

NBER WORKING PAPER SERIES

INTERNATIONAL FINANCIAL CRISES AND THE MULTILATERAL RESPONSE:
WHAT THE HISTORICAL RECORD SHOWS

Bergljot Barkbu
Barry Eichengreen
Ashoka Mody

Working Paper 17361
<http://www.nber.org/papers/w17361>

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
August 2011

The authors are with the International Monetary Fund, the University of California, Berkeley, and the International Monetary Fund, respectively. This paper was prepared for the NBER-Sloan project on the Global Financial Crisis. We thank Kristen Forbes for helpful comments and Ajai Chopra, Jeromin Zettelmeyer and several colleagues at the IMF for generous feedback. Barry Eichengreen acknowledges having periodically done consulting for financial institutions, law firms and multilateral organizations on issues related to debt and debt restructuring. He has no material and relevant ongoing financial relationships with such entities at the time of writing. The standard disclaimer applies with special force: the views expressed are the authors' and do not necessarily represent the views of the IMF's management, its Board of Directors, or the National Bureau of Economic Research.

NBER working papers are circulated for discussion and comment purposes. They have not been peer-reviewed or been subject to the review by the NBER Board of Directors that accompanies official NBER publications.

© 2011 by Bergljot Barkbu, Barry Eichengreen, and Ashoka Mody. All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including © notice, is given to the source.

International Financial Crises and the Multilateral Response: What the Historical Record Shows
Bergljot Barkbu, Barry Eichengreen, and Ashoka Mody
NBER Working Paper No. 17361
August 2011
JEL No. F0,F4

ABSTRACT

We review the modern history of financial crises, providing a context for analyses of the world's recent bout of financial instability. Along with indicators of economic performance in the subject countries, we present a comprehensive description of multilateral rescue efforts spanning the last 30 years. We show that while emergency lending has grown, reliance on debt restructuring has declined. This leads us to ask 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 literature on collective action clauses, we explore the idea of sovereign cocos, contingent debt securities that automatically reduce payment obligations in the event of debt-sustainability problems.

Bergljot Barkbu
European Department
International Monetary Fund
700 19th Street, NW
Washington DC 20431
bbarkbu@imf.org

Ashoka Mody
European Department
International Monetary Fund
700 19th Street, NW
Washington DC 20431
amody@imf.org

Barry Eichengreen
Department of Economics
University of California, Berkeley
549 Evans Hall 3880
Berkeley, CA 94720-3880
and NBER
eichengr@econ.Berkeley.edu

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

Bergljot Barkbu, Barry Eichengreen and Ashoka Mody¹

I. INTRODUCTION

In the three decades ending in 1980, serious crises implicating financial systems and sovereign creditworthiness were few.² Since then, however, crises have proliferated. The debt crisis of the 1980s, centering on syndicated bank loans, engulfed a large number of Latin-American countries, most prominently Mexico, Argentina, and Brazil, but extended also to Asia, Africa, and Eastern Europe.³ The Tequila crisis of 1994-95 affecting Mexico and Argentina was the first since the 1930s to center on international bond markets.⁴ 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.⁵ 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—highlights even more prominently than before the connections between financial-sector and sovereign-credit risks.

Just as the frequency and nature of crises have changed, so have multilateral rescue efforts.⁶ The IMF has been at the center of the multilateral response, although the role of other official bilateral and multilateral lenders has grown over time. The number of IMF-supported programs (“IMF programs” or “programs”) has been predictably bunched: 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, left panel). IMF credit in billions of U.S. dollars shows a similar bunching superimposed on a rising trend (Figure 1, right panel). As documented below, cofinancing from other official sources has further increased program financing

¹ The authors are with the International Monetary Fund, the University of California, Berkeley, and the International Monetary Fund, respectively. This paper was prepared for the NBER-Sloan project on the Global Financial Crisis. We thank Kristen Forbes for helpful comments and Ajai Chopra, Jeromin Zettelmeyer, Lee Buchheit and several colleagues at the IMF for generous feedback. The standard disclaimer applies with special force: the views expressed are the authors’ and do not necessarily represent the views of the IMF’s management or Board of Directors.

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

³ See Kahler (1986).

⁴ An introduction to which can be found in Cline (1995).

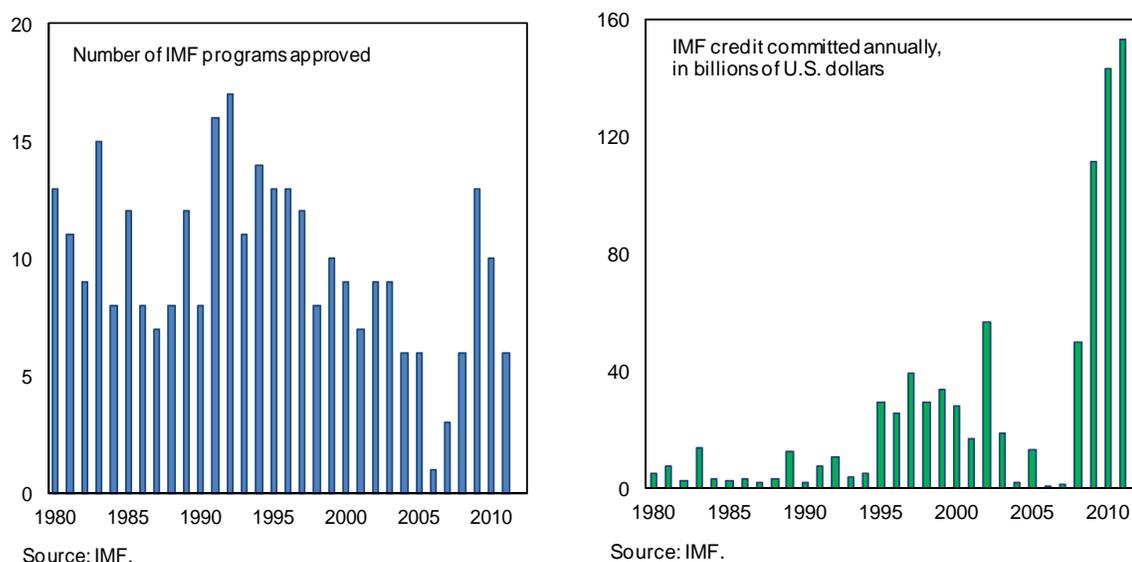
⁵ The literature on the Asian financial crisis is immense. An early overview that shaped much of the subsequent literature is Goldstein (1998). An accessible introduction to the subsequent controversies is Blustein (2003).

⁶ A compendium of IMF staff research on these trends is Mody and Rebucci (2006).

commitments.⁷ IMF commitments since 2009 also include those granted under the Flexible Credit Line arrangements to Mexico, Poland, and Colombia, which are also substantial although 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 financial crises and multilateral rescue efforts. One strand asks why crises have grown more frequent and disruptive.⁹ Another asks whether IMF programs 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, moreover, 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 appropriate balance between official financing, adjustment or austerity, and private sector burden sharing.

Figure 1: IMF programs 1980-2011 (June)
emerging and advanced economies



The controversial nature of this literature reflects the difficulties these issues pose for measurement and analysis. Measurement of a country's adjustment effort requires

⁷ Although this funding is projected to be drawn down only over time.

⁸ A description of these new facilities is Goretta 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 incur serious losses in crises (e.g. Mussa 2002). Rogoff (2010, pp. 16-17) is representative of the opposing view which sees the moral hazard issue a serious one, with current crises laying "the seeds of future ones."

considerable judgment as to the country's initial conditions.¹¹ For analysis of the effects of IMF programs, there is also the problem—most clearly evident in econometric treatments—that both crises and programs have changed over time. The structural relationship that the econometrician is seeking to estimate is not stable, in other words.¹² A related problem is that analyses attempting to determine how IMF programs affect the frequency, incidence and magnitude of crises often fail to acknowledge that programs are not randomly assigned.¹³

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.¹⁴ 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 more virulent. Some have argued that the availability of official finance from 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 delayed. No one would question the desirability of more effective crisis prevention measures. But at the same time there would be considerable value to creating a more stable and predictable framework for crisis resolution.¹⁵

This last issue will be familiar to followers of the crisis literature. Commentators have been making the case for alternatives to emergency financial assistance for more than 15 years.¹⁶ 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 restructuring, and introducing restructuring-friendly collective action and representation clauses into bond contracts.¹⁷ 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.¹⁸

¹¹ There are at least two facets of adjustment: correcting immediate macroeconomic imbalances with medium-term structural considerations related to raising potential growth rates, and reducing financial sector vulnerability. A full assessment then requires tracking a program over time to assess how much of the initially-proposed adjustment was actually undertaken.

¹² 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. One is reminded of how biologists have turned to game theory to model the evolution of competing species.

¹³ 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. We ourselves (Eichengreen and Mody) have committed this sin on at least one occasion: see Eichengreen, Gupta and Mody (2006).

¹⁴ The phrase after the colon is the Merriam Webster definition of codependence.

¹⁵ 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).

¹⁶ 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).

¹⁷ For examples see Hanke (2000), Meltzer Commission (2000), Krueger (2001) and Eichengreen (2003).

¹⁸ This is essentially the conclusion of the Roubini and Setser volume cited above.

The challenge can be described as a problem of time consistency. Once a crisis has broken out, the concern among decision makers is that private-sector burden sharing, while desirable in principle, risks further destabilizing an already volatile situation; hence they draw back from their original insistence on burden sharing. Such time inconsistency is understandable, but if not addressed could result in an unmanageable problem of ever larger crises leading to ever larger official financing.

In this paper we describe once again the state of play, providing a broader context for the other papers at this conference focusing on the most recent crisis. Along with indicators of economic performance in the crisis countries, we present a comprehensive description of major multilateral rescue efforts spanning the last 30 years.¹⁹ We employ analytic narrative rather than econometrics.²⁰ 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.²¹

We start in Section 2 by painting the picture of crisis incidence and response. We identify crisis dates on the basis of the behavior of exchange rates and sovereign spreads. We provide 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.

Section 3 considers the multilateral 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 assistance. The resulting picture is one of official financial assistance packages that are growing larger over time. Section 4 complements this picture by showing that while emergency lending has grown, debt restructuring has become less frequent, and is being used only as a last resort, as in the case of Greece.²²

We ask in Section 5 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 literature on collective action clauses, we explore the idea of “sovereign cocos,” contingent debt securities that automatically reduce payment obligations in the event of debt-sustainability problems. As with all such ideas, the devil is in the details. We would be the

¹⁹ Thus, we do not consider programs for low-income countries and countries that were not viewed as of broader relevance during the key crisis episodes.

²⁰ On analytic narrative as a research methodology see Bates et al. (1998) and Rodrik (2007).

²¹ And 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.

²² See Sturzenegger and Zettlemeyer (2007) for similar conclusions.

first to acknowledge that we don't have all the details worked out. But we offer our thoughts 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.

We consider only crisis countries that ultimately were in an IMF-supported program. Presumably, no program is also a multilateral response.²³ In general, however, the more severe a crisis, the greater is the likelihood of a program.²⁴

Any taxonomy of crisis episodes is controversial. A case in point is our grouping 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*.²⁵ Fortunately, most distinctions we highlight in this section carry over when we drop this one observation from our fourth cluster.

We identify crises using data on currency market turbulence and sovereign spreads. 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

²³ No doubt there are lessons from Brazil during the Tequila crisis and Malaysia during the Asian crisis, as these countries undertook their own significant adjustment so as to render multilateral support unnecessary.

²⁴ 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. 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.

²⁵ See Gilman (2010). We return to this point below.

rate of change of reserves, where the two components are weighted by their respective standard deviations.²⁶ 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 at least one standard deviation above the mean are identified as crises.²⁷

²⁶ 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.

²⁷ For the commercial debt crisis, crises and peaks of sovereign spreads are based on Edwards (1986) and Folkerts-Landau (1985).

Table 1: Timing and peak of crisis, and IMF-supported programs							
	Timing of crisis		Peak of crisis		IMF program		IMF commitment (percent of GDP)
	Currency crisis	Sovereign crisis	Currency pressure	Sovereign spread	Date (augmentation)		
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	Jan.95	Dec. 94	Mar.95	Feb.95 – Feb.97	5.5	
Argentina		Jan.95	Mar.95	Feb.95	Mar.92 – Mar.96(Dec. 92/Apr.95) Apr.96 – Jan.98	2.5	
Asian crisis							
Thailand	Jul.97	Nov.97	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	Dec.97	Dec. 97	Sep.98	Dec.97 – Dec.00	4.0	
Philippines	Dec.97	Aug.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	Oct.01	Jan.99	Oct.02	Dec.98 – Sep.01 Sep.01 – Sep.02 Sep.02 – Mar.05 (Dec.03)	11.6	
Argentina		Dec.01	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	Jul.02	Jul.02	Oct.02	Apr.02 – Mar.05(Jun./Aug.02) Jun.05 – Dec.06	25.7	
Turkey	Feb.01	Dec.00	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		Oct.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	Oct.08	Oct.08	Mar.09	Dec.08 – Dec.11	7.1	
Romania		Oct.08	Jan.09	Feb.09	May.09 – Mar.11 Mar.11 – Mar.13	13.6	
Greece	Oct.08	Apr.10	Oct.08	Jul.11	May.10 – May.13	13.2	
Ireland	Oct. 08	Sep.10	Jan.09	Jul. 11	Dec.10 – Dec.13	14.5	
Portugal	Oct. 08	Sep.10	Oct.08	Jul.11	May.11 – May.14	15.9	

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. Several differences across episodes are notable.²⁸ For example, the debt crisis of the 1980s displays an especially large increase in exchange market pressure, reflecting high rates of inflation in the crisis countries. Sovereign spreads, on the other hand, rose more modestly in that episode, in part because much of the debt in question was borrowing from commercial bank syndicates.²⁹

Risk premia on sovereign bonds came to the fore in the Tequila crisis, when Mexican spreads rose by 1,500 basis points. For Mexico, the crisis was resolved with a single program; but program size was substantially larger than in the 1980s. In contrast, private sector imbalances were the proximate source of the Asian crisis, with sovereign spreads rising only with subsequent worries that governments would socialize the losses of banks and large corporations.

Exchange market pressure then rose sharply with the Russian crisis, albeit to lower levels than in the commercial debt crisis. Some countries obtained multiple IMF-supported programs, raising cumulative average program financing size considerably above levels reached in prior crises episodes.

Finally, exchange market pressure has been no greater in the recent European crisis than in preceding ones. (In the case of the three euro zone economies, of course, this index has limited significance, since they are small parts of the euro area economically and their difficulties thus have only limited impact on the euro exchange rate.) Spreads on sovereign bonds are high by historical standards for Greece and are high everywhere by the prior standards of the countries themselves. Those spreads reflect limited access to international capital markets, a reduction notable because of the particularly easy access prior to the crisis.

In three episodes (the 1980s, Asian, and current crises), GDP growth had been unsustainably high for some time before the crisis. But growth had begun to decelerate before the crisis crystallized in the 1980s and in Asia (Figure 2, left panel).³⁰ 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.³¹ More often than not, it would appear, weakening growth due to accumulated macroeconomic imbalances is a precursor to crises. In the commercial debt crisis, the existence of imbalances was evident in the acceleration in inflation during the run-up (Figure 2, right panel). Of our subsequent crises, in contrast, significant inflation was evident only in the run-up to the Russian crisis.³²

²⁸ 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.

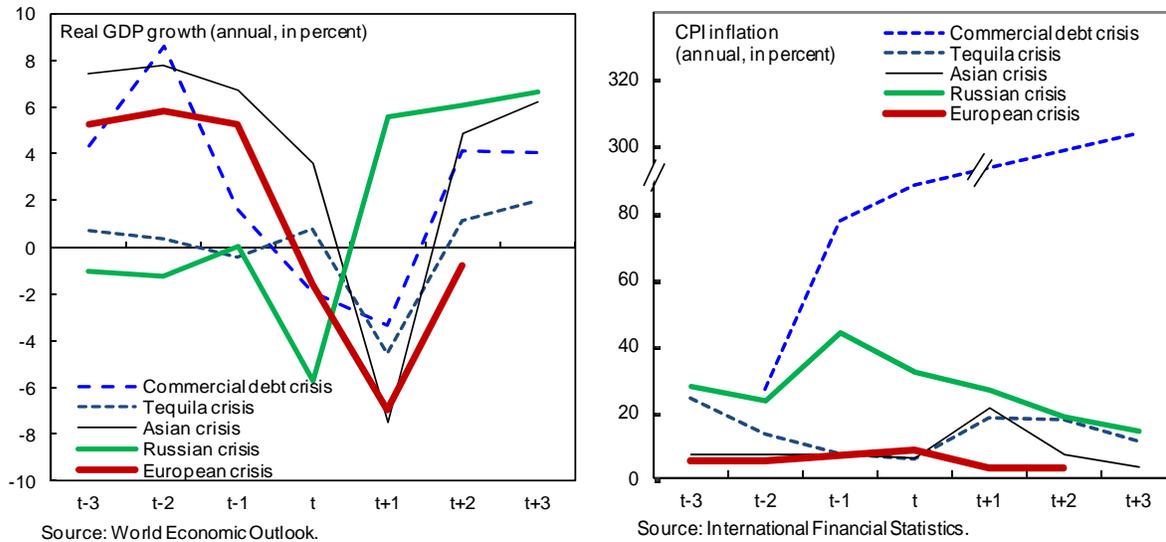
²⁹ The commercial debt was only extensively securitized starting in 1989.

³⁰ t denotes the year of the currency or sovereign crisis, whichever occurs first.

³¹ As emphasized in Gil-Diaz (1998).

³² And even then it seemingly rang no warning bells.

Figure 2: Growth and inflation



The behavior of public debt and deficits also differs across episodes (Figure 3).³³ 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 experiencing difficulties in the wake of Russia's default. But the same was not true in Asia or Latin America in the 1990s. Some argue that Mexico in 1994 had 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 did not show up in the budgetary accounts.³⁴ But the comparative statement remains valid: 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.

Interpreting the state of European public finances is particularly challenging.³⁵ With the exception of Greece, the state of the public finances did not obviously indicate a looming crisis. Assessments prior to the crisis also showed low "structural" deficits because potential growth rates were regarded as high and hence the cyclical component of the growth was not seen as large. As shown in Figure 3, the dramatic deterioration of European budget balances following the onset of the crisis then led to significant reassessment of the pre-crisis state of

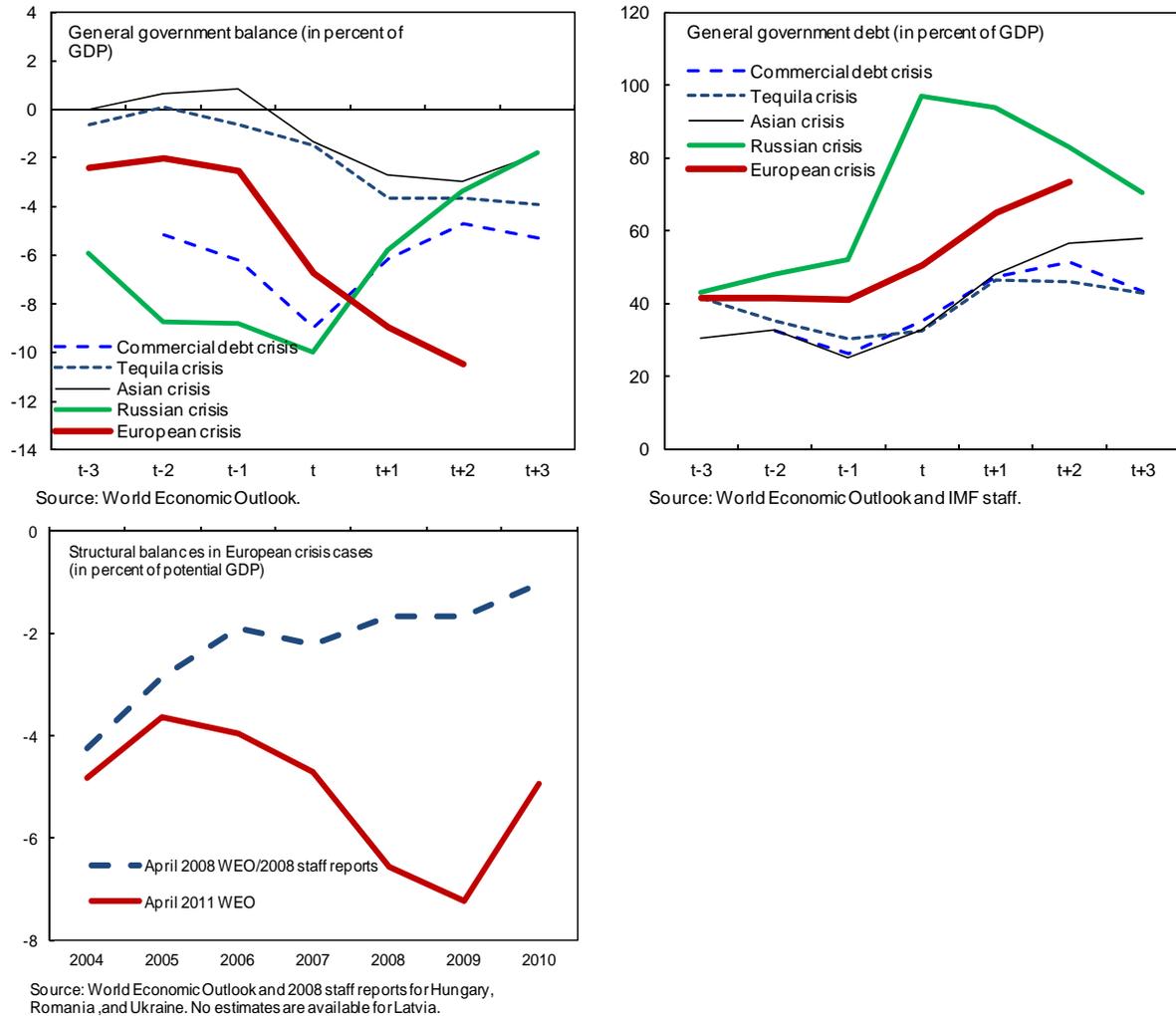
³³ Ideally one would want to include cyclically adjusted deficits as a measure of the pre-crisis fiscal stance and post-crisis response. But estimates of cyclically adjusted deficits exist for only a very small subset of our crisis countries. Moreover, there is considerable dispute about how the cycle affected the deficit (and therefore about how to do the cyclical adjustment), as we describe in the paragraph following this one.

³⁴ For discussion see GAO (1996).

³⁵ The general government deficit is greatly affected by the 2010 budget deficit in Ireland, which due to banking sector outlays that reached more than 32 percent of GDP. Excluding Ireland, the deterioration is still substantial, to about 7½ percent of GDP in (t+2).

public finances. Potential growth rates during the pre-crisis period were revised downward. Key revenue sources—notably those related to real-estate transactions—were belatedly acknowledged to have been temporary.³⁶ With benefit of hindsight it is now clear that unsustainable consumption booms and housing bubbles contributed to the appearance of healthy public finances while hiding sizeable structural deficits. Together with the failure to provision for implicit liabilities to the banking system, this meant that the strength of European budgets prior to 2008 was overstated.

Figure 3: Public finances



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 4). There is an apparent tendency for current

³⁶ Systematic accounts of this phenomenon do not yet exist to allow cross-country comparisons. For Ireland, see Kanda (2010).

accounts to strengthen already in the period immediately preceding the crisis.³⁷ 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; the Russian and current crises stand out for the unusually early and late dates of their real rate collapses, respectively. Reserve coverage measured 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.

These external imbalances were largest in the run-up to the recent European crisis. The presumption was that monetary integration would guarantee stability and facilitate catch-up growth, which led to massive amounts of borrowing and lending by the private (primarily financial) sectors within Europe.³⁸ As in past crises, the European external imbalances narrowed mildly just prior to the crisis, as the impending problems become more evident and the availability of private external finance declined (in the Russian case, the current account had actually moved into a surplus before the onset of the crisis). Yet, even in the year before the crisis, the average current account deficit in the European crisis was 9 percent of GDP, matched by equivalent private capital inflows. In contrast, the size of the real exchange rates appreciation prior to European crisis was relatively moderate in the sense that it was no greater than in past crises (and smaller, in fact, relative to the commercial debt crisis).

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. This phenomenon is also the distinguishing characteristic of the European crisis, where private capital inflows reached unprecedented heights and then collapsed with special ferocity.³⁹ Importantly, though, the accompanying decline in the real exchange rate during this crisis was significantly smaller and more gradual than in past crises. Similarly, the fall in reserve ratios in Europe was limited.

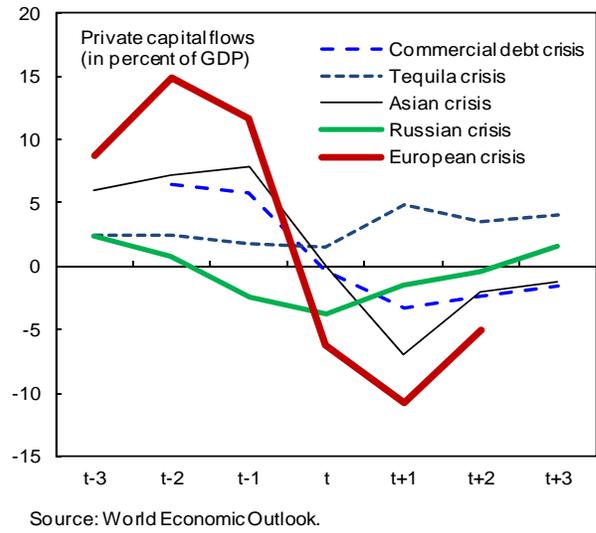
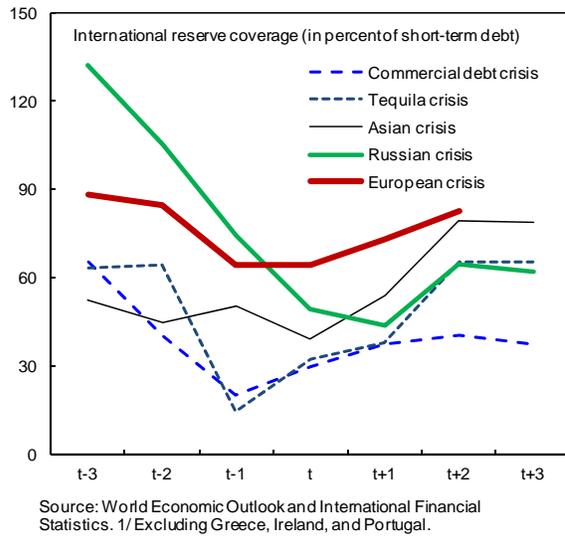
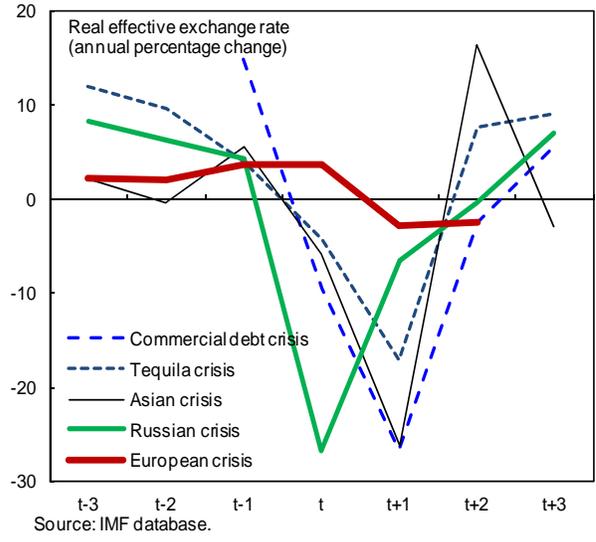
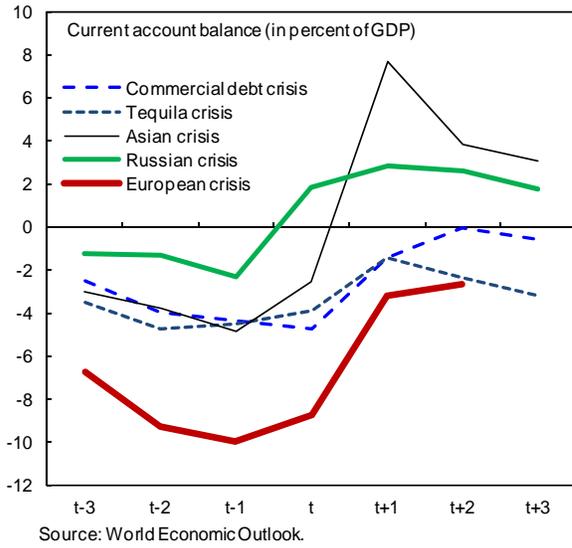
These comparisons point to important respects in which Europe’s crisis is different. Inflation was subdued before the crisis, reflecting the disciplines of the single currency in Greece, Ireland and Portugal, of a currency board in Latvia, and, more generally, a relatively widespread anchoring of inflation expectations. The real exchange rate had gradually become overvalued but to a much lesser extent than may have been expected from the magnitude of the foreign capital inflows. Government budgets were closer to balance than in earlier crises, the exceptional case of Greece notwithstanding. These are not unrelated observations: it was this very appearance of monetary and fiscal stability that allowed the now crisis countries to import capital in the amounts they did.

³⁷ Actually moving into surplus in the Asian and Russian cases.

³⁸ See Blanchard and Giavazzi (2002). 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), Ahearn, Schmitz and von Hagen (2009), and Berger and Nitsch (2009).

³⁹ See also Section 3 below.

Figure 4: External position



Instead, foreign capital inflows into European economies facilitated the buildup of a very high degree of leverage. These countries' serious internal imbalances had their roots in the resulting credit booms. 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."⁴⁰ Credit to non-financial corporations displayed a similar pattern. The private sector borrowed from their banks, which in turn borrowed from banks elsewhere in Europe.⁴¹ For Latvia and Romania, EU funds following accession in 2004 contributed further to inflows. Despite rapid wage increases, household debt-to-income ratios rose in 2002-07 by more than five-times in Latvia, and by 270 percent in Hungary, 180 percent in Ireland and 130 percent in Portugal. Housing prices rose dramatically in Greece, Ireland, Iceland, and Latvia.⁴² Equity prices continued to rise right up to the eve of the crisis, in contrast to the situation in Asia some ten years before, when they started falling well before the crisis.

The kind of fast recovery that followed the Asian crisis does not appear to be in the cards in Europe. The Asian crisis had a greater pure liquidity-crisis component: in Asia, the ratio of foreign exchange reserves to short-term debt had fallen to low levels, inviting speculative attacks on currencies; the subsequent build up in reserves was therefore sufficient to ease financial tensions. In Europe, in contrast, reserves were, on average, at healthier levels. More importantly, European crisis economies require a precipitous fall in domestic demand to achieve the necessary deleveraging. Without the option of exchange rate depreciation, this adjustment has had to rely largely on internal devaluation.⁴³

However, the rate of real depreciation following the crisis has been limited, as noted above. In the current episode, then, less post-crisis adjustment has taken the form of prices as opposed to quantities. The greater difficulty of engineering a real depreciation has meant that it has been more difficult to substitute external for internal demand. The implication is that absent growth and with continued deflationary tendencies, public debt ratios would be difficult to bring down. In this sense, the European crisis already resembles the more protracted commercial debt and Russian crises. That is to say, the current crop of post-crisis

⁴⁰ 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.

⁴¹ 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.

⁴² Unfortunately, comparable house price developments across this long span of time are not available. Even stock prices are available only from the Tequila crisis onwards. What data are available, however, point to clear difference between the Asian and European crises on the one hand and the Tequila and Russian crises on the other, as we are about to describe.

⁴³ Again, the exchange rate regime probably 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 do not have such latitude. Also, the Asian crisis occurred in 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. The 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.

recessions has been unusually severe by historical standards, and it is far from clear at the time of writing that this has run its course.

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.

In sum, crises come in different flavors. 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. The Asian and European crises also seem to have been cut from similar cloth. Both heavily involved private-sector imbalances. In both cases pre-crisis growth rested on the fast growth of credit and rapid rise of leverage. Both saw large initial output drops, reflecting heavily compromised banking systems and the important roles played by pegged exchange rates or their monetary-union equivalent. Given the existence of deep-rooted problems, it is likely that the European crisis will be persistent in the manner of the commercial debt and Russian crises. The Tequila episode, in contrast, stands alone.

III. THE SIZE OF FINANCING PACKAGES

We now analyze trends in program financing. Since we are interested not only in averages but also variations around them, we club the Tequila crisis (which led to only two programs) together with the Asian crisis. 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. That they occurred close together in time warrants treating them as a pair for present purposes.

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.⁴⁴ Hence both IMF financing and the overall official financing are discussed below.

The size of financing packages can also be normalized in different ways. The country's quota is the metric used in the IMF's assessment of access levels.⁴⁵ But since

⁴⁴ Official financing in this section does not include financing through debt rescheduling or restructuring.

⁴⁵ It is therefore the Fund's practice to report the financing as a percent of the country's quota. "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>. The actual level of IMF access is based on the IMF's policies on access limits and access under each facility or instrument.

quotas have not always kept pace with global economic developments, we normalize program financing by the country's nominal GDP.⁴⁶ Yet another alternative would be to deflate the dollar value of the program by an appropriate dollar price index. Fortunately, these alternative normalizations all lead to the same basic conclusion.

Consider first the size of IMF financing per program (Figure 5, upper left panel). There is a steady increase in the median program size and an 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 for Uruguay in the aftermath of the Russian crisis.⁴⁷ While peak program size then came down in the European crisis to 15 percent of GDP for Ireland, this was 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 5, upper right panel), the rise in the median and 75th percentile program sizes over time is once again evident, with a small dip in the Russian crisis (though Uruguay boosts the largest program even in that episode).

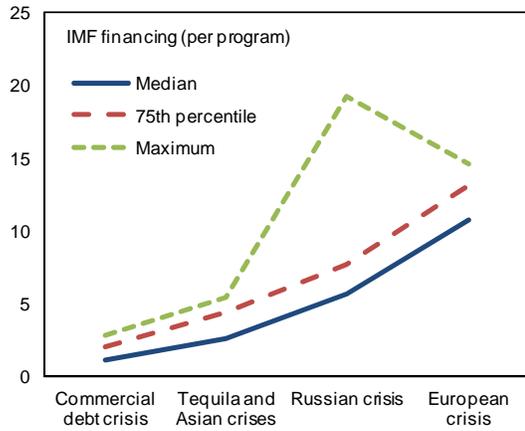
The growing size of financing packages is clearest when cumulating multiple programs per country in each crisis episode (Figure 5, lower left panel) and considering total official financing (Figure 5, lower right panel). Financing packages rise sharply in size between the commercial debt and Tequila/Asian 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 in the Russian crisis reflects multiple programs (as in the commercial debt crisis). And 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 ten-fold. 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.⁴⁸

⁴⁶ 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.

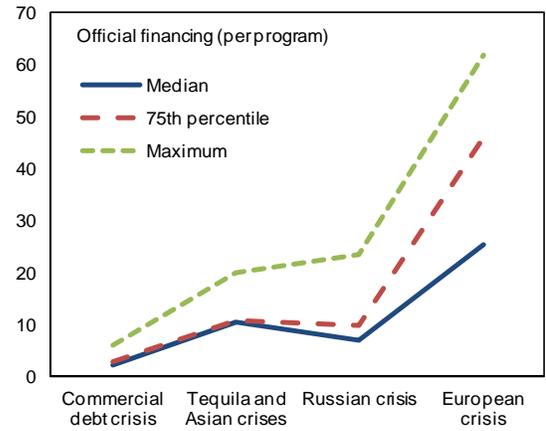
⁴⁷ Access to IMF financing under the arrangement for Uruguay was augmented in June and August 2002, bringing it to 19 percent of GDP – we discuss this case at greater length below. Note that the full amount was drawn. Note also that the IMF's decision-making process does not take into account a country's nominal GDP.

⁴⁸ 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, Ireland and Portugal are still active at the time of writing, while Hungary's has expired.

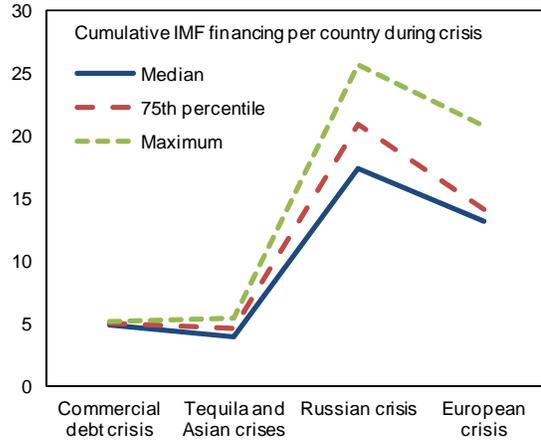
Figure 5: IMF and total official financing
(in percent of GDP)



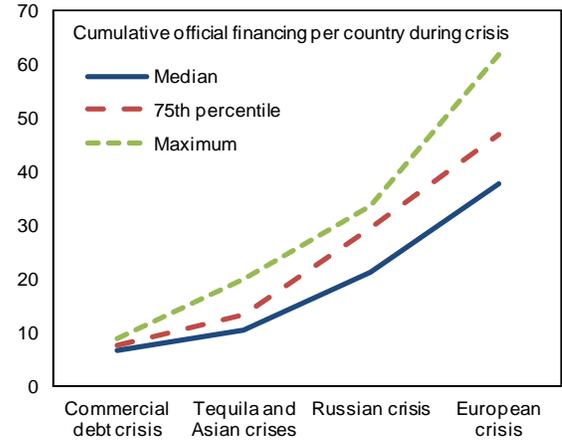
Source: IMF staff reports.



Source: IMF staff reports.



Source: IMF staff reports.



Source: IMF staff reports.

Note: The upper panel depicts averages for each crisis of IMF and total official financing per program, respectively. The lower panel shows the average cumulative IMF and total official financing, respectively, that were committed to countries during a crisis.

The rapid response and large financing extended to support the Mexican program reflected the Fund’s new view of itself as “crisis manager” Boughton (2000). The commercial debt crisis emphasized the systemic implications of crises, encouraging the Fund to focus on containing the crisis as a principal objective, rather than merely facilitating stabilization and structural adjustment in the originating country in the hope that this would also resolve the broader crisis.

Thus, not only was the Mexican program during the Tequila crisis larger than its predecessors, but the shift toward more official financing proved permanent, though with variations in the extent of participation by bilateral and other multilateral lenders varying somewhat over time (Figure 7, left panel). This reflected, in part, the new dependence of sovereigns on bond rather than on bank financing (Figure 6) and the difficulty then perceived of mobilizing bondholders to negotiate a restructuring. It reflected also fears of contagion—that other countries would be adversely affected if investors began to fear restructuring-related losses.

Figure 6. Sovereign external debt to private creditors, emerging market countries (in trillions of dollars)

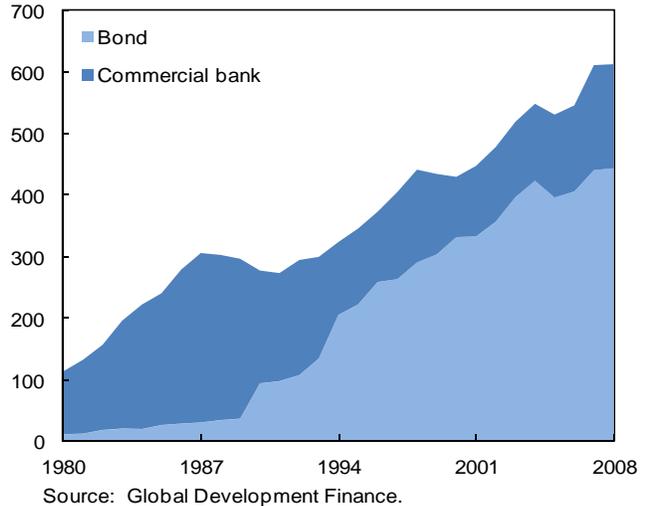
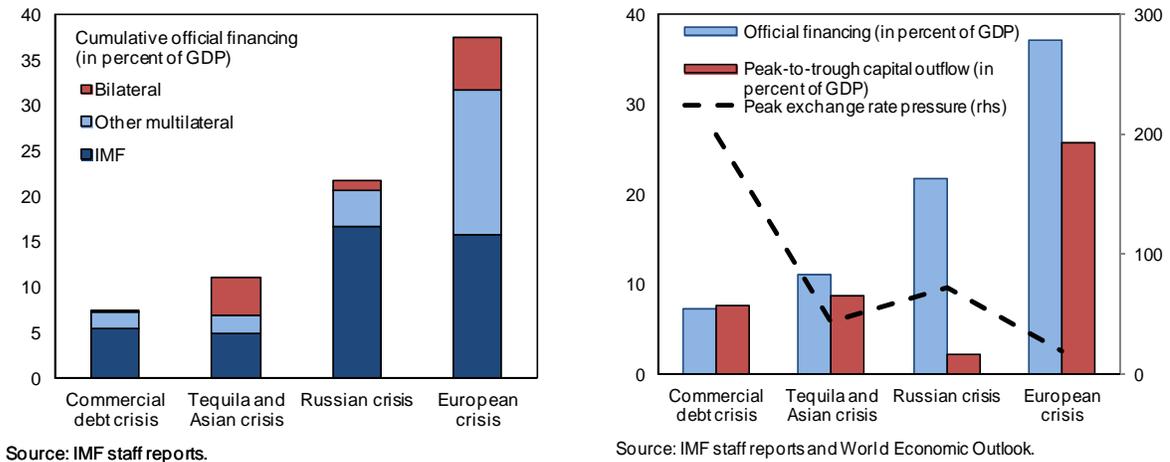


Figure 7: Official financing (in percent of GDP), capital flows, and exchange rate pressure



Does the increase in program financing reflect the greater severity of crises? Our answer is “yes and no.”⁴⁹ The peak-to-trough capital flow reversal was larger in the

⁴⁹ Two handed economists that we are.

Tequila/Asian crises than the commercial debt crisis (see Figure 7, right panel), but peak exchange market pressure was less. In the crises following Russia, capital outflows were modest. While peak exchange market pressure was greater than in the Tequila/Asian crises, it was again less than in the commercial debt crisis. By both metrics, then, the Russian crisis was less severe than the commercial debt crisis, although the financing was considerably larger. The European crisis was characterized by little exchange market pressure but a huge capital flow reversal and large financing, as we have seen.

It would appear, ex-post, that the size of the capital flow reversal has been a key correlate of the magnitude of official financing.⁵⁰ 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, where the large financing was nevertheless provided, perhaps, because fear of contagion was palpable in the wake of preceding events in Asia. This suggests that, along with the financing needs arising from capital flow reversals, perceived risk of contagion has been the other driver of growing program size.

These hypotheses can be tested using regression analysis, with total cumulative official financing as a share of GDP as the dependent variable.⁵¹ The results, in Table 2, show that when all programs are pooled, capital flow reversals appear as the main factor associated with program financing size, with little role for the exchange market pressure. When episode fixed effects are included, the capital reversal variable remains, which implies that even within each episode the extent of capital flow reversals continues to influence program financing.⁵² The fixed effects suggest that, controlling for capital flow reversals and exchange market pressure, program size did 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. Thus, other crisis-specific factors, such as differences in the perceived risk of contagion, also influenced program size.

⁵⁰ 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.

⁵¹ Not just IMF financial assistance.

⁵² 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 between 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.

Table 2: Correlates of official financing		
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: 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.

We conclude that although crises have come in different flavors, the one predictable trend has been a rise in program financing. In retrospect, the rise in program size in the second half of the 1990s, during the Tequila and Asian crises arose primarily because there was a perceived need to dampen the consequences of large capital reversals. The continued growth in program financing through the Russian crisis and its aftermath reflects broader systemic considerations, and the European crisis brought these two themes of capital-account reversals and systemic risk together.⁵³

The conditions attached to IMF financial assistance are an important part of the official response, insofar as the domestic adjustment required by these conditions can, in principle, substitute for program financing.⁵⁴ 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. The scope and use of quantitative macroeconomic targets have remained similar over time, although tailored to different exchange rate, monetary and fiscal policy regimes.⁵⁵ The

⁵³ Which are tempting to interpret in terms of contagion.

⁵⁴ 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.

⁵⁵ 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.

macroeconomic programs of Mexico, Brazil and Argentina during the commercial debt crisis aimed at reducing budget 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 had similar program targets during the Tequila crisis, but with substantially larger financing. Macroeconomic programs in the Asian crisis 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 emphasized fiscal targets, especially for euro area countries with no national monetary and exchange rate policies.

Trends in the scope of conditions related to structural reforms are harder to identify. The only metric of these conditions is their number, which is at best imperfectly correlated with the extent of the reforms agreed and completed. 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.⁵⁶ Instead, the understanding was that overall progress on structural reforms would be discussed at program reviews.⁵⁷

Thus, structural reforms were rarely formal program conditions during the commercial and the Tequila crises.⁵⁸ Structural conditionality became more of a focus as a result of the 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 commitments by the authorities (Figure 8). Early programs in the Russian crisis cases had an even larger number of conditions.⁵⁹

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 IMF. In response, initiatives were taken starting in 2000 to streamline structural conditionality, and emphasize the need for ownership and macroeconomic relevance.⁶⁰

⁵⁶ 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.”

⁵⁷ 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.

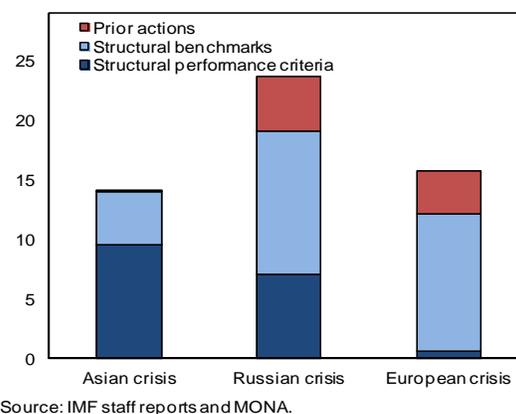
⁵⁸ An exception is Argentina (1984), which had performance criteria on interest rates and making foreign exchange available.

⁵⁹ Although partly offset by less non-formal structural commitments.

⁶⁰ 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.

Thus, conditionality has been streamlined in the most recent set of programs. It is more focused on macro relevant reforms, the majority of measures being 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 is monitored in the context of program reviews rather than through the use of structural performance criteria, which have been discontinued in 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 8. Structural conditionality in IMF-supported programs
Average conditions per program year, by crisis



IV. PRIVATE SECTOR BURDEN SHARING

Characterizing trends in private sector burden sharing is not easy. Doing so systematically would require a quantitative assessment of the extent of haircuts, which in turn requires the cumulative reduction over multiple bail-in efforts, an analysis that to our knowledge has not been undertaken.

That said, overall tendencies are clear (see Table 3 for an overview of private sector involvement in the crisis cases in the sample). As we read the evidence, there has been declining reliance on private sector burden sharing over time, albeit with significant oscillations around that trend. Thus, all the countries centrally involved in the 1980s' commercial debt episode ultimately underwent debt restructuring. Payment relief was seen as an alternative and important supplement to official financing in an era when financing packages were typically small. Restructuring negotiations, while not always brought to a quick conclusion, were ongoing. In contrast, the current European crisis has seen only one restructuring proposal as of the time of writing, in Greece, and the estimated prospective reduction in the net present value (NPV) of the debt or haircut, at 21 percent, is relatively limited by historical standards.⁶¹ In the intervening episodes, the picture is similarly nuanced, but there is an overall a tendency for official financing to increase and emphasis on restructuring to fall.

How do we explain the trend away from private-sector burden sharing? We argue that burden-sharing agreements have become more difficult with the shift from bank to

⁶¹ And even that estimate is controversial (Allen, Eichengreen and Evans 2011).

securitized finance. More difficult is not the same as impossible, to be sure, but there are more players involved than in the 1980s, when developing country debt was in the hands of illiquid loans extended mainly by a handful of money-center banks. In the case of the recent Greek debt restructuring proposal (more on which below), the financial institutions represented by the Institute of International Finance agreed to an exchange designed to produce a 21 percent reduction in the net present value of the Greek government bonds. That 21 percent figure assumed, however, a 90 percent participation rate, and it is not known to what extent the banks in question had already sold their Greek government bonds to other investors less inclined to participate in the exchange. An “involuntary” exchange in which those other holders were required to accept new bonds in exchange for their own ones, through inter alia a change in the Greek law governing the securities in question, would have presumably constituted a credit event that would have triggered credit default swaps on the debt, with uncertain consequences for the issuers of that insurance. This further illustrates the difficulties of arranging burden-sharing agreements in the era of securitized finance.

In addition, the resolution of the debt overhang in the commercial debt crisis required the Fund to relax its lending-into-arrears policy, giving itself latitude to lend even when a sovereign was in arrears to private creditors. In principle, this strengthened the sovereign debtors’ bargaining position and created greater scope for burden sharing with creditors. In practice, however, two countervailing tendencies operated. In the commercial debt crisis, absent the ability to lend into arrears, the Fund had actively engaged in rolling over and restructuring private debt while requiring private financing as a substitute to Fund financing.⁶² Once lending into arrears became possible, the Fund and other official creditors created greater distance between themselves and private creditors while rapidly increasing the official financing package.⁶³ As Panizza et al. (2009) report, this distance reflected greater need for impartiality once the lending-into-arrears policy was lifted and the fact that substantial financing had made the Fund a major creditor, creating potential conflicts of interests. The greater leverage that the debtors had acquired did lead to more unilateral debt exchanges in the Russian crisis; however, as Sturzenegger and Zettlemeyer (2006) show, the haircuts on these unilateral initiatives were less than through the coordinated process previously operative, with the exception of Argentina in 2001-5. Sturzenegger and Zettlemeyer (2006, p. 10) conclude that “...international official creditors, led by the International Monetary Fund (IMF), played a more aggressive role in preventing debt restructurings in the 1990s than in the 1980s, through large lending packages to countries such as Mexico, Brazil, and Turkey. Without these lending packages and the fiscal adjustment programs they supported, these countries probably would have had to restructure their public debts in the late 1990s.” An IMF staff account of the capital account crises of the 1990s offers the same assessment. “In contrast to the provision of official financing, attempts

⁶² Boughton, 2000, p. 286 reports that at a meeting with bankers in mid-November 1982, the Managing Director of the Fund informed bankers that “he would recommend to the IMF’s Executive Board that the Fund lend Mexico around \$3.8 billion over three years, only if received written assurances from the banks within six weeks that they would increase their exposure to Mexico by \$5 billion.” This initiated the practice of “concerted lending,” which “succeeded in filling the financing gap.”

⁶³ As we have documented.

at coordinated private sector involvement, broadly construed, were quite limited, particularly in the earlier crises....” (Ghosh et al. 2002, p. 16).

These quotations suggest that the present characterization of broad trends in crisis resolution, toward more extensive financing and less present value reduction, is not ours alone. That said, this part of our analysis will be particularly controversial. We therefore consider private sector participation in the individual episodes in more detail.

A. The Commercial Debt Crisis

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 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 negotiating multi-year rescheduling arrangements with modest net present value 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, combining structural reforms with a putative commitment by the creditors to provide new financing.

Unfortunately, neither the resumption of growth nor significant new financing materialized. Brazil responded in 1987 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 reduction with collateralization of principal using U.S. 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. IMF financing was set aside for debt reduction operations of the debtor countries to make the deals possible.⁶⁴ There was

⁶⁴ Some of the resources made available under the IMF arrangements were set aside to help the member country restructure its commercial debt, and the Fund indicated its readiness 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 readiness “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

(continued)

also a commitment to augment existing programs once the Brady deals became effective.⁶⁵ As noted above, 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 modified 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 IMF 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 new policy would then tolerate accumulation of arrears to commercial banks pending the negotiation of voluntary market restructuring agreement.⁶⁶

B. The Tequila/Asian Crises

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

Similarly, there was no renegotiation of sovereign debt to private creditors in the Asian crisis.⁶⁷ 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.⁶⁸ Instead, large financing packages again provided the cover needed to deal with problems that proved to be temporary in nature. The Fund again adopted a more arms-length approach to the restructuring process than in Brady-Plan days.

C. The Russian Crisis and its Aftermath

Since macroeconomic imbalances were greater in the Russian crisis and its aftermath, resolving them required more time, multiple programs, and greater recourse to debt

commercial banks waived the requirement of having a Fund program. All this information is from publicly-available sources.

⁶⁵ 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.

⁶⁶ This policy was extended from commercial banks to all private creditors in 1998. See IMF (1989) and IMF (1998).

⁶⁷ Indonesia rescheduled debt with Paris Club creditors during 1998-2000. Another small rescheduling of sovereign bond maturities occurred in 2000 during a successor program.

⁶⁸ However, comprehensive strategies for bank and corporate restructuring were implemented under the Asian crisis programs.

restructuring. While creditors incurred NPV losses, the IMF again maintained an arms-length posture toward restructuring negotiations, the relevant documents limiting themselves to describing the requirements for debt sustainability and emphasizing the voluntary nature of the debt exchanges.⁶⁹

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 amidst 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, difficulties in meeting debt service obligations, and the need to engage in dialogue with market participants.⁷⁰ 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 to a successful debt exchange, which helped reduce short-term financing needs while reducing the debt burden by about 5 percent of GDP.⁷¹

Why was Uruguay able to integrate debt restructuring into its crisis resolution plans at a relatively early stage? 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 is not a notable exception to the general trend we have been describing.

D. Europe

Private sector involvement in the current European crisis was initially limited to foreign creditors’ exposure to commercial banks. At the time of writing, only in Iceland and, to a lesser extent Ireland and Greece, have foreign bank creditors had to accept haircuts on their bonds. 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

⁶⁹ A few cases required official debt restructuring through the Paris Club and had an associated standard requirement of “comparability of treatment” to private creditors.

⁷⁰ The phrase in quotes is from the staff report for the Augmentation and the First Review of the Stand-By Arrangement (August 2002), as published.

⁷¹ 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).

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.⁷²

In the summer of 2011, the European Union agreed that further financial assistance for the Greek government should be combined with private-sector involvement in the form of a commitment by foreign banks to roll over a portion of their holdings of Greek debt as it matured. There was, however, a reluctance to contemplate significant net present value reductions in principal and interest, consistent with our characterization of broad secular trends.

Finally, in July 2011 a proposal by the Institute of International Finance (representing banks holding Greek debt) on a menu-based approach to restructuring the sovereign's debt was endorsed by the European Commission. That proposal, which is now to be negotiated between the Greek authorities and the creditors, envisages a nominal 21 percent reduction in the net present value of the bonds, as noted above, and this is to be achieved by the exchange of 90 percent of the government's outstanding bonds into three new securities: a "par" bond with a 30 year maturity and an average interest rate of 4.5 percent, and a pair of "discount" bonds, with 15 and 30 year durations and interest rates of, respectively, 5.9 and (roughly) 6.5 percent. The proposal was combined with an EU commitment to improve the terms of its financial assistance to Greece, as well as additional fiscal adjustment efforts by the Greek government.

Whether this represents a break with the broad trend away from substantial private-sector burden sharing only time will tell. What is already clear from this Greek tragedy, however, is that policy makers continue to resist and delay the decision to turn to debt restructuring – as they again did in this recent case.

V. 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 put it off excessively. There is a reluctance to proceed in the hope that good news that removes the need may miraculously turn up. Fears of contagion are also very real in the midst of a crisis.

⁷² Outside the European crisis, 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.

In recognition of this fact, a series of efforts has sought to encourage institutional and contractual innovations designed to modestly tip the balance toward earlier restructuring and making the restructuring process more efficient. Earlier schemes for an international-bankruptcy-court-type mechanism to determine the need for a restructuring and cram down terms culminated in Krueger's (2001) Sovereign Debt Restructuring Mechanism proposal.⁷³ Responding to international pressure, over 90 per cent of 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 Gelper 2009). Similarly, European leaders have agreed that collective action clauses should be included in all new sovereign bonds starting in 2013, and emergency lending would be preceded by a "rigorous debt sustainability analysis."⁷⁴

There are reasons to be skeptical of this approach. It is difficult to make politically-difficult decisions while a crisis is ongoing (as emphasized in Eichengreen, Kletzer and Mody 2001). And if there is sufficiently strong political resistance to proceeding with a "potentially disruptive" restructuring, adding collective-action clauses will not be enough to tip the balance. 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 automatically convert in the event of pre-specified 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 can 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. When Tier 1 capital falls below a pre-specified limit, the bonds in question automatically convert to equity, bailing in the bondholders and helping to recapitalize the bank.⁷⁵

⁷³ A comprehensive survey of proposals for an international bankruptcy-type mechanism is Rogoff and Zettelmeyer (2002) provide a comprehensive survey of proposals for an international-bankruptcy-type mechanism.

⁷⁴ The quotation is from Eurogroup (2010).

⁷⁵ This is similar in some respects to a proposal from the German government (Weber, Ulbricht and Wendorff 2011) that new euro-area bonds be required to include a contractual provision providing for a three-year maturity extension at the volition of the European Stability Mechanism when the latter provides an emergency loan for the government of a member state. The two differences from our proposal is that Weber et al. consider maturity extension only and that the provision would not be automatically when a pre-specified debt threshold was reached; rather, it would be at the volition of the ESM.

There has been some progress in 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 slips below 7 per cent.⁷⁶ 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 their intention 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.⁷⁷ 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.⁷⁸

This approach also has the specific advantage that activation of this contractual provision would not constitute a "credit event" that would trigger credit default swaps (CDS) written on the government debt instruments in question. The existence of large quantities of CDS in the market, together with uncertainty about precisely which financial institutions are responsible for issuing them, has fed the reluctance to proceed with restructuring (reluctance grounded in a fear of creating "an AIG-like event"). This specific obstacle to restructuring the obligations of a borderline-insolvent sovereign would be relaxed by the introduction of instruments with these provisions into the market.

Objections to this idea are obvious – starting with whether sovereigns 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 while the same argument has been made about bank cocos, adequately 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.⁷⁹

⁷⁶ The experience with banks' cocos thus suggests that the threshold specified in the bond contract can be 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.

⁷⁷ 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

⁷⁸ 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.

⁷⁹ 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.

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).⁸⁰ It seems plausible that the pattern would carry over.

That borrowing costs would rise for risky borrowers as the trigger is 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 problems. If coco-like clauses serve to focus the attention of investors, adding them to bond covenants might enhance the 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, and the regional development banks, which publish such numbers as part of their normal reporting but are not parties to the agreement. To further reduce the risk of reporting bias, the agreement could specify the trigger as the higher or lower of two independent estimates.⁸¹

As with the Tier 1 capital ratio, data on sovereign debt ratios are published by these entities only a few times a year. But the banks’ use of Tier 1 ratios suggests that this is not a problem.⁸²

For banks, the academic literature has also suggested an equity price as the trigger (Flannery, 2009). Concerns have been expressed about this idea, however. Bondholders may

⁸⁰ For other countries with low debts and impeccably good credit, where the provision can be seen simply as an insurance policy against exogenous risks (a Japan-like earthquake, for example), it can be argued, in parallel with the results for CACs, that they might end up able to borrow more. These responses should presumably be taken into account when setting trigger levels *ex ante* (see below).

⁸¹ The efforts of Eurostat, the European Union’s statistical agency, to construct comprehensive estimates of the debts of the member states suggest that this task will not be intractable. But the problems it has experienced in constructing tractable estimates for, *inter alia*, Greece suggests that neither will it be easy.

⁸² 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 sovereign cocos alike.

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 over a proxy for the risk-free rate. The spread is then 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, large 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 institute a "cooling off" period, by requiring the spread to persist above the threshold for some months before the trigger event is established.⁸³

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 public spending and a sharp 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.⁸⁴ 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 prevailing 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 be lower since all parties will be forewarned of its imminence and will, therefore, have adequate time to prepare. Even in instances of sharp changes in market sentiment, triggering 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.

⁸³ 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."

⁸⁴ Although experience in previous crises (viz. Argentina) suggests that the necessary period of reputation rebuilding may be shorter than sometimes supposed.

A key issue will be setting the conversion trigger. 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.

That said, 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 action.

VI. CONCLUSION

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

An explanation for this last 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 will 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.” 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 official financing needed to limit the damage.

We have therefore explored ways of automating the restructuring decision as a way of countering this bias. Automating the process has key advantages: it preserves the integrity of the contract (which avoids the uncertainties involved in triggering CDS); it is predictable; and it can be priced. To this end, we explore the idea of adding to future government bond issues so-called sovereign cocos, contractual provisions that automatically lengthen

maturities or reduce interest and amortization payments when a pre-specified debt/GDP ratio is reached.

At this point, sovereign cocos are an idea in search of a proposal. Adding them to future bond issues will require solving difficult technical issues. It would also require solving coordination problems—getting governments to move together. But, equally, not addressing the occurrence 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

	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.				
European crisis					
Ukraine					Nov.08 – Nov.10 Jul.10 – Dec.12 Nov.08 – Oct.10
Hungary	Foreign banks agreed to maintain exposure to their subsidiaries in Hungary.				Nov.08 – Oct.10
Iceland	Losses imposed/agreed with creditors of failed Icelandic banks.				Nov.08 – Aug.11
Latvia	Foreign banks agreed to maintain exposure to their subsidiaries in Latvia.				Dec.08 – Dec.11
Romania	Foreign banks agreed to maintain exposure to their subsidiaries in Romania.				May.09 – May.11
Greece				Voluntary program of debt exchange and a buyback plan for Greek government debt	May.10 – May.13
Ireland	Haircuts on subordinated debt of government-guaranteed Irish banks.				Dec.10 – Dec.13
Portugal					May.11 – May.14
<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>					

References

- Abiad, Abdul, Ashoka Mody, and Daniel Leigh (2009), "Financial integration, capital mobility, and income convergence," *Economic Policy* 24, pp. 241-305.
- Ahearne, Brian, Birgit Schmitz and Juergen von Hagen (2009), "Current Account Imbalances and Financial Integration in the Euro Area," unpublished manuscript, Bruegel and University of Bonn.
- Allen, Peter, Barry Eichengreen and Gary Evans (2011), "European Debt Deal won't Reduce Greece's Debt," www.bloomberg.com (4 August).
- Bates, Robert, Avner Greif, Margaret Levy, Jean-Laurent Rosenthal and Barry Weingast (1998), *Analytic Narratives*, Princeton: Princeton University Press.
- Berger, Helge and Volker Nitsch (2010), "The Euro's Effect on Trade Imbalances," IMF Working Paper no. 10/226 (October).
- Blanchard, Olivier and Francesco Giavazzi (2002), "Current Account Deficits in the Euro Area: The End of the Feldstein-Horioka Puzzle," *Brookings Papers on Economic Activity* 2, pp.148-186.
- Blustein, Paul (2003), *The Chastening: Inside the Crisis that Rocked the Global Financial System and Humbled the IMF*, New York: Public Affairs Books.
- Bordo, Michael, Barry Eichengreen, Daniela Kingebiel and Maria Soledad Martinez-Peria (2001), "Is the Crisis Problem Growing More Severe?" *Economic Policy* 16, pp.53-82
- Boughton, James M. (2000), "From Suez to Tequila: The IMF as Crisis Manager," *The Economic Journal*, 110, pp. 273-291.
- Boughton, James M. (2001), *Silent Revolution, the International Monetary Fund, 1979-89*, Washington, D.C.: IMF (July).
- Celasun, Oya, Xavier Debrun and Jonathan Ostry (2006), "Primary Surplus Behavior and Risks to Financial Sustainability in Emerging Market Countries: A 'Fan-Chart' Approach," in Ashoka Mody and Alessandro Rebucci eds, *IMF Supported Programs: Recent Staff Research*, Washington, D.C.: IMF, pp.401-425.
- Claessens, Stijn, Ceyla Pazarbasioglu, Luc Laeven, Marc Dobler, Fabian Valencia, Oana Nedelescu and Katharine Seal (2011), "Crisis Management and Resolution: Early Lessons from the Financial Crisis," IMF Staff Discussion Note 11/05 (March).
- Cline, William (1995), *International Debt Reexamined*, Washington, D.C.: Institute for International Economics.

Das, Udaibir, Michael Papiouannou and Christoph Trebesch (2011), "Sovereign Debt Restructurings: A Survey and New Database," unpublished manuscript, International Monetary Fund.

Edwards, Sebastian (1986), "The Pricing of Bonds and Bank Loans in International Markets," *European Economic Review* 30 (1986), pp. 565-589.

Eichengreen, Barry (2003), "Restructuring Sovereign Debt," *Journal of Economic Perspectives* 17, pp.79-98.

Eichengreen, Barry (2010), "Imbalances in the Euro Area," paper presented to the Annual Research Conference of DG ECFIN, Brussels (November).

Eichengreen, Barry, Kenneth Kletzer and Ashoka Mody (2003), "Crisis Resolution: Next Steps," IMF Working Paper no.03/196 (October).

Eichengreen, Barry and Ashoka Mody (2003), "Do Collective Action Clauses Raise Borrowing Costs?" *Economic Journal* 114, pp.247-264.

Eichengreen, Barry, Andrew Rose and Charles Wyplosz (1995), "Exchange Market Mayhem: The Antecedents and Aftermath of Speculative Attacks," *Economic Policy* 21, pp.249-312.

Eichengreen, Barry and Michael Bordo (2003), "Crises Now and Then: What Lessons from the Last Era of Financial Globalization?" in Paul Mizen (ed.), *Monetary History, Exchange Rates and Financial Markets: Essays in Honor of Charles Goodhart*, Cheltenham: Edward Elgar, vol. 2, pp.52-91.

Eichengreen, Barry, Poonam Gupta and Ashoka Mody (2006), "Sudden Stops and IMF-Supported Programs," IMF Working Paper WP/06/101 (April).

Eichengreen, Barry and Richard Portes (1995), *Crisis, What Crisis? Orderly Workouts for Sovereign Debtors*, London: CEPR.

Eurogroup (2010), "Statement by the Eurogroup," Brussels: Eurogroup (28 November).

Fitch (2011), *Fitch Ratings Sovereign 2010 Transition and Default Study*, New York: Fitch.

Flannery, Mark (2009), "Market Value Triggers will Work for Contingent Capital Investments," Working Paper, University of Florida.

Folkerts-Landau, David (1985), "The Changing Role of International Bank Lending in Development Finance," *International Monetary Fund Staff Papers* 32, pp. 317-363.

General Accounting Office (1996), "Mexico's Financial Crisis: Origins, Awareness, Assistance and Initial Efforts to Recover," Washington, D.C.: GAO.

Gil-Diaz, Francisco (1998), “The Origin of Mexico’s 1994 Financial Crisis,” *Cato Journal* 17, pp.303-313.

Gilman, Martin (2010), *No Precedent, No Plan: Inside Russia’s 1998 Default*, Cambridge, Mass.: MIT Press.

Ghosh, Atish, et al. (2002) *IMF-Supported Programs in Capital Account Crises*, IMF Occasional Paper 210, Washington D.C.: The International Monetary Fund.

Goldstein, Morris (1998), *The Asian Financial Crisis: Causes, Cures and Systemic Implications*, Washington, D.C.: Institute for International Economics.

Goretti, Manuela and Bikas Joshi (2010), “A Step Closer to a Stronger Global Financial Safety Net,” *IMF Survey Magazine* (30 August), www.imf.org.

Gulati, Mitu and Anna Gelpern (2009), “Innovation after the Revolution: Foreign Sovereign Bond Contracts Since 2003,” *Capital Markets Law Journal* 4, pp.85-103.

Haldane, Andrew (2011), “Capital Discipline,” Speech given at the American Economic Association, Denver, 9 January.

Hanke, Steven (2000), “Abolish the IMF,” *Forbes* (13 April).

Independent Evaluation Office (2007), “Structural Conditionality in IMF-Supported Programs,” Report by the Independent Evaluation Office of the IMF.

Institute for International Finance (2001), *Survey of Debt Restructuring by Private Creditors*, Washington, D.C.: Institute for International Finance.

International Monetary Fund (1989), “The Fund’s Policy on Financing Assurances,” Washington, D.C.: IMF.

International Monetary Fund (1993), “Restructuring of Commercial Bank Debt by Developing Countries: Lessons from Recent Experience,” Washington, D.C.: IMF.

International Monetary Fund (1998), “Fund Policy on Sovereign Arrears to Private Creditors,” Washington, D.C.: IMF.

International Monetary Fund (2001), “Conditionality in Fund-Supported Programs—Overview,” Washington, D.C.: IMF.

International Monetary Fund (2005), “The Design of Fund-Supported Programs,” Washington, D.C.: IMF.

International Monetary Fund (2006), “Cross-Country Experience with Restructuring of Sovereign Debt and Restoring Debt Sustainability,” Washington, D.C.: IMF.

International Monetary Fund (2009), "GRA Lending Toolkit and Conditionality: Reform Proposals," Washington, D.C.: IMF.

International Monetary Fund (2009), "Review of Recent Crisis Programs," Washington, D.C.: IMF.

Kahler, Miles ed. (1986), *The Politics of International Debt*, Ithaca: Cornell University Press.

Kanda, Daniel (2010), "Asset Booms and Structural Fiscal Positions: The Case of Ireland," *IMF Working Paper* No. 10/57, Washington, D.C.: IMF.

Krueger, Anne (2001), "A New Approach to Sovereign Debt Restructuring," Washington, D.C.: IMF.

Lane, Timothy and Steven Phillips (2000), "Does IMF Financing Result in Moral Hazard?" Working Paper no. 00/168, Washington, D.C.: IMF (October).

Meltzer Commission [International Financial Institutions Advisory Commission] (2000), *Report*, Washington, D.C.: GPO.

Mody, Ashoka and Alessandro Rebucci eds. (2006), *IMF Supported Programs: Recent Staff Research*, Washington, D.C.: IMF.

Moody's (2008), *Sovereign Default and Recovery Rates, 1983-2007*, New York: Moody's.

Mussa, Michael (2002), "Reflections on Moral Hazard and Private Sector Involvement in the Resolution of Emerging Market Financial Crises," unpublished manuscript, Institute for International Economics (July).

Panizza, Ugo, Federico Sturzenegger and Jeromin Zettelmeyer (2009), "The Economics of Sovereign Debt and Default," *Journal of Economic Literature* 47, pp.651-698.

Pennacchi, George, Theo Vermaelen, and Christian C.P. Wolff (2010), "Contingent Capital: The Case for COERCs," Faculty and Research Working Paper, INSEAD.

Reinhart, Carmen, Morris Goldstein and Graciela Kaminsky (2000), *Assessing Financial Vulnerability*, Washington, D.C.: Institute of International Economics.

Reinhart, Carmen and Kenneth Rogoff (2008), *This Time is Different: Eight Centuries of Financial Folly*, Princeton: Princeton University Press.

Rodrik, Dani ed. (2007), *In Search of Prosperity: Analytic Narratives on Economic Growth*, Princeton: Princeton University Press.

Rogoff, Kenneth (2010). "Austerity and the IMF," Fifth Annual Richard H. Sabot Lecture, Washington, D.C.: Center for Global Development (April).

Rogoff, Kenneth (2011), "History will Rue US and Europe Debt Woes," *Financial Times*, April 4. <http://www.ft.com/cms/s/0/1399efba-5eea-11e0-a2d7-00144feab49a.html#ixzz1K5qmdJIB>.

Rogoff, Kenneth and Jeromin Zettelmeyer (2002), "Bankruptcy Procedures for Sovereigns: A History of Ideas, 1976-2001," *IMF Staff Papers* 49, pp.470-507.

Roubini, Nouriel and Brad Setser (2004), *Bailouts or Bail-ins? Responding to Financial Crises in Emerging Markets*, Washington, D.C.: Institute for International Economics.

Sheng, Andrew (2009), *From Asian Crisis to Global Financial Crisis*, Cambridge: Cambridge University Press.

Squam Lake Group (2009), "An Expedited Resolution Mechanism for Distressed Financial Firms: Regulatory Hybrid Securities," New York: Council on Foreign Relations Center for Geoeconomic Studies (April).

Standard & Poor's (2010), *Sovereign Defaults and Rating Transition Data, 2009 Update*, New York: Standard & Poor's.

Sturzenegger, Federico and Jeromin Zettelmeyer (2006), *Debt Defaults and Lessons from a Decade of Crises*, Cambridge, Mass.: MIT Press.

Sundaresan, Suresh and Zhenya Wang (2010), "Design of Contingent Capital with a Stock Price Trigger for Mandatory Conversion," Working Paper, Columbia University.

Weber, Axel, Jens Ulbricht and Karsen Wendorff (2011), "Finanzmarktstabilität sichern, Investorenverantwortung stärken, Steuerzahler schonen Ein Vorschlag zur Stärkung des Europäischen Stabilitätsmechanismus durch die geeignete Ausgestaltung künftiger Anleihekonditionen," *Frankfurter Allgemeine Zeitung* (3 March).