

International Financial Crises and the Multilateral Response: What the Historical Record Shows

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I. INTRODUCTION

In the three decades ending around 1980, serious crises that implicated financial systems and sovereign creditworthiness were few.² Since then, however, crises have proliferated, along with international rescue efforts.³ The Latin American debt crisis of the 1980s, centering on syndicated bank loans, engulfed a large number of Latin-American countries, most prominently Mexico, Argentina, Brazil, but extended to Asia, Africa, and Eastern Europe.⁴ The Tequila crisis of 1994-95 affecting Mexico and Argentina was the first since the 1930s to center on international bond markets.⁵ The Asian crisis in 1997-98, felt most acutely in Thailand, Indonesia, South Korea and Philippines but with wider repercussions, brought to the fore other international financial contracts, including currency forwards and futures and interbank credits.⁶ The crisis in Russia and the succeeding events spanning the period 1998-2002 threatened financial stability in Brazil, Argentina, Uruguay, and Turkey. Finally, the most recent set of crises—in Ukraine, Hungary, Iceland, Latvia, Romania, Greece, Ireland and Portugal—highlight more prominently than before the connections between financial sector and sovereign-credit risks.

Just as the incidence and nature of crises has changed, so has the nature of multilateral rescue efforts.⁷ The IMF has been at the center of the multilateral response, although the role of other official bilateral and multilateral lenders has similarly increased over time. The number of IMF-supported programs (“IMF programs” or “programs”) has been predictably bunched in crisis episodes: up in the early 1980s, up again in the mid - 1990s, up more modestly around 2000, and up again starting in 2008 (see Figure 1). IMF credit extended in billions of U.S. dollars shows a similar pattern superimposed on a rising trend (Figure 2). As we document below, cofinancing from other official sources has particularly amplified program financing commitment, although the funding is projected to be drawn down only over time. IMF commitments since 2009 also include those granted

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² For tabulations see Eichengreen and Bordo (2003) and Reinhart and Rogoff (2008).

³ The crises and rescues have been clustered in time and, more often than not, displayed a prominent regional focus, as we describe below.

⁴ See Kahler (1986).

⁵ An introduction to which can be found in Cline (1995).

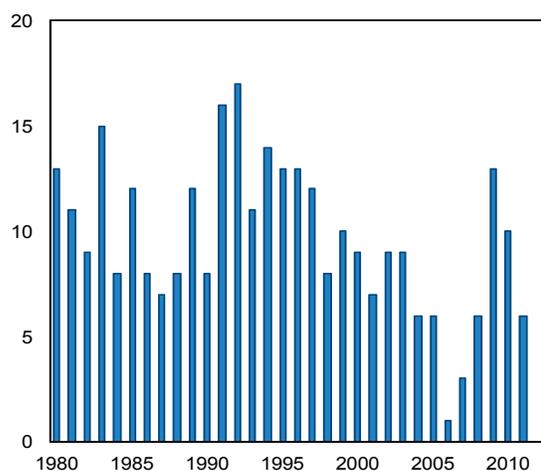
⁶ The literature on the Asian financial crisis is immense. An early overview that shaped much of the subsequent literature is Goldstein (1998). An accessible introduction to subsequent controversies is Blustein (2003).

⁷ A compendium of IMF staff’s research on these trends is Mody and Rebucci (2006).

under the Flexible Credit Line arrangements to Mexico, Poland, and Colombia, which are also substantial, although they are much less likely to be drawn, and a Precautionary Credit Line arrangement for Macedonia, which was partly drawn in March 2011.⁸

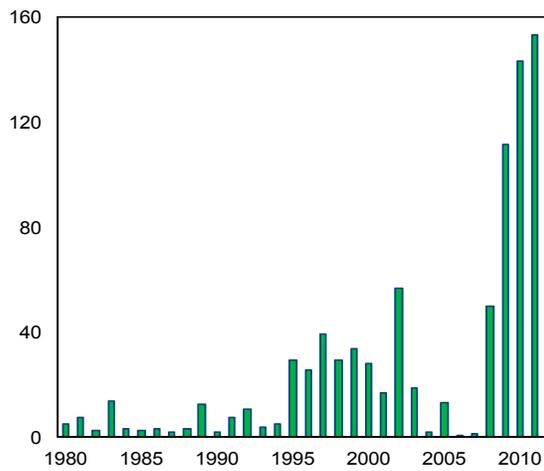
An extensive literature addresses these phenomena. One strand is organized around the question of why crises have grown more frequent and dangerous.⁹ Another asks whether the IMF programs adopted in response have helped with the restoration of macroeconomic stability or only aggravated output losses by requiring additional austerity of the borrower but without restoring investor and consumer confidence. It asks whether the international policy response, even when it provides immediate relief, contributes to the growing incidence of crises by creating moral hazard.¹⁰ Encompassing these concerns is a broader debate on the right balance between official financing, adjustment (or austerity), and private sector burden sharing (see Rogoff 2010).

Figure 1: Number of approved IMF programs, 1980-2011 (May), emerging and advanced economies



Source: IMF.

Figure 2: IMF credit committed annually, 1980 – 2011(May), emerging and advanced economies, in billions of U.S. dollars



Source: IMF.

The contentious nature of this literature reflects the difficulties these issues pose for measurement and analysis. Measurement of a country's adjustment effort requires considerable judgment on the country's initial conditions. There are at least two facets of adjustment—correcting the immediate macroeconomic imbalances and more medium-term structural considerations for raising potential growth rates and reducing financial sector vulnerability. Moreover, a full assessment of the eventual adjustment undertaken requires tracking a program over time to assess how much of the initially-proposed adjustment was actually undertaken. For analysis of the effects of IMF programs, there is the problem—most

⁸ A description of these new facilities is Goretti and Joshi (2010).

⁹ See inter alia Bordo, Eichengreen, Klingebiel and Martinez Peria (2001).

¹⁰ Some would argue that these moral hazard concerns are overdone, observing that equity investors among others suffer massive losses in crises (e.g. Mussa 2002). Rogoff (2010, pp. 16-17), however, views the moral hazard issue a serious one, with current crises laying "the seeds of future ones."

clearly evident in econometric treatments—that both crises and programs have been changing over time. The structural relationship that the econometrician is attempting to estimate is not stable, in other words. One can think of crises and rescues as locked in a process of coevolution—as two interdependent species each adapting to changes in the other.¹¹ A related problem is that many analyses attempting to determine how IMF programs affect the frequency, incidence and magnitude of crises fail to acknowledge that programs are not randomly assigned. And analyses that adopt clever econometric fixes—using the frequency with which a country votes with the United States in the UN General Assembly as an instrument for the likelihood of shareholder support for a program, for example—are less than convincing.¹²

Some would argue that crises and the multilateral response are, in fact, not just coevolutionary but *codependent*: that they have developed a reactive pattern of coexistence and problem solving over time.¹³ As countries have become more integrated into global financial markets, financial crises have become more intense, and official financing has grown larger; and as programs have grown larger, the next set of crises has proved to be more virulent. Some have argued that the availability of official finance from a combination of multilateral and national sources has rendered international investors more sanguine with the respect to the risks they assume. In turn this has permitted countries to postpone necessary adjustments, rendering the latter more costly and difficult when they can no longer be resisted. While more effective design of crisis management measures may be possible, the real payoff will come from heading off problems, first, through more incisive and candid surveillance and, second, creating the right incentives and a stable and predictable framework for crisis resolution.¹⁴

This last issue will be familiar to followers of the crisis literature. Contributors have now been making the case for alternatives to emergency financial assistance for more than 15 years.¹⁵ Proposals for doing so range from abolishing the IMF in the extreme, to placing new restrictions on its lending, creating a statutory mechanism for sovereign debt structuring, and introducing restructuring-friendly collective action and representation clauses into bond contracts.¹⁶ Still others would say that such institutional changes are unnecessary. It is already possible, they argue, to restructure problem debts under current arrangements. In this view, policy makers only need to better appreciate the case for this market-based alternative.¹⁷

¹¹ One is reminded of how biologists have turned to game theory to model the evolution of competing species.

¹² We ourselves (Eichengreen and Mody) have committed this sin on at least one occasion: see Eichengreen, Gupta and Mody (2006).

¹³ The phrase after the colon is the Merriam Webster definition of codependence.

¹⁴ For a critique of IMF surveillance in the run up the most recent crisis, see the report of the Fund's Internal Evaluation Office (IEO 2011).

¹⁵ An early statement, in a report to the G-10, was Eichengreen and Portes (1995). The definitive summary of the first generation of literature on this question was Roubini and Setser (2004).

¹⁶ For examples see Hanke (2000), Meltzer Commission (2000), Krueger (2001) and Eichengreen (2003).

¹⁷ This is essentially the conclusion of the Roubini and Setser volume cited above.

The challenge is readily understood in terms of time consistency. Once a crisis is ongoing, the concern among decision makers is that private-sector burden sharing, while appropriate in principle, carries the risk of further destabilizing an already volatile situation. Such time inconsistency is understandable, but if not viewed as the core problem, and addressed accordingly, could lead to an unmanageable evolution of larger crises requiring larger official financing.

In this paper we attempt once more to characterize the state of play, providing a broader historical and institutional context for the other papers at this conference focusing on the most recent crisis. In addition to indicators of economic performance in the crisis countries, we present a comprehensive description of the major multilateral rescue efforts spanning the last 30 years.¹⁸ Methodologically we rely on analytic narrative rather than econometrics.¹⁹ Not only do the connections between financial circumstances and policy responses run both ways, but those connections are complex and evolve over time, as emphasized above. The Lucas Critique applies with a vengeance, in other words. And even true believers in econometric modeling will acknowledge that the first step toward a proper structural analysis is careful data construction and description.²⁰ Since the data and experience we consider cover an extended period, we are able to use historical events as predetermined variables that drive the dynamics of the system over time—that provide the identifying variation, if you will.

We start in Section 2 by reporting the picture of crisis incidence and multilateral response. We identify crisis dates on the basis of the behavior of foreign exchange rates and sovereign spreads. We provide some preliminary comparisons across episodes of causes, consequences and correlates as a way of introducing non-specialist readers to the lay of the land and reminding specialists of the terrain.

In Section 3 we consider Europe's crisis in more detail. Being the most recent of our five episodes, it is the least familiar and least fully digested. We are particularly interested in how this crisis differs from those which preceded it. We therefore contrast the evolution of the variables of interest with their average behavior in earlier crises.

Section 4 considers the official response, focusing on the size of official rescue packages. We marshal data on cofinancing to analyze changes in the shares of multilateral and bilateral contributions over time and to more accurately gauge the magnitude of total assistance. This paints a picture of official financial assistance packages as growing progressively larger over time. Section 5 complements this picture by showing that while emergency lending has grown, debt restructuring has grown less frequent since the commercial debt crisis (see also Sturznegger and Zettlemeyer 2007 for a similar thesis).

¹⁸ Thus, we do not consider programs to low-income countries and to countries that were not viewed as of broader relevance during the key crisis episodes.

¹⁹ On analytic narrative as a research methodology see Bates et al. (1998) and Rodrik (2007).

²⁰ This paper may, in this sense, be thought of as the first stage in a larger research agenda.

We ask in Section 6 what can be done to rebalance the management of debt problems toward a better mix of emergency lending and private sector burden sharing. Building on the earlier literature on collective action clauses, we develop the idea of “sovereign cocos,” contingent debt securities that automatically and contractually convert to reduced payment obligations in the event of debt-sustainability problems. It can be said of this proposal, as with many proposals, that devil is in the details. We would be the first to acknowledge that we don’t have all the details worked out. But we offer our thoughts here if only to provoke discussion.

II. CRISIS EPISODES

We distinguish five major clusters of crises: the Latin American debt crisis of the 1980s (what is sometimes called the commercial debt crisis in honor of the commercial banks that engaged in much of the international financial intermediation of the preceding period); the Tequila Crisis of the mid-1990s; the Asian financial crisis of 1997; the Russian crisis of 1998 and the emerging market crises that occurred in its wake; and the crisis in emerging and advanced economies in Europe that erupted in the wake of the subprime mortgage debacle. In the case of the Tequila crisis we consider not just Mexico but also Argentina. In the case of Asia we include Thailand, Indonesia, South Korea and the Philippines, all of which had IMF-supported programs. In the case of what we refer to as the Russian crisis we consider not just Russia but also other countries that experienced sharp increases in currency volatility and sovereign spreads in the months and years following Russia’s default: Argentina, Brazil, Uruguay and Turkey. In the case of the post-subprime crisis we consider not just Greece, Ireland and Portugal but also Ukraine, Iceland, Hungary, Latvia and Romania; we consider more than just the euro crisis, per se, in other words.

How did we choose the sample? We choose only those crisis episodes that ultimately were in an IMF-supported program. Presumably, no program is also a multilateral response, and arguably, there are lessons from Brazil during the Tequila crisis and Malaysia during the Asian crisis as these countries undertook their own significant adjustment to render multilateral support unnecessary. However, in general, the more severe a crisis, the greater has been the likelihood of a program. Thus, we put aside the 1992-3 EMS (European Monetary System) episode on the grounds that none of the affected countries faced the same crisis severity as the episodes we do study, and, as such, did not require IMF or other official financing and none were forced to restructure their debts.²¹ Within each of the crises clusters we identify, we choose the most prominent crisis programs, with the largest access in percent of GDP, and which satisfy the criteria of having a currency and/or sovereign crisis.

²¹ In fact this sixth cluster shares some features in common with our five episodes, but not others. Using our measure of exchange market pressure, Italy, the UK, Sweden, Finland and Norway had currency crises, but in no case do sovereign spreads rise to the threshold we use to distinguish sovereign debt crises. In addition, drops in output and rises in government deficit and debt ratios were smaller than in our other five clusters. There were capital inflows in the run-up to the crisis (this being one of the telltale signs of impending crisis that we distinguish below), but looking at the financial account exclusive of reserves we do not see inflows on the same scale observed in the other episodes.

And what is the basis for the taxonomy that clusters the crises/programs? Any taxonomy of crisis episodes is controversial. Two obvious controversies that will be raised by ours is our practice of lumping together the Russian crisis with subsequent crises in Latin America and Turkey. While this is defensible on chronological grounds, it may be not as defensible analytically, as the Russian crisis is often seen as *sui generis*.²² Many of the distinctions we highlight in the next section carry over, however, when we drop this one observation from our fourth cluster.

We determine the timing of the crises using data on currency market turbulence and sovereign spreads as follows. In the manner of Eichengreen, Rose and Wyplosz (1995), currency market turbulence is measured by a weighted average of the rate of change of the exchange rate change and the rate of change of reserves, where the two components are weighted by their respective standard deviations.²³ Values of the index at least three standard deviations above the mean are identified as crises. In addition, in the manner of Celasun, Debrun and Ostry (2006) we pinpoint crises on the basis of sovereign spreads; here spreads that are two standard deviations or more above the mean are identified as crises.

Table 1 shows the resulting crisis dates, the timing of the first IMF intervention, the number of IMF-supported programs associated with the episode, and the cumulative IMF financial commitment.

²² See Gilman (2010). We return to this point below.

²³ We also considered the rate of change of the reserve/GDP ratio in lieu of the rate of change of reserves; nothing of substance changes with this substitution.

Table 1: Timing and peak of crisis, and IMF-supported programs						
	Timing of crisis		Peak of crisis		IMF program	
	Currency crisis	Sovereign crisis	Currency pressure	Sovereign spread	Date (augmentation)	IMF commitment (percent of GDP)
Commercial debt crisis						
Mexico	Feb. 82	Aug.82	Dec. 82		Jan.83 – Dec.85 Nov.86 – Apr.88 May.89 – May.93(Jan.90/May.92)	5.2
Argentina	Dec.83 Apr.89	Sep.82	Dec.83 Apr.89		Jan.83 – Jan.84 Dec.84 – Jun. 86 Jul.87 – Sep.88 Nov.89 – Mar.91 Jul.91– Mar.92	5.4
Brazil	Jan.90	Aug.82	Feb.90		Mar.83 – Feb.86 Aug.88 – Feb.90 Jan.92 – Aug.93	3.7
Tequila crisis						
Mexico	Dec.94	Feb-95	Dec. 94	Mar.95	Feb.95 – Feb.97	5.5
Argentina		Feb-95	Mar.95	Feb.95	Mar.92 – Mar.96(Dec. 92/Apr.95) Apr.96 – Jan.98	2.5
Asian crisis						
Thailand	Jul.97	Jan-98	Jan. 98	Sep.98	Aug.97 – Jun.00	2.6
Indonesia	Dec.97		Jan. 98		Nov.97 – Aug.98 (Jul.98) Aug.98 – Feb.00 (Mar.99)	4.8
Korea	Nov.97	Jan.98	Dec. 97	Sep.98	Dec.97 – Dec.00	4.0
Philippines	Dec.97	Sep.98	Dec. 97	Sep.98	Jun.94 – Mar.98 (Jul.97) Apr.98 – Dec.00	3.8
Russian crisis and aftermath						
Russia	Aug.98	Sep.98	Sep.98	Mar.99	Mar.96 – Mar.99 (Jul-98) Jul.99 – Dec.00	7.2
Brazil	Jan.99	Jul.02	Jan.99	Oct.02	Dec.98 – Sep.01 Sep.01 – Sep.02 Sep.02 – Mar.05 (Dec.03)	11.6
Argentina		Jul.02	May.02	Jul.02	Feb.98-Mar.00 Mar.00 – Jan.03 (Jan./Sep.01) Jan.03 – Aug.03 Sep.03 – Jan.06	20.9
Uruguay	Jul.02	Aug.02	Jul.02	Oct.02	Apr.02 – Mar.05(Jun./Aug.02) Jun.05 – Dec.06	25.7
Turkey	Feb.01	Apr.01	Feb.01	Jul.01	Dec.99 – Feb.02(Dec.00./May.01) Feb.02 – Feb.05 May.05 – May.08	17.4
European crisis						
Ukraine		Dec.08	Oct.08	Mar.09	Nov.08 – Jul.10 Jul.10 – Dec.12	20.8
Hungary	Oct.08	Oct.08	Jan.09	Apr.09	Nov.08 – Oct.10	10.6
Iceland	Sep.08	Oct.08	Sep.08	Dec.08	Nov.08 – Aug.11	13.1
Latvia	Oct.08	Mar.09	Oct.08	Mar.09	Dec.08 – Dec.11	7.1
Romania		Nov.08	Jan.09	Feb.09	May.09 – Mar.11 Mar.11 – Mar.13	13.6
Greece	Oct.08	Apr.10	Oct.08	May.11	May.10 – May.13	13.2
Ireland	Oct. 08	Aug.10	Jan.09	May. 11	Dec.10 – Dec.13	14.5
Portugal	Oct. 08	Jun.10	Oct.08	May.11	May.11 – May.14	15.9

Several differences across episodes are notable. The debt crisis of the 1980s displays an especially large increase in the exchange market pressure index, reflecting high rates of inflation in the crisis countries. Sovereign spreads, on the other hand, which are only partially documented during that period, appear to have risen more modestly in that episode, since most of the debt in question took the form of borrowing from commercial bank syndicates.²⁴ Though weak economic conditions persisted for a number of years (again elaborated below), program financing was small compared to the other episodes.

Sovereign spreads then came to the fore in the Tequila crisis, when Mexican spreads rose by as much as 1,500 basis points. For Mexico, the crisis was resolved with a single program; program size was substantially larger than in the 1980s debt crisis. In contrast, private sector imbalances were the primary source of the Asian crisis, with sovereign spreads rising only with delay as worries developed that governments would socialize the losses of banks and large corporations. While there was considerable variance across the countries in the degree of market distress, the rise in the currency pressure and sovereign spreads was on average of the same order of magnitude as in the Tequila crisis. Once more, a single program was approved with each Korea and Thailand, with some more protracted involvement in Indonesia and the Philippines. There was a relatively quick recovery in each program country.

Exchange market pressure also rose sharply in the Russian crisis, albeit to a lesser extent than in the commercial debt crisis. In this episode, some afflicted countries obtained multiple IMF-supported programs, raising the cumulative average program financing size considerably above the magnitude in the Asian crisis.

In the most recent crisis, finally, exchange market pressure has been no greater than in preceding crises on average. (In the case of the two euro zone economies Greece and Ireland, of course, this index has at best limited significance, since they are only small parts of the euro area economically and their difficulties have only limited impact on the euro exchange rate.) Spreads on sovereign bonds—although lower than the more extreme levels reached in previous crises—are high by the standards of the countries themselves. The spreads reflect reduced access to international capital markets, a reduction notable because of the particularly easy access prior to the crisis. It is this turnaround in access that has resulted in larger programs than before. Some successor programs are already being implemented, increasing the size and the duration of IMF support..

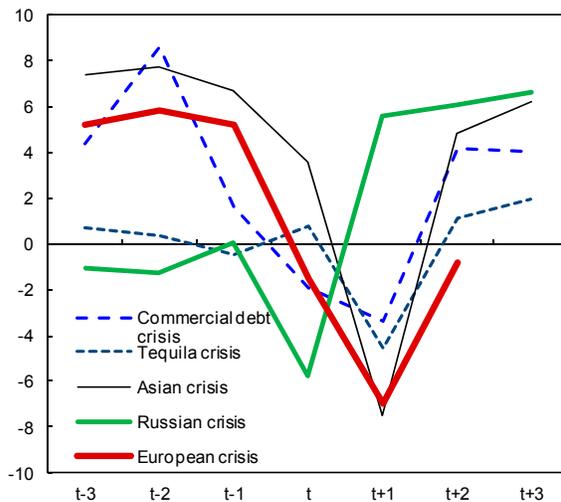
To understand why, we must delve further into the five episodes.²⁵ Economic preconditions clearly differed across them. In three episodes (the commercial debt, Asian, and current crises), GDP growth was unsustainably high before the crisis. But growth had

²⁴ See Edwards (1986) and Folkerts-Landau (1985). The commercial debt was only extensively securitized starting in 1989.

²⁵ There have been some similar comparisons before (see e.g. Reinhart, Goldstein and Kaminsky 2000, Sheng 2009 and Claessens et al. 2011 for illustrations of alternative approaches). Our analysis differs in its focus on as many as five separate episodes and in the countries considered.

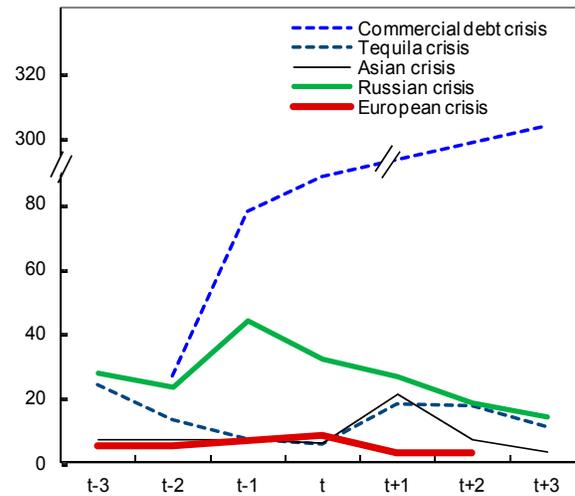
begun to visibly decelerate before the crisis in the cases of the commercial debt and the Asian crises (Figure 3).²⁶ The Tequila and Russian crises, in contrast, were preceded by slow growth, despite the exceptional measures taken in Mexico to sustain growth in 1994, a presidential election year.²⁷ More often than not, it would appear, weakening growth due to accumulated macroeconomic imbalances are precursors to crises. In the commercial debt crisis, the existence of imbalances was evident in the sharp acceleration in inflation during the run-up (Figure 4). Of our subsequent crises, in contrast, significant inflation was evident only in the run-up to the Russian crisis, and even then it seemingly rang no warning bells.

Figure 3: Real GDP growth
(annual, in percent)



Source: World Economic Outlook.

Figure 4: Consumer price inflation
(annual, in percent)



Source: International Financial Statistics.

The behavior of public debt and deficits also differs across episodes (Figure 5 and 6). Consistent with the contrasting behavior of inflation noted above, lax public finances played a major role in Latin America in the late 1970s and early 1980s and in the countries that experienced difficulties in the wake of Russia's late-1990s default. But the same was not true in Asia or Latin America in the 1990s. Some argue that Mexico in 1994 in fact had additional public spending hidden in the accounts of its development bank and that governments of the Asian crisis countries had significant implicit liabilities to banks and industrial conglomerates that were too big to fail that did not show up in the standard budgetary accounts.²⁸ But as a comparative statement – that public sector deficits were more of a problem in the run-up to the 1980s and Russian debt crises, while private sector deficits were more of a problem in the run-up to the Tequila and Asian crises – we would argue that the conclusion remains valid. Europe is an intermediate case: prior to the crisis, countries displayed small deficits, but a dramatic deterioration of budget balances followed the onset of

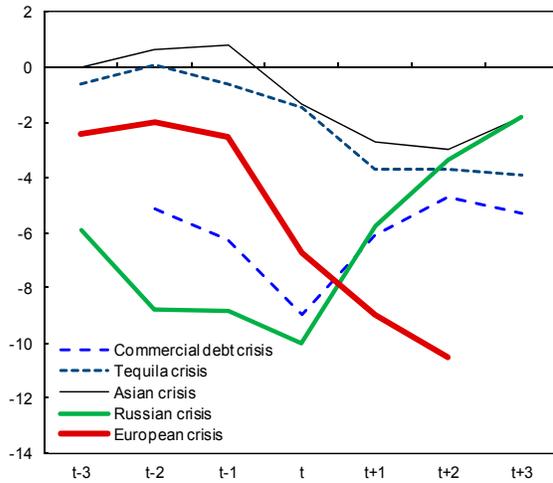
²⁶ t denotes the year of the currency or sovereign crisis, whichever occurs first.

²⁷ As emphasized in Gil-Diaz (1998).

²⁸ For discussion see GAO (1996).

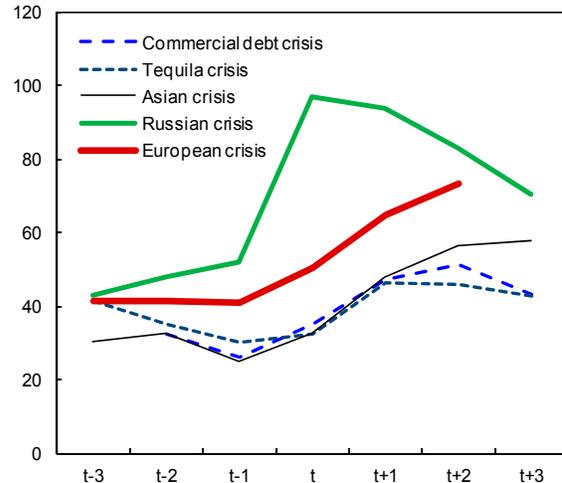
the crisis.²⁹ Thus, as in East Asia or the Tequila crisis, neither inflation nor public finances indicated a coming crisis in Europe; we will have more to say about this below.

Figure 5: General government balance
(in percent of GDP)



Source: World Economic Outlook.

Figure 6: General government gross debt
(in percent of GDP)



Source: FAD public debt database and World Economic Outlook.

External positions also varied widely across episodes. Current account deficits in the run-up to the current crisis were unusually large, but sizeable deficits were also present in all instances except the Russian crisis (Figure 7). There is an apparent tendency for current accounts to strengthen already in the period immediately preceding the crisis, actually moving into surplus in the Asian and Russian cases. This presumably reflects the declining availability of private external finance and capital flight as problems began to become evident. There is also a tendency for real exchange rates to appreciate (it is tempting to say “to become overvalued”) prior to crises and to collapse subsequently (Figure 8); the Russian and current crises stand out for the unusually early and late dates of their real rate collapses, respectively. Reserve coverage (measured in Figure 9 as a share of short-term debt) shows a tendency to decline in the run-up and to recover subsequently, with countries in the Russian crisis starting in a relatively secure position but seeing their coverage ratios then deteriorate particularly rapidly.

Leaving aside the Russian crisis, which saw a private capital outflow even before the event, the larger was the capital inflow prior to the crisis, the larger is the subsequent capital-flow reversal (Figure 10). This phenomenon is also the distinguishing characteristic of the current crisis, where private capital inflows reached unprecedented heights and then collapsed with special ferocity (see also Section 3 below).

²⁹ Greece is of course the exception to this rule, with large deficits before the fact. The average is affected by the 2010 budget deficit in Ireland, which due to banking sector outlays reached more than 32 percent of GDP. Excluding Ireland, the deterioration is still substantial, to about 7½ percent of GDP in (t+2).

In sum, crises come in different flavors. In some sense, the Asian and post-subprime crises seem to have been cut from the same cloth. Both involved mainly private- rather than public-sector imbalances. Both heavily implicated banking systems. Both involved large initial output drops. Both involved important roles for pegged exchange rates or their monetary-union equivalent. There, however, the similarities end, with the kind of fast recovery that occurred in Asia not in the cards in Europe.³⁰ The Russian crisis of the late 1990s most closely resembles the debt crisis of the 1980s: weakness in domestic public finances was mirrored in inflationary trends, and both crises required large corrections of the real exchange rate. In contrast, the Tequila crisis stands alone.

Figure 7: Current account balance
(in percent of GDP)

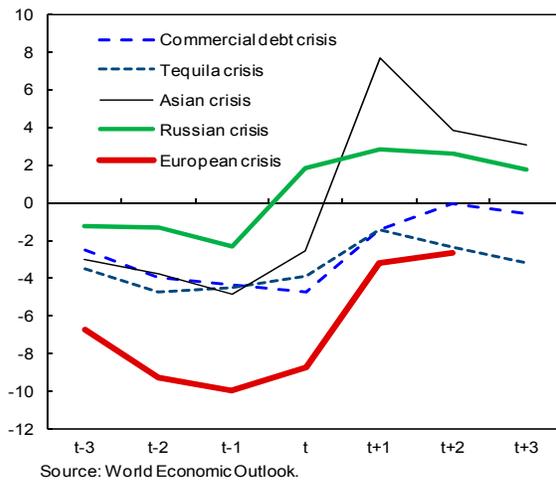


Figure 8: Real exchange rate
(annual percentage change)

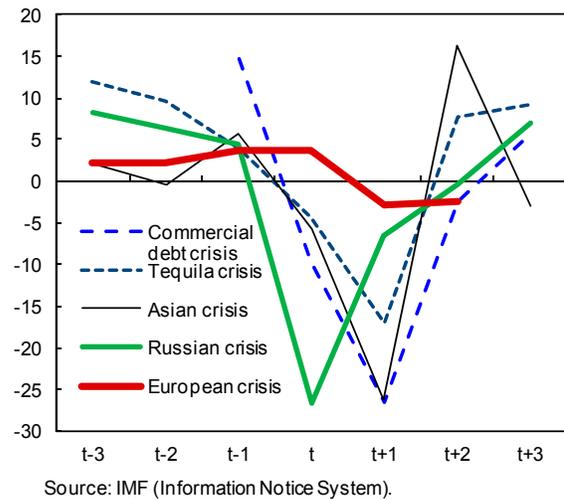


Figure 9: International reserve coverage
(in percent of short-term debt)

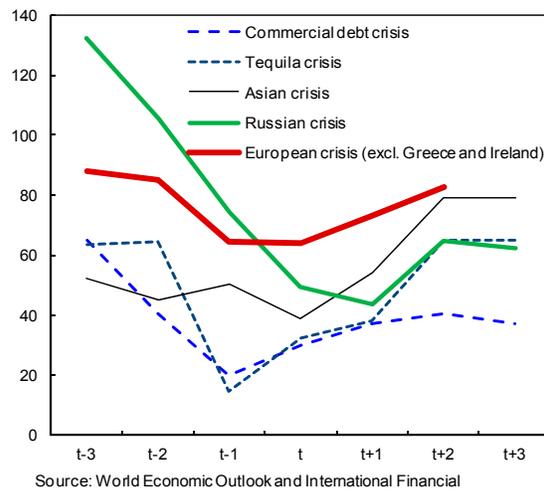
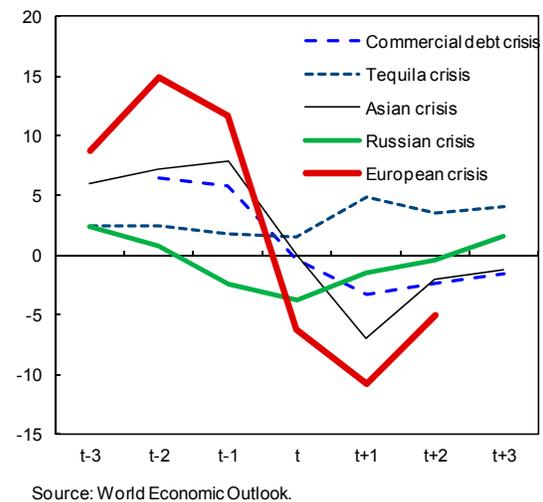


Figure 10: Private capital flows
(in percent of GDP)



³⁰ Again, we suspect that the exchange rate regime has a lot to do with this, it having been possible to unpeg pegged exchange rates in the wake of the Asian crisis but members of the euro area having no such luck.

Finally, there is the fact that some of these crises were global in scope while others were not. For example, the Asian crisis occurred during a period of high growth in much of the rest of the world, while the post-subprime crisis occurred in a period when trade and output were collapsing worldwide. Scope for recovering by, inter alia, depreciating one's currency and replacing domestic demand with external demand was, obviously, much greater in the former than the latter instance.

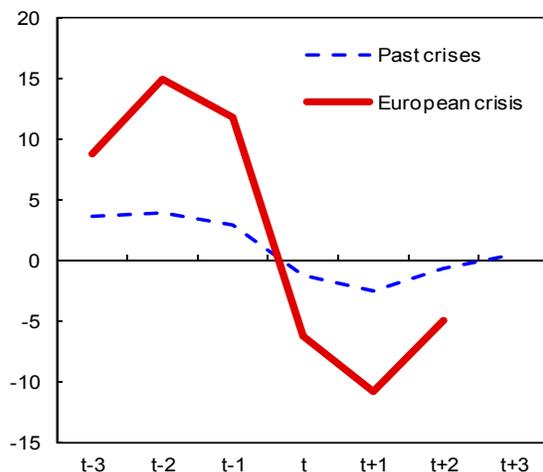
III. EUROPE: SOME FURTHER CONSIDERATIONS

We now consider Europe's crisis in more detail. This being the most recent of our five episodes, it is the least familiar and least fully digested. We are particularly interested in how this crisis differs from those which preceded it. We therefore contrast the evolution of the variables of interest with their average behavior in the four earlier crises.

These comparisons suggest that Europe's crisis differs from its predecessors in important ways. To start, there was a larger "sudden stop" (reversal of private capital flows). This reflects the dramatic increase in capital flows within the euro area following the advent of the single currency, something pointed to already by Blanchard and Giavazzi (2002) among others, but also to the extraordinarily large capital inflows into countries like Latvia, Hungary, and Romania that had not yet adopted the euro but were part of the European Union. Reflecting the laws of physics, what rises to unusual heights then comes down with an unusually loud thud: exceptionally large inflows then give way to exceptionally large outflows (Figure 11).

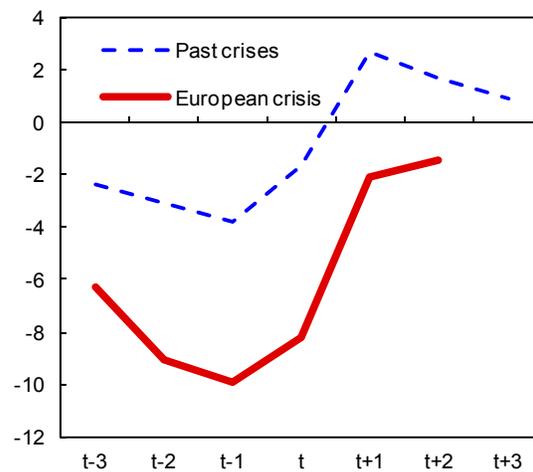
Another side of the same coin, as it were, is that larger pre-crisis current account deficits were followed by sharper post-crisis adjustments (Figure 12). With the exception of the Asian crisis, swings in the current account of this magnitude are unprecedented in our data, which helps to explain why the amount of financial assistance provided was also unprecedented.

Figure 11: Private capital flows
(in percent of GDP)



Source: World Economic Outlook.

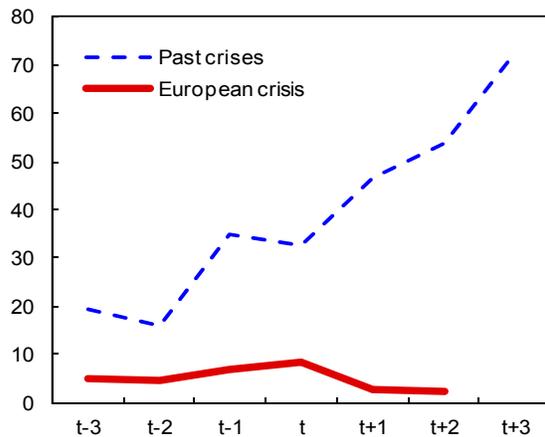
Figure 12: Current account balance
(in percent of GDP)



Source: World Economic Outlook.

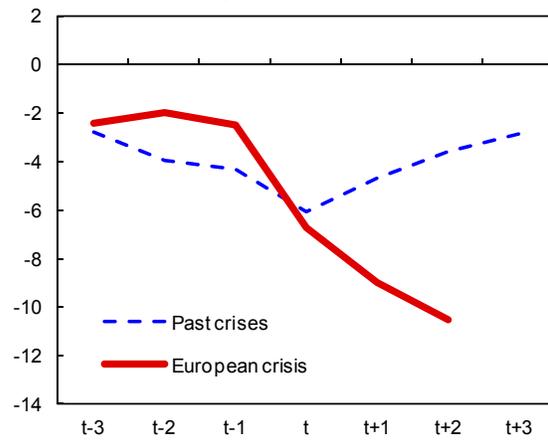
As discussed in the previous section, this evidence of external imbalances was not matched by analogous evidence of internal imbalances of the sort that had been so prominent in earlier crisis episodes. Inflation was subdued by the standards of earlier crises (Figure 13), reflecting the disciplines of the single currency in the cases of Greece and Ireland and operation of a currency board in the case of Latvia. Government budgets were similarly closer to balance than had been the case prior to earlier crises (Figure 14), the exceptional case of Greece notwithstanding. These are not unrelated observations; it was of course this appearance of fiscal and monetary stability that allowed the now crisis countries to import capital to the extent they did. This, together with the presumption that monetary integration would all but guarantee catch-up growth, led to massive amounts of borrowing and lending by the private (primarily financial) sectors in the relatively-low- and relatively-high-income members of the euro area, respectively.³¹

Figure 13: Consumer price inflation
(annual, in percent)



Source: International Financial Statistics.

Figure 14: Government balance
(in percent of GDP)



Source: World Economic Outlook.

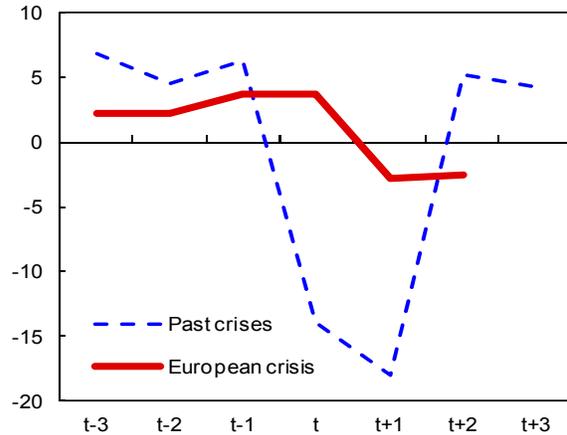
Internal imbalances in this most recent set of crises were heavily private- rather than public-sector centered, as noted. They had common roots in enormous credit booms in all the problem countries. From around 2002, household credit grew significantly faster in Ireland, Greece, Portugal, and emerging European markets than in Germany and the other countries of the euro-area “core.”³² Credit to non-financial corporations followed a similar cross-country pattern. The private sector borrowed from their banks, which in turn borrowed from banks elsewhere in Europe.³³ The result was massive capital flows from France, Germany and the other core countries to Ireland and Southern and emerging Europe.

The private capital inflows fueled real estate bubbles and consumption booms. For Latvia and Romania, EU funds following accession in 2004 contributed further to the inflows. Housing prices rose dramatically in Greece, Ireland, Iceland, and Latvia. Despite

³¹ For a critical ex post assessment of this process see Eichengreen (2010). Two earlier analyses that viewed these capital flows as relatively benign are Abiad, Mody, and Leigh (2009), Ahearne, Schmitz and von Hagen (2009), and Berger and Nitsch (2009).

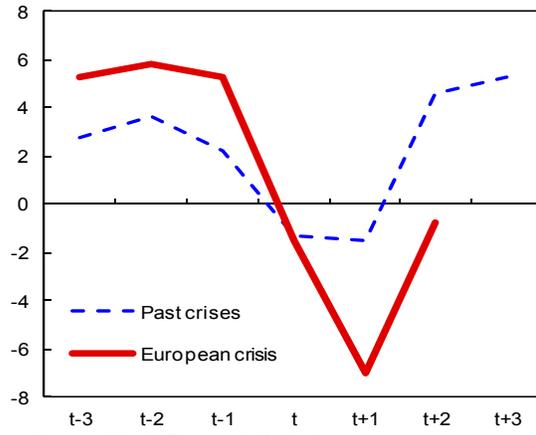
rapid wage increases, household debt-to-income ratios increased over 2002-07 more than five-times in Latvia, and by 270 percent in Hungary, 180 percent in Ireland and 130 percent in Portugal. The foreign capital inflows thus created large domestic imbalances.

Figure 15: Real effective exchange rate
(annual percentage change)



Source: IMF (Information Notice System).

Figure 16: Real GDP growth
(in percent, annual)



Source: World Economic Outlook.

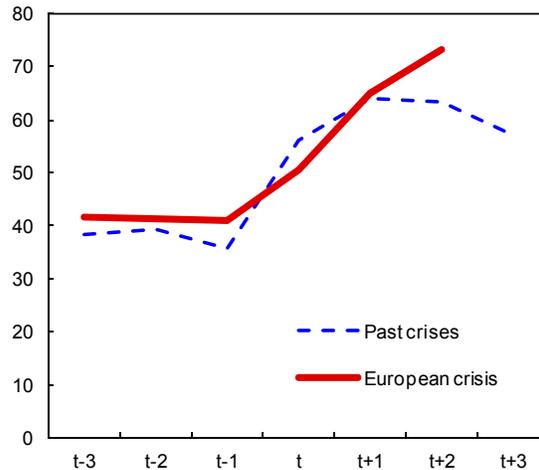
Inflation, rather than rising further with the outbreak of the crisis, then fell, reflecting the absence of an autonomous monetary policy (Iceland, Hungary and Romania notwithstanding) and consequent reliance on internal rather than external devaluation. Collapsing domestic balance sheets reinforced these deflationary tendencies. The difficulty of adjusting through internal devaluation is reflected in much more limited rates of real depreciation following the crisis (Figure 15). This greater difficulty of engineering a real depreciation meant, of course, that it was more difficult to substitute external for internal demand. In the current episode, then, less post-crisis adjustment has taken the form of prices as opposed to quantities. That is to say, the current crop of post-crisis recessions has been unusually severe by historical standards (Figure 16), and it is far from clear at the time of writing that the current crop has run its course.

³² Average annual growth rates of household credit over 2003-07 were: Ireland (23 percent), Greece (26 percent), Portugal (7 percent), compared to euro area (8 percent) and Germany (0.4 percent), based on ECB data. According to Eurostat, the annual growth rates of household credit were even higher in Hungary (27 percent) and Latvia (67 percent) during 2004-07, and Romania (88 percent) during 2005-07.

³³ In other words, banks in the problem countries funded their loans not just by taking deposits from residents but in addition by borrowing on the interbank wholesale money market.

The evolution of general government debts in the run-up to the current European crisis is in line with earlier experience (Figure 17). However, the deterioration in budgets since the crisis has been more dramatic (Figure 14 above), reflecting the depth of recessions and, to varying degrees, the need to use public funds to support the banking system.

Figure 17: General government debt (in percent of GDP)



Source: FAD public debt database, and World Economic Outlook.

IV. THE SIZE OF FINANCING PACKAGES

We now analyze trends in program financing size. Since both the central tendency and overall size distribution are of interest, we club the Tequila crisis which led to only two programs together with the Asian crisis.³⁴

The magnitude of financing can be measured per program or by the cumulative sum of the financing through repeated programs during the course of a crisis episode. In addition, cofinancing with the IMF by official bilateral and multilateral creditors became increasingly important starting with the Tequila crisis.³⁵ Hence, both IMF financing and the overall official financing package are discussed below. The size of financing packages can be normalized in different ways. The country's quota is the metric used in the IMF's assessment of access levels.³⁶ But since quotas have not always kept pace with global economic developments, we normalize program financing by the country's nominal GDP.³⁷ Yet another alternative would be to deflate the dollar value of the program by an appropriate

³⁴ While, as discussed above, there are differences between the Tequila and Asian crises, for the purpose at hand—namely, the progression of program financing size—we would argue that they are part of the same evolutionary trend.

³⁵ Official financing in this section does not include financing through debt rescheduling or restructuring.

³⁶ The actual level of IMF access is determined based on the IMF's policies on access limits and access under each facility or instrument. "Quota subscriptions generate most of the IMF's financial resources. Each member is assigned a quota, based broadly on its relative size in the world economy. A member's quota determines its maximum financial commitment to the IMF, its voting power, and has a bearing on its access to IMF financing." <http://www.imf.org/external/np/exr/facts/quotas.htm>.

³⁷ Increases in quotas take place through regular and ad-hoc reviews. The 14th General Review of Quotas, once it becomes effective, will double quotas to catch up with global economic developments and realign quota shares to fast-growing emerging market and developing countries that have become underrepresented.

dollar price index. Fortunately, the alternative normalizations all lead to the same basic conclusion.

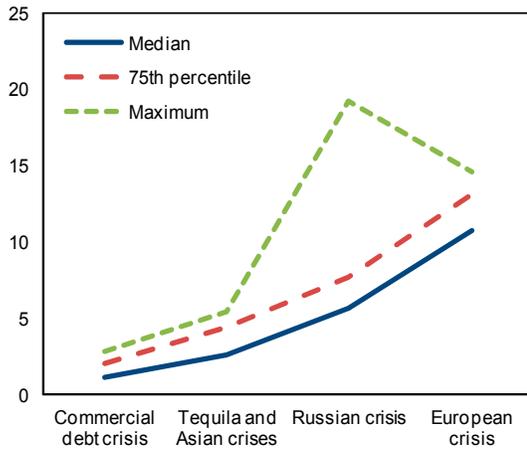
Following the commercial debt crisis, there was a discrete jump in the size of IMF program financing, first during Tequila and Asian crises, and then again to yet higher levels in more recent crises (see Figure 18). Similarly, there is a steady increase in the median program size and a similar increase in the 75th percentile of the size distribution. The program with the largest financing also rose from the 1980s, but the largest ever program, at 19 percent of GDP, was that to Uruguay in the aftermath of the Russian crisis.³⁸ While peak size then came down in the European crisis to 15 percent of GDP for Ireland, this was still far above the 3 and 6 percent of GDP levels in the commercial debt and the Tequila/Asian crises. When official cofinancing is included (as in Figure 19), per program size jumps rather more in the Tequila crisis, dips somewhat in the Russian crisis (though Uruguay boosts the largest program even in that episode), and then rises again in the European crisis.

The increasing magnitude of financing packages is clearest when cumulating multiple programs per episode (Figure 20) and considering overall financing (Figure 21). Financing packages rise sharply in size between the commercial debt and Tequila/Asian crises mainly because of extensive official cofinancing. Aggregate financing jumps for the largest program in the episode in question, from about 10 percent of GDP in the commercial debt crisis to 20 percent of GDP for the largest program in the Tequila/Asian crisis (Mexico in 1995). The further increase during the Russian crisis reflects multiple programs (as in the commercial debt crisis), while the latest step up in program size in the European crisis arises from both larger IMF financing and the substantial co-financing. Over the entire period, the largest cumulative official financing package has grown by a factor of ten. The program at the 75th percentile has grown six-fold, and the median program in the European crisis is five times as large as the median in the commercial debt crisis.³⁹

³⁸ Access to IMF financing under the arrangement for Uruguay was augmented in June and August 2002, bringing it to 19 percent of GDP. The full amount was drawn. Note that the IMF's decision-making process does not take into account a country's nominal GDP.

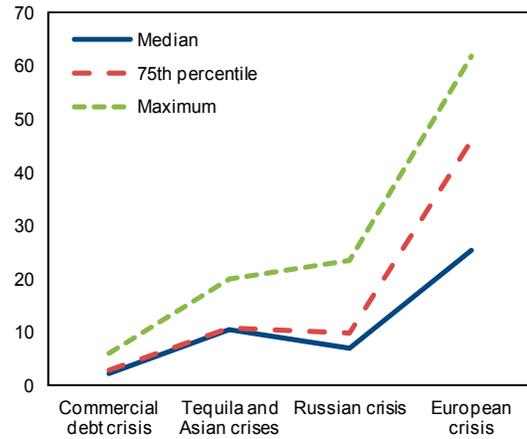
³⁹ If there are repeated programs in the European crisis, the observed increase would be even greater. Among the sample countries in the European crisis, only Ukraine and Romania have had successor programs so far. The programs for Iceland, Latvia, Greece, and Ireland are still active, while Hungary's program has expired.

Figure 18. IMF financing per program (in percent of GDP)



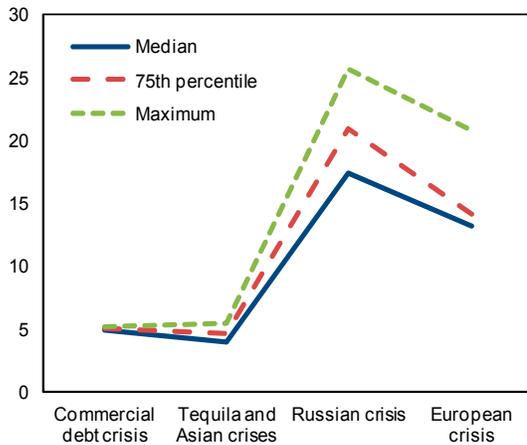
Source: IMF staff reports.

Figure 19. Official financing per program (in percent of GDP)



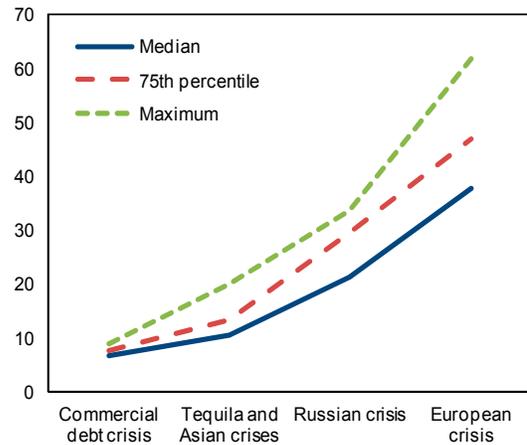
Source: IMF staff reports.

Figure 20. Cumulative IMF financing per country during crisis (in percent of GDP)



Source: IMF staff reports.

Figure 21. Cumulative official financing per country during crisis (in percent of GDP)

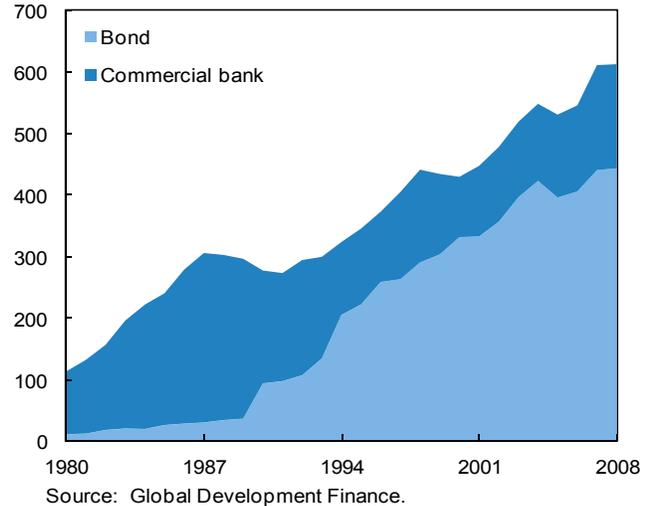


Source: IMF staff reports.

Note: Figures 18 and 19 depict averages for each crisis of IMF and total official financing per program, respectively. Figures 20 and 21 show the average cumulative IMF and total official financing, respectively, that were committed to countries during a crisis.

Not only was the Mexican program larger than its predecessors, but the shift toward larger scale official financing proved permanent (see Figure 21). In this sense the Mexican program inaugurated the new era of large financing packages. This reflected the dependence of sovereigns on bond rather than on bank financing and the anticipated difficulty of corralling bondholders to negotiate a restructuring (see Figure 22). It reflected fears of contagion – that other countries would be adversely affected if investors began to fear restructuring-related losses.

Figure 22. Sovereign external debt to private creditors, emerging market countries (in trillions of dollars)



While the concern over the complications created by dispersed bondholders and the perceived risk of contagion carried over to subsequent crises, the same recourse to official co-financing did not. In the Russian crisis and its aftermath, official cofinancing was more modest, especially from bilateral sources, resulting in heavy reliance on the IMF (again see Figure 23). In Asia, in contrast, financing came from both multilateral and bilateral sources, including Japan, the U.S. and Europe. And in the European crisis, multilateral (mainly the European Union) and bilateral (individual European nations) financing were both large. Evidently, it mattered that there was no large bilateral creditor for whom Russia and the other countries caught up in its wake mattered as much as Mexico and Korea mattered for the U.S. or the Eastern European crisis countries mattered for Western Europe. But it would appear that the absence of a bilateral stakeholder mattered more for the source of official financing than its magnitude. In none of these cases, in other words, was the IMF obviously constrained financially.

Figure 23. Cumulative IMF, other multilateral and bilateral financing (average, in percent of GDP)

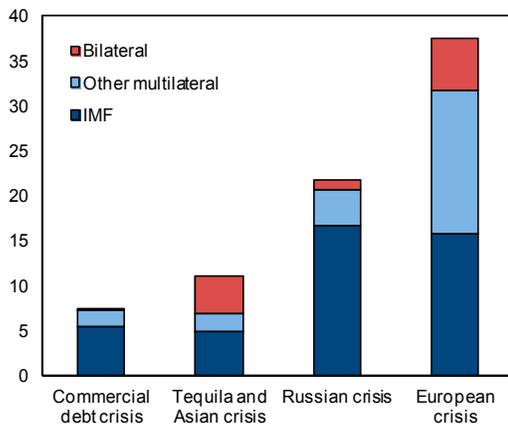
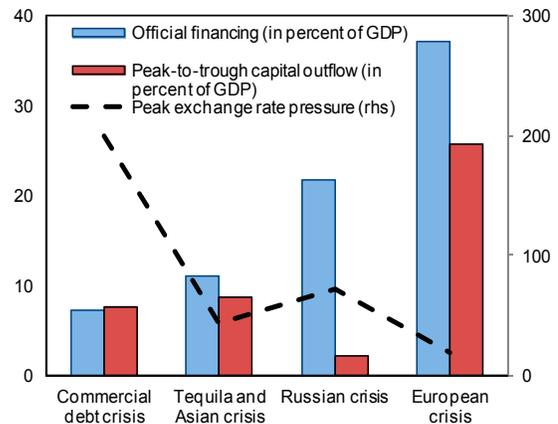


Figure 24. Cumulative official financing, peak capital outflows and peak exchange market pressure



The speed of the response and the large financing to support the Mexican program reflected the Fund's new view of itself as "crisis manager." As Boughton (1997, p.3) notes, "... the Fund had helped countries through numerous crises, but its role in those cases was essentially similar to its noncrisis lending activities." However, the commercial debt crisis emphasized the systemic implications of this new wave of crises, starting with Mexico, encouraging the Fund to focus on containing the crisis per se, rather than simply facilitating stabilization and structural adjustment in the originating country and hopefully resolving its crisis in the course of doing so.

Does the increase in program financing reflect the greater severity of crises? Two handed economists that we are, our answer would be "yes" and "no." The peak-to-trough capital flow reversal was larger in the Tequila/Asian crises than in the commercial debt crisis that preceded it (see Figure 24), but peak exchange market pressure was less. In the crises following Russia, capital outflows were, in fact, modest. While the peak exchange market pressure was greater than in the Tequila/Asian crises, it was again less than in the commercial debt crises. According to both metrics, then, the Russian crises were less severe than the commercial debt crisis, although the financing was considerably larger. The European crisis was characterized by a huge capital flow reversal but no exchange market pressure and very large financing, as we have seen.

It would appear, ex-post, that the magnitude of the capital flow reversal has been the key determinant of the magnitude of official financing.⁴⁰ If so, the rise in official financing over time primarily reflects the spread of financial globalization and, with it, the scope for capital flow reversals. By this metric, the Russian crisis cases were outliers, perhaps because fear of contagion was palpable in the wake of immediately preceding events in Asia. This suggests that, along with the financing needs arising from capital flow reversals, an underlying if difficult to measure perception of contagion has been the other driver of growing program size.

Regression results in Table 2 show that if all programs are pooled, capital flow reversals appears as the main determinant of program financing size, with little role for the exchange market pressure. (The dependent variable here is total official financing, not just IMF financial assistance.) When episode dummies are included, controlling for capital flow reversals and exchange market pressure program size does not rise between the commercial debt crisis and the Tequila/Asian crisis, but there was a jump in program financing in the Russian episode and a further modest rise in the European crises. This suggests that other crisis-specific factors, such as differences in the perceived risk of systemic contagion, also

⁴⁰ IMF financing is determined based on a country's balance of payments need, not on the basis of capital reversals. Notably IMF financing cannot substitute for private capital shortfalls in the medium term. This is, inter alia, reflected in the IMF's Exceptional Access Criteria, requiring prospects of gaining or regaining access to private capital markets during the period when IMF resources are outstanding.

influenced program size. That said, within each episode the extent of capital flow reversals continues to influence program financing.⁴¹

We conclude that the rise in program financing over time reflects both a rise in capital outflows and unaccounted broader systemic considerations, which are tempting to interpret in terms of contagion.

Variable	Coefficients	Coefficients
Capital reversal, in percent of GDP	0.37** [3.22]	0.27** [2.92]
Exchange market pressure index, peak	-0.05* [-1.78]	-0.02 [-0.62]
Constant	22.14 *** [6.08]	
Commercial debt crisis		10.86 [1.27]
Tequila/Asian crisis dummy		10.53** [2.49]
Russian crisis dummy		22.25*** [4.50]
European crisis dummy		31.65 *** [7.51]
R-squared	0.46	0.73

Note: The columns report the coefficients in an Ordinary Least Square regression with cumulative official financing by country (in percent of GDP) during a crisis episode as dependent variable. t statistics are in brackets. *** represents significance at 1 percent, ** at 5 percent, and * at 10 percent levels.

The conditions attached to IMF financial assistance represent an important part of the official response, and the domestic adjustment required by these conditions can, in principle, substitute for program financing.⁴² As discussed in the introduction, measuring adjustment is difficult. Adjustment can be thought of as (i) macroeconomic adjustment through fiscal consolidation, exchange rate devaluation, or monetary contraction to fight inflation; this is largely captured through the quantitative targets of the IMF programs or (ii) structural reforms, as defined by structural conditionality. We have no clear evidence that higher official financing has substituted, in practice, for less adjustment in IMF programs.

The scope and usage of quantitative macroeconomic targets have remained remarkably similar over time, although tailored to different exchange rate, monetary and

⁴¹ These regressions should be taken with the obvious caveats. In particular, there is the possibility that the extent of the capital flow reversal reflects the magnitude, actual or anticipated, of multilateral financial assistance. Here the capital flow reversal is measured from periods t-2 to t (where t is where exchange market pressure and/or sovereign spreads spike), whereas program financing becomes available in t or t+1, so simultaneity would have to be due largely to anticipations.

⁴² See IMF (2001), IMF (2005), and Independent Evaluation Office (2007) for more comprehensive studies and IMF (2009) for a description of recent reforms to modernize IMF conditionality.

fiscal policies.⁴³ The macroeconomic programs of Mexico, Brazil and Argentina during the commercial debt crisis aimed at reducing fiscal deficits and public external debt, bringing down inflation by containing the growth of monetary aggregates, building reserves, and, later on, eliminating external payment arrears as part of the debt strategy. Mexico and Argentina has similar program targets during the Tequila crisis, combining fiscal, monetary and exchange rate adjustment with substantial financing. The Asian crisis' macroeconomic programs focused on restoring confidence, including through reconstituting net international reserves, combined with fiscal policies to support the external adjustment. The programs for Brazil (in 1999) and Turkey (in 2006) incorporated "inflation consultation clauses" tailored to inflation targeting countries. The recent programs for European countries have had a strong emphasis on fiscal targets, especially for euro area countries with no national monetary and exchange rate policies.

The trend in the scope of conditions related to structural reforms is much harder to evaluate. The only metric of these conditions is their number, which does not help ascertain the seriousness of the reform undertaken. Moreover, the degree to which structural reforms have been formal conditions, as distinct from informal commitments that were nevertheless viewed as part of the overall program, has varied over time. Despite increasing awareness of the role of structural policies in the course of the 1980s, there was much resistance against linking them to performance criteria.⁴⁴ Instead, the understanding was that overall progress on structural reforms would be discussed at program reviews.⁴⁵

Thus, structural reforms were rarely formal program conditions during the commercial and the Tequila crises.⁴⁶ Structural conditionality became more of a focus as a result of the perceived structural deficiencies unveiled in the Asian crisis. The Asian programs incorporated a large number of structural conditions, initially focused on financial sector reform. While these lists of reform measures quickly developed into a broader reform agenda, they were not part of the program's formal conditionality, but were rather were commitments by the authorities (Figure 25). The early programs under the Russian crisis had an even larger number of conditions.⁴⁷ The increased use of structural conditionality evoked considerable criticism for being intrusive, undermining national ownership, lacking priority, overwhelming implementation capacity, and being in areas outside the core expertise of the

⁴³ Since 1979, all upper credit tranche Fund-supported programs have quantitative performance criteria. The arrangements under the Flexible Credit Line and the Precautionary Credit Line that were approved in 2009 have ex-ante policy conditionality in the form of qualification criteria.

⁴⁴ The IMF's conditionality was constrained by the 1979 Conditionality Guidelines, which stated that performance criteria "will normally be confined to (i) macroeconomic variables, and (ii) those necessary to implement specific provision of the Article [of Agreement] or policies adopted under them."

⁴⁵ For low-income countries, structural policies occupied a central role in Fund programs starting with the Structural Adjustment Facility and later the Enhanced Structural Adjustment Facility in the 1980s.

⁴⁶ An exception is Argentina (1984), which had performance criteria on interest rates and making foreign exchange available.

⁴⁷ Although partly offset by less non-formal structural commitments.

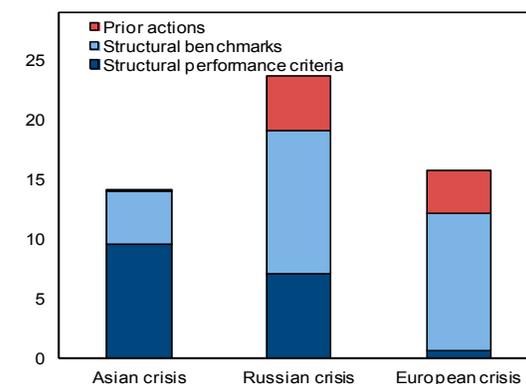
IMF. In response, initiatives were taken starting in 2000 to streamline structural conditionality, and emphasize the need for ownership and macroeconomic relevance.⁴⁸

The most recent set of programs have reflected streamlined conditionality. Conditionality is more focused on macro relevant reforms; the majority of the measures are related to financial sector, the fiscal balance, and monetary/exchange rate policies.

Following the March 2009 overhaul of the IMF's lending framework, implementation of structural policies are monitored in the context of program reviews rather than through the use of structural performance criteria, which have been discontinued in all IMF-supported programs. While structural reforms continue to be integral to IMF programs, countries no longer need formal waivers if they fail to implement a structural reform by a particular date.

Figure 25. Structural conditionality in IMF-supported programs

Average conditions per program year, by crisis



Source: IMF staff reports and MONA.

V. PRIVATE SECTOR BURDEN SHARING

In parallel with the rise in program size there has been a shift in the extent of private-sector burden sharing.⁴⁹ Payment relief was seen a plausible alternative and important supplement to official financing in the commercial debt crisis, where as we have seen financing packages were small and restructuring negotiations, while not always brought to a quick conclusion, were ongoing during the program. That emphasis then became weaker over time, as program sizes increased and the engagement of the official creditors in the restructuring process declined – although that emphasis and engagement were never entirely absent, and they were prominent in a few episodes.⁵⁰

The commercial debt crisis eventually led private and official foreign creditors to extend substantial debt reduction. In 1982-83, Mexico, Argentina and Brazil re-negotiated their debts to their commercial bank creditors, although the resulting settlements were limited to a mix of new financing and rescheduling of principal in the short term. When it became clear that this was unlikely to be enough, governments and their creditors shifted in 1984 to

⁴⁸ In September 2000, an Interim Guidance Note was issued for this purpose, followed by the Guidelines on Conditionality adopted by the IMF Executive Board in 2002.

⁴⁹ See Tables 2 and 3 for an overview of private sector involvement in the crisis cases in the sample and for estimates of haircuts in debt restructuring with private creditors.

⁵⁰ Sturzenegger and Zettlemeyer (2007) review the evidence prior to the European crisis.

negotiating to multi-year rescheduling arrangements with modest net present value (NPV) reductions designed not to do too much damage to bank balance sheets. As it became apparent once again that this would not be enough to jump-start growth and restore creditworthiness in the crisis countries, the Baker Plan was introduced in 1985, packaging together structural reforms with a putative commitment by the creditors to provide new financing.

Unfortunately, neither the resumption of growth nor significant new financing materialized. In 1987 Brazil responded with a unilateral debt moratorium, and it became increasingly clear that the commercial banks would have to take more losses. In 1987-8, Mexico, Argentina, Brazil negotiated new debt restructuring agreements, exchanging debt for exit bonds with lower face value and engaging in debt buy backs at depressed market prices. Finally, in 1989 the Brady Plan was introduced, combining significant NPV reductions with collateralization of principal using US Treasury zero-coupon bonds and reserves placed in escrow account to pay interest payments, creating a template through which the debts of a range of problem countries were then restructured.

The IMF played an important role in the Brady deals. Part of the IMF financing was set aside for debt reduction operations of the debtor countries to make the deals possible.⁵¹ There was also a commitment to augment existing programs once the Brady deals became effective.⁵² The Fund's policy of not tolerating sovereign arrears was modified to help bring the banks to the negotiating table. Previously, the banks knew that official credit would not be available until a strategy for dealing with arrears was agreed. This effectively gave the banks a veto over IMF arrangements. In 1989 the Fund therefore decided to modify its arrears policy to permit Fund financing to lend into sovereign arrears to private external creditors (the so-called lending-into-arrears policy) if two conditions were met. First, prompt Fund support is considered essential for the successful implementation of the member country's adjustment program. Second, the member country is pursuing appropriate policies and is making a good faith effort to reach a collaborative agreement with its creditors. The

⁵¹ Part of the resources made available under the IMF arrangements was set aside to help the member country restructure its commercial debt, and the Fund indicated its preparedness to consider an augmentation under certain conditions once the borrower had reached a settlement with its commercial bank creditors. For Mexico, the Board approved in May 1989 a three-year extended arrangement for SDR 2.9 billion (240 percent of quota), 30 percent of which was set aside for debt-reduction operations. The Board also expressed its preparedness "to consider a possible request by Mexico for augmentation of the arrangement for up to 40 percent of quota in the event that arrangements for the financing of Mexico's program provide for appropriate debt-service reduction and upon determination by the Fund that such arrangements are consistent with objectives of the program and with the guidelines on Fund support for debt and debt service reduction operations." For Argentina, the set-aside was 25 percent of access in the 1991 arrangements. Another 25 percent of access was set aside at the subsequent arrangement in 1992. Brazil initially had similar provisions in its 1992 program (25 percent of total access set aside), but the negotiations on the Brady deal with the banks was extended and the program went off track. Brazil therefore concluded its Brady agreement without having an IMF arrangement in place, and the commercial banks waived the requirement of having a Fund program. All this information is available in public sources.

⁵² The implication is that while the bait of additional financing helped bail in private creditors, absent that bail in, the size of official financing needed would have been even greater.

lending-into-arrears would in this context tolerate accumulation of arrears to commercial banks pending the negotiation of voluntary market restructuring agreement.⁵³

This approach involving a combination of official financing and NPV reduction changed in the Mexican crisis, which was met with massive and unprecedented official financing but no NPV reduction. Official financing was provided to support the amortization of the tesobonos (short-term sovereign obligations) and to help the commercial banks to meet their external obligations. The tesobonos had diverse ownership and lacked well defined legal and operational rules for restructuring. Given the scope for the tesobonos to roll off as they matured, it was considered impossible to coercively retain credit lines from foreign commercial banks, since doing so would imply different treatment of bondholders and banks. The approach proved successful in the end, helped in no small part by the fact that Mexico in 1994 had milder structural problems than in its previous crisis.

Similarly, there was no renegotiation of sovereign debt to private creditors in the Asian crisis.⁵⁴ Commitments were obtained from international banks to keep open their credit lines to the private sector, but foreign creditors did not incur significant NPV losses from the restructuring of their claims.⁵⁵ Instead, large financing packages again provided the cover needed to deal with the problems that proved to be temporary in nature. The Fund again adopted a more arms-length relationship with the restructuring process compared to Brady-Plan days.

That macroeconomic imbalances were greater in the Russian crisis and its aftermath meant that resolving them required more time, multiple programs, and greater recourse to debt restructuring. While creditors incurred NPV losses, the IMF maintained an arms-length posture toward restructuring negotiations, limiting itself to describing the requirements for debt sustainability as it saw them and emphasizing the voluntary nature of the debt exchanges.⁵⁶

An exceptional case in the aftermath of the Russian crisis was Uruguay, which combined an unprecedented level of financing with a voluntary debt exchange. The Uruguay program started out large (at 6 percent of GDP) and was then augmented twice in June-August 2002 amid major deposit outflows and reserve losses (as a result of which it reached 19 percent of GDP, an enormous number by IMF standards).

While the program did not call on Uruguay to restructure, it referred to “daunting challenges” to debt sustainability, the difficulties in meeting debt service obligations, and the

⁵³ This policy was extended from commercial banks to all private creditors in 1998. See IMF (1989) and IMF (1998).

⁵⁴ Indonesia rescheduled debt with Paris Club creditors during 1998-2000. A small rescheduling of sovereign bond maturities occurred in 2000, during a successor program.

⁵⁵ However, comprehensive strategies for bank and corporate restructuring were implemented under the Asian crisis programs.

⁵⁶ A few cases required official debt restructuring through the Paris Club and had an associated standard requirement of “comparability of treatment” to private creditors.

need to engage in dialogue with market participants.⁵⁷ The Fund left the design of the exchange to the authorities and their advisers while providing assurances that financing gaps would be addressed. The resulting deal extended the average maturity of virtually all market debt by about five years while maintaining the low interest rates contracted when Uruguay had enjoyed investment grade ratings. A high participation on the part of creditors (93 percent) led this to be seen as a successful debt exchange. The exchange not only helped to reduce short-term financing needs but reduced the debt burden by about 5 percent of GDP. This combination of substantial official financing and limited NPV reduction was successful in the sense that the debt/GDP ratio then fell quickly as growth resumed and the government ran substantial primary surpluses (averaging 3.4 percent of GDP in 2003-07).

Why Uruguay was able to integrate debt restructuring into its crisis resolution plans at a relatively early stage is an interesting question. One answer is that there was not much concern about contagion, reflecting the country's small size. Another is that the actual extent of the restructuring, in terms of NPV reduction, was modest. In this sense, particularly given the size of its official financing package, Uruguay therefore does not appear as a notable exception to the general trend we have been describing.

Private sector involvement in the current European crisis has been limited to foreign creditors' exposure to commercial banks. Only in Iceland and, to a lesser extent, Ireland have foreign bank creditors had to accept haircuts on their bonds at the time of writing. In Eastern Europe, foreign parent banks have committed to rolling over their interbank credit lines and maintain capital adequacy in their subsidiaries, including in Hungary, Latvia, and Romania, through the European Bank Coordination Initiative. The European Bank Coordination Initiative (formerly the Vienna Initiative) created in 2009 helped ensure that foreign banks remain engaged and that overall commitments remain intact. The group brings together the IMF, the European Bank for Reconstruction and Development, the European Investment Bank, the World Bank Group, EU institutions (European Commission with the ECB as observer), home and host country central banks, regulatory and fiscal authorities as well as the largest western banking groups active in emerging Europe.⁵⁸

VI. A NEW APPROACH

Debt restructuring has up-front political and economic costs but deferred benefits. Politicians with finite political lives and higher discount rates than society as a whole may therefore be reluctant to contemplate it or at least put it off excessively. There is a reluctance

⁵⁷ The phrase in quotes is from the staff report for the Augmentation and the First Review of the Stand-By Arrangement (August 2002).

⁵⁸ There are two recent precedents of debt exchanges within Fund programs. In Jamaica, the February 2010 debt exchange on domestic debt (including foreign-currency-denominated debt) was a prior action for the approval of the standby arrangement. A large amount of IMF financing was provided upfront to finance a fund for financial institutions holding the government debt. In Seychelles, the December 2008 program was based on a comprehensive restructuring of sovereign debt to private and official creditors. But these programs are relatively small by today's standards (300 and 200 percent of quota, respectively) and the countries in question are not systemic.

to proceed in the hope that good news that removes the need may miraculously turn up. The risk of contagion is also a real one in the midst of a crisis.

In recognition of this fact, there have been a series of efforts to encourage institutional and contractual innovations designed to modestly tip the balance in the direction of earlier restructuring and make the restructuring process more efficient. Earlier schemes for an international-bankruptcy-court-type mechanism that determine the need for a restructuring and cram down terms culminated in Krueger's (2001) Sovereign Debt Restructuring Mechanism proposal.⁵⁹ Responding to international pressure, over 90 per cent of the bonds issued by emerging markets in recent years have included collective action clauses in an effort to signal that, if things went wrong, restructuring those debts would be easier (Gulati and Gelpern 2009). Similarly, European leaders have agreed that collective action clauses would be included in all new sovereign bonds starting in 2013, and emergency lending would be preceded by a "rigorous debt sustainability analysis."⁶⁰

There are reasons to be skeptical of the institutional approach. As we have argued elsewhere, it is difficult to make politically-difficult decisions while a crisis is ongoing (Eichengreen, Kletzer and Mody 2001). And if political resistance to proceeding with a "potentially disruptive" restructuring is sufficiently strong, the addition of collective-action clauses will not be enough to tip the balance by itself. There will always be incentives to take extraordinary action to avoid having to invoke them.

One way of addressing this would be for future bond covenants to include provisions that trigger restructurings automatically. These would be "sovereign cocos," contingent debt securities that convert automatically in the event of debt-sustainability problems. The idea is that if adequate incentive to restructure is not present once a crisis starts, it should be built in *ex ante*.

The concept is taken from the debate over bank reform, where there is a similar problem of bail-ins and bail-outs. Because of the difficulty of putting banks through a bankruptcy-like procedure, which among other things tends to create difficulties for bank counterparties, there is an incentive, analogous to that which arises in the context of sovereign debt, to provide a bailout and hope that good news will turn up rather than proceeding with the delicate process of bailing in the bondholders. Contingent convertible bonds (cocos) have been suggested as a solution to this problem. The bonds in question automatically convert to equity, both bailing in the bondholders and helping to recapitalize the bank, when its Tier 1 capital falls below a pre-specified limit.

There has been movement toward issuing these instruments. In 2010 Lloyds Banking Group Plc exchanged some of its subordinated bonds for enhanced capital notes that become equity if the lender's core Tier 1 ratio falls below 5 per cent of assets. Rabobank Groep NV sold senior notes that will be written down to a quarter of their face value if its capital ratio

⁵⁹ The most comprehensive survey of proposals for an international bankruptcy-type mechanism is Rogoff and Zettelmeyer (2002).

⁶⁰ The quotation is from Eurogroup (2010).

slips below 7 per cent.⁶¹ Credit Suisse issued more than \$2 billion of cocos in February 2011. At the time of writing other banks (the Bank of Cyprus, for example) have indicated that they intend to follow.

Extending this idea to the sovereign-debt domain, government bond contracts could provide that if a sovereign's debt/GDP ratio exceeds a specified threshold, there will be an automatic reduction in principal and interest payments when the trigger is reached.⁶² One could also imagine making the trigger a function of the debt service/government revenue ratio, or of a convex combination of these two ratios.⁶³

Objections to this idea are obvious – starting with whether sovereigns themselves would have an incentive to include such provisions in their bond contracts and whether, even if an international agreement was reached to mandate their inclusion, the incentive would be to place the threshold so high as to render it meaningless.

Concretely there is the objection that this kind of provision would increase sovereigns' borrowing costs, since investors would be wary of being bailed in and require compensation. In strong form, the argument would be that investors would be unwilling to hold such securities at any price. Note, however, that the same argument has been made about bank cocos, well-capitalized banks have not found it difficult to find willing buyers of such instruments. This is evident from the example of Credit Suisse in February 2011, when its issue of cocos was favorably priced and 11 times oversubscribed.⁶⁴

Moreover, there is reason to think that borrowing costs would not rise across the board. They would only rise for sovereigns whose debts were within hailing distance of the trigger. Empirical work on collective-action clauses shows that their inclusion in bond covenants increases borrowing costs for risky sovereigns with potential sustainability problems and not for others far from the “strike price” (Eichengreen and Mody 2004). It seems plausible that the pattern would carry over.

Indeed that borrowing costs would rise for risky borrowers as the critical debt threshold was approached is by no means undesirable. Experience suggests that credit spreads do not always widen gradually as debt burdens grow; rather, investors tend to remain sanguine for extended periods before awakening abruptly to the existence of sustainability

⁶¹ The experience with banks' cocos thus suggests that the threshold specified in the bond contract is specific to the issuer—and, indeed, if there are multiple issues, the threshold will likely be specific to the issue. We return to this below.

⁶² More modestly there could be an automatic extension of maturities, although it is hard to see how maturity extension alone would address the sources of policy bias noted above or be appropriate if breaching a specified debt-GDP ratio is taken as *prima facie* evidence of unsustainability

⁶³ Specific triggers could be tailored to country circumstances. As with collective action clauses (and bank cocos, for that matter), there is no reason why different countries with different characteristics should have to adopt a one-size-fits-all provision.

⁶⁴ The rating agency Standard & Poor's estimates that banks will raise about a trillion dollars in contingent convertible bonds in the next 5 to 10 years.

problems. If coco-like clauses serve to focus the attention of investors, adding them to bond covenants might enhance its regularity of market discipline.

Another objection to cocos is uncertainty about the trigger: in the case of commercial banks, regulators in different countries value Tier 1 capital in different ways, making it difficult for investors to assess when conversion might be triggered. There might be similar uncertainty about how to value and what to count as debt and about the level of GDP. To address these concerns, bond covenants could specify that the trigger would be based on debt statistics constructed by an independent party. Candidates would be rating agencies, Eurostat, and the IMF's *World Economic Outlook*, which publish such numbers as part of their normal reporting but are not parties to the agreement. To further reduce the risk of reporting manipulation, the agreement could specify the trigger as the higher or lower of two independent estimates. As with the Tier 1 capital ratio, sovereign debt ratios are updated only a few times a year. But the banks' use of the Tier 1 ratio suggests that this is not a problem.⁶⁵

For banks, the academic literature has also suggested an equity price as the trigger (Flannery, 2009). Two related concerns have been expressed about this idea. Bondholders may have an incentive to drive down the price to the threshold level and thereby gain preemptive access to the bank's stock at a "cheap" price (Sunderesan and Wang, 2010). Because of this possibility, there may be multiple equilibria in the stock price (Pennacchi et al 2010). For sovereign cocos, the corresponding trigger would be the sovereign bond spread (possibly over a risk-free rate). The spread is a measure of the risk of default, and the restructuring trigger could be a value of the spread above which a mandatory restructuring occurs. Concerns about manipulation would arise also in this case. Authorities could "talk up" the spread by irresponsible statements, especially as it nears the threshold. Equally, certain investors might seek to drive down the price of debt. Again, the risk would occur closer to the threshold where gains from such strategies are realistic. One (partial) solution to this problem might be for the contract to have a "cooling down" period, allowing the spread to persist above the threshold for some months before the trigger event is established.⁶⁶

A further objection is the argument that triggering a country's sovereign cocos would prevent the government from issuing new bonds with similar provisions to fund itself. Assuming as seems plausible that the government in question had gone into the episode running large deficits, the country would therefore experience a draconian compression of

⁶⁵ Many of the same points arise in the context of GDP-indexed bonds: the possibility that GDP statistics might be manipulated, the difficulties of pricing, and the illiquidity of the IPO market. However, where in the case of GDP-indexed bonds it is presumably obvious in which direction a government would seek to manipulate the statistics – it would want to understate growth in order to reduce its debt burden – the direction in which an issuer of sovereign cocos would wish to manipulate the statistics is less clear. While understating GDP would get it a maturity extension, in practice governments actively seek to avoid having to restructure, and such governments would wish to overstate GDP. Our suggestions for addressing the problem of data manipulation might usefully be taken up by issuers of GDP-indexed bonds and issuers of sovereign cocos alike.

⁶⁶ Haldane (2011) considers these concerns about the consequences of market speculative behavior and suggests similar safeguards. He concludes, "So while CoCos are susceptible to market aberrations, these can in my view be managed."

public spending and a vicious recession. Absent official support, this is likely to be correct. Even through triggering these provisions on outstanding bonds will have reduced the country's debt/income ratio, possibly substantially, re-accessing financial markets is likely to also require a multi-quarter or multi-year process of reestablishing policy credibility.⁶⁷ But this problem of market access in the immediate aftermath of a restructuring holds for all restructurings, to a greater or lesser extent, whether the restructuring is automatic or discretionary. Limited amounts of official finance may thus be called for to help bridge the gap.

Then there is the danger of contagion if a government's cocos are triggered. There could be negative spillovers to banks and other institutional investors at home and abroad that hold the government bonds in question. There could be negative spillovers, both via the banking system and direct confidence channels, to bond markets in other countries.

But is there reason to think that the risks of contagion will be greater than under current contractual arrangements? Working in the other direction is the argument that if a predictable process of debt restructuring is in place, as in our proposal, the risk of contagion will also be lower since all parties will be forewarned of its imminence and will, therefore, have the time to prepare for it. Even in instances of sharp changes in market sentiment, triggering the default and restructuring, the market would have a well-defined probabilistic basis for anticipating the event in contrast to the current fuzziness on this matter that tends to create sharp swings in market sentiment.

A key issue will be setting the conversion trigger at a suitable level. The trigger needs to be placed high enough that it is unlikely to be reached as the result of a garden-variety recession but low enough that it kicks in when serious issues of debt sustainability arise. It is unlikely that the same debt-to-GDP ratio will be appropriate for different countries with different growth rates, real interest rates, and revenue-raising capacities. In other words, attempts to incorporate workable provisions of this sort into sovereign bond covenants would confront policy makers with all the same analytical problems of standard debt sustainability exercises – which is not to say that they should be relieved of trying to solve them. Moreover, there is no reason why the trigger could not be set at different levels in different countries. The Tier 1 capital threshold for bank cocos is set at different levels (see above). The thresholds for bondholder participation specified in collective action clauses differ across countries (Eichengreen 2003, Gulati and Gelpern 2009). The same could be true for sovereign cocos, in other words. Similarly, the specified degree of restructuring would be different—from maturity extension to outright write downs.

As in the case of collective action clauses, there is likely to be a first-mover problem. There will be fears by potential first movers of sending adverse signals about their creditworthiness. The first mover would pay a novelty and liquidity premium. This creates arguments for countries to move together through coordinated multilateral actions.

⁶⁷ Although experience in previous crises (viz. Argentina) suggests that the necessary period of reputation rebuilding may be shorter than sometimes supposed.

VII. CONCLUSION

Our review of the modern history of financial crises and their management highlights the heterogeneity of experience—to paraphrase *Anna Karenina*, every unhappy crisis episode is unhappy in its own way. But it has also revealed some common trends. There has been a tendency for the violence of financial reversals to grow, mirroring the progress of financial liberalization (such as it is) and growth of international capital movements. One consequence has been the financial requirements of international intervention have increased.

The obvious explanation for this trend is the absence of viable alternatives.. Private lenders have an obvious interest in holding out for full payment, whether directly from the sovereign or indirectly through resources provided by international financial institutions. National officials have an interest in pushing into the future a difficult and politically embarrassing restructuring in the hope that good news might somehow turn up. Multilaterals find it hard to go against the wishes of those national officials and, being risk averse, fear restructuring as one of those “unknown unknowns.”

We have suggested automating the restructuring decision as a way of countering this bias. Recognizing that restructuring is difficult during a crisis, private investors have an incentive to lend at rates that are, in retrospect, too low. This implies that the next crisis has a larger capital outflow, increasing the size of the needed financing to limit the damage. Automating the process has key advantages: it preserves the honor of the contract, it is predictable, and can be priced. To that end, we explore the idea of adding sovereign cocos to future government bond issues, contractual provisions that will automatically lengthen maturities or reduce interest and amortization payments when a pre-specified debt/GDP ratio is reached.

At this point, sovereign cocos are best thought of as an idea in search of a proposal. Adding them to future bond issues would require solving a host of difficult technical issues. It would also require solving coordination problems—getting getting governments to move together. But, equally, not addressing the recurrence of ever-larger crises due to large inflows, and subsequent large outflows, of underpriced international capital is a story that cannot end well.

Table 3: Private Sector Involvement and Debt Restructuring in IMF Programs

Table 3: Private Sector Involvement and Debt Restructuring in IMF Programs					
	Private Sector Involvement	Sovereign Debt 1/		IMF program	
		Default 2/	Restructuring		
Commercial debt crisis					
Mexico	Repeated rescheduling of debt with commercial banks, combined with assurances to provide new money. Also concerted rollover of interbank credit lines. One of the first Brady agreements to be finalized, in 1990, leading to substantial debt reduction.	Aug.82	Eight restructuring agreements with commercial and Paris Club creditors during 1983-89, followed by a Brady deal in April 1990.	Jan.83 – Dec.85 Nov.86 – Apr.88 May.89 – May.93	
Argentina	Bridge loan with private creditors to eliminate arrears, and unilateral rescheduling of domestic loans in 1982. Unsuccessful negotiations of rescheduling commercial loans during 1983-84, then agreement on official package combined with rescheduling/new money from commercial creditors in 1985, but new arrears appeared. Brady agreement in 1993, including down-payment of overdue amounts by Argentina.	Sep.82	Six restructuring agreements with commercial and Paris Club creditors during 1985-92, followed by a Brady deal in July 1993.	Jan.83 – Jan.84 Dec. 84- Jun. 86 Jul 87- Sep.88 Nov.89- Mar.91 Jul. 91 – Mar. 92 Mar.92-Mar. 96	
Brazil	In 1983, agreement with commercial banks to rollover short-term financing into medium-term financing, and provide new money through syndicated loans. Delays in completing multi-year rescheduling agreements and unilateral stop in interest payments on bank debt in February 1987, followed by new restructuring agreements. Final Brady agreement in 1994, re-establishing orderly relations with creditors.	Jan.83	Nine restructuring agreements with commercial and Paris Club creditors during 1983-89, followed by a Brady deal in April 1994.	Mar.83 – Feb.86 Aug.88 – Feb.90 Jan. 92- Aug. 93	
Tequila crisis					
Mexico Argentina				Feb.95 – Feb.97 Mar.92 – Mar.96 Apr.96 – Jan.98	
Asian crisis					
Thailand	Japanese banks gave informal assurances that credit lines to Thai banks would be maintained.			Aug.97 – Jun.00	
Indonesia	Agreement in 1998 with foreign banks to reschedule interbank	Mar.99	Two Paris Club rescheduling	Nov.97 – Aug.98 Aug.98 – Feb.00	

	debt, and maintain trade credit to corporations.		agreements during 1998-2000. Rescheduling of sovereign bond principal payments in 1999-2000.	
Korea	Agreement with foreign commercial banks to convert short-term of loans to Korean banks into longer-maturity sovereign-guaranteed bonds.			Dec.97 – Dec..00
Philippines				Jun.94 – Mar.98 Apr.98 – Dec.00
Russian crisis and aftermath				
Russia	Restructuring of treasury bills, bonds, and commercial bank loans, with NPV reduction. Foreign investors' claims on Russian banks were settled in bilateral negotiations.	Aug.98	Three restructuring operations of debt with commercial creditors during 1997-2000, and a Paris Club rescheduling in 1999. Final London Club restructuring with commercial creditors in August 2000.	Mar.96 – Mar.99 Jul.99 – Dec.00
Brazil	Monitoring of foreign banks' credit lines to banks operating in Brazil and indications of commitments to maintain or rebuild exposures (1999). Joint statement of long-term commitment and intention to maintain exposure to banks operating in Brazil at meetings with leading banks in 2002.			Dec.98 – Sep.01 Sep.01 – Sep.02 Sep.02 – Mar.05
Argentina	The June 2001 megaswap increased the debt stock marginally, but the Phase 1 restructuring in November implied an NPV reduction. The 2005 global debt exchange led to a large NPV reduction. Repeated intervention in bank balance sheet led to losses for banks' creditors.	Nov.01	Two rounds of debt treatment in 2001, prior to default. In April 2005, a global bond exchange was offered. Rescheduling of official bilateral debt has not been completed.	Feb.98-Mar.00 Mar.00 – Jan.03 Jan.03 – Aug.03 Sep.03 – Jan.06
Uruguay	Sovereign debt exchange with NPV reduction in 2003. Creditors of commercial banks also haircut.	May.03	A single global bond exchange in May 2003.	Apr.02 – Mar.05 Jun.05 – Dec.06
Turkey	General commitment in 2000 by foreign commercial banks to maintain exposure to Turkish banks, monitored weekly. Voluntary domestic debt swap to lengthen maturities in June 2001. Voluntary agreement in 2002 with foreign banks to maintain			Dec.99 – Feb.02 Feb.02 – Feb.05 May.05 – May.08

	exposure to Turkish banks and companies.						
<p>1/ Includes operations on sovereign bonds, commercial and official loans.</p> <p>2/ A default is defined in the month in which the government misses its first payment beyond the grace period or there is a public announcement to restructure a sovereign debt instrument. Prior to 1995, default is based on IMF staff reports. From 1995 onward, the classification of sovereign default by credit rating agencies is applied, using the default month provided by at least two of the agencies.</p>							

Table 4: Haircuts in Sovereign Debt Restructurings with Commercial Creditors

	Debt Reduction in Net Present Value (in percent)	Operation	Public debt affected (in percent of GDP)
Commercial debt crisis			
Mexico	45	1988-89 restructuring, 1990 Brady agreement	21.3
Argentina	35	1992 restructuring, 1993 Brady agreement	12.3
Brazil	38	1992 restructuring, 1994 Brady agreement	7.8
Russian crisis and aftermath			
Russia	40-75	May 1999 Treasury Bill Restructuring	23.7
	41-63	November 1999 Min-Fin 3 bonds	
	40	August 2000 London Club Agreement	
Argentina	-2	June 2001 Megaswap	11.0
	35	November 2001 Phase I restructuring	19.0
	75	2005 Global Debt Exchange	59.7
Uruguay	20	May 2003 Debt Exchange	48.3
Source: IMF (1993, 2006), IMF country documents, and Sturzenegger and Zettlemeyer (2005).			

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