

Working Paper

INTERNATIONAL MONETARY FUND



WP/06/186

IMF Working Paper

The Level and Composition of Public Sector Debt in Emerging Market Crises

Monica de Bolle, Björn Rother, and Ivetta Hakobyan

IMF Working Paper

Policy Development and Review Department

The Level and Composition of Public Sector Debt in Emerging Market Crises

Prepared by Monica de Bolle, Björn Rother, and Ivetta Hakobyan¹

Authorized for distribution by Mauro Mecagni

August 2006

Abstract

This Working Paper should not be reported as representing the views of the IMF.

The views expressed in this Working Paper are those of the author(s) and do not necessarily represent those of the IMF or IMF policy. Working Papers describe research in progress by the author(s) and are published to elicit comments and to further debate.

The paper examines the evolution of public sector debt levels and structures in 12 emerging market countries around the time of financial crises. In particular, it focuses on whether the debt situation of sovereign borrowers became more vulnerable in the aftermath of crises. The principal findings are that (i) debt levels tend to increase significantly post-crisis, and (ii) countries often experience more rigid debt structures following such events, with an increase in the share of external public debt to multilateral creditors and a greater exposure of the domestic banking system to sovereign debt.

JEL Classification Numbers: F30 and F34

Keywords: Financial crises, debt distress, sovereign debt

Author(s) E-Mail Address: brother@imf.org

¹ The authors would like to thank Mark Allen, Russell Kincaid, Matthew Fisher, Mauro Mecagni, and Krishna Srinivasan for their extensive comments and suggestions. The authors are also grateful for the comments received from seminar participants in PDR and from other IMF colleagues. Monica de Bolle was an economist in the IMF's Crisis Resolution Issues Division when the work on this paper was first undertaken. The authors assume responsibility for any remaining errors.

Contents	Page
I. Introduction	3
II. Evolution of Sovereign Debt Levels	4
A. Evolution of Debt Levels in the Immediate Post-Crisis Period	4
B. Evidence on Debt Reversals.....	7
C. External Debt versus Domestic Debt	8
III. Changes in the Structure of Sovereign Debt.....	10
A. External Public Debt	10
B. Domestic Public Debt.....	17
IV. Conclusions.....	22
Boxes	
1. Did the Relative Importance of Multilateral Lending Increase Over Time?	14
2. Evolution of Foreign Direct Investment (FDI) Inflows in Crisis Episodes	16
Tables	
1. Decomposition of Changes in Debt-to-GDP Ratios, from t-1 to t+1	6
2. Domestic Banking Sector Claims on Public Sector.....	18
A1. Public Sector Debt by Country: Evolution from t-2 to t+2	28
Figures	
1. Public Sector Debt by Country as a Share of GDP.....	5
2. Public Sector Debt by Country: Pre-Crisis Levels and Evolution Through t+3.....	8
3. Public Sector Debt: Average Evolution of External and Domestic Debt Components	9
4. Debt to Multilateral Institutions.....	11
5. External Sovereign Debt: Creditor Composition, Cross-Country Averages	13
6. Domestic Public Sector Debt by Country: Maturity and Currency Composition	21
A1. External Sovereign Debt by Country: Creditor Composition.....	26
Annexes	
Data Issues and Methodology	25
References.....	32

I. INTRODUCTION

The rapid international integration of capital markets provides emerging market countries (EMCs) with considerable opportunities for investment-led growth. At the same time, it exposes them to sudden shifts in market sentiment and the risk of financial crises. The resolution of these crises has typically involved the provision of sizable financial assistance by the official community in support of economic adjustment programs aimed at easing liquidity pressures and restoring confidence. It is conceivable that under some circumstances, however, countries may emerge from a financial crisis with increased debt-related vulnerabilities that may leave them exposed to the risk of recurrent distress.

Conceptually, debt-related vulnerabilities can be expected to increase during and following the resolution of a crisis through a number of channels. In particular, the *level* of debt relative to a country's repayment capacity may increase because of a sharp depreciation of the exchange rate, an increase in real interest rates, and a contraction in output. In addition, the debt burden may increase as a result of new borrowing from external and domestic sources in the context of efforts aimed at resolving the crisis. Post-crisis vulnerabilities can also stem from crisis-induced changes in the *composition* of sovereign debt, including in the maturity and currency composition of the debt stock and changes in the creditor base which increase the debt's rigidity, an issue that has received relatively little attention thus far in the literature.

Against this background, the paper examines the stylized facts regarding changes in the level and structure of sovereign debt for 12 emerging market economies that experienced a major financial crisis in recent years.² The paper focuses on the following questions:

- How did public debt levels evolve over the crisis cycle, and what was the contribution of the domestic and external components to overall debt dynamics?³
- Did efforts aimed at crisis resolution result in a more rigid external debt structure, defined as a higher share of senior multilateral claims in total public debt that are less amenable to (or need to be excluded from) a restructuring?⁴ In which situations could such a shift in debt structure contribute significantly to post-crisis vulnerability?

² The sample includes Argentina, Brazil, Ecuador, Indonesia, Korea, Mexico, Philippines, Russia, Thailand, Turkey, Ukraine, and Uruguay. For a discussion of data-related issues, see Annex.

³ External and domestic debt refers to the claims of nonresidents and residents, respectively, on the public sector. This definition follows the World Bank's *Global Development Finance*, which is used as one of the main data sources for this study.

⁴ The de facto seniority of multilateral claims—or the preferred creditor status of multilateral financial institutions relative to other creditors—helps insulate these institutions from the risk of nonpayment and debt restructuring. This enables them to take on risks in the general public's interest in crisis situations when other creditors are unwilling to provide financing.

- Is there evidence to suggest that domestically issued public debt also became more rigid in the aftermath of crises, owing in particular to an increase in the exposure of the financial sector to such debt?
- How did the maturity and currency composition of domestic public debt change throughout the crisis cycle?

The paper is organized as follows. Section II examines the evolution of public debt levels for the 12 countries over the crisis cycle. Section III discusses changes in the structure of sovereign debt during a crisis and its aftermath, focusing both on its external and domestic components. Section IV concludes.

II. EVOLUTION OF SOVEREIGN DEBT LEVELS

The experience with financial crises indicates that these episodes were associated with significant changes in public debt levels. Typically, the combined effect of new financing requirements, the depreciation of the exchange rate, changes in real interest rates, and output contractions led initially to a significant increase in the level of debt as a share of GDP. While some countries were successful in reducing debt as a share of GDP to pre-crisis levels within three years following the crisis event,⁵ debt levels stabilized at relatively high levels for others.

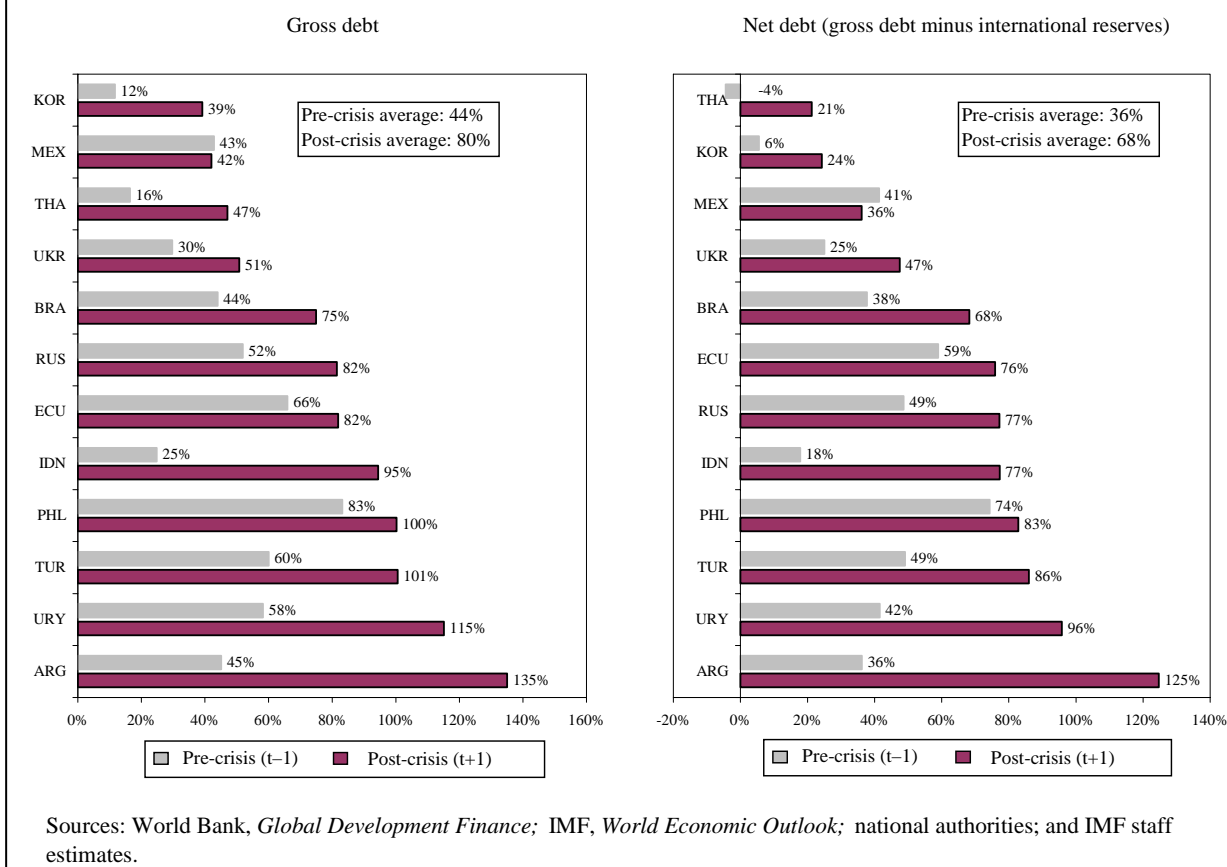
A. Evolution of Debt Levels in the Immediate Post-Crisis Period

Public sector debt as a share of GDP typically increased sharply following the onset of a crisis. In particular, for the countries in the sample, gross public debt as a share of GDP increased on average by 36 percentage points from the year prior to the crisis ($t-1$) to the year following the crisis ($t+1$) (Figure 1, left panel). A broadly similar trend can be discerned for net public debt (gross debt adjusted for international reserve holdings of the central bank), with an average increase of about 32 percentage points over the same two-year horizon (Figure 1, right panel). Comparing the evolution of gross and net debt reveals that for some countries, particularly in Asia, the growth in gross sovereign debt was associated with an increase in central banks' international reserves.⁶

⁵ Due to data constraints, the analysis is confined to a three-year window following the crisis, and thus does not capture longer-term effects of the post-crisis recovery on debt dynamics. Moreover, since countries differ regarding the reporting of contingent liabilities in public sector debt figures, cross-country comparisons of post-crisis debt levels should be interpreted with some caution.

⁶ Between $t-1$ and $t+1$, the stock of international reserves increased by 11 percentage points of GDP in Indonesia, 9 percentage points in Korea, 8 percentage points in the Philippines, and 6 percentage points in Thailand, respectively.

Figure 1. Public Sector Debt by Country as a Share of GDP



Notwithstanding this general trend, the rise in debt ratios was uneven across countries. For example, in the three cases that experienced the highest increase in their debt burden (Argentina, Indonesia, and Uruguay), the net debt-to-GDP ratio rose by more than half the size of GDP over the two-year period. These exceptional dynamics contrast with the experience of the other countries in the sample, where the increase in the debt ratio was more moderate. In one case, Mexico, the ratio declined from 41 percent of GDP in $t-1$ to 36 percent in $t+1$.

A decomposition of the change in the debt ratios reveals that the depreciation of the exchange rate typically contributed most to the worsening of the debt situation (Table 1). On average, the nominal exchange rate depreciation alone caused the net debt-to-GDP ratio to increase by 36 percentage points. In addition, debt dynamics were affected by crisis-induced new borrowing, including to fund primary deficits and, in some country cases, financial sector restructuring (reflected in the residual category of Table 1), changes in real interest rates, and the evolution of output:

- The impact of exchange rate depreciations was very large in the cases of Argentina, Ecuador, Russia, and Uruguay, where it led to a rise in the net debt-to-GDP ratio exceeding 50 percentage points in the two-year period beginning at the end of $t-1$. The impact of an

exchange rate depreciation on debt levels was, however, partially offset by other factors in the cases of Ecuador and Russia.

Table 1. Decomposition of Changes in Debt-to-GDP Ratio, from t-1 to t+1 1/
(in percent of GDP from the end of t-1 to the end of t+1)

	Change in public debt-to-GDP ratio	Individual Contributions to Variations				
		Primary balance	Real interest rate	Real GDP growth	Exchange rate depreciation	Residual
Argentina (2001)	88.5	-1.1	3.2	6.2	63.4	16.7
Brazil (1998)	30.5	-3.2	19.0	-0.5	16.8	-1.6
Ecuador (1999)	16.9	-11.1	-60.5	1.2	90.7	-3.3
Indonesia (1998)	59.5	-3.3	-5.8	-0.1	22.1	46.7
Korea (1997)	18.7	4.7	0.5	0.7	2.2	10.7
Mexico (1995)	-5.2	-14.7	5.4	0.2	38.3	-34.3
Philippines (1998)	8.5	-2.3	-1.3	-2.1	10.6	3.5
Russia (1998)	28.5	0.7	-27.5	-0.1	79.5	-24
Thailand (1997)	25.7	4.2	-0.4	0.6	0.7	20.5
Turkey (2001)	36.9	-9.6	-7.3	-1.7	42.9	12.6
Ukraine (1998)	22.4	0.2	-6.6	0.5	15.7	12.6
Uruguay (2002)	54.3	-3.4	-9.3	2.4	54.2	10.3
<i>Average</i>	<i>32.1</i>	<i>-3.2</i>	<i>-7.6</i>	<i>0.6</i>	<i>36.4</i>	<i>5.9</i>

Sources: World Bank, *Global Development Finance*; IMF, *World Economic Outlook*; national authorities; and IMF staff estimates.

1/ Crisis years in parenthesis.

- The impact of exchange rate movements on debt levels was less pronounced in the cases of Brazil, Mexico, Turkey, and Ukraine; and was modest in the case of the Southeast Asian countries, largely because of their relatively small pre-crisis holdings of foreign currency-denominated debt.
- A significant tightening of the primary fiscal balance helped contain debt dynamics in some countries, including Ecuador, Mexico, and Turkey. In most other cases, the impact of fiscal consolidation on the debt dynamics was relatively modest.⁷
- With the exception of Argentina and Uruguay—where deep recessions contributed to a significant rise in debt ratios—the impact of output growth on debt dynamics remained limited.

⁷ In the cases of Korea and Thailand, expansionary fiscal policies, which were adopted with a view to buttress domestic demand and thus limit the real effects of their financial crises, actually led to a significant rise in the debt-to-GDP ratio.

B. Evidence on Debt Reversals

The ability to roll back or contain the crisis-induced increase in debt levels differed across countries (Figure 2). This suggests that adjustment programs aimed at recovery from crises through a combination of fiscal consolidation, growth-enhancing structural reforms, and prudent monetary policies do not always translate into a significant reduction in the debt burden in the three years following the onset of a crisis. Furthermore, evidence suggests that the post-crisis evolution of debt ratios appears to be generally unrelated to the countries' pre-crisis debt levels.⁸ Looking at the evolution of (net) sovereign debt ratios over time, countries can be grouped as follows:

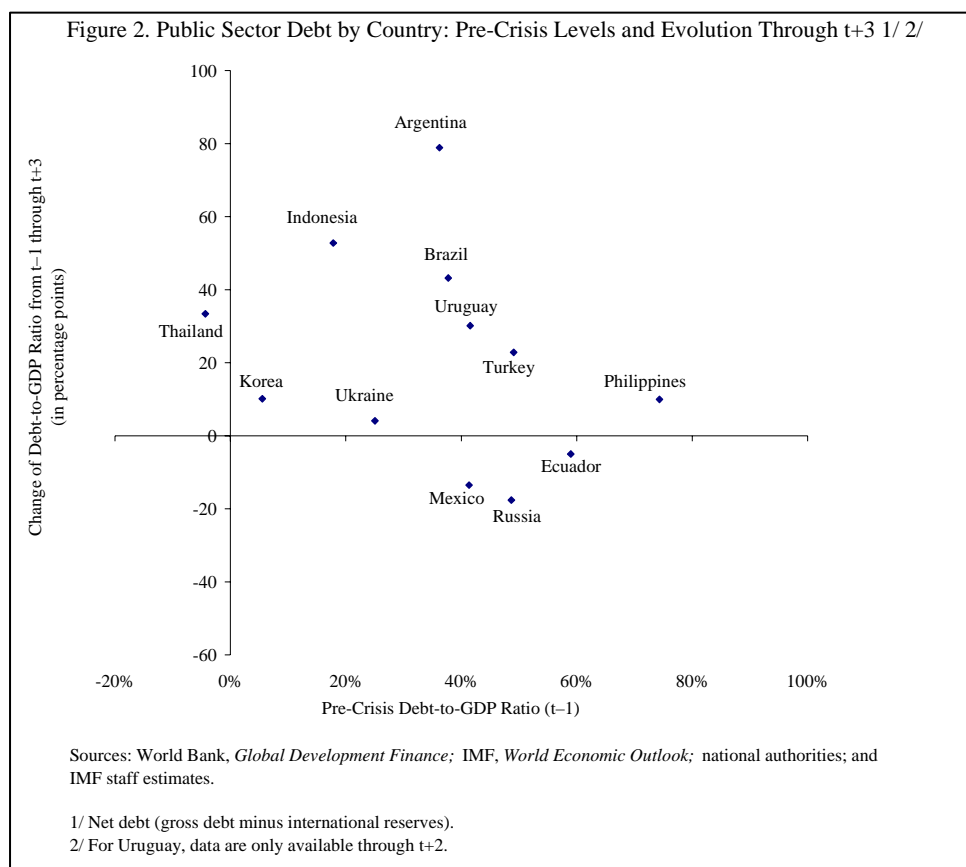
- In some cases, the initial increase in the debt-to-GDP ratio was reversed. In Ecuador, Mexico, and Russia, debt ratios were at or below their pre-crisis levels within the third year following the crisis. This can be attributed to a combination of economic adjustment, including fiscal consolidation, favorable trend in the terms of trade, and, in the cases of Mexico and Russia, relatively strong economic recovery. Debt restructurings further contributed to improving the debt dynamics in the cases of Ecuador and Russia, where the debt-to-GDP ratio declined in 2000, the year of a major restructuring in both cases, by 13 percentage points and 32 percentage points, respectively.⁹ Korea, the Philippines, and Ukraine also succeeded in broadly neutralizing the impact of the crisis on their sovereign debt levels by the end of the third post-crisis year, although debt did not fully revert to pre-crisis levels.
- For other countries, the crisis-induced increase in the debt-to-GDP ratio was more persistent. In the cases of Brazil, Thailand, Turkey, and Uruguay, debt-to-GDP ratios at the end of t+3 (t+2 for the cases of Turkey and Uruguay) remained at about 30 percentage points above their pre-crisis levels. While the debt-to-GDP ratio exhibited a declining trend for Turkey and Uruguay, it continued to grow in years t+2 and t+3 in the cases of Brazil and Thailand.¹⁰
- In a few cases, net sovereign debt as a share of GDP at t+3 continued to exceed pre-crisis levels by more than 50 percentage points. Notwithstanding fiscal tightening, negative real interest rates, and, in the case of Argentina, a strong pick-up in output growth, both Argentina and Indonesia were not able to reverse significantly the sharp rise in debt ratios in the first three years following the crisis. This said, in the case of Argentina, net sovereign debt as a share of GDP declined sharply following the debt exchange with external private sector creditors in 2005 and the early repayment of IMF credit in January 2006. In Indonesia, the

⁸ This may be surprising, given that debt ratios reflect, inter alia, past macroeconomic performance and underlying characteristics of the country such as the quality of institutions that could generally be thought to be relevant for the success and speed of debt reversals.

⁹ This evidence tends to confirm the findings of IMF (2003) and Reinhart and others (2003) that substantial reversals of debt are often linked to debt defaults and/or restructurings.

¹⁰ In the case of Brazil, the persistence of high debt levels reflected largely high real interest rates owing to continued concerns about policy credibility, a further depreciation of the exchange rate, as well as an increase in IMF exposure in 2001. Thailand's debt burden remained high since (i) the economy was slow to recover from the 1997 crisis; (ii) the primary balance remained in deficit through t+3; and (iii) high real interest rates persisted.

debt ratio was reduced by 22 percentage points of GDP between t+3 and t+5, but still remained high at 49 percent of GDP at end-2003.



C. External Debt versus Domestic Debt

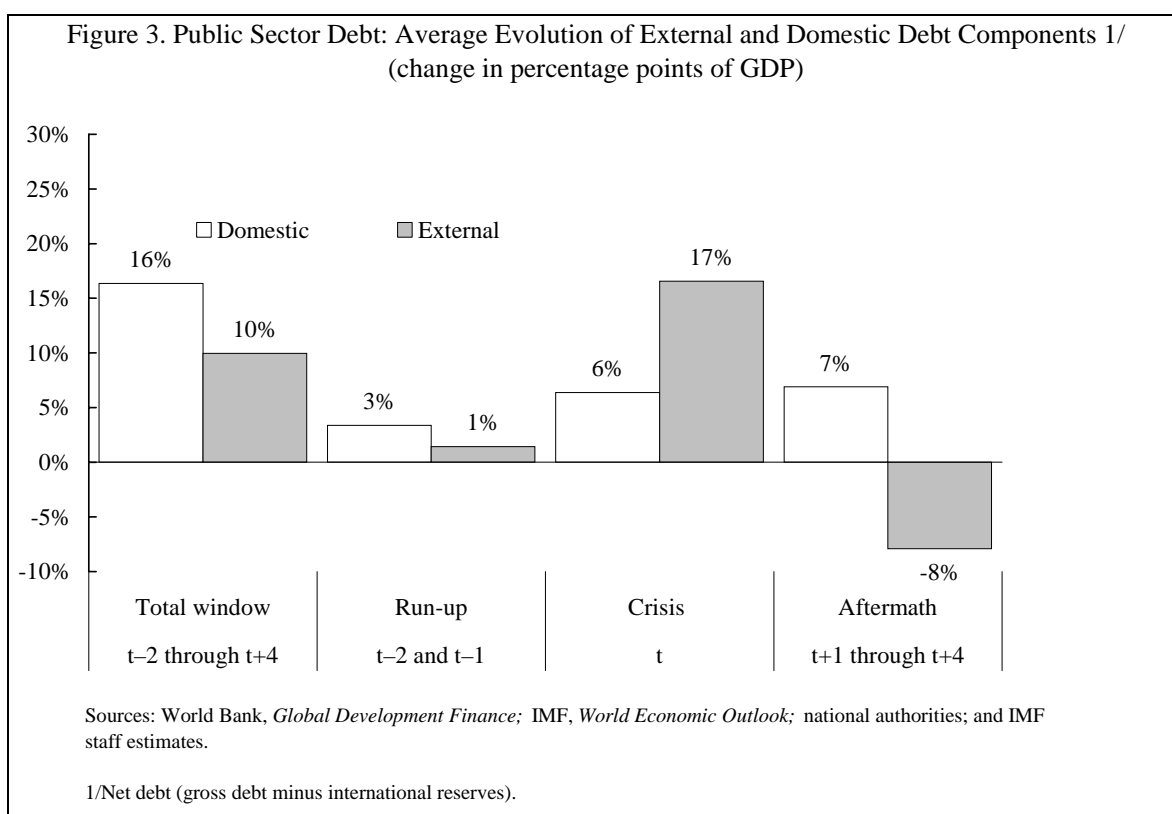
External and domestic debt evolved over the crisis period with a clear pattern.¹¹ While domestic debt increased, on average, by 16 percentage points of GDP through a seven-year time span beginning two years prior to the crisis event, external debt (net of financing used to build-up international reserves) contributed only 10 percentage points to the overall growth in the debt-to-GDP ratio over the same horizon. The relative contribution of the domestic and external components to overall debt growth varied significantly across the different stages of the crisis cycle (Figure 3):

- Domestic debt, on average, grew faster than external debt in the run-up to the crisis. This pattern was strongest in Brazil, Mexico, and Uruguay, where domestic debt in the year prior to the crisis increased by more than 8 percentage points of GDP, while external public debt remained broadly constant. A significant factor driving the increase in domestic debt was the absorption of sovereign debt by the domestic financial system, including because of moral

¹¹ The distinction between the two components is less useful in cases where international and domestic debt markets had become essentially integrated (as was the case in Argentina, Mexico, Russia, and Uruguay), with nonresidents holding a large share of domestically issued debt (see Borensztein and others, 2004).

suasion, in the context of a general decline in investor confidence and in the sovereign's access to international capital markets.

- In the midst of a crisis, however, the external debt component tended to dominate the overall debt dynamics. Typically, external public debt as a share of GDP rose sharply, while the increases in domestic debt were relatively modest. The sharp increase in the relative share of external debt can be explained mainly by an exchange rate depreciation effect, given the significant weight of foreign currency-denominated debt in total external debt, as well as the countries' recourse to emergency financial support from multilateral institutions.



- In the aftermath of crises, the share of domestic debt typically continued to rise while that of external debt declined. This pattern was pronounced in Southeast Asia, where the unprecedented issuance of domestic debt was linked to financial sector restructuring efforts.¹² More generally, countries had to rely more on domestic sources for new borrowing in the aftermath of crises after having temporarily lost access to international capital markets (see IMF, 2005). The decline of external debt-to-GDP ratios was also facilitated by the recovery of

¹² Domestic debt ratios for the Asian sample countries increased by 19 percentage points of GDP, on average, between the end of year t+1 and t+4, but significant cross-country differences are observable: domestic debt grew by 23 percentage points of GDP in Indonesia (after a prior increase of 14 percentage points of GDP in year t), and by 22 percentage points and 20 percentage points in Korea and Thailand. The rise was limited to 10 percentage points for the Philippines. By contrast, in the non-Asian crisis cases, the average post-crisis domestic debt ratio increased by 1 percentage point of GDP.

the exchange rate following the initial overshooting and, in some cases, the early repayment of crisis-related external borrowing as a result of improvements in the balance of payments.

III. CHANGES IN THE STRUCTURE OF SOVEREIGN DEBT

Financial crises are associated not only with changes in the level of public debt, but also in its composition. In this section, we first elaborate on this issue by illustrating the effect of crises on the creditor composition of external sovereign debt for the countries included in the sample (Section III.A). In Section III.B, the focus is then shifted to a discussion of how crisis episodes were associated with changes in the creditor, currency, and maturity composition of domestic public debt.

A. External Public Debt¹³

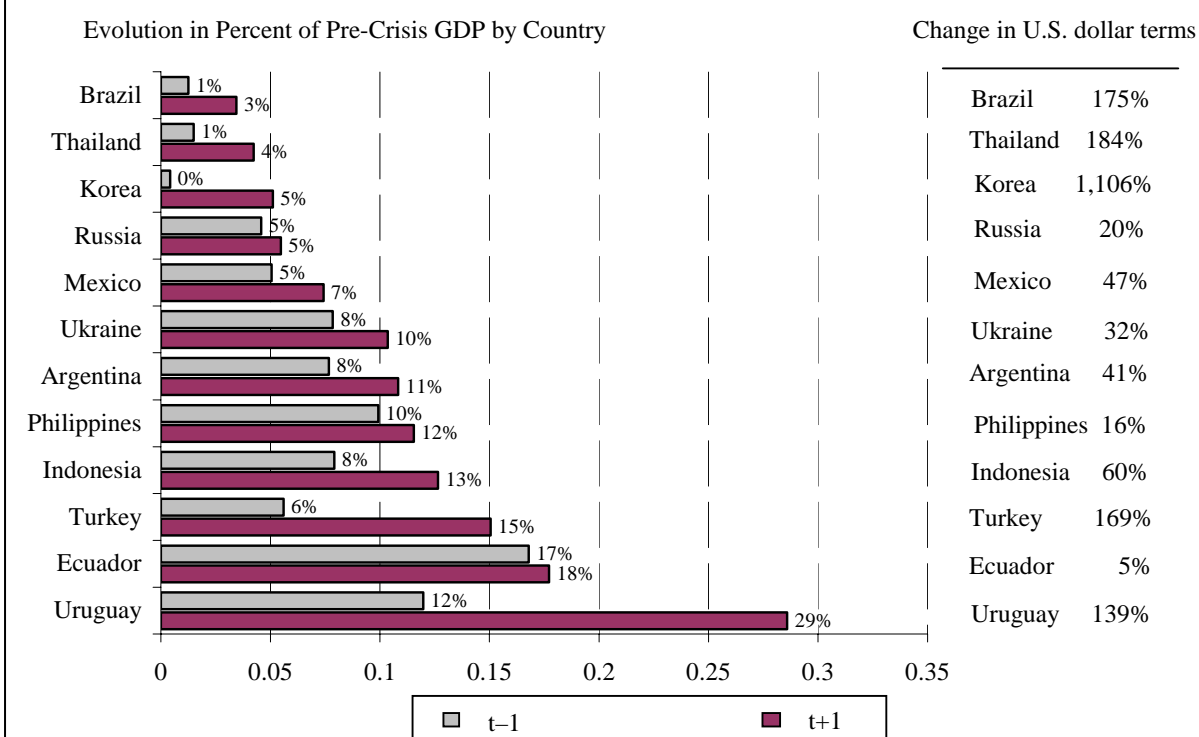
The resolution of financial crises has generally involved the country seeking recourse to official financing, particularly from the IMF. The resulting increase in the share of debt to official creditors, notably multilaterals, led to a significant change in the composition of the debt stock. In particular, the structure of sovereign debt tended to become more rigid, as claims of international financial institutions are typically accorded senior creditor status.

- All countries in the sample received multilateral financing at the time of their financial crises. While exposure to multilateral institutions increased on average by 4.3 percentage points of pre-crisis GDP in the two years following the onset of the crisis (Figure 4, top panel), there were significant cross-country differences in terms of the size of emergency financing.¹⁴
- The increase in recourse to multilateral financing was most significant in the cases of Turkey and Uruguay, where changes in the stock of multilateral debt amounted to 17 percentage points and 9 percentage points of pre-crisis GDP, respectively.
- Recourse to such financing by other countries in the sample was more modest, ranging from about 0.9 percentage points of pre-crisis GDP in the case of Russia to about 5 percentage points of pre-crisis GDP in the cases of Korea and Indonesia.
- The IMF was the main source of balance of payments assistance in the context of crisis resolution. As a result, the IMF claims as a share of the claims of all multilateral creditors increased rapidly for most countries in the sample (Figure 4, lower panel). While there was a shift in the composition of multilateral lending towards the IMF, the U.S. dollar exposure of other multilateral creditors also increased. In some cases, their engagement was substantial: for example, the World Bank increased its exposure by more than 50 percent between t-1 and

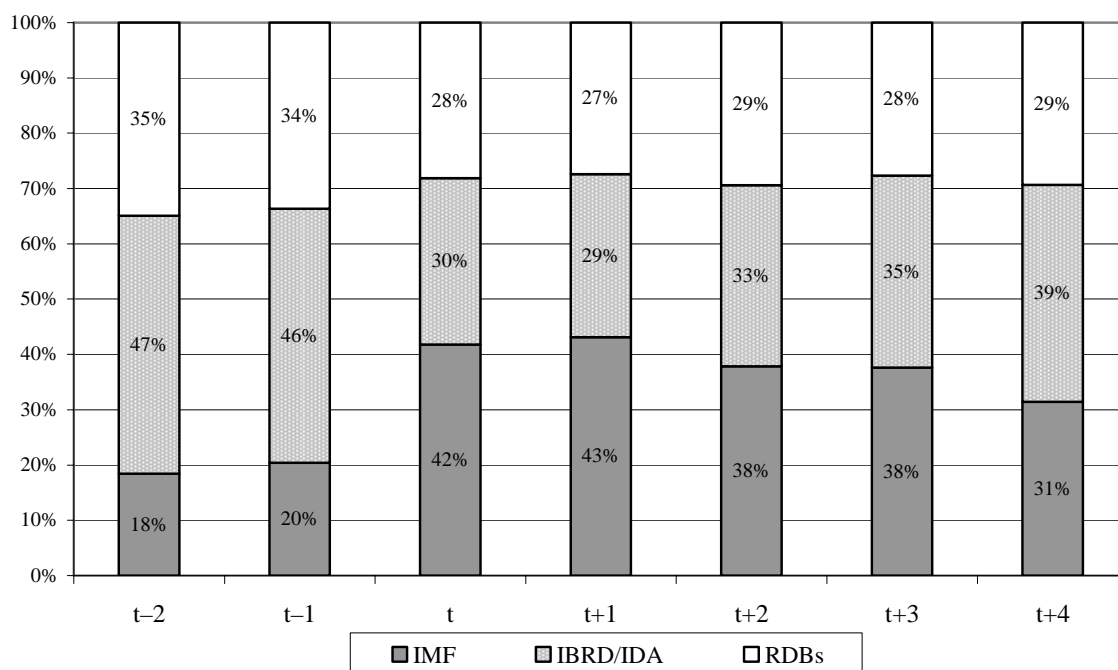
¹³ The analyses presented in Section III.A are based on gross debt rather than net debt and mainly draw on data from the World Bank's Global Development Finance database. Moreover, as data on short-term external sovereign debt are not available, the analysis is confined to debt having a contractual maturity of one year or more.

¹⁴ Interestingly, the cross-country variation with regards to additional multilateral financing does not appear to be closely related to the pre-crisis debt exposure of the sovereign. This suggests that creditors did not systematically differentiate the size of their emergency lending packages based on debt sustainability considerations.

Figure 4. Debt to Multilateral Institutions



Composition of Multilateral Debt, Cross-Country Averages



Sources: World Bank, *Global Development Finance*; IMF, *World Economic Outlook*; national authorities; and IMF staff estimates.

t+1 in the cases of Korea and Ukraine; and the Regional Development Banks more than doubled their lending relative to the pre-crisis period in the cases of Brazil, Korea, and Thailand (see Table A1, Annex).

The rapid increase in multilateral financing combined with a more modest growth in the exposure of other creditor groups implied an increase in the share of senior debt in total debt. Multilateral debt as a share of total (medium- and long-term) external public debt rose on average by 9 percentage points through the crisis year, from about 24 percent to 33 percent, and remained at about that level through the following years (Figure 5, top panel).¹⁵ This said, available evidence suggests that bilateral and private sector creditors typically maintained their exposure to the sovereign at the time of the financial crisis in most of the country cases (see also Box 1 discussing the relative importance of multilateral lending over time).

- In U.S. dollar terms, official bilateral exposure increased, on average, by 11 percent over the two years following the onset of a crisis, underscoring the role of official creditors in the resolution of crises (Figure 5, lower panel). This source of emergency financing was particularly important in some of the earlier crisis cases included in the sample. In particular, with the exception of Argentina's crisis in 2001, all of the other cases in which bilateral creditors significantly increased their exposure to the country in the context of a crisis occurred between 1995 and 1998 (Indonesia, Korea, Philippines, Thailand, and Ukraine).¹⁶
- Typically, private sector exposure to the sovereign measured in U.S. dollar terms either remained unchanged at pre-crisis levels or, in some cases, increased at the time of the crisis. In all cases, except Argentina and Ecuador, private debt exposure in U.S. dollar terms grew between the end of t-1 and t+1. In some cases, including Korea, Indonesia, and Thailand, this was facilitated by the recourse to rollover agreements with international banks to maintain exposure.¹⁷

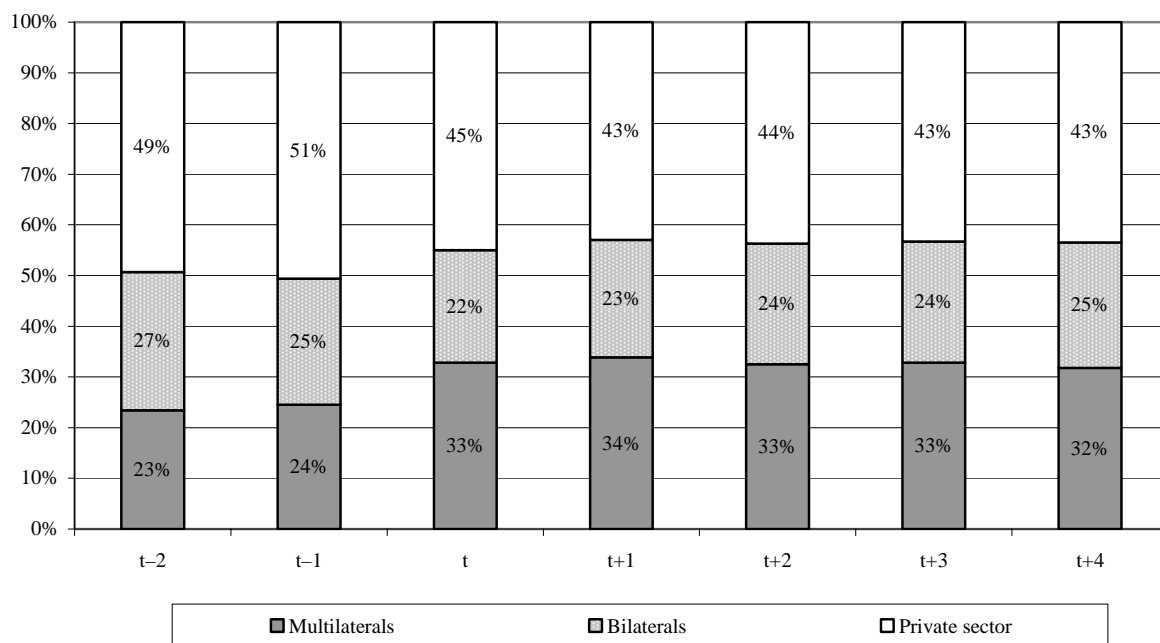
¹⁵ The significant increase of multilateral claims can largely be explained by the debt dynamics in a group of five countries (Argentina, Brazil, Korea, Turkey, and Uruguay). For these countries, the average increase in the share of multilateral debt in total external sovereign debt amounted to about 18 percentage points between t-1 and t+1, while it was limited to 3 percentage points for the remaining countries. Within the above group of five countries, initial conditions differed significantly—in Brazil and Korea the build-up of multilateral claims began from a very low base, but came on top of already substantial exposure to multilateral institutions in the cases of Argentina, Turkey, and Uruguay.

¹⁶ Interestingly, the strongest average increase in U.S. dollar exposure can be observed for t+2 and thus with considerable delay relative to the onset of crisis. That said, the average growth rate for t+2 is heavily biased by a strong increase in exposure to Korea (plus 252 percent) and Argentina (plus 33 percent).

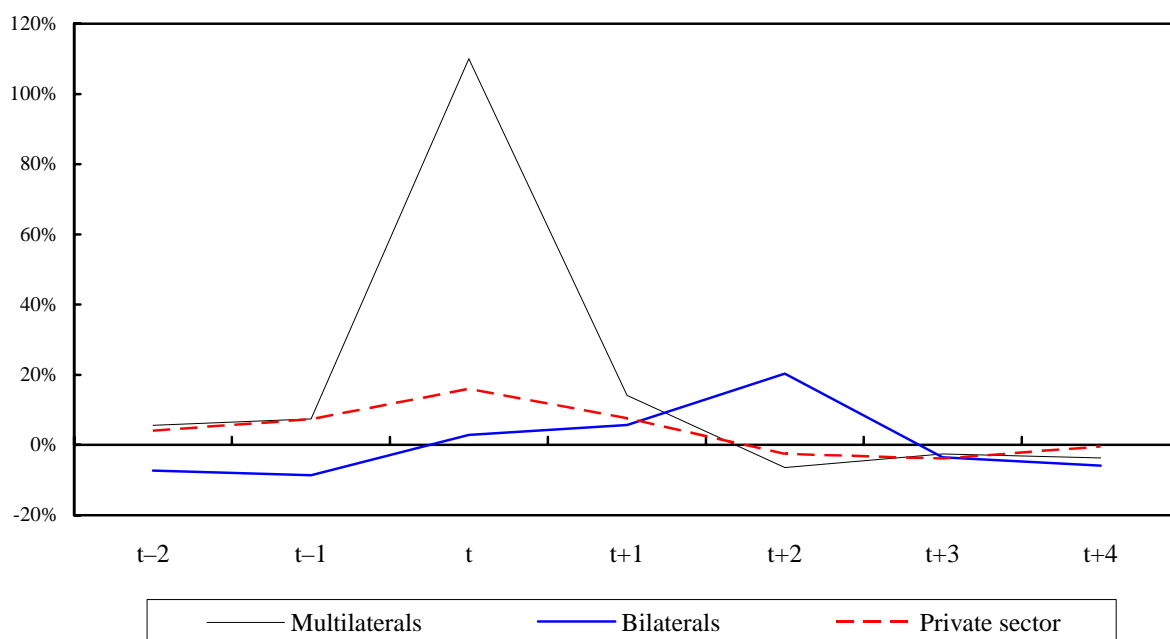
¹⁷ For example, in Korea, the authorities rolled over short-term interbank debts into one to three-year government guaranteed bonds. A similar, though less successful scheme was put into place in Indonesia (see Roubini & Setser, 2004). The fact that such strategies appeared to have been less successful in some of the more recent crisis episodes (e.g., Brazil, Turkey) could reflect a progressive change in the investor base from international banks to bond holders and thereby a more diverse investor base that (i) would make it more difficult to overcome collective action problems, and (ii) does not have the same level of long-term commitment to the country, as is usually the case with banks. In addition, the banks' appetite for risk may have declined since, related to the deterioration of the global environment (September 11, heightened credit risk in the OECD world) and a worsening of bank balance sheets.

Figure 5. External Sovereign Debt: Creditor Composition, Cross-Country Averages 1/

Exposure as a Share of Total Debt



Change in U.S. Dollar Exposure



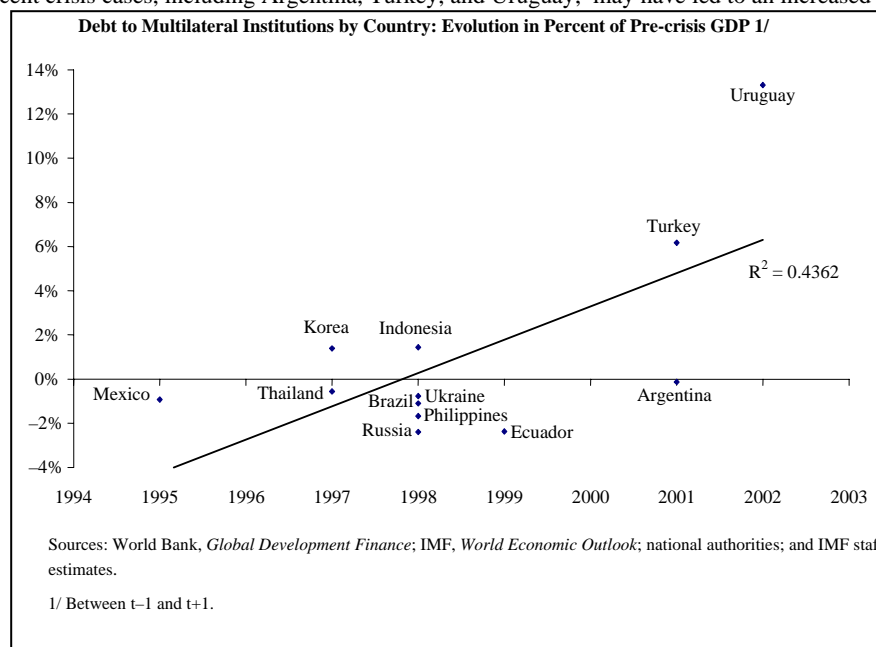
Sources: World Bank, *Global Development Finance*; IMF, *World Economic Outlook*; national authorities; and IMF staff estimates.

1/ Medium- and long-term sovereign debt.

Box 1. Did the Relative Importance of Multilateral Lending Increase Over Time?

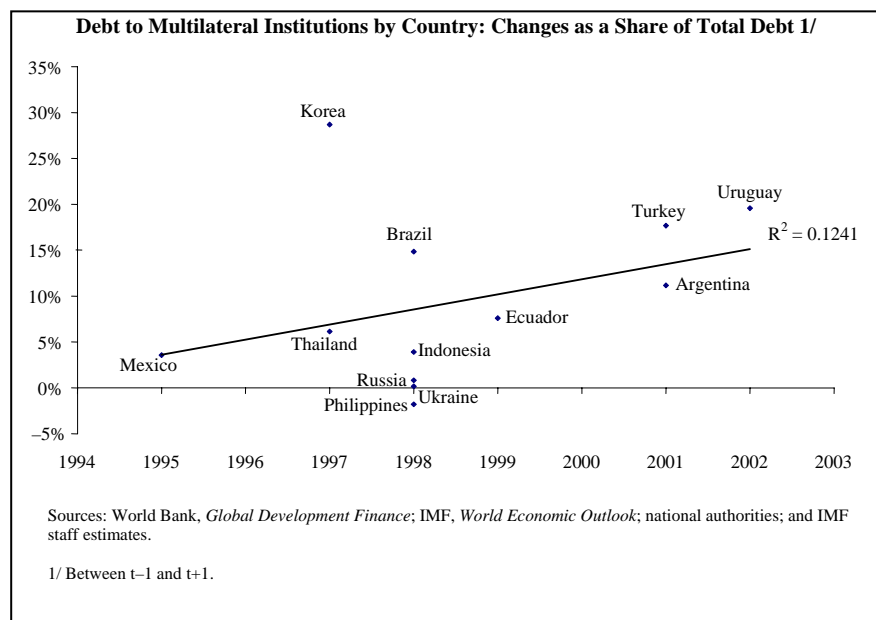
In recent years, the role of debt-related vulnerabilities in triggering confidence crises has received growing attention among policymakers and scholars (see, for example, European Central Bank, 2005; Goldstein, 2003). Moreover, high debt vulnerabilities in some recent crisis cases, including Argentina, Turkey, and Uruguay, may have led to an increased

reluctance of private sector creditors to increase or even to maintain their exposure (see, for example, Bordo and others, 2004; Eichengreen and others, 2005). In this context, did the more recent crisis cases involve a larger role for official financing compared to earlier crisis episodes? In particular, did the size of financing packages provided by the multilateral institutions actually increase over time? And did the share of multilateral exposure increase relative to other creditors?



The first chart plots for each country the deviation (in percentage points of pre-crisis GDP) from the average increase in multilateral exposure between t-1 and t+1. It shows that the rise in multilateral exposure in the two recent crisis cases of Turkey (2001) and Uruguay (2002) exceeded the average cross-country increase in this debt category (4.3 percent of pre-crisis GDP) by a wide margin. At the same time, two other recent crisis cases, Ecuador (1999) and Argentina (2001), did not involve “unusual” amounts of multilateral assistance. Thus, the evidence with regards to the first question appears to be mixed.

The second chart shows for each country the percentage point change in the ratio of multilateral exposure to total medium- and long-term external debt between t-1 and t+1. It can be observed that the exposure to multilateral creditors relative to other sources of external financing rose more strongly in some of the recent cases including Turkey and Uruguay than in most of the earlier crises. This said, the most significant increase was experienced by Korea, which underwent a crisis in 1997.



- When crises abated, private sector positions were temporarily unwound in a majority of cases, including in countries where mechanisms to encourage the maintenance of exposure in the crisis context were successfully implemented. The decline in exposure was often a consequence of a temporary loss of access to international capital markets, with spells of market exclusion ranging from several months to five years and more (see IMF, 2005).¹⁸ Over the longer term, however, countries emerging from crises have typically regained access to private sector flows, owing largely to credible adjustment programs supported by official financing (see Box 2 for evidence on the behavior of FDI inflows at the time of crisis).¹⁹
- A large increase in the weight of multilateral debt may arguably heighten a country's post-crisis vulnerability to the extent that it is associated with very high and rising debt levels.²⁰ Most adjustment programs supported by multilateral financing have been successful in restoring confidence and helping crisis countries progress towards debt sustainability. In rare cases, however, the evolution of the crisis may cause a sovereign's debt situation to deteriorate to such an extent that no feasible set of macroeconomic policies exists that would allow the sovereign to regain medium-term debt sustainability without a restructuring of its debt. In such circumstances, a high share of senior multilateral debt in total debt may complicate reaching agreement with creditors on debt relief sufficient to ensure a durable exit from the crisis. In particular, all else equal, the higher the share of multilateral debt in total debt and the deeper the reduction of the present value of private claims sought by the borrower, the more reluctant will private creditors be with regard to their participation in the debt operation.²¹

¹⁸ Countries that restructured their bonded debt to private creditors—and particularly countries that underwent a restructuring in a post-default setting—experienced longer spells of market exclusion than others. For example, in the cases of Ecuador and Ukraine, the sovereign reaccessed international markets only in the fifth and sixth post-crisis year, respectively (see IMF, 2005).

¹⁹ External private sector claims on the sovereign at the end of the fourth post-crisis year exceeded the exposure in the last pre-crisis year by at least 30 percent in the cases of Mexico, Philippines, and Turkey. By contrast, private sector exposure to Argentina and Ecuador fell by more than 25 percent (for Argentina, the calculation is based on t+3). For the remaining countries in the sample, private creditor exposure at the end of t+4 stood at broadly pre-crisis levels.

²⁰ Reinhart and others (2003) suggest that for most emerging market countries, the external debt-to-GDP ratio should not exceed 35 percent to be considered “safe,” and could need to be substantially lower in countries with a history of recurrent crises and/or debt defaults. A study by the IMF (IMF 2003) reaches a similar conclusion. In general, a sovereign's liability position is deemed *sustainable* if it satisfies the solvency condition without a major policy adjustment and given the costs of financing it faces in the market. The *solvency* condition stipulates that the present discounted value (PDV) of a sovereign's current and future primary expenditure is no greater than the PDV of its current and future path of income, net of any initial indebtedness. By contrast, the *liquidity* condition is satisfied if a sovereign's liquid assets and available financing are sufficient to meet or roll over its maturing liabilities. Finally, *vulnerability* is the risk that the liquidity or solvency conditions are violated and the borrower enters a crisis (see IMF, 2002, for a more extended discussion of these concepts).

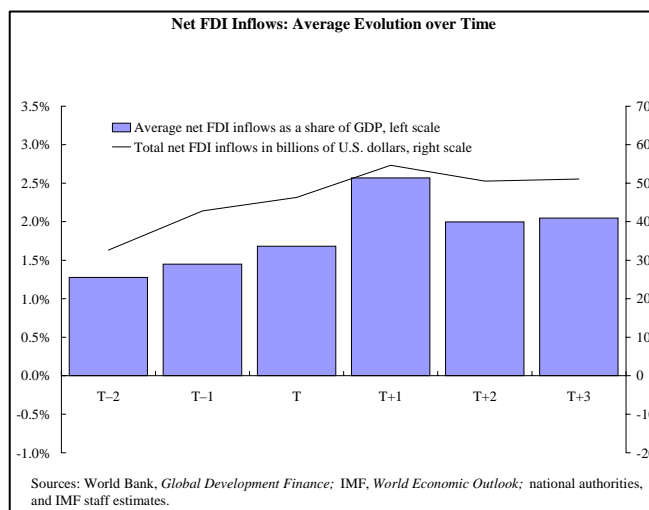
²¹ Such a scenario is most likely to arise in cases where the sovereign's solvency is the main source of concern. By contrast, if a country is facing liquidity pressures but its long-term solvency is not at risk, multilateral financial assistance should typically be associated with a decrease in vulnerability, as the longer maturities and more

(continued...)

Box 2. Evolution of Foreign Direct Investment Flows in Crisis Episodes

A comprehensive analysis of private sector exposure to a crisis country would need to assess how flows other than the financing of the sovereign have evolved around the time of the event. Of particular interest may be the behavior of foreign direct investment (FDI) inflows, as FDI is considered one of the most stable components of capital flows to developing countries and can also be a vehicle for technological progress (see, for example, Mody 2004).

Using data for the 12 emerging market countries included in the sample, the evolution of net FDI inflows scaled to GDP suggests that inflows increased, on average, from about 1.3 percent of GDP in $t-1$ to 1.5 percent of GDP in t , and subsequently to 2.5 percent of GDP in $t+1$. This pattern is confirmed by data on aggregate FDI flows into the 12 crisis countries measured in U.S. dollar terms, showing that net inflows continued to grow strongly after the crisis occurred. In fact, Indonesia and Russia were the only countries in the sample that experienced net FDI outflows in at least one year following the event.



Notwithstanding the conceptual link, it is difficult to establish a strong association between debt rigidity and post-crisis vulnerability for any of the sample countries.

- In the majority of the country cases included in the sample, multilateral financing was successful in supporting an adjustment program aimed at addressing temporary liquidity pressures and restoring confidence among private investors. In many of these cases, sovereign bond spreads—a measure of the risk premium requested by private investors compared with a risk-free asset—declined rapidly to at least pre-crisis levels, allowing the sovereign to regain reasonably robust access to international capital markets. This, together with the reconstitution of central bank reserves in the context of successful policy adjustment, typically helped the debtor to quickly unwind its exposure to multilateral creditors.²²
- In some of the more recent cases, however, including Argentina, Ecuador, and Uruguay, the fact that rigid multilateral claims represented more than one-fifth of total sovereign debt, which, in turn, stood at elevated levels (exceeded 80 percent of GDP) at the end of $t+1$,

favorable terms of such financing can be expected to improve the maturity profile of the debt structure and lower debt service costs.

²² For a discussion of crisis resolution strategies for some of the earlier crisis cases included in the sample, see Ghosh et al. 2002. Country cases in which sovereign bond spreads (J.P. Morgan's EMBI or EMBIG) decreased substantially in the first-post crisis year include Brazil, Korea, the Philippines, and Thailand, while no data is available for Indonesia, Mexico, and Ukraine.

contributed initially to concerns about post-crisis vulnerability. For example, some private creditors openly challenged the seniority of multilateral debt in the cases of Argentina and Ecuador;²³ and creditors representing 24 percent of the eligible claims did not participate in the Argentine debt offer (as of February 25, 2005, the closing date). Debt levels eventually declined in all of the three country cases—with some delay and in the context of a favorable external environment—rendering the issue of debt rigidity less critical.²⁴

B. Domestic Public Debt

Evidence suggests that financial crises had an effect on the structure of domestic sovereign debt as well. In particular, in some of the country cases, domestic debt became more rigid post-crisis due to a significant increase in the claims of a fragile financial sector, and notably banks, on the sovereign. Evidence from some of the sample countries also shows that countries typically do not succeed in improving the maturity and currency composition of domestic public debt in the immediate post-crisis period.²⁵

Domestic Debt Rigidity

Crisis resolution efforts often resulted in substantially increased holdings of sovereign debt by the domestic banking sector. While in the context of crises, there was a sharp increase in banks' claims on the sovereign for about half of the countries in the sample, the post-crisis bank exposure to the sovereign was particularly high in Argentina, Brazil, Indonesia, Mexico, and Turkey, where it exceeded 15 percent of GDP in year $t+3$ (Table 2). Underlying the increased exposure of the banking sector on the sovereign were typically the large fiscal costs related to the

²³ In the context of the litigation arising from Argentina's default on its external debt, creditors contemplated to rely on a broad interpretation of the "pari passu" provision in the bonds so as to constrain Argentina from making payments to any creditors including the IMF. The question of whether creditors could actually use the "pari passu" clause to attack Argentina's new payments was raised and deferred in the Southern District Court of New York in 2004 (see, for example, Gelpern, 2005 and International Monetary and Financial Committee, 2005). In the case of Ecuador, the seniority of such debt was challenged by several commercial banks. For example, the Commerzbank, in its Emerging Markets This Week (No. 26/1999, October 15) publication, states that [the IMF and the World Bank] "*will be concerned with protecting their own balance sheets rather than with fair 'burden sharing'*" [and that therefore the] "*IMF and the World Bank are not suited either as arbitrators or as objective regulators of sovereign insolvency procedures.*" (See <http://www.new-rules.org/docs/sdrm0902.pdf>). By contrast, the 2003 bond exchange in Uruguay was well received by investors, but it did hardly affect the sovereign's debt-to-GDP ratio.

²⁴ While multilateral claims at the end of 2005 still amounted to more than 32 percent of GDP in the case of Uruguay, Argentina fully retired its outstanding debt to the IMF of US\$9.5 billion (5.3 percent of GDP) in January 2006 and hence reduced its liabilities to multilateral institutions to about 10 percent of GDP. Ecuador's multilateral debt represented 12 percent of GDP at end-2005, most of which was owed to the World Bank and Regional Development Banks. For a recent discussion of these countries' debt sustainability outlook, see IMF, 2006.

²⁵ However, given data constraints, the results presented in this section should be interpreted with caution: the analysis of changes in the maturity structure is based on the experience of six countries; the discussion of the currency decomposition is informed by data from five crisis cases.

Table 2. Domestic Banking Sector Claims on Public Sector 1/ 2/
(in percent of GDP)

	t-1	t+1	t+3
Argentina	7	26	23
Brazil	11	12	17
Indonesia	1	25	29
Korea	1	3	4
Mexico	7	7	16
Philippines	13	11	15
Russia	9	10	7
Turkey	28	29	26
Thailand	0	3	6
Uruguay	5	9	6

Sources: IMF, *International Financial Statistics* and *World Economic Outlook*.

1/ Includes only countries with banking sector exposure to government exceeding 5 percent of GDP in at least one year between t-1 and t+3.

2/ Deposit bank claims on central government for all countries, except Russia and Ukraine (general government, and Turkey (government)).

resolution of financial sector crises.²⁶ In the cases for which data are available (Ecuador, Indonesia, Korea, Mexico, Thailand, and Turkey), estimates of net costs range between 19 percent and 52 percent of GDP, comprising, inter alia, outlays for liquidity assistance from the central bank, government guarantees of deposits, and bank recapitalization (see Hoelscher and others, 2003). These outlays often represented a substantial share of overall post-crisis public debt, particularly in the Southeast Asian countries.

As in the case of senior multilateral debt, a high exposure of the financial sector to the sovereign may add to the sovereign's vulnerability by rendering its debt structure more rigid. This said, the risks associated with the rigidity of these liabilities of the sovereign have to be weighed against the potentially benign impact of such obligations on debt servicing costs and the maturity and currency composition of public debt.

²⁶ The sources of financial sector crises varied across the sample countries. In Korea, Indonesia, and Thailand, investor concerns focused on imbalances in the private sector, including heavily leveraged corporate sectors, inflated asset values, and large unhedged short foreign currency positions (see Lindgren and others, 1999). In other countries, including Argentina, Ecuador, Russia, and Uruguay, banking crises were closely associated with sovereign debt distress. That said, in most cases, the financial sector showed weaknesses already in the run-up to the financial crisis. For a more detailed discussion of financial sector restructuring costs, see, for example, Hemming and others (2003), Hoelscher and others (2003), Honohan and Klingebiel (2000), and Lindgren and others (1999).

- As long as banks' financial conditions—including their capital, liquidity, asset quality, and exposure to market risk—are strong enough to absorb the additional government paper, increasing bank exposure to a weak sovereign may not be a major source of concern. In fact, in such circumstances, domestic banks can become an important source of financing for the sovereign when access to other alternatives dries up in the run—up to a crisis (see Section II.C).
- However, in situations where the health of the banking system has already been weakened by crisis dynamics and claims on the government represent a high share of total bank assets, the stability of the sector may become closely tied to a continued performance of public sector assets.²⁷ When a high bank exposure to the sovereign—which is often encouraged by regulatory frameworks that consider such claims to be riskless assets—coincides with an unsustainable debt level of the sovereign requiring a debt restructuring operation, a tradeoff may arise between two competing objectives: restoring a viable debt and debt-service profile and preserving the soundness of the banking system. The intensity of the tradeoff will likely depend on the state of the banking sector, its exposure to the sovereign relative to other creditor groups, and the required size of the haircut to restore debt sustainability.

Although banking sector exposure to the sovereign increased considerably in some of the cases considered, the associated risks were reduced by efforts to limit the impact on the domestic banking sector in several countries where a debt restructuring became unavoidable.

For example, the Argentine sovereign was successful in restructuring most of its liabilities to the domestic banking sector on a voluntary basis in November 2001, which provided the basis for excluding about 85 percent of the banking sector's total sovereign exposure from the sovereign default that occurred only one month later. Despite the NPV loss due to coupon reduction and maturity extension, the direct effect of the sovereign default was thus contained as the restructured debt continued to be serviced and government debt was not marked to market.²⁸ In Uruguay, the domestic banks' voluntary participation in the 2003 debt exchange—which was much smaller in scope than the Argentine operation—was facilitated by a menu of instruments designed to meet their needs to avoid a principal haircut.

²⁷ This pattern emerges, for instance, in the cases of Argentina and Indonesia, where claims of banks on the central government as a share of their total assets increased to 58 percent and 53 percent at the end of $t+1$, respectively, from 20 percent and 17 percent at the end of $t-1$. For a discussion of the impact of the Argentine crisis on the banking sector, and cross-bank variation in vulnerability, see also Barajas et al. (2006).

²⁸ Banks, however, incurred large losses from the policy response to the economic crisis—including the asymmetric pesoization of banks' assets and liabilities and the impact of judicial injunctions—which affected banking sector soundness and led to the issuance of US\$21 billion in sovereign debt to the banking sector. As a consequence, banking sector exposure to the sovereign increased to 55 percent of assets by end-2004.

Maturity and Currency Composition

No clear cross-country trends can be established regarding the evolution of domestic public debt maturities in the context of crises (Figure 6, top panel).²⁹

- Available evidence suggests that the maturity composition of domestic debt did not change significantly for most countries in the run-up to crises. In fact, Uruguay is the only case out of the five countries for which data are available (Indonesia, Mexico, Thailand, Turkey, and Uruguay) and where a modest growth in the share of short maturities can be detected.
- By contrast, three out of a total of five countries experienced a substantial increase in short-term debt after the crisis. This pattern was most pronounced in the case of Turkey, where the share of short maturities tripled through the end of the crisis year (representing a rise by 13 percentage points).³⁰ Smaller increases can be observed for Thailand and Uruguay, while Mexico succeeded in reducing temporarily the share of short-term debt in total debt before experiencing a reversion to broadly pre-crisis levels in the second year after the crisis (1997). The only case where any short-term exposure was avoided throughout the crisis episode was Indonesia. The fact that short-term debt often continued to grow well past the event suggests that investors were often not willing to accept a lengthening of maturities at costs acceptable to the sovereign.

While foreign currency debt often increased pre-crisis, most countries were unable to reduce their vulnerability to sudden exchange rate changes after the crisis event (Figure 6, lower panel):

- Governments typically made greater use of foreign currency-denominated debt in the runup to a crises.³¹ The most prominent case is Mexico, where the government swapped large amounts of peso-denominated treasury bills for *tesobonos* indexed to the U.S. dollar, both to reduce its funding costs and to underscore its commitment to the exchange rate peg. On a smaller scale,

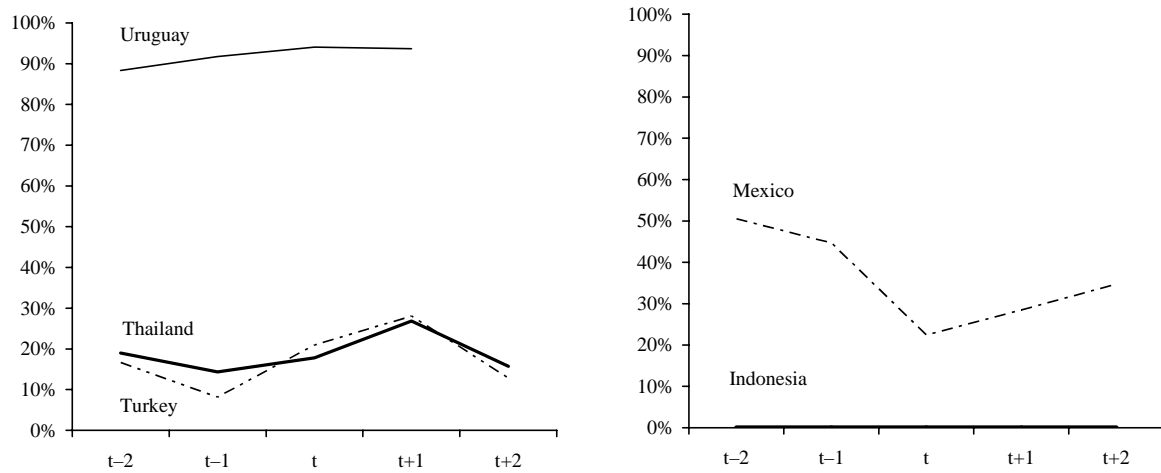
²⁹ This finding partially reflects the heterogeneity in the countries' pre-crisis debt structures (see also Borensztein and others, 2004): Uruguay relied almost exclusively on instruments with a contractual maturity of less than one year, and Mexico for about 40 percent of its total domestic debt stock. In Indonesia, Thailand, and Turkey, more than 80 percent of the sovereign's pre-crisis domestic debt was longer term.

³⁰ The continuing decline in the average maturity of Turkey's outstanding domestic debt stock mainly reflects the fact that the large stock of so-called noncash debt (bank recapitalization bonds issued during the crisis), which typically carried longer maturities than regular paper, was increasingly substituted with regular debt.

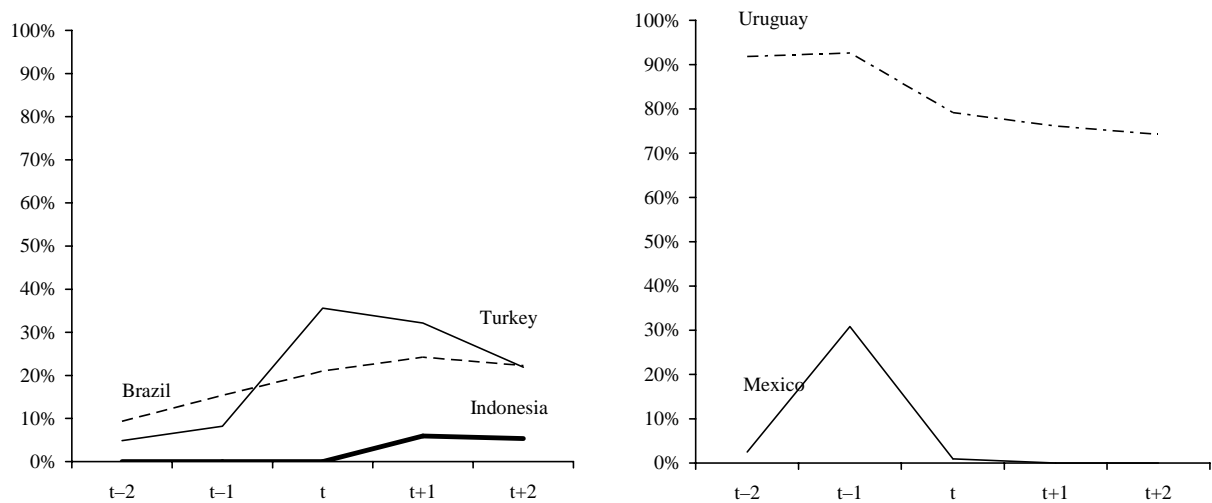
³¹ This finding is consistent with the results of a recent study by Frankel and Wei (2004), which finds that U.S. dollar-denominated debt is a good crisis predictor in EMCs.

Figure 6. Domestic Public Sector Debt by Country: Maturity and Currency Composition

Maturity Composition 1/
(share of short-term debt in total domestic debt)



Currency Composition
(share of foreign currency debt in total domestic debt)



Sources: World Bank, *Global Development Finance*; IMF, *World Economic Outlook*; national authorities; and IMF staff estimates.

1/ For Uruguay, data are only available through t+1.

a rise in the share of foreign currency liabilities in total domestic public debt can also be observed for Brazil, Turkey, and Uruguay (see Ghosh and others, 2002; and IMF 2004 for the latter cases).³²

- Following the crisis, only a minority of countries for which data are available were able to reduce their reliance on foreign currency debt. In Mexico, the *tesobonos* were fully retired by the end of 1995, which effectively eliminated the foreign currency component in domestic borrowing (see Collyns and others, 2003). The Uruguayan government was also able to marginally reduce its dependence on foreign currency debt, but at the expense of extremely high interest rates. By contrast, the public sector had to rely on increased foreign currency issuances as a means to retain market access following the crisis in the cases of Brazil, Indonesia, and Turkey.³³
- The evidence suggests that countries generally faced significant difficulties in reducing their exposure to maturity or currency risk after a crisis. While this conclusion is supported for a majority of countries for which relevant data are available with regard to either of the two risk types, it is even more compelling when looking at the *parallel* evolution of the maturity and currency composition of the countries' domestic public debt: in no case did a sovereign succeed in reducing both risks associated with the structure of its domestic debt at the same time. In fact, in such situations characterized by a high degree of investor uncertainty, countries may often have no choice but to rely on short-term and/or foreign currency-denominated debt to induce the private sector to hold sovereign paper.

IV. CONCLUSIONS

The evidence for 12 capital account crises that took place since the mid-1990s indicates that sovereigns typically emerged from an episode of financial distress with a weaker debt profile compared to the pre-crisis situation. As a result, concerns over the public sector's vulnerability may have actually increased in some cases. While outcomes varied due to country-specific circumstances, and strong conclusions are difficult to draw, the following stylized facts are noteworthy.

³² A pre-crisis shift to foreign currency instruments did not take place in the case of Indonesia, which exclusively relied on local currency instruments. Apparently, Indonesia (and the other Southeast Asian countries) enjoyed a higher degree of investor confidence prior to 1997–98 compared to many of the other countries in the sample, based on the credibility of the countries' anti-inflationary monetary stance, prudent fiscal policies reflected by relatively low public sector borrowing requirements, and well-developed domestic capital markets.

³³ In the case of Turkey, the sharp increase in foreign currency-denominated domestic debt in year t was largely due to a debt swap in June 2001, in which the government exchanged about US\$5 billion worth of local currency paper for dollar-indexed bonds to help domestic banks close the currency mismatches on their balance sheets. That said, through May 2004, about one third of the total volume of domestic bonds issued was denominated in foreign currency. In Brazil, the share of foreign currency-denominated instruments in total post-crisis domestic borrowing was a more modest seven percent through May 2004, but the country also relied extensively on interest rate- and inflation-linked instruments.

In general, financial crises were associated with higher sovereign debt *levels* in the emerging market countries involved.

- Crises typically cause an increase in public sector debt ratios, driven in particular by the impact of severe exchange rate depreciations. Specifically, the debt-to-GDP ratio for gross (net) public debt increased on average by 36 (32) percentage points within two years from the onset of the crisis.
- For most countries, the increase in debt levels persisted for several years. Only three out of the twelve countries in the sample (Ecuador, Mexico, and Russia) were able to fully roll back the crisis-induced increase in their debt-to-GDP ratios within the three-year horizon examined with the available data. All of these countries benefited from favorable trends in their terms of trade; Ecuador and Russia also benefited from a debt restructuring.
- Typically, the rise in (net) debt-to-GDP ratios over the crisis cycle was driven more by domestic rather than external debt, although their relative shares in total debt differed at different stages of the crisis cycle. New domestic borrowing in the context of crisis resolution was often linked to financial sector restructuring, particularly in the case of the Asian crisis countries.

Financial crises were also associated with changes in debt *structures*.

- In particular, there was an increase in sovereign liabilities that could contribute to greater rigidity of the debt structure in all of the countries in the sample. This pattern resulted from both an increase in the share of multilateral claims in total public debt associated with the financial assistance needed in order to resolve the crisis; and a heightened exposure of a weak domestic banking sector to government debt as a consequence of efforts aimed at resolving problems in the banking sector.
- There is, however, little evidence to suggest that debt rigidity represented a persistent source of significant vulnerability for the countries in the sample. In particular, in the case of 6 of the 12 countries in the sample, rigid liabilities exceeded 20 percent of GDP at the end of the first post-crisis year, but they were all successful in reducing debt levels soon thereafter.³⁴ This helped these countries make progress towards debt sustainability, and thus rendered the issue of debt rigidity—which could have complicated a debt restructuring operation in the event that it was required to reduce unsustainably high debt levels—less critical.

³⁴ This group of countries includes Uruguay (58), Argentina (56), Indonesia (46), Turkey (46), Ecuador (29), and the Philippines (23). The figures in parentheses indicate the respective country's ratio of rigid liabilities to GDP, calculated as the sum of public debt owed to multilateral institutions and to the domestic banking sector.

- Evidence from a limited set of cases suggests that countries generally faced significant difficulties in reducing their exposure to maturity or currency risk after a crisis. In no case did a sovereign succeed in reducing both types of risk at the same time. Data limitations notwithstanding, this finding confirms that improving the composition of sovereign debt at times of heightened uncertainty is a serious challenge for policymakers.

Data Issues and Methodology

For each country, the crisis year was determined on the basis of qualitative assessments and available case studies. This follows from the fact that a quantitative definition, like the familiar pressure index for currency crises, does not work well due to the wide range of crisis types considered, including currency, banking, and debt crises. It also reflects common practice, as, for example, in Kaminsky and Reinhart's twin crisis paper (1999) or in Caprio and Klingebiel (2003). Reported results are not very sensitive to changes in crisis dates, as a window spanning from the end of the last pre-crisis year through the end of the first post-crisis year is used for most analyses, and, at times, is even expanded further.

The country sample comprises the capital account crises cases included in Gosh and others (2002), augmented by five countries. First, Argentina, Turkey, and Uruguay are included as prominent recent crises cases. Second, Russia and Ukraine were added to broaden the sample of restructuring cases. A unifying feature of all these crises is that they combined sharp reversals of capital inflows, triggering a currency crisis, with other factors which were critical in negatively affecting investor confidence, like adverse public debt dynamics (Argentina, Brazil, and Turkey), a risky public debt management strategy (Mexico), and pervasive financial sector weaknesses (Indonesia, Korea, and Thailand).

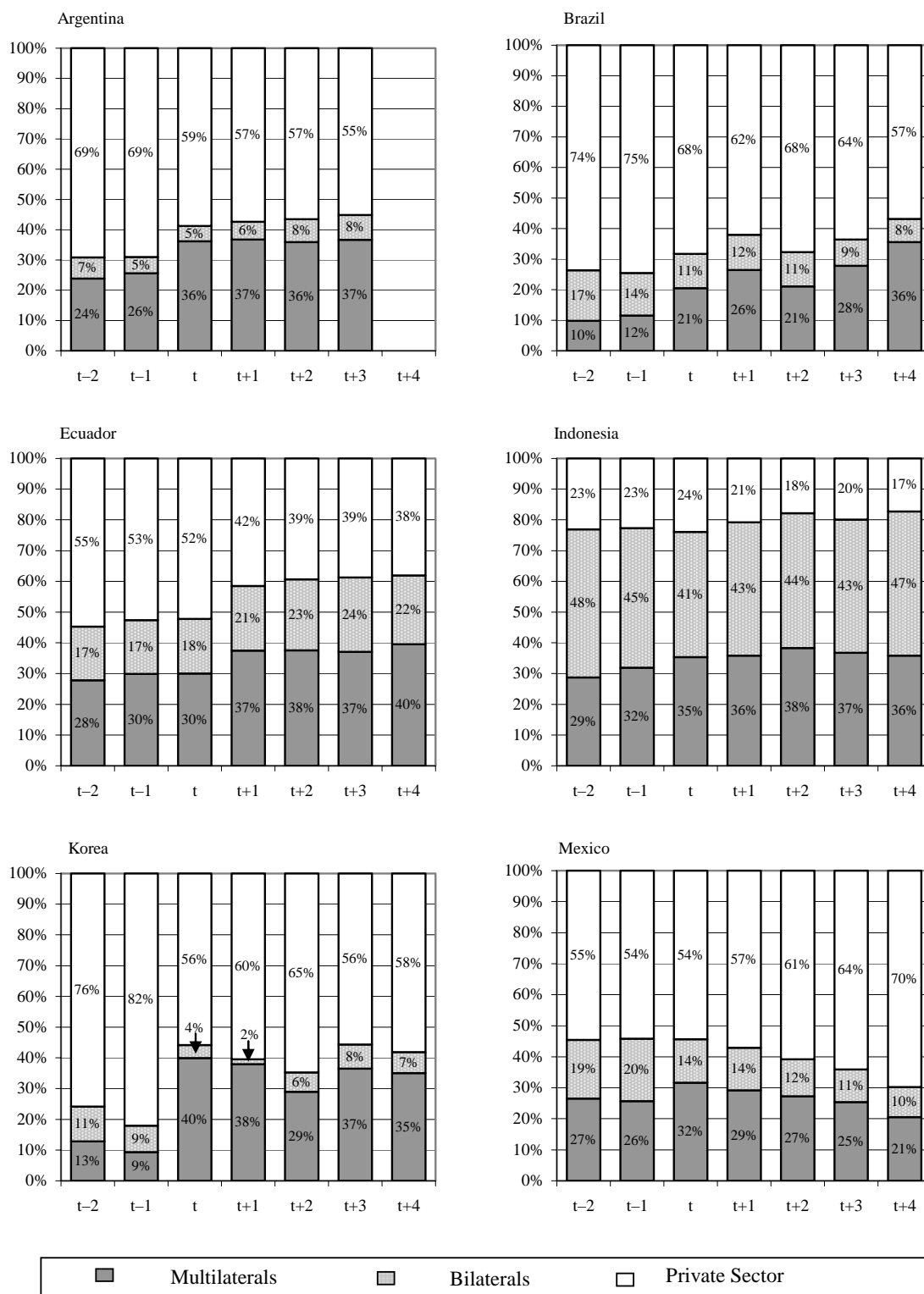
Crisis years (<i>t</i>)	
Argentina	2001
Brazil	1998
Ecuador	1999
Indonesia	1998
Korea	1997
Mexico	1995
Philippines	1998
Russia	1998
Thailand	1997
Turkey	2001
Ukraine	1998
Uruguay	2002

The study draws on several data sources. External debt data are mainly drawn from the World Bank's *Global Development Finance CD-ROM* (2003), and are updated with data collected from IMF country economists. Data on domestic public debt are based mostly on submissions of the country desks, and are completed with input from the Fiscal Affairs Department's debt database as well as national sources. GDP and exchange rate data are drawn from the World Economic Outlook (WEO) database, and banking sector data from the IMF's *International Financial Statistics*.

For the decomposition of the increase in debt-to-GDP ratios around crisis periods, the study uses, where available, macroeconomic data contained in IMF Article IV staff reports. Missing data points were filled by recourse to the IMF's WEO database. Given that the decomposition analyses use the debt data newly constructed for this project, and are based on net debt, the results differ from the decompositions reported in the respective country reports.

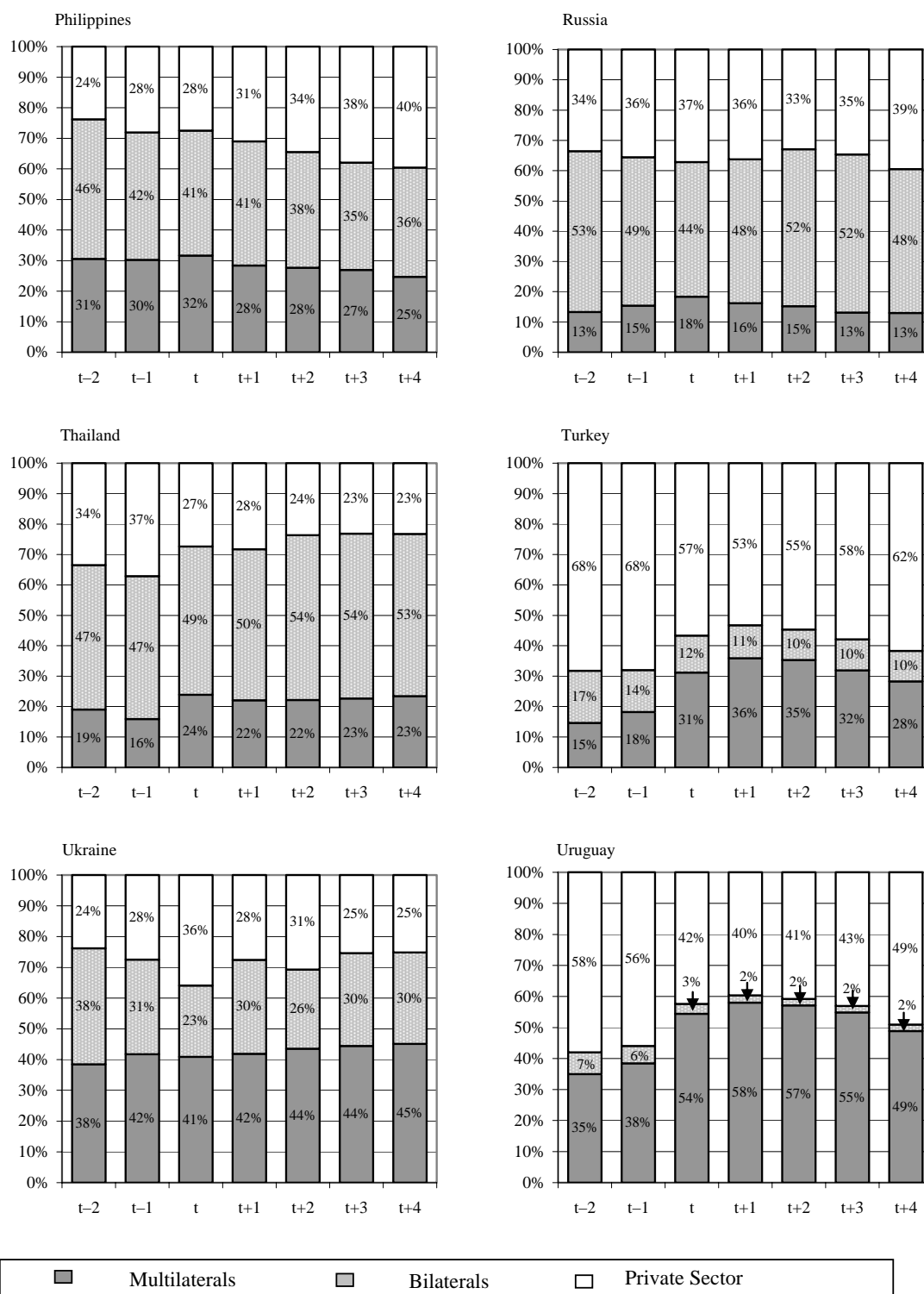
Supplementary Data Sources	
Argentina	EBS/03/130, Suppl.1; SM/05/193; SM/05/107; and staff estimates
Brazil	EBS/05/39
Ecuador	EBS/03/2, Suppl. 1 and FAD database
Indonesia	EBS/03/132; EBS/03/35
Korea	SM/04/23 and FAD database
Philippines	EBS/03/107 and FAD database
Russia	SM/04/269 and FAD database
Thailand	SM/03/266
Turkey	EBS/05/66; Turkish Treasury; and staff estimates
Ukraine	SM/03/113
Uruguay	EBS/05/23; EBS/05/78; and staff estimates

Figure A1. External Sovereign Debt by Country: Creditor Composition
(as a share of MLT debt)



Sources: World Bank, *Global Development Finance*; IMF, *World Economic Outlook*; national authorities; and IMF staff estimates.

Figure A1 (cont'd). External Sovereign Debt by Country: Creditor Composition
(as a share of MLT debt)



Sources: World Bank, *Global Development Finance*; IMF, *World Economic Outlook*; national authorities; and IMF staff estimates.

Table A1. Public Sector Debt by Country: Evolution from t-2 to t+2
(in U.S. dollar billion)

	t-2	t-1	t	t+1	t+2
Argentina (2001)	1999	2000	2001	2002	2003
Total public sector debt	121.9	128.1	143.8	137.0	177.8
External public and publicly guaranteed debt	85.0	85.2	87.5	83.8	86.3
Official creditors	26.2	26.4	36.1	35.7	37.5
Multilaterals	20.3	21.8	31.6	30.8	31.0
IMF	4.5	5.1	14.0	14.3	15.5
IBRD / IDA	8.6	9.1	9.4	8.5	7.5
Others	7.2	7.6	8.2	8.0	8.0
Bilaterals	5.9	4.6	4.5	4.9	6.5
Private sector creditors	58.8	58.8	51.4	48.1	48.8
Debt to commercial banks	0.9	0.8	0.6	0.5	0.4
Bonds and Others	57.9	58.0	50.8	47.5	48.4
Domestic Debt	36.9	42.9	56.3	53.2	91.5
Of which: Foreign currency denominated debt	n.a.	n.a.	n.a.	n.a.	n.a.
Of which: Short-term debt	n.a.	n.a.	n.a.	n.a.	n.a.
Brazil (1998)	1996	1997	1998	1999	2000
Total public sector debt	293.4	357.3	488.3	389.2	447.7
External public and publicly guaranteed debt	96.4	87.3	103.0	105.3	98.3
Official creditors	25.4	22.2	32.7	39.9	31.7
Multilaterals	9.5	10.1	21.1	27.8	20.7
IMF	0.1	0.0	4.8	8.8	1.7
IBRD / IDA	5.9	5.7	6.3	6.8	7.4
Others	3.5	4.3	10.0	12.2	11.6
Bilaterals	15.9	12.1	11.5	12.1	11.0
Private sector creditors	71.0	65.1	70.3	65.4	66.5
Debt to commercial banks	10.7	11.2	17.3	2.6	2.5
Bonds and Others	60.3	53.9	53.1	62.8	64.1
Domestic Debt	197.0	269.9	385.3	283.9	349.5
Of which: Foreign currency denominated debt	18.5	41.5	80.9	68.8	77.9
Of which: Short-term debt	n.a.	n.a.	n.a.	n.a.	n.a.
Ecuador (1999)	1997	1998	1999	2000	2001
Total public sector debt	14.6	15.3	16.4	13.0	13.6
External public and publicly guaranteed debt	12.5	13.1	13.4	11.0	11.3
Official creditors	5.6	6.2	6.4	6.4	6.9
Multilaterals	3.5	3.9	4.0	4.1	4.3
IMF	0.1	0.1	0.0	0.1	0.2
IBRD / IDA	0.9	0.9	0.9	0.9	0.9
Others	2.4	2.9	3.1	3.1	3.1
Bilaterals	2.2	2.3	2.4	2.3	2.6
Private sector creditors	6.8	6.9	7.0	4.6	4.5
Debt to commercial banks	0.4	0.4	0.4	0.4	0.3
Bonds and Others	6.4	6.5	6.6	4.2	4.2
Domestic Debt	2.1	2.3	3.0	2.1	2.3
Of which: Foreign currency denominated debt	0.0	0.0	0.0	0.0	0.0
Of which: Short-term debt	n.a.	n.a.	n.a.	0.1	0.1

	t-2	t-1	t	t+1	t+2
Indonesia (1998)	1996	1997	1998	1999	2000
Total public sector debt	60.0	58.8	91.0	145.4	155.6
External public and publicly guaranteed debt	60.0	58.8	76.4	83.7	80.3
Official creditors	46.1	45.5	58.2	66.3	65.9
Multilaterals	17.2	18.8	27.0	30.0	30.7
IMF	0.0	3.0	9.1	10.2	10.8
IBRD / IDA	11.9	10.7	11.4	12.1	12.4
Others	5.4	5.1	6.5	7.6	7.5
Bilaterals	28.9	26.7	31.2	36.3	35.2
Private sector creditors	13.9	13.3	18.2	17.4	14.3
Debt to commercial banks	6.0	5.9	11.0	11.6	9.5
Bonds and Others	7.9	7.5	7.2	5.8	4.8
Domestic Debt	0.0	0.0	14.6	61.7	75.4
Of which: Foreign currency denominated debt	0.0	0.0	0.0	3.7	4.0
Of which: Short-term debt	0.0	0.0	0.0	0.0	0.0
Korea (1997)	1995	1996	1997	1998	1999
Total public sector debt	61.3	65.0	89.4	136.5	173.0
External public and publicly guaranteed debt	22.1	25.4	45.1	75.0	64.1
Official creditors	5.3	4.6	19.9	29.6	22.6
Multilaterals	2.8	2.4	18.0	28.5	18.6
IMF	0.0	0.0	11.1	16.9	6.1
IBRD / IDA	2.2	1.9	4.6	7.5	8.4
Others	0.6	0.4	2.3	4.1	4.1
Bilaterals	2.5	2.2	1.9	1.2	4.1
Private sector creditors	16.8	20.9	25.1	45.4	41.5
Debt to commercial banks	4.5	4.6	3.1	20.8	16.8
Bonds and Others	12.3	16.2	22.1	24.6	24.6
Domestic Debt	39.1	39.5	44.3	61.5	108.9
Of which: Foreign currency denominated debt	n.a.	n.a.	n.a.	n.a.	n.a.
Of which: Short-term debt	n.a.	n.a.	n.a.	n.a.	n.a.
Mexico (1995)	1993	1994	1995	1996	1997
Total public sector debt	129.7	173.9	148.0	134.7	131.8
External public and publicly guaranteed debt	79.3	82.9	109.6	106.8	94.5
Official creditors	36.0	38.0	50.0	45.8	37.0
Multilaterals	21.1	21.3	34.6	31.2	25.8
IMF	4.8	3.8	15.8	13.3	9.1
IBRD / IDA	12.3	13.0	13.8	12.7	11.5
Others	3.9	4.4	5.0	5.3	5.2
Bilaterals	15.0	16.7	15.4	14.6	11.2
Private sector creditors	43.3	44.9	59.5	61.0	57.5
Debt to commercial banks	6.8	6.4	6.5	6.4	6.2
Bonds and Others	36.5	38.5	53.0	54.6	51.3
Domestic Debt	50.3	91.0	38.4	27.8	37.3
Of which: Foreign currency denominated debt	1.3	28.1	0.4	0.0	0.0
Of which: Short-term debt	25.4	40.7	8.6	7.9	12.9

	t-2	t-1	t	t+1	t+2
Philippines (1998)	1996	1997	1998	1999	2000
Total public sector debt	67.5	67.3	61.3	75.0	75.3
External public and publicly guaranteed debt	27.3	27.1	30.2	33.4	32.8
Official creditors	20.8	19.5	21.9	23.1	21.5
Multilaterals	8.3	8.2	9.5	9.5	9.1
IMF	0.4	0.9	1.6	1.8	2.0
IBRD / IDA	4.9	4.4	4.5	4.3	3.4
Others	3.1	2.9	3.5	3.4	3.7
Bilaterals	12.4	11.3	12.4	13.6	12.4
Private sector creditors	6.5	7.6	8.3	10.4	11.3
Debt to commercial banks	0.4	0.8	1.5	2.1	2.1
Bonds and Others	6.1	6.8	6.8	8.2	9.2
Domestic Debt	40.2	40.3	31.1	41.5	42.5
<i>Of which:</i> Foreign currency denominated debt	n.a.	n.a.	n.a.	n.a.	n.a.
<i>Of which:</i> Short-term debt	n.a.	n.a.	n.a.	n.a.	n.a.
Russia (1998)	1996	1997	1998	1999	2000
Total public sector debt	114.9	210.0	198.1	159.7	142.5
External public and publicly guaranteed debt	114.9	120.2	141.1	136.6	122.7
Official creditors	76.3	77.4	88.7	87.1	82.3
Multilaterals	15.3	18.5	25.9	22.2	18.7
IMF	12.5	13.2	19.3	15.2	11.6
IBRD / IDA	2.5	5.1	6.3	6.7	6.8
Others	0.3	0.2	0.2	0.2	0.2
Bilaterals	61.0	58.9	62.8	64.9	63.7
Private sector creditors	38.6	42.7	52.4	49.5	40.4
Debt to commercial banks	15.6	29.3	29.3	29.0	0.4
Bonds and Others	23.0	13.5	23.1	20.5	40.0
Domestic Debt	0.0	89.8	56.9	23.2	19.8
<i>Of which:</i> Foreign currency denominated debt	n.a.	n.a.	n.a.	n.a.	n.a.
<i>Of which:</i> Short-term debt	n.a.	n.a.	n.a.	n.a.	n.a.
Thailand (1997)	1995	1996	1997	1998	1999
Total public sector debt	29.3	29.8	35.5	52.5	68.5
External public and publicly guaranteed debt	16.8	17.1	25.1	34.9	40.0
Official creditors	11.2	10.7	18.3	25.0	30.6
Multilaterals	3.2	2.7	6.0	7.7	8.9
IMF	0.0	0.0	2.4	3.2	3.4
IBRD / IDA	1.9	1.7	1.8	2.2	2.8
Others	1.3	1.0	1.8	2.3	2.6
Bilaterals	8.0	8.0	12.2	17.3	21.7
Private sector creditors	5.6	6.3	6.9	9.9	9.5
Debt to commercial banks	3.0	3.4	3.3	6.0	5.9
Bonds and Others	2.7	2.9	3.6	3.9	3.6
Domestic Debt	12.5	12.7	10.4	17.6	28.4
<i>Of which:</i> Foreign currency denominated debt	0.0	0.0	0.0	0.0	0.0
<i>Of which:</i> Short-term debt	2.4	1.8	1.9	4.7	4.5

	t-2	t-1	t	t+1	t+2
Turkey (2001)	1999	2000	2001	2002	2003
Total public sector debt	108.3	121.4	170.4	185.5	224.6
External public and publicly guaranteed debt	53.4	63.0	70.8	86.0	94.7
Official creditors	17.0	20.2	30.6	40.2	42.9
Multilaterals	7.8	11.5	22.1	30.8	33.5
IMF	0.9	4.2	14.1	22.1	24.1
IBRD / IDA	3.0	3.7	4.8	5.3	5.8
Others	3.9	3.6	3.1	3.4	3.6
Bilaterals	9.1	8.7	8.6	9.3	9.5
Private sector creditors	36.4	42.8	40.1	45.8	51.7
Debt to commercial banks	19.8	20.7	18.8	22.0	24.2
Bonds	16.7	22.1	21.3	23.8	27.6
Domestic Debt	54.9	58.4	99.7	99.6	130.0
<i>Of which:</i> Foreign currency denominated debt	2.7	4.8	35.5	32.0	28.5
<i>Of which:</i> Short-term debt	9.2	4.8	20.9	28.0	16.7
Ukraine (1998)	1996	1997	1998	1999	2000
Total public sector debt	10.9	14.9	16.4	16.0	14.0
External public and publicly guaranteed debt	8.9	9.4	11.8	12.4	10.2
Official creditors	6.8	6.8	7.5	9.0	7.1
Multilaterals	3.4	3.9	4.8	5.2	4.5
IMF	2.3	2.4	2.8	2.8	2.1
IBRD / IDA	0.9	1.1	1.5	2.0	2.0
Others	0.3	0.4	0.5	0.4	0.4
Bilaterals	3.4	2.9	2.7	3.8	2.6
Private sector creditors	2.1	2.6	4.2	3.4	3.1
Debt to commercial banks	0.1	0.6	0.7	0.5	0.1
Bonds and Others	2.0	2.0	3.5	3.0	3.0
Domestic Debt	2.0	5.5	4.7	3.6	3.8
<i>Of which:</i> Foreign currency denominated debt	n.a.	n.a.	n.a.	n.a.	n.a.
<i>Of which:</i> Short-term debt	n.a.	n.a.	n.a.	n.a.	n.a.
Uruguay (2002)	2000	2001	2002	2003	2004
Total public sector debt	9.4	10.8	12.2	12.3	11.0
External public and publicly guaranteed debt	6.0	5.8	8.3	9.2	9.8
Official creditors	2.5	2.6	4.8	5.5	5.8
Multilaterals	2.1	2.2	4.5	5.3	5.6
IMF	0.1	0.1	1.8	2.3	2.6
IBRD / IDA	0.5	0.6	0.7	0.7	0.8
Others	1.4	1.5	2.0	2.2	2.2
Bilaterals	0.4	0.3	0.3	0.2	0.2
Private sector creditors	3.5	3.2	3.5	3.6	4.0
Debt to commercial banks	0.6	0.5	0.4	0.1	0.1
Bonds and Others	2.9	2.8	3.1	3.6	3.9
Domestic Debt	3.3	5.0	4.0	3.1	1.2
<i>Of which:</i> Foreign currency denominated debt	3.1	4.6	3.1	2.4	0.9
<i>Of which:</i> Short-term debt	2.9	4.6	3.7	2.9	n.a.

Sources: World Bank, *Global Development Finance*; IMF, *World Economic Outlook*; national authorities; and IMF staff estimates.

References

- Barajas, Adolfo, Emiliano Basco, V. Hugo Juan-Ramon, and Carlos Quarracino, 2006, "Banks During the Argentine Crisis: Were They All Hurt Equally? Did They All Behave Equally?" IMF Working Paper 06/42 (Washington: International Monetary Fund).
- Bordo, Michael, and others, 2004, "Keeping Capital Flowing: The Role of the IMF," IMF Working Paper 04/197 (Washington: International Monetary Fund).
- Borensztein, Eduardo, and others, 2004, *Sovereign Debt Structure for Crisis Prevention*, IMF Occasional Paper No. 237 (Washington: International Monetary Fund).
- Caprio, Gerard, and Daniela Klingebiel, 2003, "Episodes of Systemic and Borderline Financial Crises" (unpublished; Washington: World Bank).
- Collins, Charles, and G. Russell Kincaid, eds., 2003, *Managing Financial Crises: Recent Experience and Lessons for Latin America*, IMF Occasional Paper No. 217 (Washington: International Monetary Fund).
- Eichengreen, Barry, and others, 2005, "The IMF in a World of Private Capital Market," IMF Working Paper 05/84 (Washington: International Monetary Fund).
- European Central Bank, 2005, *Managing Financial Crises in Emerging Market Economies – Experience with the Involvement of Private Sector Creditors* (Frankfurt: European Central Bank).
- Frankel, Jeffrey, and Shang-Jin Wei, 2004, "Managing Macroeconomic Crises: Policy Lessons" (unpublished; Washington: World Bank).
- Gelpern, Anna, 2005, "After Argentina," Policy Briefs in International Economics PB05–2 (Washington: Institute for International Economics).
- Ghosh, Atish, and others, 2002, *IMF-Supported Programs in Capital Account Crises*, IMF Occasional Paper No. 210 (Washington: International Monetary Fund).
- Goldstein, Morris, 2003, "Debt Sustainability, Brazil, and the IMF," IIE Working Paper 03–1 (Washington: Institute for International Economics).
- Hemming, Richard, and others, 2003, *Fiscal Vulnerability and Financial Crises in Emerging Market Economies*, IMF Occasional Paper No. 218 (Washington: International Monetary Fund).
- Hoelscher, David S., and Marc Quintyn, 2003, *Managing Systemic Banking Crises*, IMF Occasional Paper No. 224 (Washington: International Monetary Fund).
- Honohan, Patrick, and Daniela Klingebiel, 2000, "Controlling Fiscal Costs of Banking Crises" (unpublished; Washington: World Bank).
- International Monetary and Financial Committee, 2005, *Progress Report to the International Monetary and Financial Committee on Crisis Resolution*, IMFC/Doc/11/05/4. Available via the Internet: <http://www.imf.org/external/np/pp/eng/2005/041205.htm>.
- International Monetary Fund, 2002, *Assessing Sustainability*, SM/02/166, 2/28/02. Available via the Internet: <http://www.imf.org/external/np/pdr/sus/2002/eng/052802.pdf>.

- 2003, *World Economic Outlook, September 2003: Public Debt in Emerging Markets: Is it Too High?* World Economic and Financial Surveys (Washington: International Monetary Fund).
 - 2004, *Debt-Related Vulnerabilities and Financial Crises—An Application of the Balance Sheet Approach to Emerging Market Countries*, SM/04/210, 7/2/04. Available via the Internet: <http://www.imf.org/external/np/pdr/bal/2004/eng/070104.pdf>
 - 2005, *Assessing the Determinants and Prospects for the Pace of Market Access By Countries Emerging From Crisis – Further Considerations*, SM/05/76, 3/2/05. Available via the Internet: <http://www.imf.org/external/np/pp/eng/2005/030105a.pdf>.
 - 2006, *Cross-Country Experience with Restructuring of Sovereign Debt and Restoring Debt Sustainability*, SM/06/26, 1/23/06.
- Kaminsky, Graciela, and Carmen M. Reinhart, 1999, “The Twin Crises: The Causes of Banking and Balance-of-Payments Problems,” *American Economic Review*, Vol. 89, No. 3, pp. 473–500.
- Lindgren, Carl-Johan, and others, 1999, *Financial Sector Crisis and Restructuring Lessons from Asia*, IMF Occasional Paper No.188 (Washington: International Monetary Fund).
- Mody, Ashoka, 2004, “Is FDI Integrating the World Economy?” *World Economy*, Vol. 27, No. 8, pp. 1195–1222.
- Reinhart, Carmen M., Kenneth S. Rogoff, and Miguel A. Savastano, 2003, “Debt Intolerance,” NBER Working Paper No. 9908 (Cambridge, Massachusetts: National Bureau of Economic Research).
- Reinhart, Carmen M., and Kenneth S. Rogoff, 2004, “Serial Default and the ‘Paradox’ of Rich to Poor Capital Flows,” NBER Working Paper No. 0296 (Cambridge, Massachusetts: National Bureau of Economic Research).
- Roubini, Nouriel, and Brad Setzer, 2004, *Bailouts or Bail-Ins? Responding to Financial Crises in Emerging Markets* (Washington: Institute of International Economics).
- Sturzenegger, Federico, 2003, “Default Episodes in the 90s: Factbook, Toolkit and Preliminary Lessons” (unpublished; Buenos Aires: Universidad Torcuato Di Tella).