, where the central bank has become decapitalized as a result of its activities in crises. Central banks must depend on the central government for recapitalization and thus cannot really be independent in a fundamental sense. The issue of central bank insolvency is heightened currently by the use of central bank liabilities for monetary policy/sterilization policy and previous resolution of financial crises that in some cases has left a large and growing volume of central bank liabilities outstanding.

Dealing with the problem at the most fundamental level means both a more flexible exchange rate policy and replacing central bank liabilities with central government liabilities for the conduct of monetary policy. This replacement would place responsibility on the central government for servicing debt arising from monetary tightening as well as fiscal deficits. It would leave the central bank free to pursue its targets without concerns about future costs or rollover risks that would arise with its own debt.

Carrying out this policy would require an arrangement between the central bank and the government. This would involve recapitalizing the central bank over time, which, in turn would impose costs on the central government. However, these costs are, in fact, simply recognition of the current insolvent status of the central bank. Second, it would require some arrangement between the central bank and the government to a) provide the central bank with a stock of government debt that could be used as needed to tighten money, and b) divide the income from central bank's holdings of government debt between the government and the central bank, taking into account the expenses of the central bank, as is done by the U. S. Federal Reserve and the U.S. Treasury.

9. Conclusion

In the early 1990s, government domestic debt existed in most of the developing countries with large financial systems. [61] On average, however, these countries tended to rely more on foreign debt to finance their governments. Between the mid-1990s and 2004, government domestic debt rose much faster then GDP or foreign debt in these countries. On average, the ratio of government domestic to foreign debt was roughly twice as high on a country-by-country basis in 2004 than in 1995.

The rapid growth of government domestic debt is broadly explained by four interacting factors:

- Financial crises, which led to more issuance of domestic debt to fund the government as well as to recapitalize bankrupt banks;
- Growth of central bank debt;

[61] Government domestic debt is defined in this paper to include central bank debt, as well as central government debt.

- Governments' greater use of more attractive and deepening domestic government debt markets; and
- A broadening and increasing demand for government domestic debt from new domestic sources such as pension and investment funds, and from non-resident investors.

The majority of the countries with large increases in government domestic debt between 1994 and 2004 had experienced large financial crises. The increases reflected both the shift to domestic borrowing, as foreign loans became less available/more expensive, and the recapitalizations of banks. Substantial differences exist in the growth of government domestic debt across the crisis countries, reflecting both differences in the crises and in the use of various mechanisms to resolve the crises, especially government guarantees.

Crises are far from the only explanation of the growth of government domestic debt. Governments in both non-crisis and crisis countries have relied more on domestic borrowing, less on foreign borrowing. One explanation is the decline in the supply of foreign loans and the rise in their cost after the crises, which affected all countries. In addition, governments probably felt that domestic debt was desirable because it matched the composition of their revenues better and was less subject to volatility than foreign debt. The views on volatility were probably highly influenced by the volatility of capital inflows during the crises. Governments have continued to rely on domestic debt issuance as the supply of international capital has rebounded, reflecting these views and the smaller cost differential between foreign and domestic debt than in the past. In addition, the issuance of government domestic debt has been made easier by the substantial efforts governments have made to develop their domestic debt markets. Central bank debt has also grown as some central banks tried to sterilize the inflows of foreign exchange by issuing their own debt.

At the same time, demand for government domestic debt has grown substantially from both domestic and non-resident sources. Domestically, the growth of pension funds, insurance companies, and investment funds (to some extent reflecting regulatory advantages they enjoyed compared to banks) increased the demand for government domestic debt. To some degree, this growth reflected regulations requiring pension funds and insurance companies to invest in government domestic debt. Recently, non-residents have become interested in government domestic debt — even debt in local currency — as macro-economic stability took hold, interest rates in industrial countries became less attractive, bond market liquidity grew, and developing countries' exchange rates held the promise of appreciation and reserve growth lowered the risk of depreciation.

The growth of government domestic debt has generated some new burdens and risks. One burden is the possible crowding-out of banks credit to the private sector and the distribution of that burden. Domestic government debt has grown faster than private sector bank credit, particularly in the crisis countries. Some evidence of crowding- out exists, though much more empirical work is needed on this subject. Perhaps more important is the changed distribution of the burden of such crowding-out. Larger private corporations are increasingly able to borrow abroad and raise funds in growing local capital markets. Hence, the burden of any crowding-out is likely to be borne by smaller,

less well-known borrowers, such as SMEs and rural borrowers. Easing this burden will depend on improving information on these borrowers, improving the legal system's treatment of their collateral, and improving their access to capital markets through securitization.

Large government debt relative to fiscal, financial, and political systems is a risk and that risk does not seem to be much affected by whether the debt is domestic or foreign. The volatility of capital flows in crises and the fall in the cost of domestic borrowing, relative to foreign borrowing, have made domestic debt issuance attractive to government currently. However, these conditions probably reflect the current benign international environment and the regulations that force pension and insurance companies to hold government domestic debt. Fundamentally, the volatility of voluntary demand for government debt does not depend on location or even the currency of issue. For example, sales of domestic as well as foreign debt are subject to "sudden stops", when direct holders and bank depositors switch to other assets. The potential for "sudden stops" in demand for domestic debt may have even been increased by the growth of non-resident participants in domestic markets. Ultimately, governments must adjust their debt to be consistent with the development of their fiscal, financial and political development.

Unsustainable debt levels may lead to a default, whether the debt is domestic or foreign. The higher levels of government domestic debt would make any default a larger political issue than in the past. If government has to default formally on domestic debt, then it must correspondingly take the politically difficult decision to write down bank deposits. Moreover, the change in the holders of domestic debt mean new distributional impacts from any default, notably losses to those holding assets in insurance companies and pension funds, particularly those retiring in crisis periods.

There are also substantial potential changes in financial sector risk as a result of the growth of government domestic debt. In particular, an issue exists regarding the extent to which government domestic debt management policy may transfers risks from the government to the banks and other financial intermediaries. Governments can reduce their risks by issuing more fixed-rate, longer maturity, domestic currency debt. However, this debt management policy increases the risks for banks if these changes lead to significant differences between the composition of deposits and the government debt held by intermediaries. A related issue is the appropriate response of bank supervisors when interest rate rises reduce the capital values of banks' government debt. The solution to these risks is not simply to increase banks' required capital because of these risks—the potential volatility of interest rates means the changes in capital are unlikely to be insufficient and the policy will raise the cost of government borrowing from banks and lead to a shift of government debt into non-bank intermediaries. A more fundamental approach to reducing this risk would be for government debt managers to include a consideration of how banks' risks will be affected by their debt management policy with respect to maturities, fixed rate and local currency debt issues.[62]

For non-bank intermediaries, the issues are more complex and some of them reflect the possibility that legal limits to international diversification raise risk to holders

[62] The growth of banks' government domestic debt holdings is not all bad; government debt can be used to ease liquidity problems in individual banks and decreases the cost of bank failures, compared to loans.

of their liabilities. Insurance companies may suffer runs similar to bank runs and annuity holders may lose if rising interest rates bankrupt the companies. As noted above, pension fund investors may suffer if interest rates rise, particularly those that are legally forced to retire in periods of high interest rates. In both cases, the problems can be eased by allowing greater international diversification of the intermediaries' assets.

For investment funds and other intermediaries that hold government debt for investors, the issues still more complicated, particularly because such intermediaries can transfer their problems back to their parent banks by selling their declining-value debt to them. A more basic issue is whether the government can withstand politically the loss of value in these portfolios, particularly if some of these institutions are state-owned or associated with state-owned banks. At a minimum, in making their debt management policy, government debt managers should not assume that there is no risk to government from intermediaries that are supposed to pass-on any losses on government debt to their investors.

Finally, the growth of central bank debt may affect the central bank's objectives and reduce its focus on macroeconomic stability. As central bank debt increases, the central bank is likely to become concerned about rolling over its debt as well as limiting inflation. Such problems are especially likely to arise when international interest rates are low and produce a negative spread between earnings on international reserves and central bank debt. The problem may be further intensified if the central bank is concerned not only with limiting inflation, but also avoiding an appreciation of the currency—this would require sterilization of its purchases of foreign exchange by selling central bank debt. Such situations are further complicated for central banks that were de-capitalized by their response to the crisis. The solution is not easy, but requires not only a more flexible exchange rate policy but a gradual switch by the central banks from use of its own debt to use of government debt for monetary policy. In turn, this solution requires agreement between the central government and the central bank on whether any recapitalization is needed, the stock of government debt that the central bank will be given to carry out monetary if tightening should that become necessary, and the division of the income on this stock of debt in the central bank between the treasury and the central bank.

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