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Over the past quarter of a century, emerging market economies (EMEs) have defaulted on their sovereign debts frequently. This article assesses the size and types of costs that have been associated with these defaults. It emphasises that costs, measured by the fall in output, are particularly large when default is combined with banking and/or currency crises. Output losses also seem to increase the longer that countries stay in arrears or take to restructure their debts. The paper concludes with a number of policy suggestions to improve debt crisis prevention and management and the role played by the IMF.

1. Introduction

Since the financial crises of the 1990s, including the sovereign defaults by Russia, Ecuador and Argentina, a number of policy initiatives have been taken and others suggested to improve the international financial architecture, including the effectiveness of crisis resolution (see for example the article by Bedford *et al* (2005) in the June 2005 *Financial Stability Review*).

This article puts the recent policy initiatives into a broader context by attempting to draw lessons from the large number of sovereign defaults witnessed over the past 30 years. In particular, it assesses the type and size of costs that are associated with sovereign default and the implications for crisis prevention and management policies.

The larger these default costs, the greater the incentive for debtors to avoid default or, if default occurs, to resolve the crisis as effectively as possible. But to the extent that these costs are not internalised, there may be a role for international official sector intervention, by an agency such as the IMF, to help prevent or resolve debt crises. Distinguishing the size and type of different costs of sovereign default may help to determine where efforts at crisis prevention and management should be most focused.¹

2. Costs of debt crises: the literature

Sovereign defaults have been a feature of the international financial landscape for centuries. For example, Reinhart *et al* (2003) report that France defaulted on its sovereign debt eight times

¹ The IMF (2003) lists a number of default costs that may justify IMF liquidity support intended to substitute for loss of trade financing, contain balance sheet effects, provide liquidity support to domestic banks, minimise the collapse in investment and maintain access to priority financing from other international financial institutions (IFIs).

between 1500 and 1800, while Spain defaulted thirteen times between 1500 and 1900. And, more recently, over the past quarter of a century EMEs have defaulted on their sovereign debts frequently.

Sovereign nations – unlike companies – cannot be liquidated and there are also no national, or international, courts that can enforce payments on contract through, for example, transferring assets from the debtor to the creditor.² Defaulting, or restructuring, enables debtor countries to reduce the size and/or lengthen the maturity of their repayments, and thereby seek to provide a temporary boost to current consumption. This raises the issue of why sovereigns do not default more frequently than has actually occurred.

The reason is that there are a number of potential costs of default that incentivise debtors to repay. Some are penalties imposed by external creditors on the cost or ability of defaulters to access future finance. So increasing consumption today may be at the expense of reducing consumption in the future. Moreover, given that defaulting may cause a broader financial crisis in which domestic activity and output are reduced even in the short run, any attempt to boost current spending temporarily through a default may not be successful.

2 i. Penalty costs

Defaulters may lose access to borrowing from financial markets. However, the theoretical evidence is mixed on how a sovereign contemplating default might balance the potential loss of access to international capital markets against its ability to use the breathing space afforded by default to support domestic expenditure. Eaton and Gersovitz (1981) argue that, if the expected reduction in future consumption from losing market access is at least as large as any increase in current consumption from default, sovereigns should prefer to honour their debt repayments.³ In contrast, Bulow and Rogoff (1989) suggest that, if the government can invest existing borrowed funds in international markets, this cushion could be used to support current consumption should the sovereign be cut off from international borrowing following a voluntary default.

A loss of trade finance may also result in defaulters facing a reduction in international trade. However, trade finance need not be provided by the same creditors that hold the defaulted debt. For example, during the 1980s a few major international banks held most of the defaulted Latin

² Following the Foreign Sovereign Immunity Act (1976) in the United States and the State Immunity Act (1978) in the United Kingdom, it became common practice for most governments to waive sovereign immunity on foreign loans and bond contracts. In practice, however, this only allows creditors to have access to the debtor's assets held for "commercial activity" in the country where the debt contract was issued. Moreover, a country considering default could remove its assets held in the foreign jurisdiction before any default.

³ In practice, myopic governments might attach a high weight to current rather than future consumption, and therefore a low weight to the risk of future default through increasing current borrowing.

American debt. But this did not prevent other banks, with fewer exposures, stepping in to provide trade finance.

Overall, the empirical evidence suggests that sovereign default is not necessarily associated with a loss of market access, so fears about any such loss may not in themselves be a major deterrent to default. Lindert and Morton (1989) argue that in the 1930s, and again in the early 1980s, during periods when a number of countries defaulted, external credit was no more inaccessible to sovereign defaulters than to non-defaulters.⁴ Jorgensen and Sachs (1989) find that, in the two decades following the 1930s sovereign debt crisis, access to international capital markets for Latin American countries was severely restricted for previous non-defaulters as well as for defaulters. And once capital markets opened up in the 1960s, defaulters found it as easy to access capital as non-defaulters. More recently, assessing defaults since 1980, Medeiros *et al* (2005) find that the probability of regaining market access after default depends partly on a country's external situation at the time of default and partly on its domestic macroeconomic performance.⁵ The current external environment has enabled recent defaulters, such as Russia, Argentina and Ecuador, to regain market access quickly.⁶ More generally, Gelos *et al* (2004) find that it only took defaulters three and half months, on average, to regain market access after defaulting during the 1990s compared with more than 4 ½ years during the 1980s.

Although the empirical evidence does not suggest that default necessarily closes off market access, it does point to an adverse effect on the government's *cost* of future borrowing. Ozler (1993) finds that, during the tranquil period of the 1970s, lenders charged up to 50 basis points more for loans to previous (post-1930) defaulters. And more recently, Reinhart *et al* (2003) find that EMEs with a history of defaulting on their external debts – especially 'serial defaulters' – received a lower credit rating over the 1979-2000 period than non-defaulters that displayed similar financial strength.⁷

2 ii. Broader financial costs

The costs discussed above represent penalties that sovereigns may face should they default. But governments may also want to maintain debt repayments in order to avoid broader losses to the domestic economy associated with default, beyond those caused by a tightening in the terms and conditions on borrowing imposed by foreign creditors. A number of studies suggest that default

⁴ Tomz (1998), however, finds that, during the interwar period, defaulting countries that were expected to default, given their poor fundamentals, could regain access to capital markets twice as quickly as countries that defaulted unexpectedly, given their better fundamentals.

⁵ As measured by GDP growth, inflation, the current account balance and foreign currency reserves.

⁶ Indeed, assisted by the sharp rise in oil prices, Russia's sovereign debt is now rated investment grade.

⁷ Measured by the ratios of external debt to both GDP and exports.

is often associated with a decline in output growth (eg, Cohen (1992) and Sturzenegger and Zettelmeyer (2006)). Dooley (2000) shows that output losses, assumed to be due to domestic residents being unable to borrow from domestic as well as foreign creditors in the aftermath of crises, may be the most important incentive for debt repayment. And more recently, Alfaro and Kanczuk (2005) calibrate a dynamic equilibrium model of sovereign debt and find that the threat of higher borrowing costs alone is insufficient to discourage debtors from defaulting. It is only when default also results in “additional output costs” over and above those caused by higher interest rates that equilibria are derived that are consistent with the stylised facts on the frequency of sovereign defaults. But what are these broader output costs to the domestic economy resulting from sovereign default?

One mechanism by which a sovereign default may reduce GDP is through its impact on the domestic financial system. In many EMEs, domestic banks are major creditors of the government and so may be severely weakened, if not made insolvent, when the government defaults on, or restructures, its debt (including that owed to the domestic sector). In this case, banks may stop playing their intermediation role of providing liquidity and credit to the economy. This happened, for example, in Russia after the government suddenly defaulted on its domestic debt in autumn 1998. The impact of a sovereign default on the banking system is often accentuated through government debt having been taken up increasingly by domestic banks in the run-up to debt crises, when governments find it harder, or at least more expensive, to obtain external finance. Once banking problems emerge, any fiscal weakness, in turn, reduces the ability of the government to take measures to contain a crisis. For example, it is probably not credible for a highly indebted government to introduce a blanket guarantee to deposit holders in order to stem bank runs, because depositors will not believe such a guarantee will be honoured and their investments insured (see Hoelscher and Quintyn (2003)).⁸

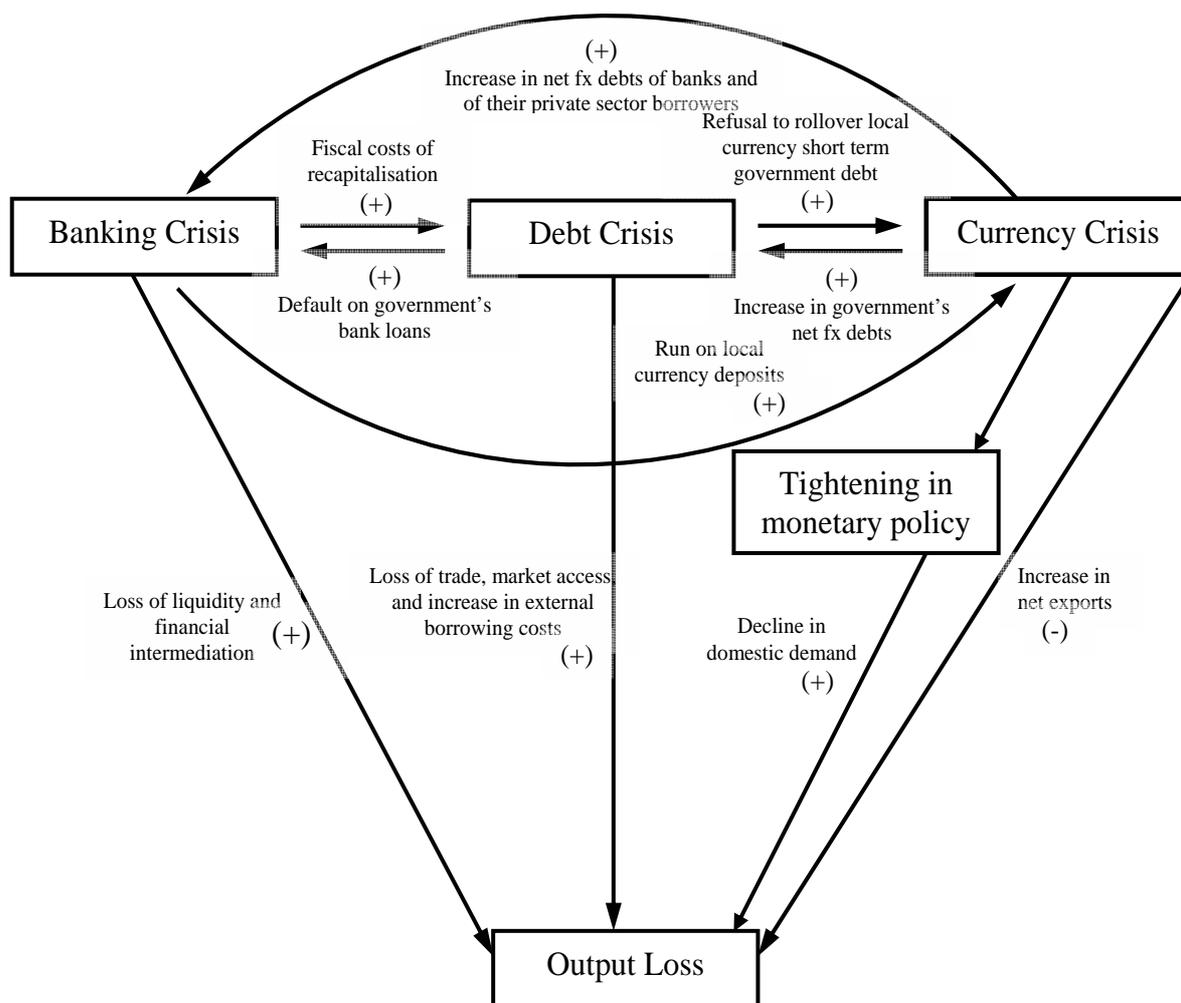
Foreign and domestic investors might also react to a sovereign defaulting on its external debt by questioning whether the government has sufficient foreign currency to defend the exchange rate. For net foreign currency borrowers, a sharp currency depreciation would, in turn, increase – when valued in domestic currency terms – the net foreign currency debts and debt service costs of the government, banks and the non-bank private sector.⁹ A tightening in monetary policy might limit the extent of exchange rate depreciation but at the expense, in the short run at least, of

⁸ The large fiscal costs that are often incurred in resolving a banking crisis can also cause, or make worse, a sovereign crisis, for example in Indonesia in 1997-98.

⁹ For the balance sheet channel of currency depreciation see, *inter alia*, Cespedes *et al* (2004).

reducing domestic demand and liquidity in the financial system. Therefore, a triple – sovereign, banking and currency – crisis may ensue, involving a run on both the domestic currency and the banking system (see Figure 1). But since depreciation tends to increase trade competitiveness there would, after a time lag, be a potentially offsetting gain in net exports and output depending, *inter alia*, on the size of the traded goods sector (see Frankel 2005) and whether exporters have access to trade finance.

Figure 1 Interaction between sovereign debt, banking and currency crises



Note: Arrows show the direction of causation and +/- whether the impact is likely to accentuate or alleviate the particular crisis or output loss.

There is little evidence from the literature on the costs associated with these different types of sovereign crises nor on the costs and benefits of different types of crisis resolution. For example, is it less costly to restructure debt – and if so pre- or post-default – than to reduce arrears gradually over time? Restructuring might have the benefit of starting afresh through the debtor explicitly sharing the costs of default with creditors. Some new evidence on these questions is presented below.

3. Estimates of the costs of debt crises

3i. Defining a crisis

Before its costs can be assessed and measured accurately, a sovereign default needs first to be properly defined. Unfortunately, there is no off-the-shelf definition. It could be narrowly confined to debt that has gone into arrears or also include debt that has been explicitly restructured.¹⁰ The definition of debtor and creditor is also not unambiguous. “Sovereign” debtor could be defined narrowly as the government or public sector alone or more broadly to include the domestic private sector. And creditors could be confined to the commercial sector or also include the official sector.

Table 1 Summary of recent studies on sovereign defaults since 1970

Authors	Sample period	Definition of default event	Number of crises			
			Total	1970s	1980s	1990s
Detragiache and Spilimbergo (2001)	1971-1998	Arrears on principal or interest payments >5% of debt outstanding or restructuring of a country’s total (sovereign plus private) external debt with private creditors	54	11	33	10
Reinhart, Rogoff and Savastano (2003)	1970-2001	Default or restructuring of a country’s total (sovereign plus private) external debt with private creditors	36 ^(a)	4	23	8
De Paoli and Saporta (2006)	1970-2000	Arrears on principal or interest payments >15% and 5% respectively or restructuring of a sovereign’s external debt with private creditors	40	3	29	8

^(a) Includes one crisis in the sample since 2000.

Table 1 summarises recent studies of sovereign defaults. As indicated, Reinhart *et al* (2003) adopt the simplest definition of a default event as occurring when a country defaults on, or restructures, its total external debt.¹¹ Detragiache and Spilimbergo (2001) define it as occurring when arrears of principal or interest obligations to commercial creditors on a country’s total external debt exceed 5% or when a debt rescheduling agreement is made with commercial

¹⁰ ‘Default’ could be defined more broadly still. Manasse and Roubini (2005), for example, also include episodes of incipient defaults which they believe were averted through large-scale international bail-outs, such as occurred in Mexico in 1995, Turkey in 2000 and Brazil in 2001. And Sy (2004) defines a sovereign debt crisis to occur when sovereign spreads over US Treasuries rise to 1,000 basis points (10 percent) or more.

¹¹ Default events are taken from Standard and Poor’s (S&P’s) *Credit Week* (various issues). S&P defines default as the failure of a borrower to meet principal or interest payment on the due date (Chambers and Alexeeva (2002)).

creditors. In contrast, De Paoli and Saporta (2006) define a sovereign debt crisis as occurring when the sovereign alone is in (large) arrears (on principal or interest payments) or arranges a rescheduling agreement with its foreign private creditors.

The summary suggests that sovereign debt crises were particularly frequent during the 1980s and remained more common in the 1990s than in the 1970s. Moreover, crises can last a long time – 11 years on one definition according to De Paoli and Saporta.¹² This study suggests that Argentina, Brazil and Peru have been in sovereign debt crisis for about half the time since 1970.

Table 2 shows indicators of the economic situation at the outset of recent sovereign debt crises. Perhaps not surprisingly, sovereign crises have usually materialised in recessions, when government and/or external debt has been large – generally over 60% of GDP – and the fiscal balance in deficit (of over 2% of GDP). Although annual inflation was rapid in some cases, for example over 50% in Indonesia and Ecuador, it was negative or low in others, such as Argentina and Uruguay. Nearly all recent debt crises, however, have been associated with a banking and/or currency crisis.¹³ Table 2 also shows that, on average, EMEs currently have lower external debt than countries had at the time of recent sovereign crises. This partly reflects the recent improvement in current account positions in most EMEs.¹⁴ However, in many EMEs government (domestic plus external) debt and deficits remain high with a large reliance still on financing from the domestic banking system.

¹² As explained below, in De Paoli and Saporta (2006) the crisis ends for countries which do not reschedule when arrears fall below a certain level. The length of crisis is therefore sensitive to the selection of this threshold.

¹³ The definition of banking crisis, based on Caprio and Klingebiel (2003), is when ‘much or all’ of the banking system’s capital is exhausted, while that of currency crisis, based on Frankel and Rose (1986), is when the domestic nominal exchange rate against the dollar depreciates by at least 25% in any one year combined with a 10% increase in the rate of depreciation

¹⁴ See IMF (2006a).

Table 2 Economic indicators in the year of onset of recent sovereign debt crises in selected countries

Country	Type of debt crisis	General government debt/GDP (%)	Central government balance/GDP (%)	External debt/GDP (%)	Exports/GDP ^(a) (%)	Annual inflation rate (%)	Annual output growth (%)	Other types of financial crisis ^(b)
Argentina 2001	Post-default restructuring	63.1	-3.7	61.8	11.5	-1.1	-4.4	Banking and currency
Ecuador 1999	Post-default restructuring	101.2 ^(c)	-0.6	98.0	31.5	52.2	-6.3	Banking and currency
Indonesia 1998	Arrears	66.6	-2.2	155.5	46.0	58.4	-13.1	Banking and currency
Pakistan 1998	Pre-default restructuring	78.2	-6.7	56.2	15.9	6.2	3.1	None
Russia 1998	Post-default restructuring	75.4 ^(c)	-6.0	68.5	31.2	27.7	-5.3	Banking and currency
Ukraine 1998	Pre-default restructuring	37.6	-2.8	27.4	42.1	10.6	-1.9	Banking and currency
Uruguay 2001	Pre-default restructuring	39.1	-4.9	86.0	18.3	4.4	-3.4	Banking and currency
<i>Memo</i> all EMEs, 2005 ^(d) <i>of which:</i>		50.2	-0.8	26.9	43.2	5.4	7.2	
Western Hemisphere		55.0	-2.1	33.3	23.4	6.3	5.3	
Developing Asia		60.2	-2.0	15.4	50.3	3.6	8.6	
Central and eastern Europe		46.5	-3.1	49.8	45.6	4.8	4.3	
Middle East								
Africa		33.5	5.9	36.1	56.9	8.4	5.9	
		59.2	1.3	35.2	38.5	8.5	5.2	

Source: IMF.

^(a) Exports of goods and services.

^(b) Within two years before or after the sovereign crisis.

^(c) Public sector debt.

^(d) Excludes the Newly Industrialised Economies (Hong Kong, Korea, Taiwan and Singapore).

3 ii. Measures of the costs of debt crises

The literature summarised above suggested two main types of potential losses resulting from debt crises – those arising from any impairment of the government’s future ability to raise finance or increase in the cost of raising finance from creditors; and those imposed on the domestic economy through the interaction of debt crises with banking and/or currency crises.

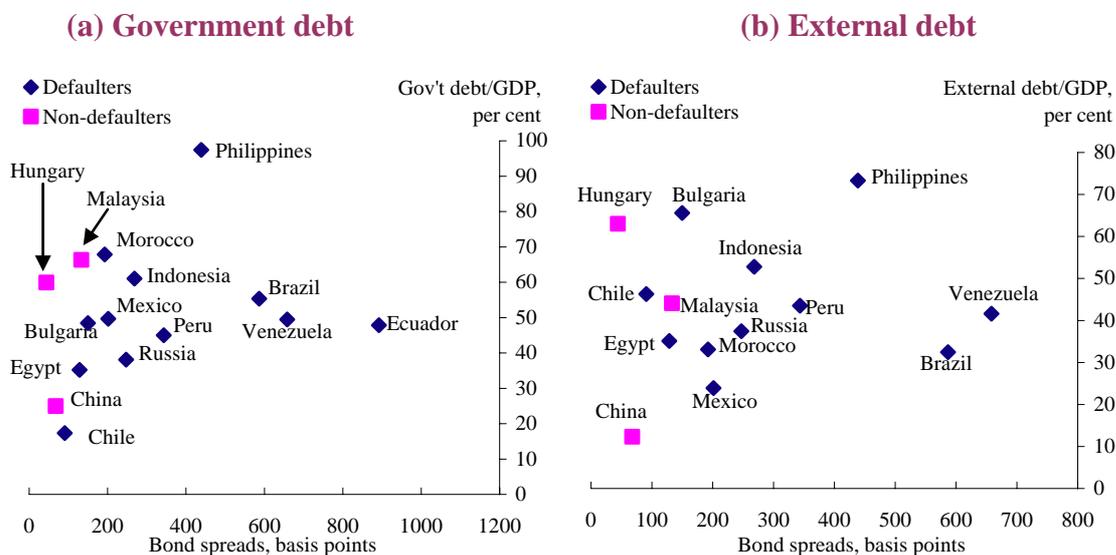
Penalty costs

Charts 1-2 plot the average government and external debt/GDP ratios against bond spreads and credit ratings respectively over the past three years for EMEs that have a history of default (in blue dots) and those that do not (pink dots). The defaulters are countries that are listed by at least two of the three studies shown in Table 1; non-defaulters are not listed by any of these studies. Consistent with the evidence from Ozler (1993) and Reinhart *et al* (2003), for a given debt/GDP ratio, past defaulters have generally had a higher bond spread/ lower credit rating than non-defaulters in recent years. Furthermore, some past defaulters, such as Mexico and Russia, have a higher bond spread and lower credit rating than non-defaulters, such as Hungary and Malaysia, even though these defaulters have lower external and government debt (relative to GDP) than these non-defaulters. This suggests that default increases the cost of obtaining external finance in the future. Chart 3 also shows that a much higher proportion of sovereign debt – issued both domestically and abroad – is denominated in foreign currency in past defaulters than in non-defaulters. Similarly, Reinhart *et al* (2003) report that, on average over the 1996-2001 period, some 16% of domestic government debt outstanding was denominated in foreign currency in previous defaulters, but almost none in non-defaulters, in their sample. This might reflect the past strong association between debt and currency crises (discussed below), which has increased the perceived foreign currency risk of investors – whether foreign or domestic – buying sovereign debt denominated in the domestic currencies of past defaulters.

For countries that restructure their debt the terms and conditions offered to creditors subsequently can vary markedly. The size of haircuts imposed on creditors in recent restructurings are plotted against current credit ratings and bond spreads in Charts 4 (a) and (b) respectively. Countries that recently restructured their debts before defaulting imposed much smaller haircuts on their creditors than those which restructured after defaulting. This might reflect the desire of these countries to avoid the costs associated with default and therefore their greater willingness to reach a deal with creditors. However, the size of haircut does not seem to be an important determinant of current credit ratings. Since credit ratings measure the likelihood of default rather than expected loss given default (ie they do not take into consideration the likely recovery rates) this is perhaps not surprising. But there is some evidence that current bond spreads are correlated with past haircuts. For example,

current spreads are still much higher in Argentina and Ecuador – where the haircuts were large – than, say, Uruguay where they were small, despite all these countries having similar credit ratings.¹⁵

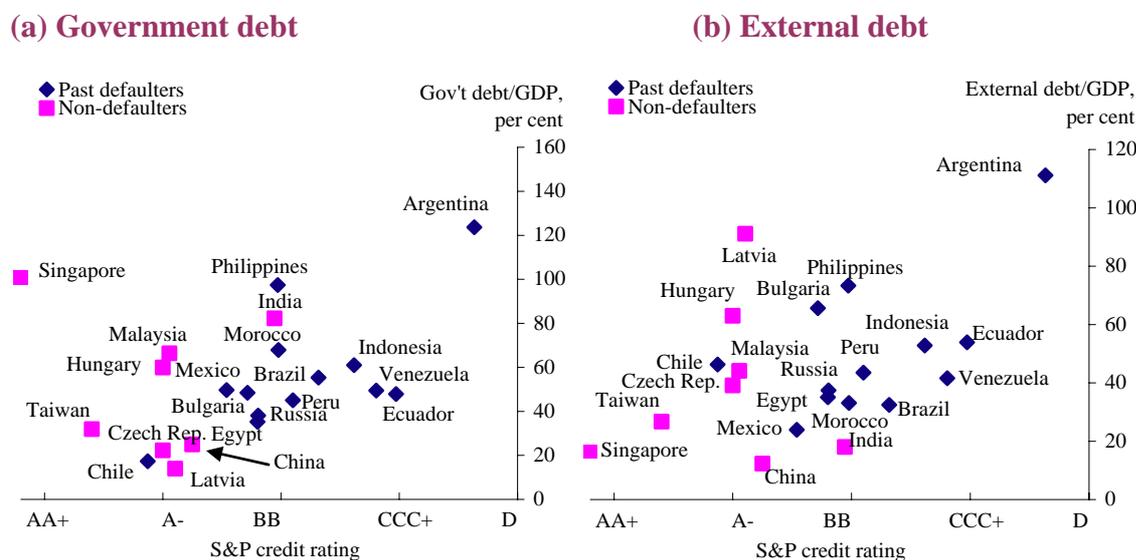
Chart 1 Debt/GDP and bond spreads, average, 2003-05^(a)



Source: IMF and JP Morgan.

^(a) Government and external debt are end-year averages. Bond spreads are averages of daily data. Defaulters are countries listed as having a history of defaulting in two of the three studies in Table 1. Non-defaulters are countries not listed in any of the three studies.

Chart 2 Debt/GDP and credit ratings, average, 2003-05^(a)

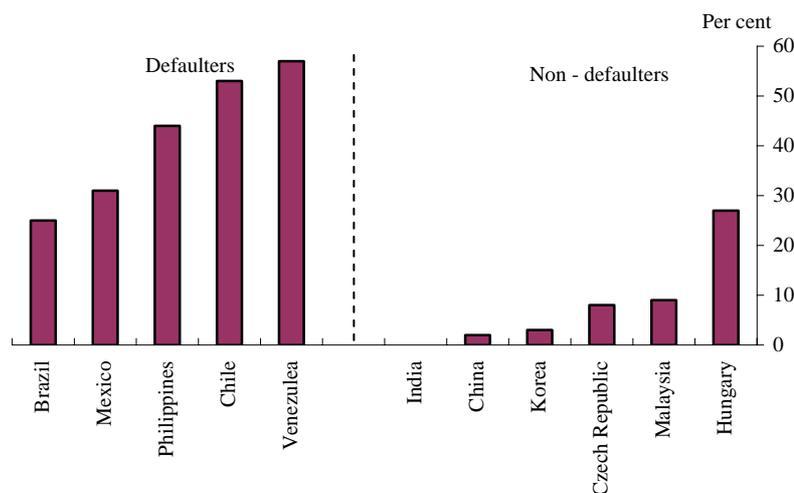


Source: IMF and Standard and Poor's.

^(a) Government and external debt are end-year averages. Credit ratings are averages of monthly data.

¹⁵ But note that, following the recent marked rise in oil prices, sovereign spreads in Russia have fallen to very low levels despite the large haircuts imposed during its sovereign default in autumn 1998.

Chart 3 Share of sovereign debt denominated in foreign currency (percent of total marketable sovereign debt)^(a), end-2004

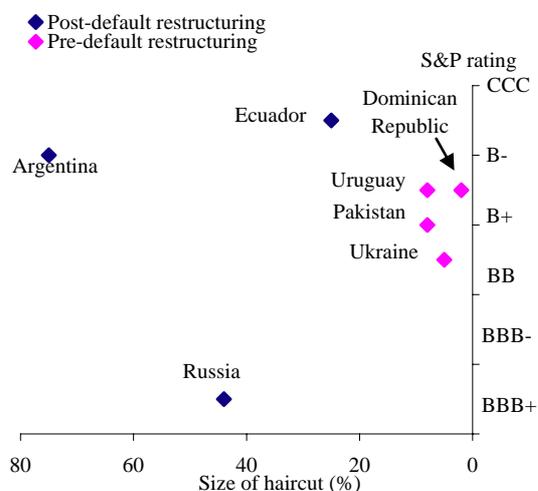


Source: Jeanne and Guscina (2006).

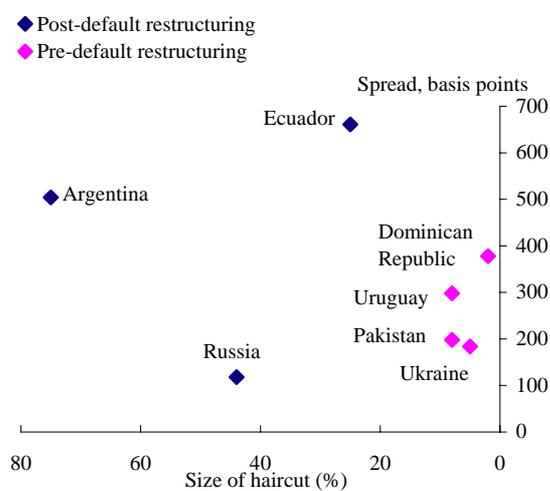
^(a) Issued both domestically and abroad. Note that all the defaulters in the chart defaulted at least twenty years ago, suggesting that most, if not all, of the current debt stock was issued after their default.

Chart 4 Market-based measures of credit risk for recent debt restructurers, end-2005

(a) credit ratings



(b) sovereign bond spreads



Source: JP Morgan, Standard and Poor's and IMF (2006b).

Measures of the broader financial costs of debt crises

Despite research pointing to the importance of output losses as a reason why sovereigns would want to avoid defaulting, there have been few studies that have sought to quantify directly the losses following sovereign defaults. This gap in the literature is even more surprising given that similar studies have now been carried out extensively for banking and currency crises and their combination – so-called “twin crises” (see for example Kaminsky and Reinhart (1999), Aziz *et al* (2000), Bordo *et al* (2001), Hoggarth *et al* (2002) and Cerra and Saxena (2005)). A forthcoming study by two of

the authors of this article on the output costs of sovereign defaults is an exception (De Paoli and Saporta ((2006)).

As indicated in Table 1, De Paoli and Saporta define a sovereign default episode as occurring when either (i) the sovereign's arrears on principal are 15% or more of the total outstanding debt owed to the external private sector; (ii) arrears on interest payments are 5% or more; or (iii) a rescheduling agreement is reached with foreign private sector creditors.¹⁶ Output losses are then estimated as the cumulative difference during the debt crisis period between actual GDP and estimates of what it would have been in the absence of a default. Having defined the episodes of default, there are two crucial measurement questions here – defining the beginning and end year of the default period and estimating the output counterfactual. For countries that fall into default, arrears usually build up gradually (and fall gradually after reaching a peak). So, having identified the default episodes, the authors define the beginning of the crisis as the first year in which arrears on principal or on interest payments rise above 5% and 1 ½ % respectively of outstanding debt (or when an actual restructuring begins).¹⁷ The end of a (high arrears) crisis period is more difficult to pinpoint precisely so alternative specifications were considered.¹⁸ But for all variations of the assumed end point, crises were found, on average, to be long-lasting. For the main output counterfactual (in the absence of a crisis) it was assumed that output would have followed its pre-crisis trend (where the trend is measured using a Hodrick Prescott (HP) filter on the available past GDP data). As a check on the robustness of the results, an alternative output counterfactual was also derived based on a conventional equation estimated to explain (per capita) output growth.¹⁹ This method produced qualitatively similar results.

Table 3 shows typical estimates of output losses from De Paoli and Saporta. The estimated average cumulative output loss of the sample increases with the length of crisis given that actual output remains below its counterfactual during most if not all of the crisis period.²⁰ Output losses are therefore shown on a per annum basis.

¹⁶ The higher threshold for arrears on principal than on interest payments is because, according to World Bank estimates, sovereign arrears on principal have been, on average, two to three times larger than on interest payments since 1970. The authors show that the probabilities of breaching these thresholds are low.

¹⁷ This was checked for consistency with other studies which include definitions of the start of debt crises.

¹⁸ For example, as soon as arrears on principal fall below 15% or arrears on interest payments below 5%, or when arrears fall below 5% on principal or below 1 ½ % on interest payments. Other things equal, the first definition will clearly imply a shorter crisis period than the second one.

¹⁹ This is based on a panel regression of the crisis countries over the 1970-2000 period. GDP growth per capita was found to be a negative function of the initial level of GDP, price inflation, the share of government consumption in GDP and political instability and a positive function of the investment share in GDP and trade-openness (see De Paoli and Saporta (2006)).

²⁰ In fact, output did not return to its pre-crisis trend at all during the crisis period in 60% of the sample.

Table 3 Output losses (per year) during sovereign crisis, 1970-2000

Type of sovereign default	Number of crises	Average median length of crisis, (years)	Median loss, per year ^(a)	Mean cost per year ^(a)
Default only	4	3	-5.2 ^(d)	-1.0 ^(d)
Default and currency crisis ^(b)	13	5	6.5	10.3
Default and banking crisis ^(b)	7	8	10.8	13.2
Triple crisis ^(b)	21	10	22.1	21.7
ALL CRISES	45	8	6.9	15.1
Restructured debt ^(c)	15	8	2.8	8.3
Unrestructured debt	30	8.5	10.9	18.5

Source: De Paoli and Saporta (2006).

^(a) Cumulative difference per year between potential and actual output. Potential output is based on the country's pre-crisis (HP filter) trend.

^(b) Defined as when a currency or banking crisis occurs at some point during the duration of the sovereign crisis. Currency and banking crises are defined as in footnote 13 above.

^(c) Includes both pre- and post-arrears restructurings.

^(d) A negative 'cost' implies that actual output was higher during the crisis than suggested by its pre-crisis trend. Note, however, the small sample of default-only crises.

A number of features are suggested by Table 3. First, output losses in the wake of sovereign default appear to be very large – around 7% a year on the median measure – as well as long lasting.²¹

However, the counterfactuals could overstate the path of output in the absence of the debt crisis, because it is difficult to separate completely the loss due to default *per se* from the loss caused by the economic shock that triggered the default. Therefore, more weight should be attached to the relative costs from different types of crises than to the absolute estimates.

Second, sovereign defaults rarely occur in isolation – in less than 10% of the sample. More often, a debt crisis coincides with a banking and/or a currency crisis. In fact, almost one-half of the sample consists of triple (sovereign, banking and currency) crises. In these cases output losses appear to be particularly high – here the interactions between different sectors of the economy accentuate the decline in GDP. Box A describes how these linkages played out in the recent triple crisis in Argentina.

²¹ These median output losses per year are about 2% points bigger than the estimates of banking crises losses reported in Hoggarth *et al* (2002).

Third, output losses from twin crises appear to be bigger when a debt crisis is accompanied by a banking rather than a currency crisis. Banking crises often result in a sharp and prolonged reduction in the intermediation of credit to the private sector, with significant costs to economic efficiency. A currency crisis involving a sharp depreciation of the domestic currency, by contrast, has the silver lining of stimulating exports. In fact, in two-thirds of the sample the share of domestic demand in total final expenditure falls during the crisis period (ie the share of exports increases).

Fourth, the output losses *per year* tend to increase with the length of crisis.²² This suggests that the longer that it takes to reduce arrears or complete a restructuring, the more output falls (relative to its trend or potential). Crisis countries that reschedule their debts, however, appear to face smaller output losses than those which do not. Moreover, using the model-based estimate of the output counterfactual, and bearing in mind the limited available sample of countries, De Paoli and Saporta find that pre-arrears restructuring is associated with a smaller fall in output – both cumulatively and on an annual basis – than post-arrears restructuring.²³ This suggests that countries that reschedule their debts – and thus start afresh with creditors – face a lower subsequent cost of finance and/or quicker renewed access to external finance. It might also indicate that an active policy of rescheduling has a less debilitating impact on the domestic financial system than a passive policy of remaining in arrears and not restructuring.

4. Conclusion and policy implications

This paper has assessed the size and types of costs associated with sovereign default. The literature highlights a number of potential channels through which sovereign debtors incur costs through defaulting. Some of these costs are imposed by creditors, involving in particular a reduction in access to, or an increase in the cost of, future finance. In practice, in the aftermath of recent debt crises, EMEs have often been able to reaccess international capital markets quite quickly, although there is some evidence that they have had to pay a higher risk premium and been less able to issue in domestic currency, thereby increasing their vulnerability to currency risk. There has been less focus in the literature on the broader output costs to the domestic economy associated with sovereign default and on the interaction with currency and banking crises. In practice, most sovereign crises over the past 25 years have been associated with a banking and/or a currency crisis. Sovereign defaults appear to have the biggest impact on domestic output when they are combined with

²² A simple regression shows that the length of crisis has a positive and statistically significant effect at the 5% level on output losses per year using either the trend or the model-based estimate of the GDP counterfactual.

²³ The reduction in output loss averages 10% a year and is significant at the 5% confidence level. But note that no difference in output losses associated with pre- and post-arrears restructurings is found when the trend-based estimate of the output counterfactual is used. The IMF (2006b) also find in recent restructurings that post-defaulters had bigger recessions than pre-defaulters

widespread failure of the domestic banking system and particularly when there is a triple (sovereign, banking and currency) crisis. And in some cases, such as following the Latin American crisis in the early 1980s and the more recent Russian crisis, sovereign defaults have precipitated broader instability in the global financial system.

Given that the costs of sovereign default appear to be high, one obvious but nonetheless important policy conclusion is that countries should take measures to reduce the risk of defaulting in the first place. At a broad level, authorities need to adopt sound macroeconomic policies and structural reform which should reduce the likelihood of crises as well as raise sustainable output growth. More specifically, the high cost of default points to the need for further development of early warning systems of crisis. The IMF has a role to play here in carrying out stress tests of the fragility of the government's balance sheet and those of other sectors in its regular Article IV surveillance. This type of analysis should allow authorities time to change domestic policies and therefore reduce the likelihood of crisis. It also emphasises the need for countries themselves to self insure against the possibility of crises. Many EMEs have done this in recent years through building up foreign exchange reserves and reducing their reliance on foreign currency and short-term debt. This has reduced the likelihood of currency crises in particular. But government debts (relative to GDP) remain high in many EMEs and are often still significantly financed by the domestic banking system.²⁴ This makes the latter vulnerable to sovereign weakness (and potentially *vice versa* if governments bail out weak banking systems).

Once in crisis, annual output losses seem to increase the longer that countries stay in arrears or take to restructure their debts. There is also evidence that output losses are smaller for countries that restructure their debt than for those that do not. This emphasises the importance of recent market-based policy initiatives aimed at improving the speed and efficiency of debtor-creditor restructuring.²⁵ It also highlights the need for better data transparency. In a recent survey, the Institute of International Finance (2005) emphasised the still marked cross country differences in data transparency and investor relations.

The IMF could have a role to play in improving information in the midst of a crisis, as well as in advance of one, through publishing independent country debt sustainability analysis. But whether or not the IMF should lend following a default depends on whether this would reduce the costs of default without weakening the incentives of the debtor to repay and/or restructure its outstanding debt. Given that default costs look high, especially when a banking crisis also occurs, IMF lending

²⁴ See IMF (2006a), Chapter III.

²⁵ See Bedford *et al* (2005).

could be used to support the domestic authorities' provision of liquidity to the domestic banking system, although this would need to be done promptly and for a limited time.²⁶

The IMF could also play a role in encouraging restructuring, for example by making its provision of liquidity support conditional on the debtor reaching a restructuring agreement with its creditors within a given time period.²⁷ This highlights the importance of a rigorous application of the IMF's exceptional access framework, which guides its lending decisions to countries experiencing capital account crises.

²⁶ Hoggarth *et al* (2004) provide evidence that open-ended (central bank) liquidity support to the banking system during past banking crises has been associated with bigger rather than smaller output losses.

²⁷ See Tanaka (2005).

Box A Argentina's triple financial crisis

The recent crisis in Argentina is a good example of how interactions between sectors of the economy can greatly increase the costs of debt crises.²⁸ Argentina eventually defaulted on its sovereign debt in January 2002 (following two debt exchanges in June and November 2001). Before this – as the economy moved into recession – the government's fiscal deficit and debt position deteriorated markedly. This dramatically increased the interest rate spread – over US treasuries – on external sovereign debt, from less than 10 percentage points at end-2000 to almost 50 percentage points by end-2001. The government consequently increased its reliance on financing its deficit from domestic banks. Government debt rose as a share of the banking system's total assets from 15 ½% at end-2000 to 21 ½% at end-2001, exposing especially some of the largest banks.²⁹ This increased significantly the banking system's credit risk.³⁰ In addition, the voluntary debt exchanges in June and November 2001, which lengthened the maturity of domestic financial institutions' claims on the government, increased the maturity mismatches on banks' balance sheets. The consequential weakening of the banking system resulted in episodic deposit withdrawals throughout 2001, culminating in a massive outflow in late November (bank deposits fell by 20% in the year to end-November). A series of restrictions ('corralito') on bank withdrawals were introduced in December.³¹

In early January 2002, the (new) government confirmed that it was defaulting on \$81.8bn of its external debt and simultaneously announced it was abandoning the currency board exchange rate regime. The peso quickly fell from its convertibility rate of 1 peso per US\$ to a low of 3.9 peso per \$ at end March 2002. Given that most liabilities in the economy were denominated in US dollars, this resulted in a large increase in debts when measured in local currency terms. In February 2002, in order to protect corporate and household dollar borrowers from valuation losses, the government announced that banks' foreign currency assets held with the domestic private sector were to be converted into pesos not at the (much depreciated) market exchange rate but at the currency board rate of 1 peso per US dollar. In contrast, banks' foreign currency liabilities were converted at

²⁸ For lessons learnt from the crisis see IMF (2004) and Daseking *et al* (2004) and for a blow by blow account of the crisis see Blustein (2005).

²⁹ In fact, the share of banks' assets with the government had edged up throughout the second half of the 1990s, from around 10% at end-1994. These figures also understate the banks' overall exposure to the government. For example, at the end of 2000 the banks invested a further \$25.2bn (18% of GDP) in other financial instruments that had government debt as the underlying asset.

³⁰ In addition, all bank credit to the government and around 80% of credit to the private sector was in foreign currency. Given that the income streams of the government and the non-bank private sector were mainly in pesos, this foreign exchange risk for bank borrowers translated into a credit risk for the banking system.

³¹ In the Asian crisis, in contrast, bank runs had been contained through the government introducing a blanket guarantee to depositors. However, in Argentina the government's policy options were constrained because of the weakness of its own balance sheet.

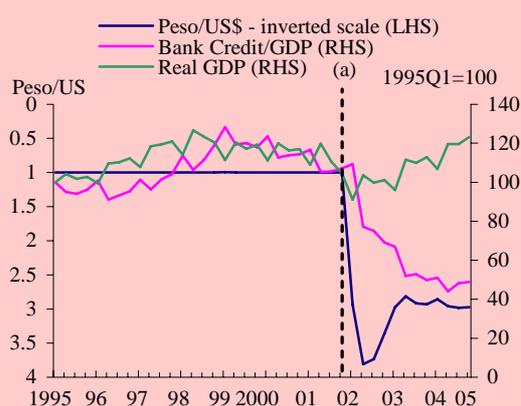
1.4 pesos to the US dollar. This ‘asymmetric pesoization’ passed the losses, which at 28bn pesos were greater than the entire capital of the banking system, onto banks and their depositors. However, some depositors were able through court action (‘amparos’) to release their deposits at the current market exchange rate rather than at 1.4 pesos to the dollar. This increased banks’ losses by an estimated further 8.8bn pesos.³²

These measures severely impaired the banking system’s role of providing liquidity and credit to the economy. Bank credit to the private sector as a proportion of annual nominal GDP halved between end-2001 and end-2003 from 20.8% to 10.8%.³³ This reduced economic activity further and consequently increased the government’s fiscal burden relative to GDP. And banks’ NPLs rose sharply as the recession deepened.

The government’s main strategy to deal with insolvent banks was regulatory forbearance – on capital requirements and bad loan classification.³⁴ This allowed the banking system to recover gradually. Nonetheless, the government partially compensated banks for their losses by issuing government bonds to them. This – together with private sector creditors choosing to pay off their foreign currency loans at the much more favourable pre-crisis exchange rate - resulted in the share of government assets in banks’ balance sheets rising to almost 50% by end-2003.

This interaction of the sovereign default with a loss of banking intermediation contributed to the marked fall in GDP – by almost one-quarter between 2001 Q2 and 2002 Q1.

Chart A Argentina: bank credit, exchange rate and GDP, 1995-2005



Source: IMF

(a) Sovereign default announced.

³² IMF (2005).

³³ In the run up to the crisis, during 2001 credit fell from 23.9% to 20.8% of GDP.

³⁴ In the immediate aftermath of the crisis the Central Bank of Argentina also played an important role in providing lender of last resort assistance to the financial system.

References

- Alfaro, L and Kanczuk, F (2005)**, 'Sovereign debt as a contingent claim: a quantitative approach', *Journal of International Economics*, 65, No.2.
- Arteta, C and Hale, G (2005)**, 'Are private borrowers hurt by sovereign debt restructuring?' Yale University Working Paper.
- Aziz, J, Caramazza, F, and Salgado, R (2000)**, 'Currency crises: in search for common elements', *IMF Working Paper No. 00/67*.
- Bedford, P, Penalver, A and Salmon, C (2005)**, 'Resolving sovereign debt crises: the market-based approach and the role of the IMF', Bank of England, *Financial Stability Review*, June.
- Beim, D and Calomiris, C (2001)**, *Emerging financial markets*, McGraw-Hill, New York.
- Bordo, M, Eichengreen, B, Klingebiel, D and Martinez-Peria, M S (2001)**, 'Is the crisis problem growing more severe?', *Economic Policy*, 32, pages 51-82.
- Bulow, J and Rogoff, K (1989)**, 'Sovereign debt: is to forgive to forget?', *American Economic Review*, 79, pages 43-50.
- Barro, R and Sala-i-Martin, X (1995)**, *Economic growth*, McGraw-Hill, New York.
- Blustein P, (2005)**, 'And the money kept rolling in (and out)', *Public Affairs*.
- Caprio, G and Klingebiel, D (2003)**, 'Episodes of systemic and borderline banking crises', World Bank *mimeo*.
- Cerra, V and Saxena, S C (2005)**, 'Growth dynamics: the myth of economic recovery', *IMF Working Paper No.147*, July.
- Céspedes, L, Chang, R and Velasco, A (2004)**, 'Balance sheets and exchange rate policy', *American Economic Review*, September, Vol 94, No.4.
- Chambers, J and Alexeeva, D (2002)**, 'Rating performance, 2002, default, transition, recovery and spreads', Standard and Poor's.
- Cohen, D (1992)**, 'The debt crisis, a post mortem', *NBER Macroeconomic Annual*.
- Daseking, C, Ghosh A, Lane, T and Thomas, A (2004)**, 'Lessons from the crisis in Argentina', *IMF Occasional Paper, No.236*.
- De Paoli, B S and Saporta, V (2006)**, 'Output costs of sovereign defaults: some empirical estimates', *Bank of England Working Paper, forthcoming*.
- Detragiache, E and Spilimbergo, A (2001)**, 'Crises and liquidity: evidence and interpretation', *IMF Working Paper No. WP/01/2*.
- Dooley, M (2000)**, 'Can output losses following international financial crises be avoided?', *NBER Working Paper No.7531*.

- Dooley, M and Verma S (2001)**, ‘Rescue packages and output losses following crises’, *NBER Working Paper No. 8315*, June.
- Eaton, J and Gersovitz, M (1981)**, ‘Debt with potential repudiation: theory and estimation’, *Review of Economic Studies*, 48, pages 289-309.
- Ferrucci, G and Penalver, A (2003)**, ‘Assessing sovereign debt under uncertainty’, Bank of England *Financial Stability Review*, December.
- Frankel, J A (2005)**, ‘Contractionary currency crashes in developing countries’, NBER.
- Frankel, J A and Rose, A K (1996)**, ‘Currency crashes in emerging markets: empirical indicators’, *NBER Working Paper No. 5437*.
- Gelos, R G, Sahay, R and Sandleris, G (2004)**, ‘Sovereign borrowing by developing countries: what determines market access?’ *IMF Working Paper No 221*, November.
- Hoelscher, D and Quintyn, M (2003)**, ‘Managing systemic banking crises’, *IMF Occasional Paper, No.224*.
- Hoggarth, G, Reidhill, J and Sinclair, P (2004)**, ‘On the resolution of banking crises: theory and practice’, *Bank of England, Working Paper, No.229*.
- Hoggarth, G, Reis, R and Saporta, V (2002)**, ‘Costs of banking system instability: some empirical estimates’, *Journal of Banking and Finance*, 26, pages 825-855.
- Institute of International Finance (2005)**, ‘Investor relations: an approach to effective communication and enhanced transparency: assessment of key borrower countries’, November.
- IMF (2003)**, ‘Crisis resolution in the context of sovereign debt restructuring: a summary of considerations’, *Policy Development and Review Department*.
- IMF (2004)**, ‘The IMF and Argentina, 1991-2001’, *Independent Evaluation Office*.
- IMF (2005)**, Argentina Article IV and selected issues, Chapter VII.
- IMF (2006a)**, *Global Financial Stability Report*, Chapter III ‘Structural changes in emerging sovereign debt and implications for financial stability’, April.
- IMF (2006b)**, ‘Cross-country experience with restructuring of sovereign debt and restoring debt sustainability’, *Policy Development and Review Department*.
- Jeanne, O and Guscina, A (2006)**, ‘Government debt in emerging-market countries: A new data set’, *IMF Working Paper, No.06/98*.
- Jorgensen, E and Sachs, J (1989)**, ‘Default and renegotiation of Latin American foreign bonds in the interwar period’, in Eichengreen, B and Lindert, P (eds), *The international debt crisis in historical perspective*, MIT Press.
- Kaminsky, G and Reinhart, C M (1999)**, ‘The twin crises: the cause of banking and balance of payment problems’, *American Economic Review*, 89, pages 473-500.

Lindert, P H and Morton, P J (1989), 'How sovereign debt has worked', in Sachs, J (ed), *Developing Country Debt and the World Economy*, NBER.

Manasse, P and Roubini, N (2005), 'Rules of thumb' for sovereign debt crises', *IMF Working Paper No. WP/05/4*.

Medeiros, C, Gapen, M and Zanforlin, L (2005), 'Assessing the determinants and prospects for the pace of market access by countries emerging from crisis – further considerations', IMF, International Capital Markets Department.

Ozler, S (1993), 'Have commercial banks ignored history?', *American Economic Review*, 83, pages 608-20.

Reinhart, C, Rogoff, K and Savastano M (2003), 'Debt intolerance', *NBER Working Paper No. 9908*.

Rose, A K (2002), 'One reason countries pay their debts: renegotiation and international trade', *NBER Working Paper No.8853*.

Roubini, N and Setser, B (2004), '*Bailouts or bail-ins?*', Institute for International Economics.

Sturzenegger, F and Zettelmeyer, J (2006), 'Debt defaults and lessons from a decade of crises', forthcoming, MIT press.

Sy, A (2004), 'Rating the rating agencies: anticipating currency crises or debt crises?', *Journal of Banking and Finance*, Vol 28, Issue 11, pages 2845-2867.

Tanaka, M (2005), 'Bank loans versus bond finance: implications for sovereign debtors', *Bank of England Working Paper, No.267*.

Tomz, M (1998), 'Do creditors ignore history? Reputation in international capital markets', paper presented at the Latin American Studies Association.