INTERNATIONAL MONETARY FUND

THE FUND'S LENDING FRAMEWORK AND SOVEREIGN DEBT—ANNEXES

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- A **Staff Supplemental Report** on *The Fund's Lending Framework and Sovereign Debt—Preliminary Considerations,* prepared by IMF staff and completed on May 22, 2014 for the Executive Board's consideration on June 13, 2014.

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Approved by
Olivier Blanchard,
Sean Hagan,
Siddharth Tiwari, and
José Viñals

Prepared by a team from four departments (LEG, MCM, RES, and SPR) led by Geneviève Verdier. Annex I was prepared by Cesar Serra with input from Suchanan Tambunlertchai, Varapat Chensavasdijai, Francisco Roch (all SPR) and Julianne Ams (LEG). Annex II was prepared by Nelson Sobrinho, Charlotte Lundgren and Cesar Serra with input from Christopher Dielmann (all SPR). Annex III was prepared by Kay Chung, Anastasia Guscina, Michael Papaioannou, Gabriel Presciuttini, Miguel Segoviano (all MCM) and Heiko Hesse with input from Tamon Asonuma, Christopher Dielmann, Charlotte Lundgren and Nelson Sobrinho (all SPR). Annex IV was prepared by Heiko Hesse with input from Christopher Dielmann (SPR). Annex V was prepared by Damiano Sandri (RES) and Suchanan Tambunlertchai (SPR).

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ANNEX I. THE FUND'S EVOLVING APPROACH IN SOVEREIGN DEBT CRISES[1]

This annex describes how the Fund's approach to lending in sovereign debt crises has evolved with changing circumstances since the early 1980s, with a focus on the origins and evolution of the current framework for exceptional access. In the sovereign debt crises of the 1980s, concerted financial support from the private sector was a standard feature of Fund-supported programs, most of which were within the normal access limits. By contrast, the spate of capital account crises that began in the mid 1990s occurred at a time when the creditor base had become much more diffuse, and the Fund's strategy sought instead to entice a resumption of private flows through programs involving large-scale Fund and other official resources. While this strategy worked well in some circumstances, it failed to play its catalytic role in cases where, amongst other factors, the member's debt sustainability prospects were uncertain. In response to this varied experience, and to ensure effective use of its resources, the Fund concluded that decisions to grant access above normal limits should henceforth be guided by defined criteria. These were established in the 2002 Exceptional Access Policy, which included a requirement that public debt be judged as sustainable with "high probability." The framework applied initially only in capital account cases, but in 2009 became applicable to all exceptional access decisions. When Greece requested exceptional access in May 2010, the policy would have required deep debt reduction to reach the high probability threshold for debt sustainability. Fearing that such an operation would be highly disruptive in the circumstances prevailing at the time, the Fund decided to create an exemption to the high probability requirement for cases where there was a high risk of international systemic spillovers—an exemption that has since been invoked repeatedly in programs for Greece, Portugal, and Ireland.

A. Overview

1.   **This annex examines how the Fund's strategic approach to resolving sovereign debt distress has changed since the 1980s.** The analysis broadly defines three phases of the Fund's crisis involvement:

- During the emerging market debt crises of the 1980s, the resolution strategy relied initially on policy adjustment with rescheduling and new money as an interim source of finance, but eventually resorted to debt reduction when adjustment proved insufficient.

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[1]This annex was prepared by Cesar Serra with input from Suchanan Tambunlertchai, Varapat Chensavasdijai, Francisco Roch (all SPR) and Julianne Ams (LEG).

- Capital account crises during 1995–2002 were non-sovereign in nature, with sudden stops typically triggered by broader balance sheet concerns rather than excessive public debt per se. Rescue programs relied on exceptional access of Fund resources to catalyze a return of private flows, but in some cases these failed to materialize, forcing excessive adjustment.

- In light of the experience in the 1990s, and especially in the wake of the Argentina and Russia defaults, concerns about excessive use of Fund resources and insufficient attention to debt sustainability led to reform of the exceptional access policy in 2002, adoption of a more rigorous DSA framework, consideration of the idea of a statutory approach to sovereign debt restructuring, a Sovereign Debt Restructuring Mechanism (SDRM), and Fund advocacy for the use of collective action clauses in sovereign bonds. The global financial crisis triggered an unprecedented demand for Fund resources, and out of concerns for potential systemic effects from debt restructuring, the exceptional access policy was amended in 2010 to facilitate support to euro area countries.

B.   The Emerging Markets Debt Crises of the 1980s

2.   **The early years of the 1980s witnessed severe stress in Latin American economies.** The debt crisis of 1982–83 was the product of massive external shocks and policy errors that significantly reduced developing countries' capacity to service their external debts. The turnaround of easy borrowing conditions that prevailed during the 1970s, after the Fed set out to reverse the inflationary excesses of preceding years, led to a moratorium on Mexico's debt in 1982, triggering the onset of the Latin American debt crisis that lasted through the early 1990s. The Mexican default and the ensuing retrenchment of external financing accelerated the eruption of crises elsewhere, with most Latin American countries turning to the Fund for financial support.

3.   **In response to the strains which emerged in the global economy following the second oil price shock in the late 1970s, access policy allowed the flexibility to provide large-scale Fund resources.** By the end of the 1970s, many members with large payments imbalances were approaching their cumulative limits. The Supplementary Financing Facility (SFF), under which the Fund would on-lend borrowed resources, was introduced in 1979, partly in response to these

developments.[2] The SFF provided for access above normal limits "in special circumstances," establishing what would become known as the "exceptional circumstances" clause in 1983.[3]

4.   **The Fund played a major role in managing the strategy for overcoming the debt crisis, with private sector involvement providing a significant portion of overall financing.** The central role for the Fund was to negotiate adjustment programs and to support those programs with resources covering a limited portion of financing needs. Such a strategy, which in most cases provided access below normal limits, was underpinned by the Fund's position of not bailing out private creditors.[4] In a first phase through 1986, the Fund's strategy followed a "concerted lending" approach, whereby firm commitments were required from creditor banks to support debt rescheduling and new lending as a precondition for Fund financing.[5] In a second phase starting in early 1987, as it became clear that previous efforts had not meaningfully reduced the present value of debt, the Fund recognized the need for market-based debt operations aimed at lightening the burden of debt. This shift in approach preceded the Brady plan of early 1989 that ultimately, with Fund-supported programs, delivered debt sustainability.

5.   **The "concerted lending" approach to resolve the debt crisis initially helped prevent widespread defaults and the collapse of sovereign lending.** The Fund sought to contain the debt crisis through a "case-by-case" strategy aimed at providing enough additional financing to buy time for debtor countries to implement adjustment programs and generate enough growth to restore normal financial conditions.[6] Fund support was conditional upon countries reaching agreement on debt rescheduling and new financing with creditor banks. Several rounds of rescheduling followed, initially extending only debt maturing in the short term, before introducing multiyear rescheduling agreements beginning in 1984.

6.   **The initial response to resolve the debt crisis was clearly designed to address a liquidity problem.** It reflected the Fund's prevailing view during this initial phase that prospects of most indebted countries were sufficiently strong for a combination of policy adjustment and

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[2]The SFF permitted countries under either the credit tranches or the EFF to obtain supplementary and parallel Fund resources (see IMF 2001b).

[3]The "exceptional circumstances" clause was established as such in the context of the review of the Enlarged Access Policy (EAP) in 1983, when the Board decided to "retain the flexibility to approve stand-by or extended arrangements for amounts above the access limits in exceptional circumstances" (see IMF 2004a). The EAP replaced the SFF in 1981.

[4]In the context of the Latin America debt crisis, the "exceptional circumstances" clause was only invoked once, for Mexico's 1989 extended arrangement (see Boughton, 2001).

[5]Op. cit.

[6]Op. cit.

financing to restore sustainable growth and the countries' capacity to service their debt. The Fund viewed the threat of unilateral default as having potentially dire consequences for debtor countries and global financial stability.

7.   **By 1987, the restoration of growth remained an elusive goal, creditor banks had reduced their exposure, and debt overhang continued to weigh on prospects for growing out of debt.** Commodity price declines during the critical early years of adjustment contributed to faltering growth, as did the fact that the importance of structural reforms to promote sustainable growth gained traction only gradually as the decade progressed.[7] But the debt overhang also continued to weigh on growth, as over-optimistic growth projections led to policy adjustment that fell short of what was needed.[8]

8.   **A second phase started with the Fund urging creditor countries to develop debt reduction plans.** During 1987, staff took a clear stand in favor of debt relief for the most heavily indebted countries and some early debt operations were supported through Fund arrangements (e.g., Bolivia's buybacks, Chile's debt-equity swaps, and Mexico's exchange of bank debt with lower face value collateralized bonds).[9] In May 1988, the Managing Director publicly endorsed "*additions to the menu of options that in effect work to reduce the existing stock of debt, while countries simultaneously pursue a return to more normal debtor-creditor relationships*".[10] Furthermore, in September 1988 at the IMF Annual Meetings in Berlin, the Managing Director clearly stated the need for debt relief: "… *we have to recognize that the burden of current and prospective debt service obligations places significant economic and political constraints on policy formulation … techniques must be found, not just to provide additional finance, but also to lighten, in a mutually agreeable, market-based way, the relative burden of existing indebtednes*s."[11]

9.   **The Brady Plan, introduced in March 1989, provided the debt relief needed to address the debt overhang problem once and for all.** It was acknowledged that countries could not extricate themselves from a depressed growth path unless their debt overhang was eliminated and debt-service obligations were reduced to a sustainable level.[12] The Fund played a pivotal role in the

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[7]The Baker Plan, not introduced until October 1985, aimed at strengthening the role of multilateral development banks in promoting structural reforms.

[8]Op. cit.

[9]See Boughton (2001).

[10]At a speech to the seminar on "Latin America in the World Economy," organized by the Aspen Institute in Caracas.

[11]ICMS Meeting 31 (September 25, 1988).

[12]See Boughton (2001).

implementation of the Brady Plan by providing financing to member countries that was earmarked for the repurchase of their own debt at discounted prices and/or the establishment of escrow accounts to guarantee future debt service in exchange for cuts in interest rates (see Box AI1). The agreement with creditor banks was facilitated by the strategy followed during the earlier phase of the crisis, which allowed banks time to provision for the losses that debt reduction would entail,[13] as well as by the offer of a menu of options tailored to creditors' divergent business goals.

Box AI1. Fund Support for Debt and Debt Service Reduction (DDSR) Operations

Evolution of the debt strategy

In 1989, the Fund adopted a new debt strategy to allow countries to use Fund resources, in conjunction with other official support, to finance upfront costs of DDSR operations with commercial banks, such as repurchases of their own debt at discounted prices (buybacks) and the establishment of escrow accounts as collateral for principal and/or interest payments in exchange for cuts in interest rates.[1] Before 1989, the Fund's role in debt reduction operations had been limited to a facilitator, mainly "unlocking" financing for LICs.

The purpose of Fund support for DDSR operations was to help catalyze commercial banks' participation in such operations by financing the associated upfront costs through set-asides (25 percent of access under Fund arrangements) and additional resources from augmentations (up to 30 percent of quota).[2] The set-asides and additional resources were released only after a member had reached an agreement with its commercial bank creditors, and so long as the Executive Board agreed that Fund resources would be used effectively in support of DDSR. The set-asides must leave adequate margins to meet the member's general balance of payments need.

During the early 1990s, more than ten indebted countries—such as Venezuela, Costa Rica, Mexico, and the Philippines—benefited from Fund support to reach agreements with commercial creditors on debt restructuring. Such a support was provided to countries that pursued strong economic policies and in which the implementation of market-based debt reduction was expected to contribute to the restoration of external viability.

The Fund's policy on support for DDSR operations was pivotal in resolving the long debt crisis that started in the early 1980s, but it had limited use by the late 1990s, as countries increasingly turned to capital markets rather than bank lending for their financing needs. In 1997, the Board noted that "… this phase of the evolving approach to dealing with the debt crisis that erupted 15 years ago is drawing to a close. The remaining cases of commercial bank debt to be dealt with are a small residual."[3] In light of such developments, the policy was terminated in 2000.

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[13]As reflected in Citibank's decision of May 1987 to add US$3 billion to its reserves as a provision against possible losses on sovereign loans.

Box AI1. Fund Support for Debt and Debt Service Reduction (DDSR) Operations (concluded)

Poland and DDSR operations

The experience of Poland provides a practical example of how the policy was applied. In the context of the 1994 stand-by arrangement, Poland received Fund support for DDSR operations through both set-asides and augmented access. Upon agreement with commercial bank creditors, the authorities requested an augmentation of access and a release of the accumulated set-asides to assist with the financing of the commercial bank debt operation. The operation regularized USD 14.4 billion of commercial debt at an upfront cost of USD 1.9 billion, divided among debt buybacks and the purchase of collateral for principal.

The Fund determined that Poland's DDSR operation was consistent with Fund guidelines: commercial bank participation was voluntary; the package was market-based and the terms of the operation were more favorable than secondary market conditions prevailing at that time; the authorities contributed a significant amount from the country's own resources; and the package constituted a crucial step in Poland's progress toward external viability.

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[1] See IMF 2000a.

[2] Initially, Fund support for DDSR operations was segmented between set-asides and augmentations. While set-aside resources were use to finance debt reduction in the form of buybacks and principal and interest collateral on discount bond exchanges, augmentations funded interest collateral for both discount bond and reduced-interest par bond exchanges. In 1992, confronted by the rise in the cost of principal support relative to interest support given the decline of U.S. interest rates, the Board revised the DDSR guidelines to permit the use of augmentations to finance the collateralization of principal in reduced-interest par bond exchanges. Eventually, the Board eliminated the segmentation requirement in 1994, making it possible to use both set-asides and augmentations to support operations involving debt reduction, interest support for DDSR, and principal collateral for reduced-interest par bonds.

[3] See IMF 2000a.

C. The Capital Account Crises of 1995–2002

10.   **Capital account crises took different forms in the 1990s, reflecting distinctive domestic and external vulnerabilities.** In the first wave—beginning with Mexico's "tequila crisis" in 1995 and followed by the Asian crisis of 1997—the sudden reversals of private capital flows were not related directly to high public indebtedness but rather to investor concerns about excessive dependence on short-term funding, currency and maturity mismatches, and perceived weaknesses in the financial and corporate sectors in the countries involved. Nevertheless, the ensuing exchange rate pressures and banking sector problems transformed a purely private external financing gap into sovereign funding stress. After 1998, the sovereign defaults of Russia and Argentina marked a new bout of sovereign debt crises engendered by significant fiscal imbalances and structural rigidities.

11.   **In contrast to the engagement with Latin American countries in the 1980s, rescue programs were based on massive Fund and other official financing, aimed at catalyzing a return of private capital flows.** A strategy combining exceptionally large Fund access (and sometimes other official financing) with economic adjustment and reform by the member was intended to help restore confidence, halt capital outflows, and support a transition back to access to

private capital markets.[14] Given the large up-front needs, and an assumption that the crisis of confidence would be short-lived, access was heavily frontloaded in all cases.[15]

12. **Such exceptional provision of Fund resources above normal access limits was made possible by the highly discretionary access policy prevailing at the time.** The "exceptional circumstances" clause—the use of which was not governed by any established criteria—was invoked 14 times between 1995 and 2002, in order to provide access above normal limits in the credit tranches or the EFF. In addition, in the midst of the Asian crisis in 1997, the Fund created the Supplemental Reserve Facility (SRF), which was not subject to access limits.[16, 17]

13. **While the approach relied primarily on the pure catalytic effect of Fund financing, limited forms of concerted private sector involvement were attempted in some programs.** By the late 1990s, bonded debt had become more prevalent, and the creditor base more diffuse, making private creditor coordination more difficult than it had been in the 1980s. Attempts at private sector involvement were generally cautious, for fear of exacerbating the massive capital outflows experienced at the time as well as adding to contagion effects. In some early programs— Argentina (1995), Mexico (1994), Turkey (1994), and the Philippines (1997)—private sector involvement was not needed or was not attempted. However, in crises where the catalytic effect of programs was much weaker than had been hoped—leading to large financing shortfalls and excessive adjustment—some form of private sector involvement was pursued, though its detailed form varied depending on individual country circumstances.[18] While in some cases the approach

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[14]The Fund lent more in these exceptional access cases than it had in any previous arrangements in its history, with cumulative access committed under most of the arrangements in the range of 500-700 percent of quota (see IMF 2002a).

[15]The Fund expected a quick turnaround of capital outflows and as such the average length of arrangements was 2½ years and purchases of more than 70 percent of total access during the first year of the arrangement were available in all cases.

[16]The SRF could provide large-scale financial assistance to members experiencing *"exceptional balance of payments difficulties due to a large short-term financing need resulting from a sudden and disruptive loss of market confidence reflected in pressure on the capital account and the member's reserves"* and where there was *"a reasonable expectation that the implementation of strong adjustment policies and adequate financing will result, within a short period of time, in an early correction of such difficulties"* (Press Release Number 97/59). The first use of Fund resources under the SRF was agreed for Korea on December 1997 and since then it has been used by Argentina, Brazil, Russia, Turkey and Uruguay.

[17]The SRF decision stated that such financing would be available to members where "the projected access in the credit tranches or under the extended Fund facility, taking into account outstanding purchases, would otherwise exceed either the annual or cumulative limit. In those cases, unless the member's medium-term financing needs require access in the credit tranches or under the extended Fund facility beyond the annual or cumulative limit, financing in the credit tranches or under the extended Fund facility will not be provided beyond the annual or cumulative limit, and financing beyond either limit will be provided only [with SRF resources]".

[18]See Lane and others, (1999), IMF (2000), and Ghosh and others, (2002).

relied on informal pressure on international banks to maintain their exposure (Thailand, 1997; Brazil, 1999), in others direct pressure was applied to transform existing interbank credit lines into new short- to medium-term instruments, although in both cases the rescheduled bank debt benefited from an explicit government guarantee (Korea and Indonesia, 1998).

14.   **By the early 2000s, concerns were growing in the Fund—and within the official sector more generally—that large-scale Fund financing packages were creating adverse systemic risks.** The pure catalytic approach had had limited success, and there was a perception that the use of Fund resources by the sovereign simply to repay maturing debt obligations generated moral hazard, particularly in situations where debt sustainability was in doubt (see Box AI2). This concern was heightened when Russia and Argentina defaulted on their debt shortly after approval of augmentations of their Fund arrangements. Moreover, the degree of discretion and flexibility in the existing framework at that time was seen as making the Fund more vulnerable to pressure to provide exceptional access even when prospects for success were quite poor and the debt burden of the sovereign was likely to be unsustainable.[19] Additionally, market participants argued that the lack of clarity in the framework was creating uncertainty in financial markets when a country approached the Fund. Last, but certainly not least, the provision of exceptional access under these circumstances called into question the adequacy of safeguards for Fund resources.

15.   **These concerns were reflected in the "Prague Framework for Private Sector Involvement,"** which was endorsed by the IMFC in September 2000. The Prague Framework stated that extraordinary access to Fund resources should be exceptional, and noted that a *"spectrum of actions by private creditors, including comprehensive debt restructuring, may be warranted to provide for an adequately financed program and a viable medium-term payments profile."* The IMFC further agreed that any operational framework for private sector involvement must be based on the Fund's assessment of a country's underlying payment capacity and prospects of regaining market access, and should rely as much as possible on market-oriented solutions and voluntary approaches.[20] These principles set the stage for the development of a new Exceptional Access Policy in 2002.

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[19]See IMF 2002a.

[20]See Annex I, IMF2002a.

Box AI2. Creditor Bailout in Fund-Supported Programs

This box examines external debt restructuring episodes between 1995 and 2012 that took place during a Fund-supported program and evaluates whether Fund (and other official) resources were used to pay out private creditors in periods leading up to an eventual debt restructuring or default. For cases where data are available, we compare the amounts of financing received against the debt service schedule. Net positive financing from the official sector, including the IMF, that offsets reduced financing from the private sector is taken as evidence of a "bailout" (see table below).

We find that private sector bailouts have tended to take place in larger (more "systemic") countries, albeit to varying degrees. Bailouts were seen in Argentina, Russia, Pakistan, Greece, and to a smaller extent, Turkey. The Fund and the official sector in fact stepped up disbursements in Argentina, Russia, and Turkey as the crises intensified and private creditors exited.

- In the months leading up to its default in December 2001, *Argentina* received large net financing from the Fund which helped meet its external private debt service.

- In *Russia*, private sector bailout took place over a longer period, as the Fund had been disbursing to Russia since 1995, when signs of insolvency had already begun to emerge. During 1995 and 1996, Fund financing did make up for a shortfall in private sector financing. However, the extent to which the IMF, and the official sector more broadly, bailed out private creditors immediately before the August 1998 default is more difficult to assess as Russia received net positive external financing from both the official and private sector creditors at that time.

- In *Pakistan*, official sector financing, of which the Fund's share was relatively small, began replacing private sector flows as the crisis intensified in 1998.

- In *Greece*, financial support from the Fund and the EU were used in part to finance the exit of private creditors in the two years leading up to the restructuring of private debt in 2012. The amount of official resources deployed in this way totaled about €48 billion, or 23 percent of Greece's GDP.

- In *Turkey*, Fund financing was used to contribute to the sovereign's large debt repayments. However, the extent of the bailout was limited as shortly after the program began Turkey successfully negotiated a voluntary PSI which maintained private sector exposure (foreign and domestic) in the country.

In the less systemic economies, Fund support was conditional on, or came after, debt restructuring. This was the case in Dominican Republic, Ecuador, St. Kitts & Nevis, Seychelles, and Uruguay. For all these countries, debt restructuring was assumed in the program baseline. In Ukraine, IMF financing and the program's NIR targets were coordinated in such a way that the authorities had no choice but to reschedule debt that was falling due.

Box AI2. Creditor Bailout in Fund-Supported Programs (concluded)

Countries with External Debt Restructuring between 1995 and 2012

Country	IMF program	External debt restructuring	Private creditor bailout	Summary
Argentina	Mar-00	Apr-05	Yes	IMF disbursements were stepped up as crisis intensified; IMF provided net positive financing, making up for net negative private external financing prior to default in December 2001.
Dominican Republic	Jan-05	May-05	No	Restructuring was announced prior to IMF program. Ne IMF financing during program was small.
Ecuador	Jan-00	Jul-00	No	Restructuring was announced prior to IMF program. Roughly zero net IMF and official sector funding during the program.
Greece	May-10	Mar-12	Yes	IMF and EU financing of around €48 billion, or 23 percent of Greece's GDP, was used to pay out private creditors in the years leading up to the restructuring in 2012.
Pakistan	Oct-97	Nov-99	Yes, partially	IMF disbursements were made until debt restructuring. Pakistan serviced international bonds, domestic debt, IFIs' debt in the meantime, but net IMF financing was small.
Russia	Jul-98	Jul-98	Yes, partially	IMF disbursements were stepped up as crisis intensified; IMF and external private sector provided net positive financing, some of which was used to repay domestic debt falling due.
Seychelles	Nov-08	Feb-10	No	Defaulted prior to IMF program; restructuring was assumed in program baseline.
St. Kitts & Nevis	Jul-11	Apr-12	No	Defaulted prior to IMF program; restructuring was assumed in program baseline.
Turkey	Dec-00	n/a	Yes	Turkey serviced its debt up until debt exchange in June 2001, significant IMF disbursements in the interim.
Ukraine	Sep-98	Sep-98 to Aug-99	No	Program was designed to avoid private sector bailout. Net purchases were small, and together with tight NIR targets the government had no choice but to reschedule debt falling due.
Uruguay	Mar-02	May-03	No	IMF disbursements were deposited at the central bank as Fund for the Stability of the Banking Sector. Restructuring was announced prior to continued use of Fund resources.

Source: IMF Staff Reports.

D.   The Exceptional Access Policy and Sovereign Debt Crises since 2003

Development of the exceptional access policy

16.   **The new exceptional access policy (EAP) in capital account crises was adopted in 2002 and became fully operational in February 2003.** In response to shareholders' concerns, the reform was intended to move from a regime that allowed excessive discretion in the use of Fund resources above normal access limits to a more systematic framework that would constrain that discretion. In particular, the Board agreed that the following set of substantive criteria would need to be met to justify exceptional access for members facing a capital account crisis:

1) The member is experiencing exceptional balance of payments pressures on the capital account resulting in a need for Fund financing that cannot be met within the normal limits.
2) A rigorous and systematic analysis indicates that there is a high probability that debt will remain sustainable.
3) The member has good prospects of regaining access to private markets within the time Fund resources would be outstanding.
4) The policy program of the member country provides a reasonably strong prospect of success, including not only the member's adjustment plans but also its institutional and political capacity to deliver that adjustment.

17.   **The "rigorous and systematic analysis of debt sustainability" (required under Criterion 2) gave more prominence to the recently improved DSA.**[21] The DSA was seen as a crucial input for the decision on whether exceptional access was justified or a debt restructuring was warranted instead. In 2003, the Board agreed that access in cases where a debt restructuring was needed would normally be expected to be within the normal access limits, although there could be rare circumstances warranting exceptional access.[22] Staff argued that such exceptional circumstances could arise when a country was not in a position to repay the Fund or where there was a need for additional financing to support the member's strategy to limit the economic disruption associated with debt reduction. In addition, it was recognized that Fund financing should not unduly increase

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[21]A modified debt sustainability framework for market access countries, including standardized sensitivity analysis, was developed in May 2002.

[22]The Board also agreed that the procedures for decision-making on exceptional access would apply to any exceptional access cases, even when the member was not experiencing a capital account crisis (see IMF 2003e).

the rigidity of the member's debt stock (e.g., by leaving member countries heavily dependent on official financing).[23]

18.   **The Prague Framework for PSI however, did not provide a clear mechanism to prevent holdouts.** This led the Fund to consider the idea of a statutory approach that would provide strong incentives for debtors and their creditors to reach cooperative agreements and facilitate orderly debt restructuring. The staff's proposal—SDRM—aimed at preventing potential holdouts by considering imposing a binding majority of creditors to accept a restructuring offer, and promoted the establishment of an arbitration body, the Debt Resolution Forum, responsible for approving members' restructuring plans as well as assisting with the resolution of debt disputes.[24] However, the SDRM did not receive sufficient support from the international community and, at the time of the 2003 Spring Meetings, the IMFC recognized that its establishment was not feasible. Instead, it welcomed the enhancement of the contractual approach, namely the inclusion of collective action clauses (CACs) in international sovereign bond issues.[25]

19.   **In the context of the 2002 EAP reform, the Board also discussed the merits of considering regional and systemic contagion as a potential justification for exceptional access.** Staff argued that cross-border contagion should not be used to justify exceptional access when the other criteria were not met. Such an exemption would provide higher access, in relation to quota, to large systemic countries which—it was argued—may be inconsistent with uniformity of treatment under the Articles of Agreement.[26] Moreover, it could also revive moral hazard concerns that the EAP reform aimed to mitigate. The Board concurred with staff, recognizing that the Fund should be prepared to provide exceptional access where the member's problems have regional or systemic contagion effects only when the other criteria are met.[27]

20.   **In late 2003, Argentina and Brazil were granted exceptional access, though neither country satisfied all the EAP criteria.** This was possible because the EAP applied only to members experiencing severe capital account pressures (Criterion 1), which was not considered to be the case for either country. In cases where a debt restructuring was needed, the Board had agreed that exceptional access could be provided under rare circumstances as noted above. In light of such

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[23]See IMF 2003a.

[24]See IMF 2003d.

[25]See "Communiqué of the International Monetary and Financial Committee of the Board of Governors of the International Monetary Fund," Washington, D.C., April 12, 2003.

[26]See IMF 2002a.

[27]See IMF 2002b.

flexibility, Argentina was granted exceptional access on the basis of sizable external financing gaps projected over the program period (424 percent of quota, with more than half available during the first year of the program).[28] Brazil's case was somewhat different: it was seeking precautionary support, which by definition fell outside of the scope of Criterion 1.

21.   **Staff sought to address these apparent anomalies through a revision of the framework in early 2004, but the proposed amendments were not approved at that time.** The changes would have allowed lending to proceed when there was a potential rather than existing balance of payments need or when debt sustainability could be achieved on a "forward looking" basis, i.e., taking into account planned policy adjustment and/or debt restructuring.[29] Based on such a revision, staff recommended that any request for exceptional access would need to satisfy all EAP criteria. The Board declined to support this proposal, given the limited experience under the new framework. However, it was agreed that, in cases where the member is not experiencing a capital account crisis, the procedures for exceptional access would apply and the request would be judged "*in light of the four substantive criteria*"—meaning that, in noncapital account cases, approval of the request would not necessarily be conditioned on meeting all of these criteria.[30]

22.   **It was not until 2009 that the Board adopted reforms aimed at resolving the perceived inconsistencies in the EAP.**[31] Foremost amongst these problems was the asymmetry of treatment between capital and noncapital account crises (see Table 1).[32] In capital account crisis cases, the framework effectively precluded the use of exceptional access when the debt position at the time of the member's request for financial support was judged to be unsustainable even if sustainability could have been restored through policy adjustment and/or debt restructuring. By contrast, in

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[28]The Report on Exceptional Access for Request of Stand-by Arrangement at the time of the 2003 SBA request argued that the exceptional high proposed access reflected the need to restructure public and private debt, rebuild reserves, and repay the Fund (see IMF 2003b).

[29]Staff proposed the following revised criteria. Criterion 1: The member has an actual or <u>potential</u> need for Fund financing that cannot be met within the normal limits. Criterion 2: A rigorous and systematic analysis indicates that there is a high probability that its debt will remain or <u>be made sustainable</u> (see IMF 2004a).

[30]See IMF 2004b.

[31]See "Review of Fund Facilities—Analytical Basis for Fund Lending and Reform Options," (February 2009) and "GRA Lending Toolkit and Conditionality: Reform Proposals," (March 2009).

[32]At the time of the "Review of Access Policy in the Credit Tranches and Under the Extended Fund Facility and the Poverty Reduction and Growth Facility, and Exceptional Access Policy" in 2008, staff already recognized that the asymmetric treatment between capital account and noncapital account crises cases in the EAP had led to a perception that exceptional access decisions in the latter cases were ad hoc. However, given the limited recourse to the exceptional access framework since 2005, staff did not propose any changes. In addition to the cases of Argentina and Brazil discussed above, the exceptional access stand-by arrangements of Turkey and Uruguay in 2005 did not meet the EAP criterion 1.

situations where financing needs did not stem from a capital account shock, the policy was far more permissive of access requests above normal limits.[33] Additionally, as noted above, the framework was incompatible with the provision of exceptional access under potential rather than existing balance of payments needs. The staff's proposal was intended to streamline and clarify the EAP criteria by adopting the general principle that lending above access limits was permitted as long as there was a credible strategy to address the debt situation and restore debt sustainability.

23. **Under the 2009 reform all revised criteria for exceptional access would henceforth need to be satisfied for the approval of any request involving GRA access beyond the normal limits.** Criterion 1 to 3 were revised (revisions underlined) as follows:

1) The member is experiencing or has the potential to experience exceptional balance of payments pressures on the current account or the capital account, resulting in a need for Fund financing that cannot be met within the normal limits.

2) A rigorous and systematic analysis indicates that there is a high probability that the member's public debt is sustainable in the medium term. Debt sustainability for these purposes will be evaluated on a forward-looking basis and may take into account, inter alia, the intended restructuring of debt to restore sustainability. This criterion applies only to public (domestic and external) debt. However, the analysis of such public debt sustainability will incorporate any potential contingent liabilities of the government, including those potentially arising from private external indebtedness.

3) The member has prospects of gaining or regaining access to private capital markets within the timeframe when Fund resources are outstanding.

4) The policy program of the member country provides a reasonably strong prospect of success, including not only the member's adjustment plans but also its institutional and political capacity to deliver that adjustment.

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[33]In addition to the changes to the EAP described above, the 2009 reform doubled access limits to an annual limit of 200 percent of quota and cumulative limit of 600 percent of quota and added to the GRA lending toolkit new "precautionary" facilities to help contain contagion risks for countries with broadly sound fundamentals and policies. The 2009 reform also eliminated the SRF given its relative inflexibility and limited used as the evidence shows that capital account crisis do not quickly turnaround. In the most recent exceptional access arrangements (Georgia, Iceland, Hungary, Latvia, Pakistan, and Ukraine), the SRF was considered inappropriate due in part to the mismatch between its short maturity and the expected duration of the crises affecting these countries.

Recent experience under the EAP framework

24.   **The global financial crisis brought an unprecedented demand for Fund-supported programs after 2008.** While between 2004 and 2007 only two exceptional access stand-by arrangements were approved (Turkey and Uruguay in 2005), the global financial crisis led to a spate of high-access programs and the commitment of more than US$250 billion in loans to member countries.

25.   **Unlike past crises, which mostly involved emerging markets, the global financial crisis exposed deep-rooted external imbalances in advanced economies.** With the exception of Cyprus, whose extended arrangement was under normal access limits, other Euro Area (EA) program countries required a historically unprecedented level of Fund and official support to deal with their high fiscal financing requirements, structural imbalances, and financial market turbulence. In contrast with the Fund's catalytic role in past crises, EA program countries were taken out of the market for extended periods. As a result, EA program financing has relied almost entirely on the official sector.

26.   **In May 2010, the EAP was once more revised in the context of the Greek program approval.** An important rigidity of the EAP came to the fore when Greece requested financial support in early 2010. When "significant uncertainties" surrounding the sustainability assessment prevented staff from affirming that debt was sustainable with high probability, the existing EAP framework would call for a debt reduction operation to deliver such high probability as a condition for the provision of exceptional access.[34] In the case of Greece, where the high probability requirement was not met, however, there were fears that an upfront debt restructuring would have potentially systemic adverse consequences on the euro area. Given the inflexibility of the EAP, and the crisis at hand, the Fund decided to create an exemption to the requirement for achieving debt sustainability with a high probability when there was a "high risk of international systemic spillovers". Since then, the systemic exemption has been invoked 34 times by end-May, 2014 in the three EA programs for Greece, Portugal, and Ireland.

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[34]Such a higher evidentiary requirement is not binding when countries request Fund financial support below normal access limits. In the past, countries in this group that experienced a debt crisis have used lighter forms of restructurings—face-value preserving maturity extensions with moderate NPV reductions—that together with strong implementation of adjustment programs put debt into a sustainable path. However, such a practice in cases where debt was too high, and especially for too long, has not been successful (see Box 3 in the main paper).

27.   **In the context of a deep and prolonged recession, massive financing needs and an undercapitalized banking system, it became clear in 2011 that a debt restructuring would be needed for Greece.** At the time of the 4th Greece review, in mid-2011, the staff report acknowledged that PSI would be necessary to close financing gaps and address debt sustainability concerns.[35] The debt exchange in March/April 2012 resulted in a reduction of more than 50 percent of eligible debt (about €200 billion) after attracting a participation rate of close to 97 percent. In late 2012, a second round of PSI was implemented through a buyback operation that retired sovereign bonds issued in the context of the debt exchange. By the time of these debt restructurings, however, private creditors had been paid out a total of almost €50 billion, drawing on resources provided by the Fund and other official creditors to support Greece's program.

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[35]See IMF 2011.

Table AI1. Exceptional Access Programs since 2003

Year	Country	Arr. Type	If capital account crisis, were all other EAC met?
2002 reform			
Capital account crises			
2008	Hungary	SBA	Y
2008	Iceland	SBA	Y
2008	Latvia	SBA	Y
2008	Ukraine	SBA	Y
2009	Armenia	SBA	Y
2009	Belarus	SBA	Y
2008	Pakistan	SBA	Y
Non capital account crises			
2003	Argentina	SBA	
2003	Brazil	Precautionary SBA	
2005	Turkey	SBA	
2005	Uruguay	SBA	
2008	Liberia	EFF	
2009	El Salvador	SBA	
2009	Mongolia	SBA	
2009 reform			
2009	Costa Rica	SBA	
2009	Guatemala	SBA	
2009	Romania	SBA	
2009	Sri Lanka	SBA	
post- 2010 modification (systemic exemption)			
2010	Greece	SBA	
2010	Ireland	EFF	
2010	Ukraine	SBA	
2011	Portugal	EFF	
2011	Romania	SBA	
2011	St. Kitts and Nevis	SBA	
2012	Greece	EFF	
2012	Jordan	SBA	
2014	Ukraine	SBA	

Source: IMF Staff Reports.

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ANNEX II. A REVIEW OF SOVEREIGN DEBT RESTRUCTURINGS SINCE THE 1980s[36]

A. Introduction

28.   **In May 2013, the Board reviewed the Fund's recent experience with sovereign debt restructurings.** Looking at the experience with restructurings since 2005, the staff paper argued that unsustainable debt situations often fester before they are resolved and, when restructurings do occur, they do not always restore sustainability and market access in a durable manner, leading to repeated restructurings.

29.   **During the Board discussion, and in subsequent interactions with market participants,** some questioned whether this assessment holds over a broader period and sample. Many noted, in particular, that the case of Greece—which featured prominently in the staff's analysis—was sui generis and some argued that, in general, restructurings have been timely and effective in restoring sustainability, compared to reasonable counterfactuals. It was also suggested that countries are often able to get out of debt distress without requiring a restructuring, and hence the Fund's lending framework should allow a case-by-case treatment in high debt situations.

30.   **This broader retrospective addresses these points, based on experience with debt distress and restructurings over a much longer period than considered in the 2013 Board paper.** The analysis draws on both country case studies and cross-country empirical work to answer the following questions:

- *When countries experience debt distress, how often and under what circumstances are they able to exit stress without needing a restructuring?* The finding is that, in many cases, countries were indeed able to avoid a debt restructuring. Nevertheless, in a significant number of cases an exit from distress entailed a restructuring. Not surprisingly, lower initial debt levels and stronger fundamentals made it more likely that a country could exit debt distress without a restructuring.

- *When restructurings have been used, have they generally been timely and adequately-sized?* This review confirms the earlier assessment that countries often delayed needed debt reduction and debt overhangs tended to persist for several years before a restructuring was

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[36]This Annex was prepared by Nelson Sobrinho, Charlotte Lundgren, and Cesar Serra with input from Christopher Dielmann under the supervision of Geneviève Verdier (SPR).

undertaken. Restructurings also often appear to have been insufficient to bring debt down to lower and safer levels. This suggests that, although a debt reprofiling may be the appropriate option under certain conditions, if it fails to pave the way to a sustainable outcome, it should be followed by definitive debt reduction—"repeat" reprofilings should be avoided.

- *In what circumstances have restructurings been effective in establishing sustainability?* On average, two-thirds of a representative sample of restructurings with private foreign creditors in market access countries resulted in a "non-cured" outcome, requiring further restructuring. In cases where initial debt was high a significant NPV reduction was needed to help increase the likelihood of a successful restructuring. In cases where initial debt was at more moderate levels, a relatively small NPV reduction was enough to raise the likelihood of a successful restructuring. These findings suggest that a reprofiling has a good chance of working at moderate levels of debt but should be avoided in favor of a debt reduction at higher levels of debt.

B. Successful Avoidance of Sovereign Debt Restructuring

When countries experience debt distress, how often and under what circumstances are they able to exit stress without needing a restructuring?

31.   **To address this question, staff examined episodes of exit from debt distress in both advanced and emerging markets between 1980 and 2012.**[37] Staff used two complementary ways to measure debt distress: (i) on the basis of the level of debt (when public debt exceeded 60 percent of GDP) and (ii) using sovereign debt ratings (when such ratings fell to a trough before eventually recovering). This dual approach, though very stylized, is intended to capture the fact that countries can face difficulties even at comparatively low levels of debt.[38] Exit from distress was defined in two alternative ways:

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[37]The sample comprises 107 countries (34 advanced and 73 emerging economies) for which public debt data are available for at least 10 consecutive years over the period 1980–2012. A total of 229 debt restructuring episodes over the same period are considered in the sample, of which 15 are associated with domestic debt, 99 with private foreign creditors, and 115 with official creditors (see Figure 5 and Table 2). Multiple restructurings of the same type (domestic, private foreign or official) and in the sample year are aggregated and count as a single episode. Sources for data on debt restructurings include Reinhart and Rogoff (2009), Cruces and Trebesch (2013), Das *and others* (2012), and IMF staff reports. The main sources for debt and other macroeconomic data are Abbas and others (2010), Mauro and others (2013), the World Bank's World Development Indicators and WEO. Data on credit ratings come from the three rating agencies (S&P, Moody's and Fitch) and go through 2013.

[38]Nevertheless, these indicators may not capture all debt distress cases. For example, countries may experience debt distress at debt levels lower than 60 percent, while others may be able to sustain much higher debt levels with no

(continued)

- *A large debt reduction (LDR)*, defined as cases where (i) initial debt at the beginning of the episode exceeded 60 percent of GDP; (ii) debt fell for at least 5 years subsequently;[39] and (iii) the total reduction was at least 10 percentage points of GDP (Appendix, Table A1).

- *A durable recovery in sovereign debt ratings*, defined as cases where (i) ratings reached a trough and recovered to at least an average B- rating;[40] (ii) they remained above the trough 5 years later; and (iii) negative blips of at most one notch were allowed during the 5 years following the trough. Credit ratings are averages of comparable numerical values assigned to the letter ratings on foreign and local currency debt from Standard and Poor's, Moody's and Fitch (Appendix, Table A2). The selected sample includes countries that experienced a significant ratings downgrade (the average rating downgrade was about 4 notches) and a few countries that, despite experiencing mild downgrades, were clearly facing significant stress (e.g., Brazil in 1998 and 2002, and Turkey in 1996 and 2001). The selected sample excludes ongoing distress episodes (e.g., Greece, Jamaica, Belize) and cases of ratings downgrades leading to a final rating above A-/A3 (Appendix, Table A2).[41]

32.   **While many countries were able to exit from debt distress without a restructuring, a significant number of cases involved a debt restructuring.** As shown in Figure AII1, out of 68 cases of large debt reductions, about one half (32, all in emerging economies) entailed a restructuring of debt owed to private foreign, official, or domestic creditors. Most restructurings occurred when debt peaked or during the 5 years thereafter.[42] When measured on the basis of recovery in credit ratings, one fifth of all cases (7 out of 34) entailed a debt restructuring. The lower

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adverse effects. However, this level is consistent with debt burden benchmarks estimated for the Fund's debt sustainability framework for market-access countries (MAC DSA). A signal approach was used to estimate benchmarks which indicate the level of the debt-to-GDP ratio which best predicts the occurrence of a debt distress event. This level was estimated at 60 percent for emerging markets and 70 percent for advanced economies. An alternative would be to use the full range of debt burden indicators used in the MAC DSA. Unfortunately, comprehensive data are not available for most of these indicators over a long time horizon.

[39]This criterion implies that debt is clearly on a downward trajectory. It does not require that debt is falling in every single year. Instead, it allows for small increases as long as long the debt level does not exceed its initial level which by construction is the peak over the episode.

[40]No country has been able to regain market access with a rating below B-.

[41]Such cases were excluded as credit agencies consider that the payment capacity of sovereigns with ratings above A-/A3 is strong. A downgrade from AAA to the AA segment, for example, is therefore not included in a sample meant to include episodes of debt distress.

[42]Some of the 32 cases were preceded by other debt restructurings; however, only those restructurings that strictly coincided with the debt reduction episodes were considered in the analysis. The remaining 36 cases (15 in advanced and 21 in emerging economies) entailed only two restructurings in the three years preceding the reduction episodes and none during or thereafter.

share of restructurings in this case is likely due to the fact that sovereign ratings can fall below B-even if debt is not too high if the country faces temporary liquidity problems.

Figure AII1. Exit from Debt Distress

Debt restructuring and large debt reductions, 1980-2012 [1/]

Debt restructuring and durable recovery in ratings, 1980-2013 [2/]

large debt reduction = 68   debt restructuring = 229

durable recovery = 34   debt restructuring = 18

| 36 | 32* | 136 |

| 27 | 7 | 11 |

[1/]**Large debt reduction episodes** are defined as: (i) initial debt was larger than 60 percent of GDP; (ii) debt fell for at least 5 years subsequently; and (iii) the total reduction was at least 10 p.p. of GDP. *The 32 debt reduction episodes correspond to 93 debt restructurings during the episode. The latter is larger because several restructurings may occur during a debt reduction episode and because restructurings of different types may occur in a single year (these were not aggregated in a single event in this exercise).

[2/]**Durable rating recoveries** are defined as: (i) ratings downgrades and recovery to at least B- rating; (ii) ratings remained above the trough 5 years later; and (iii) ratings experienced blips of at most one notch 5 years after the trough.

Sources: Fund staff calculations. **Restructuring episodes**: Reinhard and Rogoff (2009); Das, Papaioannou and Trebesch (2012); and Cruces and Trebesch (2013). **Debt data**: Abbas, Belhocine, El-Ganainy and Horton (2010); Mauro, Romeo, Binder and Zaman (2013); WEO; and Moody's.

33.   **Countries that exited debt distress without the need for a restructuring generally faced milder initial conditions.** As shown in Table AII1, countries that were able to avoid a restructuring had lower initial levels of total public and public external debt and a smaller rise in debt in the years preceding the debt peak. They also had higher primary and current account balances, stronger growth, lower spreads, and smaller exchange rate depreciation in the preceding years. Thus, the data suggest that a country has a better chance of avoiding a debt restructuring if it has lower initial indebtedness and more favorable macroeconomic indicators. These qualitative results are robust to reducing or increasing the debt-to-GDP threshold for debt distress (from 60 percent to 40 or 80 percent).

Table AII1. Initial Conditions Prevailing before Large Debt Reductions in Emerging Economies [1]
(percent GDP, unless otherwise stated)

Variable	Description	LDR associated with debt restructuring [2]	LDR without debt restructuring [3]
Number of LDR episodes		32	21
Number of debt restructurings		93	0
Public debt level	at t = 0	100.4	79.8
Public debt build-up	increase from t = -3 to t = 0	43.8	7.1
External public debt level	at t = 0	66.0	47.2
External public debt build-up	increase from t = -3 to t = 0	24.1	10.7
Primary balance	average, t =-3 and t = 0	0.8	1.7
Current account deficit	average, t =-3 and t = 0	3.0	2.0
GDP growth	average, t =-3 and t = 0, in percent	1.1	1.8
Bond spreads	average, t =-3 and t = 0, in basis points	1108	462
Depreciation of the REER	average, t =-3 and t = 0, in percent	4.6	1.9

Sources: Fund staff calculations. **Restructuring episodes**: Reinhard and Rogoff (2009); Das, Papaioannou and Trebesch (2012); Cruces and Trebesch (2013). **Debt data**: Abbas, Belhocine, El-Ganainy and Horton (2010); Mauro, Romeo, Binder and Zaman (2013); and WEO. **Macro data**: WEO and Bloomberg.

1/ An LDR episode starts at the debt peak (t = 0) and ends at the debt trough, and lasts at least 5 years. A debt reduction is at least 10 p.p. of GDP with initial debt at least 60 percent of GDP. The calculations are based on the **median values** across LDR episodes.

2/ In the selected sample, only emerging economies experienced sovereign debt restructurings.

3/ Restructurings are possible before the debt peak but not during the LDR episode. In the sample, only two restructurings occurred before the debt peak.

34.   **A closer look at public debt before and during the debt reduction episodes accompanied by restructurings can shed some light on the source of the differences between large debt reductions with and without restructuring.** Figure AII2 suggests real exchange rate changes played an important role during both the debt buildup and the debt reduction. The latter was also driven by the recovery of growth, some fiscal adjustment, debt treatment (nominal haircut), and lower real interest rate payments. In the large debt reduction episodes without the need for restructuring, the bulk of the debt reduction was achieved through strong growth and fiscal discipline.

Figure AII2. Cumulative Debt Change in Large Debt Reduction Episodes

Large debt reduction episodes with restructurings 1/
(in percentage points)

Large debt reduction episodes without restructurings 1/
(in percentage points)
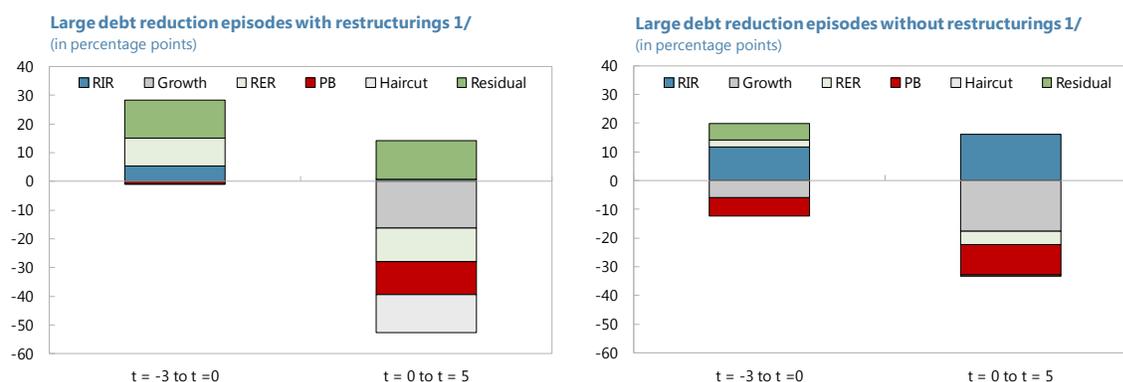
Source: Fund staff calculations.
1/ Considers only the episodes for which data on the determinants of debt are available for most of the years.

Note: The debt decomposition is based on a standard equation that breaks down the debt changes into the contributions of real interest rate (RIR), GDP growth, real exchange rate (RER), primary balance (PB), nominal reduction (Haircut), and a residual component. The latter reflects both data limitations (e.g., incomplete reconciliation between stocks and flows) and economic factors (e.g., privatization receipts, recognition of contingent liabilities, bank recapitalization, etc). The contribution of the nominal reduction is probably understated because of data availability. Real interest rate payments are lower in LDR episodes with restructurings in part because they probably reflect flow treatment but also because of higher average inflation.

35.   **A review of specific country cases can also shed light on exit from debt distress.**[43] Brazil and Turkey experienced crises in the early 2000s and both were able to avoid deep debt reductions. However, although Brazil's experience in the early 2000s illustrates how more favorable initial conditions can help exit from debt distress without restructuring, weaker fundamentals in Turkey necessitated some mild form of private sector involvement (Box AII1).

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[43]Staff reviewed a number of country cases that underwent a restructuring of external debt including sovereign bonds from the mid-1990 and onwards. They include 14 countries (17 cases): Argentina (2005), Belize (2007 and 2013), Dominican Republic (2005), Ecuador (2000 and 2009), Greece (2012), Grenada (2005), Jamaica (2010 and 2013), Moldova (2002), Pakistan (1999), Russia (1999–2000), Seychelles (2010), St. Kitts and Nevis (2012), Ukraine (1998–2000) and Uruguay (2003). Brazil and Turkey were also reviewed as examples of countries which exited debt distress without requiring a restructuring.

Box AII1. Exiting Debt Distress without Deep Restructuring: Brazil and Turkey

Brazil and Turkey are often cited as examples of countries which exited debt distress without the need for a debt restructuring. This box examines the circumstances that led to debt distress in each case and how a deep debt reduction was avoided. In addition, the implications of the proposed framework for these countries are analyzed. The main finding is that initial conditions mattered in both cases but that neither would have been reprofiled, though for different reasons. While Brazil had lost market access, staff expressed confidence in its fiscal fundamentals and did not express concerns about debt sustainability. By contrast, staff assessed Turkey to have weaker fundamentals going into the crisis and its prospects for being able to service its debts were less certain. Nevertheless, the proposed new framework would not have called for debt reprofiling since Turkey did not lose market access.

Turkey and Brazil both experienced crises in the early 2000s, but for different reasons.

- In Brazil, despite successful fiscal consolidation initiated in the late 1990's, the continued depreciation of the currency and the large share of foreign-currency denominated debt led to a large increase of public debt. A crisis of confidence in 2002—brought about by the concern that the winner of the October presidential election might not stay committed to the fiscal targets—caused a sharp increase in spreads, ratings downgrades and eventual loss of market access.

- Turkey experienced a full-blown crisis in late 2000 on account of a widening current account, a fragile banking system heavily reliant on short term funding, and, more generally, years of weak economic and policy performance as evidenced by continued high inflation. Market pressure returned in early 2001, eventually requiring an augmentation of the Fund-supported program in mid-2001.

The Fund responded by providing exceptional access in large amounts in each case. In both countries, the crisis occurred in the context of an ongoing Fund lending relationship. In Brazil, the Fund had provided two Stand-by Arrangements previously: one in December 1998 with access of SDR 13 billion, followed by another in September 2001 with access of SDR 12.1 billion. But the largest program came in September 2002 with access of SDR 22.8 billion (US$30 billion, 752 percent of quota). Similarly, Turkey had been provided an SBA in December 1999 with access of SDR 2.9 billion. When the crisis worsened at end 2000 and early 2001, the SBA was augmented (twice), to SDR 15 billion (about US$19 billion, 1560 percent of quota) by May 2001. The key question addressed in this box is whether, at the time that the Fund provided the largest access—August 2002 for Brazil and end-2000/early 2001 for Turkey—and based on the information available to staff at the time, would it would have required a reprofiling of the debt stock under the proposed new policy.

Figure 1. Brazil and Turkey (1998-2005)
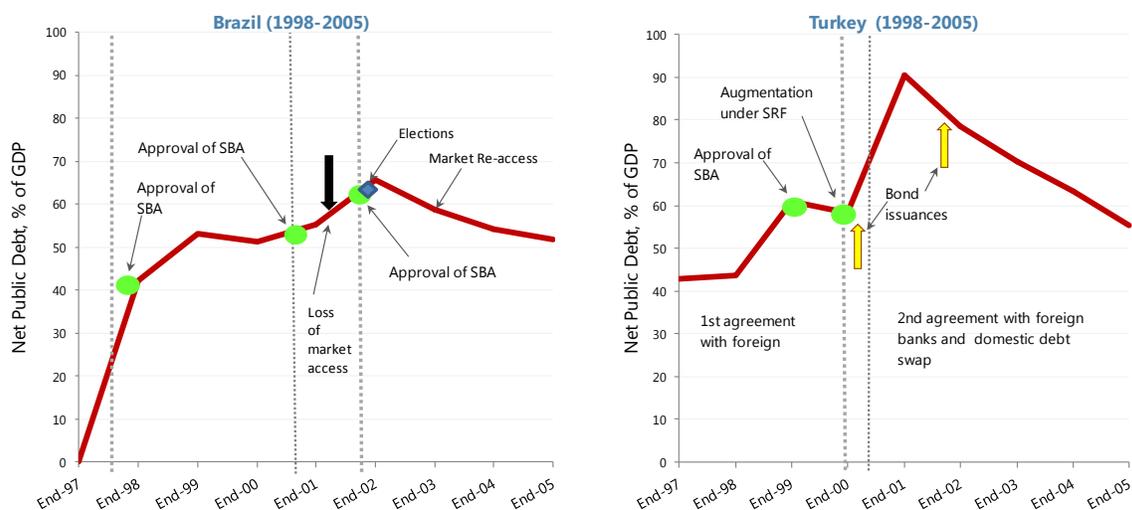
Source: IMF Staff Reports.

Box AII1. Exiting debt distress without deep restructuring: Brazil and Turkey (continued)

Conditions prevailing at program request / augmentation
(in percent of GDP, unless otherwise stated)

	Brazil	Turkey
Real GDP growth (annual percent change)	2.0	1.4
Overall fiscal balance	-3.8	-14.6
Primary balance	3.3	1.9
Net public debt	50.7	55.7
Net public debt (projected for 1st program year)	58.5	79.7
Current account balance	-4.1	-1.1

Sources: Fund staff reports and VEE data. All indicators except projected public debt are averages between t-1 and t-3 where t = 2001 for Turkey and 2002 for Brazil.

On the eve of the crisis, while Brazil benefited from milder initial conditions, Turkey's macroeconomic performance was more mixed (Text Table). At the onset of the 2002 crisis, Brazil benefited from three factors: a healthy fiscal position, a few years of positive growth and controlled debt accumulation. Turkey, however, had been through several years of macroeconomic imbalances and volatile growth, despite successive reform programs and renewed commitments to policy prudence.

This assessment of economic performance was also reflected in Fund documents around the time of the respective crises:

- For Brazil, the Fund credited the authorities with a strong track record in meeting previous programs' fiscal targets and improvements in fiscal institutions in prior years. It was noted that the key cause of the crisis was political uncertainty and a worsening external environment, which even in the context of good fundamentals presented challenges for public debt management.

- In Turkey, the Fund had noted mixed macroeconomic and policy performance. At the time of the December 2000 augmentation of the program, there was recognition that the crisis was a result of both external shocks as well as domestic policy slippages in privatization, banking and fiscal areas. Similarly, at the time of the May 2001 augmentation, the Fund noted that further policy slippages, political uncertainty, and deterioration in economic fundamentals had undermined the credibility of the authorities' disinflation program and pushed the country into a severe financial crisis.

A reprofiling of Brazil's debt would not have been considered appropriate even though it had lost market access. The key purpose of the exceptional access Fund arrangement in August 2002 in the run-up to presidential elections was to provide a framework to coordinate the presidential candidates' public endorsement of the Fund-supported adjustment program. With political parties having signed on to the core elements of the Fund-supported program, the Fund was able to assert that continued prudent macroeconomic policies with the support of the Fund would allow Brazil to regain public debt sustainability and investors' confidence which would help avert a potentially systemic crisis in the region as well as in emerging markets.[1] This strategy worked. While market pressures did not immediately abate, the new government delivered on its commitment to the program, and spreads eventually came down. Market access was regained in April 2003, less than a year from when it was lost (Figure A).

Box AII1. Exiting Debt Distress without Deep Restructuring: Brazil and Turkey (concluded)

Even though the prospects for debt sustainability were less certain in Turkey, its debt would not have been considered appropriate for reprofiling because it did not lose market access. The staff report for the May 2001 augmentation noted that deterioration in market sentiment since the beginning of the year had put "the sustainability of public debt dynamics...in question" (IMF 2001a). It also noted that an immediate task facing the authorities was to lengthen maturities of debt falling due. Nevertheless, Turkey was able to maintain market access, though at high interest rates. Even as market sentiment had been deteriorating, the government was able to place a €0.7 billion bond with European retail investors in January 2001, and the staff report planned financing of more than US$7 billion from Eurobond issues during 2001–02. Turkey was never downgraded to "selective default" during this period, and by the last quarter of 2001 it was able to issue a series of U.S. dollar and euro-denominated bonds (Figure 1). Staff also noted in the April 2013 sovereign debt restructuring paper that "throughout the stressful period, Turkey was able to preserve market access albeit at very high interest rates."

Even though the proposed new framework would not have called for a debt reprofiling, Turkey undertook a voluntary creditor bail-in to manage the crisis. When the first crisis hit in late 2000, the authorities effectively managed it through efforts at correcting policy imbalances while also reaching agreement with external private creditors to maintain their support. In December 2000, major foreign creditors agreed to maintain aggregate exposure to the Turkish banking system on assurances that macroeconomic and financial instability would not recur, a commitment that was supported by an enhanced Fund-supported program. In February 2001, Turkey was hit by a second major crisis. This was brought about by a dramatic increase in real interest rates and ensuing concerns over debt dynamics, prompting capital outflows. Based on a commitment to further strengthen domestic policies, the authorities were able to negotiate restored exposure from foreign creditors. They also organized a voluntary and market-priced domestic debt swap that markedly improved Turkey's debt profile. On account of these measures, the staff report for the 8th review noted the following: "To further reduce the government's borrowing need and to address the debt roll-over problem, besides intending to use available external financing, the authorities are relying on voluntary private sector involvement (PSI). On the domestic side, the recent debt swap, alongside continued strong fiscal policy and the ongoing use of external assistance, should keep the Treasury's domestic borrowing need well below redemptions during the second half of 2001. Regarding foreign PSI, in mid-June the authorities recently secured a voluntary commitment from foreign commercial bank creditors to maintain their interbank and trade credit lines to Turkish banks, with a view to rebuilding their exposure as the program is implemented" (IMF 2001b).

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[1]The 2002 Brazil program was agreed shortly before the 2002 Exceptional Access framework was ratified by the Board. This program did not therefore include any reference to exceptional access.

C. Has Debt Restructuring Been Deployed Effectively?

When restructurings have been used, have they been timely and adequately sized?

36.   **A broader sample corroborates the message of the 2013 paper that restructurings have tended to be "too little too late."** In cases where a debt treatment is eventually needed, debt has often remained high for a long period of time before any action is taken, suggesting that restructurings have tended to be unduly delayed. As shown in Figure AII3, debt overhang had been lingering for a number of years before a restructuring.

37.   **As noted in the 2013 paper, there may be many reasons for delaying a restructuring.** While the costs of delaying a restructuring are well known, country authorities and other stakeholders may weigh this against risks to financial stability, contagion and perceived risk of

protracted loss of market access. For example, in Jamaica (2010), where 65 percent of the debt was held by domestic financial institutions, there were concerns about the risks of financial sector distress. In the case of Greece (2010), spillovers on other euro area countries were a particular concern. Ongoing initiatives on the part of official creditors, who may have an interest in accepting or encouraging overly sanguine assessments of the debt sustainability, may also play a role. Indeed, while this may also reflect concerns about possible adverse market reactions or true uncertainties, the review of country cases shows that staff reports prior to restructurings were often not very explicit about whether the country's debt problem was assessed to be one of liquidity or solvency, even in some cases with very high debt levels. Furthermore, the recent IEO report (2014) on IMF forecasts suggest that short-term forecasts of GDP growth and inflation made in the context of IMF-supported programs, while unbiased in the majority of cases, tended to be optimistic in high-profile cases characterized by exceptional access to IMF resources.

38.   **Debt reduction operations also often appear to have been insufficient to bring debt down to safer levels while creating much needed fiscal space.** From 1980 to 2012, of the 44 countries that restructured their debt in the sample, 86 percent had more than one restructuring. This pattern emerges in restructurings with both private and official creditors; on average each country had over 5 restructurings, of which about half were with private foreign creditors (Table AII2). Repeat restructurings suggest that a one-time restructuring was often not enough to solve the debt problem (Figures AII4 and AII5).[44] For example, Poland went through six restructurings with private creditors and four with the Paris Club between 1981 and 1990, mostly consisting of rescheduling of principal and interest. The debt problem was not fully resolved until the Paris Club granted 50 percent debt forgiveness in 1991 and, after lengthy negotiations, private banks agreed to a 45 percent debt reduction in 1994.[45]

39.   **Inadequately-sized restructuring may be linked to the desire to avoid the costs associated with large debt reductions.** The available literature finds that significant debt reductions often have higher economic costs, with lengthier market exclusion (see Cruces and Trebesch 2013). Annex III also argues that light restructurings have smaller economic costs.

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[44]These results are consistent with some of the existing literature. See for example, Moody's (2013b). Note that it may be that when there are consecutive restructurings, they are meant to cure the same debt distress episode and are part of one drawn out restructuring negotiation process. The findings documented in Figures AII4 and AII5—the presence of repeat restructurings—are robust to grouping two or more consecutive restructuring as one long restructuring episode.

[45]Cline (1995).

Figure AII3. Delayed Restructurings

- Debt was "high" 3 years before restructuring
- Debt was much lower 3 years before restructuring

"High": debt at t = -3 is less that 15 p.p. lower than debt at t = -1 or at least 60% of GDP

Proportion = 19%

Debt-to-GDP 3 years before restructuring

Debt-to-GDP ratio 1 year before restructuring
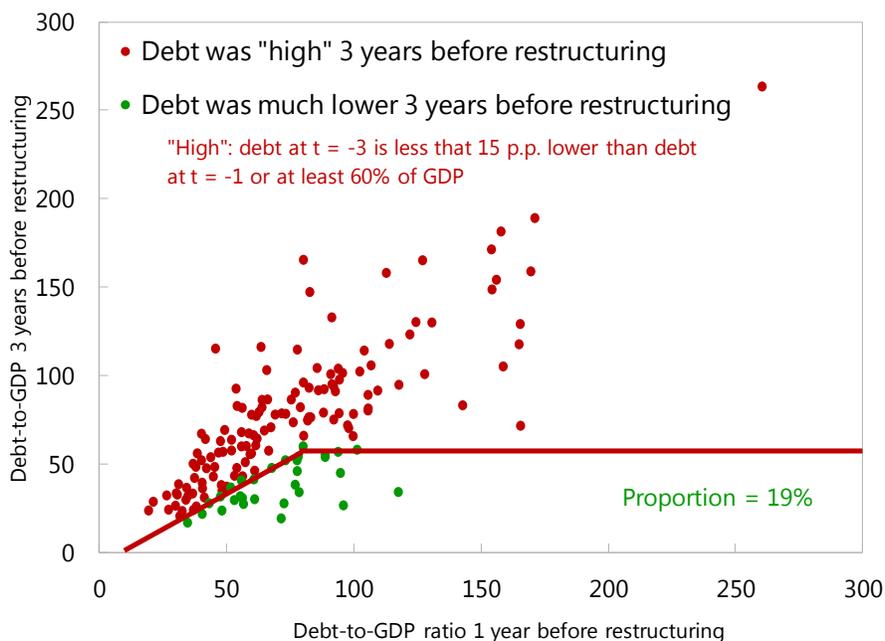
Sources: Fund staff calculations. Restructuring episodes: Reinhart and Rogoff (2009); Das, Papaioannou, and Trebesch (2012); and Cruces and Trebesch (2013). Debt data: Abbas, Belhocine, El-Ganainy, and Horton (2010); Mauro, Romeo, Binder, and Zaman (2013); and WEO.

Figure AII4. Repeat Restructurings, 1983–2012

- Episodes with no prior restructurings in the preceding 3 years
- Episodes with prior restructurings in the preceding 3 years
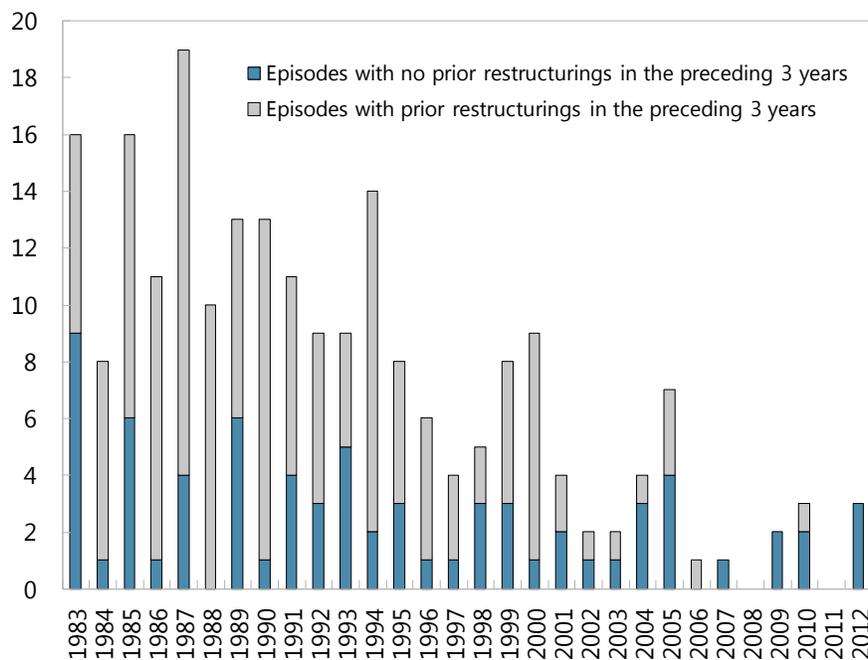
Sources: Fund staff calculations; Reinhart and Rogoff (2009); Das, Papaioannou, and Trebesch (2012); and Cruces and Trebesch (2013).
Note: The bars for each year denote the total number of restructurings broken down by countries that did not have a restructuring in the previous three years versus those that had at least one restructuring in the previous three years. For instance, the sample comprises a total of 16 restructurings in 1983, of which 9 episodes were not preceded by any restructuring during 1980–82, and 7 episodes were preceded by at least 1 restructuring in the same period. The sample comprises domestic, private foreign and official foreign restructurings.

In what circumstances have restructurings been effective in establishing sustainability?

40.   **On average, two-thirds of all restructurings with private foreign creditors did not successfully establish sustainability and led to repeat restructurings.** To address the question posed in this section, staff distinguished between "cured" and "non-cured" restructurings. Following the literature, a cured restructuring is defined as follows: (i) it is not followed by another restructuring with private foreign creditors in the next four years; (ii) the country does not remain in state of default; and (iii) the country regains market access some time following the restructuring and before another restructuring with private foreign creditors occurs.[46] Market re-access is measured as the first international bond/loan issuance after the restructuring (as long as it led to an increase in the public and publicly guaranteed external debt with private creditors) and/or by positive net transfers (through bonds or loans) from private creditors to the public sector.[47] The results show that of the 99 restructurings with private foreign creditors in the sample, only about a third met the criteria for a 'cured' outcome and hence resulted in long-lasting solution to the debt problem.

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[46]See Richmond and others (2009), Gelos and others (2011), and Cruces and Trebesch (2013).

[47]See, for instance, Cruces and Trebesch (2013). Four years is slightly above the average time of market exclusion in the sample. The definitions of "cured" and "non-cured" only involve restructurings with private foreign creditors given data availability on debt reduction in both nominal and net-present-value (NPV) terms. Finally, we follow Cruces and Trebesch (2013) and consider the Argentine 2005 restructuring as cured. This case also satisfies the criteria for market re-access.

Figure AII5. Restructuring Episodes by Country, Type and Year, 1980–2012
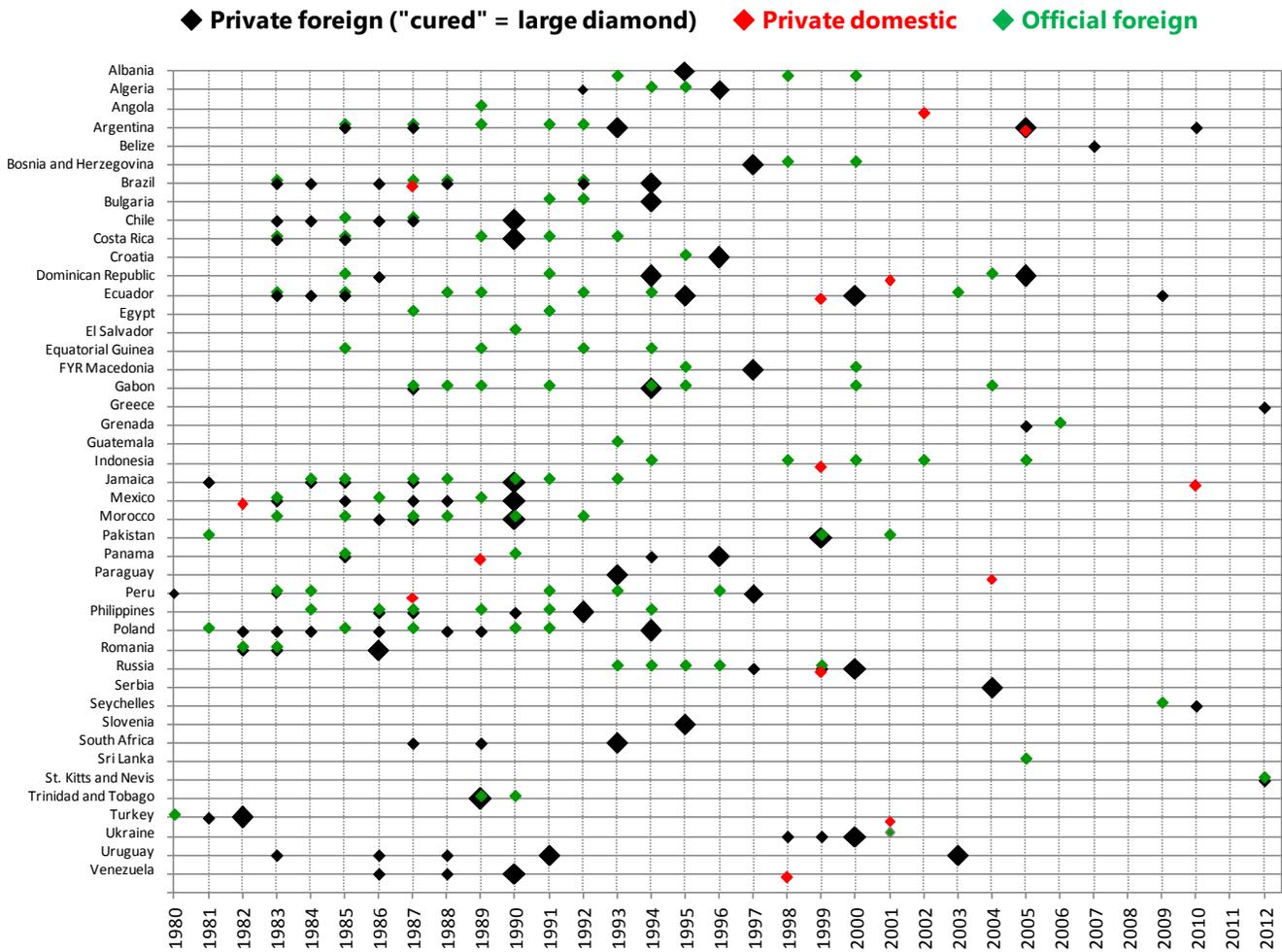
◆ Private foreign ("cured" = large diamond)   ◆ Private domestic   ◆ Official foreign

Sources: Cruces and Trebesch (2013); Das, Papaioannou, and Trebesch (2012); Reinhart and Rogoff (2009); and Fund staff calculations.
Note: The 2005 official foreign restructuring in Sri Lanka and Indonesia refers to a debt deferral which was related to the Indian Ocean Tsunami in 2004.

Table AII2. Restructuring Episodes by Country and Type, 1980–2012

Country	Private Foreign	Official	Domestic	Total
Ecuador	6	8	1	15
Jamaica	5	7	1	13
Poland	7	5		12
Argentina	5	5	1	11
Brazil	6	4	1	11
Gabon	2	8		10
Philippines	4	6		10
Mexico	5	3	1	9
Morocco	3	6		9
Peru	3	5	1	9
Russia	3	5	1	9
Costa Rica	3	5		8
Dominican Republic	3	4	1	8
Chile	5	2		7
Indonesia		5	1	6
Panama	3	2	1	6
Romania	3	2		5
Uruguay	5			5
Albania	1	3		4
Algeria	2	2		4
Bulgaria	1	3		4
Equatorial Guinea		4		4
Pakistan	1	3		4
Turkey	2	1	1	4
Ukraine	3	1		4
Venezuela	3		1	4
Bosnia and Herzegovina	1	2		3
FYR Macedonia	1	2		3
South Africa	3			3
Trinidad and Tobago	1	2		3
Angola		1	1	2
Croatia	1	1		2
Egypt		2		2
Grenada	1	1		2
Paraguay	1		1	2
Seychelles	1	1		2
Sri Lanka		1		1
St. Kitts and Nevis	1	1		2
Belize	1			1
El Salvador		1		1
Greece	1			1
Guatemala		1		1
Serbia	1			1
Slovenia	1			1
Total	**99**	**115**	**14**	**228**

Sources: Cruces and Trebesch (2013); Das, Papaioannou, and Trebesch (2012); Reinhart and Rogoff (2009); and Fund staff calculations.
Note: The 2005 official foreign restructuring in Sri Lanka and Indonesia refers to a debt deferral which was related to the Indian Ocean Tsunami in 2004.

41.   **Successful restructurings starting from high initial debt typically required larger principal reduction but also benefited from a good policy framework and benign external conditions.** To help understand the characteristics of successful restructurings, staff estimated the probability of a cured restructuring as a function of exogenous shocks (e.g., natural disasters or global liquidity conditions), policies and institutions, macroeconomic fundamentals and initial conditions, and the terms and characteristics of the restructuring (see Box AII2). Comparing the unconditional mean of the debt treatment in cured and non-cured restructurings reveals that a larger debt reduction was needed for a successful end to debt problems particularly when initial debt was high. Successful exit from debt distress may be also achieved through low to moderate debt reduction when initial debt is relatively low (Figure AII6). This evidence is corroborated by the estimated probability of a cured restructuring. Figure AII7 shows the estimated probability of a successful restructuring for two different types of restructurings: one with a high (40 percent) and the other with a low (20 percent) NPV reduction. As is to be expected, the probability of success is inversely related to the initial debt levels, as countries that enter a debt crisis at a higher debt level usually have many other macro-economic problems in addition to high debt. As the figure shows, the beneficial effect of a NPV reduction on the probability of success (the vertical difference between the blue and gray bars) is more pronounced for high debt levels. For example, for a country with an initial debt level of 50 percent of GDP, there is a 50 percent chance it would reestablish sustainability with a small NPV reduction. However, at an initial debt level of 70 percent of GDP, a small NPV reduction is more likely to perpetuate the problem and there is a bigger premium to a larger debt reduction in successfully reestablishing sustainability. These findings support the conclusion that a reprofiling (even small) is more beneficial at more moderate levels of initial debt and should generally be avoided at high initial debt levels. The existence of an IMF program at the time of restructuring also improves the likelihood of success.[48] On the other hand, unfavorable global conditions, high initial debt level and exogenous shocks (e.g., a natural disaster) have the opposite effect.

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[48]Also see Erce (2013), and Moody's (2013a).

Figure AII6. Average Nominal and NPV Reduction in Debt Restructurings with Private Foreign Creditors, 1980–2012

Average nominal reduction
(in percent of debt treated)

Average NPV reduction
(in percent of the present value of the old debt)
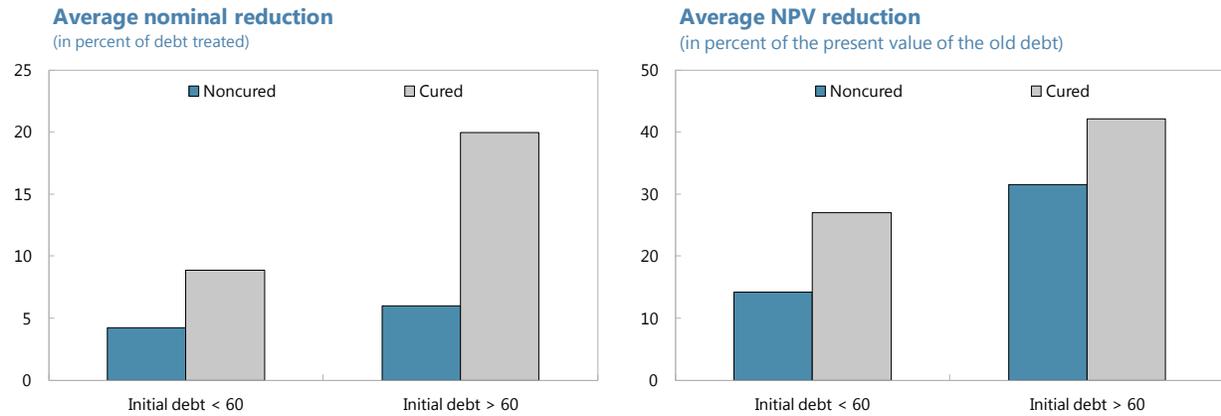
Sources: Fund staff calculations; Cruces and Trebesch (2013); Das, Papaioannou, and Trebesch (2012); and Reinhart and Rogoff (2009).

Note: A **cured restructuring** is defined as in paragraph 40: (i) it is not followed by another restructuring with private foreign creditors in the next four years; (ii) the country does not remain in state of default; and (iii) the country regains market access some time following the restructuring and before another restructuring with private foreign creditors occurs.

Figure AII7. Estimated Probabilities Implied by Different NPV Reduction and Initial Debt
(in percent)
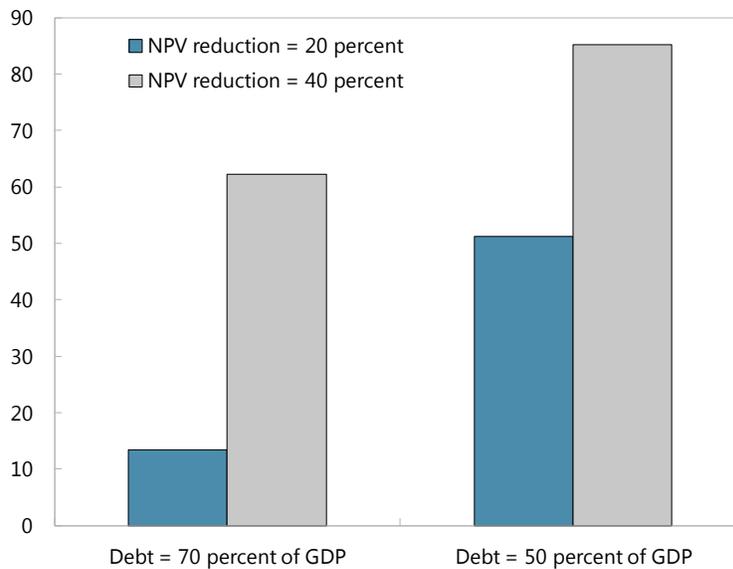
Source: Fund staff estimates.

Note: The bars are estimated probabilities implied by the Probit "long" model as described in Box 2,considering a low (20 percent) and a high (40 percent) NPV reduction and low (50 percent of GDP) and high (70 percent of GDP) initial debt. To calculate the probabilities, only statistically significant coefficients are used, and all the right-hand side variables (except NPV reduction and initial debt) are kept at their sample mean.

Box AII2. Estimating the Probability of a Cured Restructuring

- **Econometric model.** A "cured" restructuring, the event of interest, is measured by the binary variable y_i which takes the value 1 if the restructuring is deemed cured and 0 otherwise, and where the index i denotes "a restructuring episode" with private foreign creditors. It is assumed that the conditional probabilities of a cured restructuring, $P(y_i = 1|X_i) = \Phi(X_i\beta)$, follow a normal distribution, where $\Phi(.)$ is the normal cumulative distribution function (CDF), X_i is the set of control variables and β is the vector of coefficients to be estimated. The vector of parameters and the probabilities are estimated through a Probit regression using cross-section data, where the cross-sectional unit is the restructuring episode.

- **Data.** The left-hand side variable is based on the definition of a "cured" default, as defined in paragraph 40, and involves only restructurings with private foreign creditors. There are in total 96 such cases, after excluding a few cases in the beginning of the sample for which there is no information available on initial conditions, and cases at the end for which there is no history after restructuring. The relevant control variables included in the vector X_i fall in four broad groups:[1]

    i. **Terms/characteristics of the restructuring.** Controls include: s*ize of face value reduction*, in percent of debt treated (expected sign: positive); s*ize of haircut (NPV reduction)*, in percent of PV of old debt (expected sign: positive); *instrument*, measured by a dummy that takes the value 1 if the restructuring involved a bond exchange, and zero otherwise (expected sign: uncertain); *debt treatment*, measured by a dummy variable that takes the value 1 if the restructuring involved debt treated previously, and zero otherwise (expected sign: positive).

    ii. **External shocks.** Controls include: *natural disasters*, measured by the average cost (as a fraction of GDP) of natural disasters occurring during the four years following the restructuring; data come from the International Disaster Database (expected sign: negative); *global liquidity*, measured by the average spread between the 30-year U.S. bond yields and 30-years Baa corporate bond yields from Moody's in the four years after each restructuring. (This variable also measures investor risk appetite, as suggested by Richmond and Dias (2009) among others. A low spread is associated with higher liquidity in global financial markets and stronger demand for riskier assets, including sovereign debt (expected sign: negative)).

    iii. **Policy/institutions.** Controls include: *IMF program*, measured by a dummy that takes the value of 1 for the first year of an IMF program starting in the year of restructuring or in the previous two years, and zero otherwise—as argued by Gelos and others (2011), this variable acts as a "seal of approval" of sound economic policies (expected sign: positive); *political institutions*, as in Cruces and Trebesch (2013), measured by a dummy that takes the value of 1 for the first two years of a new government over the four-year period preceding the restructuring, from the Database of Political Institutions (Beck and others, 2000) (expected sign: positive).

Box AII2. Estimating the Probability of a Cured Restructuring (concluded)

iv. **Initial conditions/macro fundamentals.** Controls include: *debt level* in the year before the restructuring (expected sign: negative); to capture potential nonlinear effects from the debt level, the

v. *interaction between initial debt and debt reduction* (either in nominal or in NPV terms) (expected sign: positive); *level of development*, measured by (the log of) real GDP per capita in the year before the restructuring. (According to Gelos and others (2011) this variable also captures the country's vulnerability to shocks. Expected sign: positive); *openness*, measured by the average ratio of exports and imports to GDP in the four years before the restructuring (expected sign: positive); *macro volatility*, measured by the standard deviation of GDP growth in a 10-year window before the restructuring, in the spirit of Gelos and others (2011) (expected sign: negative); *domestic liquidity or coverage ratio*, measured by the average reserves-to-imports ratio (in months) in the four years prior the restructuring (expected sign: positive).

- **Results.** Four baseline models were estimated, two "long" models (i.e., including the full set of controls described above), and two "short" models that excluded four controls (political institutions, income volatility, openness and coverage ratio), in both cases one variant considered the face-value reduction and the other considered the NPV reduction on the right-hand side. Most estimated coefficients are statistically significant at conventional levels and have the expected sign (GDP per capita being the notable exception), including the three key coefficients of interest (size of debt reduction, initial debt level, and interaction between debt reduction and initial debt). The results suggest that there is a tension between the size of the debt treatment and the size of the overall debt: while a high initial debt reduces the odds of success, an appropriately large haircut tends to improve it. The estimated probabilities implied by the "long model" in the case of NPV reduction are shown in Figure AII7.

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[1]Robustness checks using alternative controls (e.g., global growth, terms of trade shocks, country size) did not overturn the baseline results but generally yielded regressions with a lower fit.

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42.   **Evidence on the effectiveness of restructurings can also be drawn from case studies.** They provide information regarding staff's assessment before the restructuring on whether the debt operations were expected to be successful in establishing sustainability, as well as the assessment of the result after the restructuring. Success was often seen to depend not only on the debt treatment itself but also on continued adjustment:

- ***Ex-ante assessment.*** The case studies show that, ex ante, staff was not always confident that planned debt restructurings would re-establish debt sustainability (Ecuador 2000, Belize 2007, Jamaica 2010 and 2013, Moldova, Greece 2012) and the expected outcome was often made conditional upon continued ambitious adjustment. For example, in the January 29, 2010, request for an SBA for Jamaica, staff states that: "*The debt exchange is expected to*

result in a significant extension of maturities and interest savings", but that "*Given Jamaica's debt overhang problem, public sustainability risks remain high.*"[49]

- **Ex-post assessment.** Similarly, in many cases it is unclear whether staff assessed debt sustainability to have been achieved ex post. In several cases, re-establishing sustainability still hinged on further adjustments (Argentina, Greece, Jamaica 2010, Grenada) and/or overall positive macroeconomic developments (Argentina, Greece). For example, in 2006, reporting on Grenada after its debt restructuring, staff noted that "*All told, the adjustment envisaged under the program would bring public debt on a sustainable path. As shown above, however, accomplishment of both fiscal and growth objectives are crucial to obtain this result. Failure to adhere to program targets would rapidly result in an unsustainable debt trajectory.*"[50]

- **Final outcomes.** Out of eight cases that were assessed to have solvency issues before restructuring, only five included a cut in face value. Two of the three cases that only underwent a reprofiling continue to have debt problems (Grenada and Jamaica).

- **Examples of reprofiling.** In some cases, a reprofiling of debt was sufficient to restore market access and debt sustainability. When debt sustainability was uncertain or countries faced a liquidity problem, reprofiling proved to be a useful element in addressing debt problems provided program implementation was strong (Dominican Republic, Pakistan, Uruguay). It was not successful in cases where debt was too high or financial stability concerns dictated its use without addressing the fragility in the financial sector (Grenada, Jamaica 2010). Although it was mostly used in normal access cases, Uruguay (2003) stands out as an example of reprofiling in the context of a Fund-supported program with exceptional access (Box AII3); this case was possible only because the 2002 exceptional access reform had not yet gone into effect

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[49]Jamaica Art. IV Consultation and Request for Stand-By Arrangement, January 2010, Country Report No. 10/267, August 2010.

[50]Grenada: Request for Three-Year Arrangement Under the Poverty Reduction and Growth Facility, IMF Country Report No. 06/277, July 2006.

Box AII3. Reprofiling in Uruguay

This box reviews the experience of Uruguay with a face-value preserving maturity extension.[1]

Uruguay: Public Debt
(in percent of GDP)
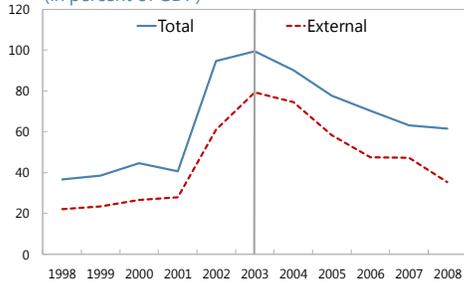
Sources: Mauro and others (2013); and Fund staff calculations.

Trigger. After years of moderate debt ratios and healthy growth, macroeconomic fundamentals in Uruguay deteriorated very quickly following the Brazilian and Argentine crises of the late 1990s and early 2000s. By early 2000s, the high dollarization of the banking sector, dependence of its funding on nonresident deposits (mainly from Argentina) and the large share of public debt in foreign currency made Uruguay vulnerable to negative shocks stemming from its two most important neighbors. In 2001, the Argentine default triggered a run on bank deposits that caused a depletion of international reserves and rising borrowing costs, and culminated in a ratings downgrade, a 50 percent exchange rate devaluation, and a severe recession in 2002. As a result, public debt rose from 40 percent of GDP in 2001 to about 100 percent in 2003, making it difficult for the government to rescue distressed banks. A full-blown banking crisis was averted with measures to restrict deposit withdrawals and a Fund-supported program was approved in March 2002, which was subsequently augmented in June 2002 and August 2002. The large increase in debt and debt service led authorities to seek an extension of maturities with creditors in May 2003.[2]

Debt exchange. The debt exchange intended to achieve debt service relief in a creditor-friendly way, entailing low NPV haircut and no nominal reduction. The debt treatment was "preemptive" (prior to any unilateral default, with authorities remaining committed to full debt service), comprehensive (targeted about half of total debt), and comprised distinct instruments offered to domestic and external creditors. The exchange offered most bondholders a choice between two options, both involving approximately a par-for-par exchange: a maturity extension option and a benchmark bond option. Under the maturity extension option each existing bond could be exchanged for a bond with similar coupon and extended maturity (5 years longer, generally) while under the benchmark bond option each bond could be exchanged for one of a number of benchmark bonds, longer-dated but more liquid than under the maturity extension option. Nearly two-thirds of the bond holders chose the maturity extension option. The maturity of international bonds issued under foreign law was extended by an average of 6.4 years while that of domestically issued bonds and treasury bills was extended by 8.6 years on average. Since the reprofiling was implemented at the interest rates at which the bonds were issued (when Uruguay had investment grade ratings) rather than at the market rates prevailing at the exchange, it entailed a positive but small NPV reduction—about 13.3 percent for the international bonds and 23.3 percent for domestic bonds. To ensure inter-creditor equity the debt treatment involved (i) asymmetric exchange ratio among creditors, that is, creditors received new instruments whose face value varied depending on the maturity of old instruments while having the same aggregate face value of the old; and (ii) asymmetric cash payments, that is, some bondholders received small upfront cash payments to compensate for accrued interest on the old bonds. The exchange was completed relatively quickly:

Uruguay: Market Access Indicators
(EMBI spreads in basis points, credit ratings from 0 (D) to 20 (AAA) 1/)

Sources: Bloomberg; rating agencies; and Fund staff calculations.
1/ Averages S&P, Moody's and Fitch.

It was launched on April 10 and closed on May 29, 2003. Though the participation rate varied across bonds, the average participation was 89 percent for international bonds and 99 percent for domestic obligations.

Uruguay: Macro Fundamentals
(in percent, positive RER change is a depreciation)

Sources: WEO; and Fund staff calculations.

Box AII3. Reprofiling in Uruguay (concluded)

Risks. Fund staff explicitly flagged the risks to the debt exchange, including potential problems in implementation, the difficult economic environment and the impact of the operation on the banking system. This uncertainty even persisted after successful completion of the exchange: "*vulnerability has decreased but risks to the program remain significant…The main risks are in the still-fragile banking system and the continuing challenges to meeting the primary surplus targets required for debt sustainability*" (IMF 2003).

Outcome. The reprofiling was a success and allowed Uruguay to regain market access relatively quickly and improve economic fundamentals in a durable way.

- o *Macro fundamentals*. Strong program implementation, coupled with a more favorable external environment, gradually dissipated the uncertainty regarding debt sustainability. Public debt came down to more moderate levels, driven by robust growth recovery, sizeable fiscal balances and some reversal of the exchange rate devaluation.
- o *Policies*. The sound policies implemented under the program were important to restore Uruguay's credit standing and debt sustainability. For instance, tight control over current expenditure and adjustment of public tariffs in line with costs strengthened the fiscal position; the implementation of a bank's restructuring program limited fiscal costs; maintaining a floating exchange rate helped to boost exports and rebuild externals buffers; and implementation of a prudent debt management strategy resulted in debt issuances with longer maturities and better terms.
- o *Market access*. Following the exchange, Uruguay successfully regained market access in June 2003, issuing a US$53 million dollar-denominated bond with 7.7-year maturity and 10.6 percent yield to maturity. In October 2003, Uruguay was able to issue again, this time an international bond denominated in domestic currency and 3-year maturity. As market confidence continued to improve and the international environment turned more favorable (higher commodity prices, resumption of growth in Brazil and Argentina), spreads returned to pre-crisis levels and credit ratings recovered in the following months. The investor-friendly nature of the restructuring also contributed to the quick fall in spreads and fast market re-access. Although the selective default downgrade was very short (less than a month), investment grade was regained only in 2012.
- o *Domestic financial stability*. The maturity extension had a small impact on domestic banks in part because they had low exposure to government bonds. In addition, the bank supervisory authorities provided strong regulatory incentives for banks to participate in the exchange (e.g., the central bank only allowed new bonds as eligible collateral).[3]

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[1]Also see Sturzenegger and Zettelmeyer (2006).

[2]The Fund program involved exceptional access which was approved before the 2002 framework became effective. An SBA of SDR 594.1 million was approved in March 2003 but in June 2003 the Board recommended an augmentation of SDR 1.2 billion upon request from Uruguayan authorities.

[3]See Annex IV.

D.   Conclusion

43.   **The main conclusions of this retrospective illustrate the importance of reforming the Fund's lending framework to help resolve debt problems in a timely and effective manner.** Three main lessons can be drawn from the evidence: (i) a debt restructuring has often been part of the solution to addressing debt overhang; (ii) however, restructurings have often been delayed and inadequately sized; and (iii) 'curing' debt distress often requires not only resilience to shocks, prudent macroeconomic policy but also adequate debt reduction when initial debt is high. A light debt restructuring is sufficient to address debt distress when initial debt is low to moderate. Taken together, this evidence suggests that, considering the costs associated with deep restructurings, light restructurings have reasonable prospects for restoring sustainability at moderate levels of public debt. Light restructurings should generally not be used for high debt cases and, if they are tried and fail to work, they should not be repeated but instead should be followed by a deeper and more definitive debt reduction.

Appendix-Table A1. Samples of Large Public Debt Reductions in Emerging Economies 1/
(in percent of GDP unless stated otherwise)

LDR episodes associated with debt restructuring

Country	Start	End 3/	Duration in years	Initial Debt	Final Debt	Reduction in p.p.	Speed 4/
Egypt	1982	1989	7	134.4	87.5	46.8	6.7
Equatorial Guinea	1982	1987	5	263.3	142.7	120.5	24.1
Costa Rica	1983	1995	12	110.3	34.6	75.7	6.3
Uruguay	1984	1996	12	99.9	31.8	68.1	5.7
Chile	1985	2000	15	165.5	13.3	152.3	10.2
Dominican Rep.	1985	2000	15	60.7	19.3	41.4	2.8
El Salvador	1985	1998	13	108.3	24.5	83.8	6.4
Jamaica	1985	1997	12	181.3	69.4	111.9	9.3
Morocco	1985	1991	6	117.7	85.5	32.2	5.4
Mexico	1986	1994	8	78.1	30.9	47.2	5.9
Panama	1988	1995	7	105.6	60.6	45.1	6.4
Argentina	1989	1994	5	115.0	28.9	86.2	17.2
Sri Lanka	1989	1997	8	105.1	83.0	22.1	2.8
Ecuador	1990	1997	7	100.8	56.7	44.1	6.3
Poland	1991	2000	9	70.6	36.8	33.8	3.8
Philippines	1993	1998	5	67.7	51.1	16.7	3.3
Bulgaria	1993	2010	17	289.6	14.9	274.6	16.2
Venezuela	1994	2000	6	71.9	31.9	40.0	6.7
Algeria	1994	2008	14	98.0	8.1	89.9	6.4
Albania	1994	2007	13	85.2	53.4	31.7	2.4
Ecuador	1999	2009	10	93.8	15.7	78.1	7.8
Indonesia	1999	2012	13	95.9	24.0	71.9	5.5
Angola	1999	2007	8	165.3	21.4	143.8	18.0
Russia	1999	2008	9	88.7	7.9	80.8	9.0
Ukraine	1999	2007	8	61.0	12.3	48.7	6.1
Serbia	2000	2008	8	241.7	34.2	207.5	25.9
Turkey	2001	2007	6	77.9	39.9	38.0	6.3
Pakistan	2001	2007	6	87.9	55.3	32.6	5.4
Argentina	2002	2012	10	165.0	44.9	120.1	12.0
Gabon	2002	2008	6	87.3	20.9	66.4	11.1
Uruguay	2003	2012	9	99.3	53.7	45.6	5.1
Belize	2003	2008	5	104.0	79.2	24.8	5.0
Median			8	100.4	34.4	57.6	6.4
Mean			9	118.6	42.9	75.7	8.5

LDR episodes without debt restructuring 2/

Country	Start	End 3/	Duration in years	Initial Debt	Final Debt	Reduction in p.p.	Speed 4/
Belize	1985	1990	5	68.8	39.8	29.0	5.8
Malaysia	1987	1997	10	109.0	32.3	76.8	7.7
Kuwait	1991	2008	17	203.4	9.8	193.6	11.4
Hungary	1991	2001	10	127.6	52.6	75.0	7.5
Egypt	1992	2000	8	136.6	66.8	69.8	8.7
Morocco	1993	2009	16	90.4	48.0	42.4	2.6
Barbados	1994	1999	5	71.8	34.7	37.1	7.4
Libya	1994	2007	13	78.5	0.0	78.5	6.0
Tunisia	1997	2010	13	62.5	40.5	22.0	1.7
Turkmenistan	1998	2007	9	64.4	2.4	62.0	6.9
Qatar	1999	2007	8	72.6	8.9	63.7	8.0
Equatorial Guinea	1999	2008	9	61.1	0.7	60.4	6.7
Panama	2001	2011	10	71.1	37.8	33.3	3.3
Brazil	2002	2008	6	79.8	63.5	16.3	2.7
Antigua and Barbuda	2002	2008	6	127.5	76.9	50.7	8.4
Jamaica	2002	2007	5	106.3	83.0	23.4	4.7
Saudi Arabia	2002	2012	10	96.9	3.6	93.3	9.3
Montenegro, Rep. of	2002	2007	5	75.7	27.5	48.2	9.6
India	2003	2012	9	84.3	66.8	17.5	1.9
Philippines	2003	2011	8	68.0	41.9	26.1	3.3
Lebanon	2006	2011	5	179.9	137.4	42.4	8.5
Median			9	79.8	39.8	48.2	6.9
Mean			9	97.0	41.7	55.3	6.3

Sources: Abbas, Belhocine, El-Ganainy and Horton (2010); Mauro, Romeo, Binder (2013); WEO; and Fund staff calculations.

1/ An LDR episode starts at the debt peak (t = 0 = start) and ends at the debt trough, and lasts at least 5 years. A debt reduction is at least 10 p.p. of GDP with initial debt at least 60 percent of GDP.

2/ Restructurings are possible before the debt peak but not during the LDR episode. In the sample, only two restructurings occurred before the debt peak.

3/ Episodes extending through 2012 (end of the sample) are assumed to end in that year.

4/ Average reduction per year, defined as total reduction divided by duration.

Appendix-Table A2. Samples of Debt Distress Episodes Identified Through Rating Downgrades

| Country | Credit Rating Cycle | | Duration | Credit Rating | | | | Debt Restructuring | | IMF |
	Peak	Trough	(years)	Peak	Trough	Diff.	5-year or latest from trough	Private	Paris Club	Program
Durable Exit										
Argentina	1987m11	1992m6	4.6	8.0	5.0	3.0	8.7	Y	Y	Y
Brazil	2002m5	2003m10	1.4	7.8	6.7	1.1	11.0			Y
Chile	1997m11	1999m6	1.6	16.0	14.8	1.2	15.3			
China	1989m10	1993m8	3.8	14.0	12.5	1.5	13.7			
Colombia	1999m6	2007m2	7.7	12.5	10.2	2.3	11.5			Y
Cyprus	1997m12	2002m1	4.1	18.0	15.0	3.0	15.7			
Dominican Republic	2003m5	2005m4	1.9	8.5	2.5	6.0	6.0	Y	Y	Y
Estonia	2008m9	2010m5	1.7	15.5	14.5	1.0	16.3			
Fiji	2000m6	2011m7	11.1	10.0	6.3	3.7	6.5			
Georgia	2008m7	2010m3	1.7	7.5	6.5	1.0	8.0			Y
Greece	1990m6	1996m11	6.4	12.0	11.0	1.0	15.0			
Hong Kong SAR	1990m1	1992m11	2.8	16.0	15.0	1.0	17.0			
Iceland	2006m11	2012m1	5.2	18.8	11.2	7.6	11.5			Y
Indonesia	2001m4	2002m7	1.3	5.2	4.2	1.0	8.0		Y	
Kazakhstan	1998m8	2000m6	1.8	9.0	7.7	1.3	11.7			Y
South Korea	1997m10	1998m1	0.3	17.8	8.5	9.3	15.0			Y
Latvia	2007m4	2010m11	3.6	14.5	10.2	4.3	12.5			Y
Lebanon	1998m5	2008m7	10.2	8.5	4.7	3.8	6.3			
Lithuania	2007m12	2013m3	5.3	15.2	12.5	2.7	12.8			
Malaysia	1997m11	1999m3	1.3	16.8	11.8	5.0	14.2			
Mauritius	2006m5	2012m5	6	13.5	12.0	1.5	13.0			
Mexico	1994m8	1997m8	3	12.3	10.0	2.3	12.2			Y
Pakistan	1995m6	1999m6	4	7.5	2.0	5.5	6.5	Y	Y	Y
Philippines	2001m2	2009m6	8.3	11.0	8.5	2.5	10.8			
Romania	1998m4	2000m10	2.5	9	5	4.0	11.0			Y
Romania	2008m9	2011m6	2.8	11.7	10.7	1.0	10.8			Y
Russia	1998m2	1999m4	1.2	9.0	2.0	7.0	10.5	Y	Y	Y
Seychelles	2008m7	2009m7	1	6.5	3.0	3.5	6.5	Y	Y	Y
Slovak Republic	1996m7	2001m9	5.2	13.0	11.5	1.5	15.3			
Sri Lanka	2008m11	2010m8	1.8	7.5	6.5	1.0	7.0			Y
Thailand	1997m3	1998m4	1.1	15.8	11.3	4.5	12.2			Y
Turkey	2001m1	2003m6	2.4	7.5	5.3	2.2	8.3			Y
Ukraine	1998m8	2001m5	2.8	6.0	3.0	3.0	7.8	Y	Y	Y
Uruguay	2002m1	2003m4	1.3	11.7	2.3	9.4	7.5	Y		Y
Nondurable Exit										
Argentina	1999m9	2003m7	3.8	9.2	0.3	8.9	5.0	Y		Y
Belize	2001m9	2007m1	5.3	9.5	2.0	7.5	5.0	Y		
Brazil	1987m11	1994m10	6.9	10.0	6.0	4.0	6.2	Y	Y	Y
Brazil	1998m5	1999m11	1.5	7.8	6.2	1.6	8.0			Y
Chile	1994m10	1995m6	0.7	15.5	14.3	1.2	15.3			
Dominican Republic	1998m10	2001m5	2.6	8.0	5.3	2.7	5.5			
Ecuador	1998m8	2000m7	1.9	7.0	1.8	5.2	4.5	Y	Y	Y
Ecuador	2006m12	2009m5	0.6	4.5	0.3	4.2	5.0	Y		
Grenada	2004m8	2005m10	1.2	8.0	1.5	6.5	5.0	Y	Y	
Grenada	2007m3	2007m7	0.3	5.0	4.0	1.0	5.0			
India	1991m2	1996m9	5.6	12.0	10.0	2.0	9.8			Y
India	1998m5	2000m2	1.8	11.5	9.8	1.7	9.8			
Indonesia	1997m9	2000m9	3	12.7	4.2	8.5	7.3		Y	Y
Jamaica	1999m10	2001m4	1.5	9.5	8.0	1.5	7.0			
Jamaica	2003m4	2010m1	6.8	8.5	1.7	6.8	3.0	Y		Y
Moldova	1998m6	2003m1	4.6	9.0	1.8	7.2	4.8	Y		Y
Nicaragua	2003m5	2010m4	6.9	6.0	4.5	1.5	5.0	Y	Y	Y
Pakistan	2008m4	2008m11	0.6	7.5	4.3	3.2	4.5			Y
Paraguay	1998m6	2004m6	6	9.5	2.8	6.7	5.5	Y		Y
Turkey	1993m12	1995m8	1.7	11.5	7.0	4.5	7.5			Y
Turkey	1996m11	2000m3	3.3	7.7	6.7	1.0	7.8			Y
Ukraine	2008m5	2010m2	1.8	7.8	5.2	2.6	5.7			Y
Venezuela	1982m7	1991m6	8.9	20.0	7.5	12.5	7.5	Y		Y
Venezuela	1994m2	1997m5	3.3	9.5	7.5	2.0	6.0			Y
Venezuela	1998m6	2003m5	4.9	8.0	3.8	4.2	7.5			
Ongoing Distress as of June 2013										
Belize	2011m7	2013m2	1.6	5.5	1.8	3.7	4.0	Y		
Greece	2004m10	2012m2	7.3	16.0	0.3	15.7	3.3	Y		Y
Jamaica	2013m1	2013m2	0.1	5.0	1.7	3.3	3.0	Y		Y

Sources: Moody's; S&P; Fitch; Das, Papaioannou, and Trebesch (2011); Cruces & Trebesch (2013); and Fund staff calculations.

Table A2. Samples of Debt Distress Episodes Identified Through Rating Downgrades (concluded)

Ratings Scale for Long-Term Securities

S&P	Moody's	Fitch	Numerical values 1/	Risk classification	Payment Capacity
AAA	Aaa	AAA	20	Prime	Extremely strong
AA+	Aa1	AA+	19	High grade	Very strong
AA	Aa2	AA	18		
AA-	Aa3	AA-	17		
A+	A1	A+	16	Upper medium grade	Strong
A	A2	A	15		
A-	A3	A-	14		
BBB+	Baa1	BBB+	13	lower medium grade	Adequate
BBB	Baa2	BBB	12		
BBB-	Baa3	BBB-	11		
BB+	Ba1	BB+	10	Non-investment grade Speculative	Less vulnerable
BB	Ba2	BB	9		
BB-	Ba3	BB-	8		
B+	B1	B+	7	Highly speculative	More vulnerable
B	B2	B	6		
B-	B3	B-	5		
CCC+	Caa1	CCC+	4	Substantial risks	Currently vulnerable
CCC	Caa2	CCC	3		
CCC-	Caa3	CCC-	2		
CC	Ca	CC	1	Extremely speculative	Currently highly-vulnerable
C	C	C	0	In default	Currently highly-vulnerable to nonpayment
SD	C	RD	0		Selected default/Restricted default/Default
D	C	DDD	0		
D	C	DD	0		
D	C	D	0		
PR	P		--		Preliminary rating
	E	Expected	--		Expected rating
		WR	--		Rating withdraw
unsolicited	unsolicited		--		Rating unrequested
NR	NR	NR	--		Not rated

Sources: Ratings agencies and Fund staff calcultions.
1/ Ad-hoc linear scale from zero (lowest) to 20 (highest), assigned by Fund staff.

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ANNEX III. COMPARATIVE COSTS AND BENEFITS OF REPROFILING, BAILOUT, AND RESTRUCTURING IN GRAY ZONE CASES—MARKET DYNAMICS AND INTERNATIONAL SPILLOVERS[51]

This annex examines the implications of past reprofiling, restructuring, and bailout episodes for market dynamics and cross-border spillovers. In particular, it provides (i) an analysis of the potential impact of the possible inclusion of reprofiling in Fund lending policy on sovereign spreads and maturity structures of sovereign debt, both in normal and distressed periods, (ii) empirical evidence on the evolution of spreads and maturity structures when markets start anticipating a restructuring or reprofiling, (iii) a description of the factors that determine the speed of market re-access under different restructuring episodes; and (iv) empirical analysis of international spillovers in crisis episodes that involved restructuring and reprofiling of sovereign debt.

A.   Implications of a Reformed Fund Policy Framework on Spreads and Maturity Structures of Government Debt

44.   **This section discusses the likely implications of a reformed Fund lending policy on market dynamics in the steady state and in periods of heightened stress,** assuming that the adoption of the new framework would lead markets to perceive a lower probability of being bailed out and a higher probability of being reprofiled.[52] While markets may have that perception, some investors may also view it as an alternative to a deeper debt restructuring for countries in the gray zone in the current framework. In such cases the reprofiling would be associated with lower borrowing costs. The discussion also assumes that the reprofiling option would only be applied to government bonds coming due within the duration of the Fund program.[53] As the reformed policy would represent a new regime, the analysis examines potential theoretical effects to make some broad inferences.

45.   ***In a steady state,*** the new Fund lending policy might lead to the following:

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[51]This annex was prepared by Kay Chung, Anastasia Guscina, Michael Papaioannou, Gabriel Presciuttini, Miguel Segoviano (all MCM) and Heiko Hesse (SPR) with input from Tamon Asonuma, Christopher Dielmann, Charlotte Lundgren, Nelson Sobrinho and Geneviève Verdier (all SPR).

[52]The steady state refers to tranquil periods when a country is not in debt distress.

[53]This assumption is made for convenience; as discussed in the main paper, this does not need to be the case for the reprofiling proposal.

- **Investors would factor in a greater probability of a credit event in the pricing of risks.**[54] Spreads may increase, especially in countries that are perceived as more at risk of debt distress. As moral hazard associated with bailouts is reduced, investors are likely to differentiate better between sovereigns based on macroeconomic fundamentals and fiscal discipline. Investors will demand higher interest rates from governments with higher debt levels, fiscal deficits, and external financing requirements. At the same time, with better pricing of risks, countries with better economic fundamentals might benefit from increasing demand for their government bonds, and may actually see their spreads fall. As discussed in Box AIII1, there is evidence suggesting that this may be a mitigating factor for highly-rated sovereigns

- **For riskier countries, to the extent that credit risk premia rise, they would tend to do so across the yield curve and more so in the shorter end.**[55] Bonds with shorter initial maturity are refinanced more frequently than longer-term bonds. As a result, at any given point in time, shorter-term bonds are more likely to fall due in a period of stress when a reprofiling option may be exercised. Since shorter-term bonds are more likely to be reprofiled than longer-term bonds, investors will be more hesitant to buy or roll over bonds of shorter duration in the steady state. Hence, one would expect that the demand for shorter-term bonds will decrease, and the maturity structure of sovereign debt portfolio would shift increasingly towards longer tenors.[56]

- **Assuming a positively-sloping yield curve, a shift towards longer-tenors will imply a higher average cost of the debt portfolio but reduced rollover risk.** Since longer-term bonds are typically more expensive than shorter-term bonds, this would imply that the average cost of the debt portfolio would rise, while rollover risk would fall. The impact of this development on individual countries will depend on their cost-risk preferences. Long term investors who are less likely to be reprofiled could benefit from the positive effect of the reprofiling on debt sustainability. In the event that a reprofiling does not work and a debt reduction is needed they would face a lower haircut due to a bigger creditor base. Compared to the status quo this could lower yields at the long end.

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[54]A credit event refers to debt restructuring with face value reduction or reprofiling.

[55]If the likelihood of bailouts is perceived to decline under the proposed framework, long-term creditors could anticipate a lower risk of being subordinated to higher levels of (senior) official debt that typically arises from a bailout. This perception could lead to a further flattening of the yield curve or even a decline in long-term yields when a bailout becomes less likely. In principle, a removal of the "bailout premium" is expected to shift the yield curve upwards, while an increased probability of reprofiling shorter-term maturities could change the slope of the yield curve.

[56]Short-term treasury bills are typically excluded from debt reprofilings.

- **Governments with less developed domestic debt markets might have to rely increasingly on international bond issuance for their financing needs.** Placement of longer-term bonds in such countries would be limited by the absorption capacity of the domestic investor base. Riskier countries that rely on shorter-term instruments for the majority of their government financing will be most affected by the policy change. Such governments may shift towards issuing a higher share of their bonds on the international market. Since international bonds are usually denominated in actively traded currencies, this movement would heighten currency risks facing the sovereign.

- **If sovereign borrowing costs rise, the cost of borrowing in the corporate sector is likely to increase in tandem.** Since sovereign bonds often serve as benchmarks for corporate debt, an increase in yields on sovereign debt would also lead to higher spreads and higher costs of borrowing for the corporate sector, which usually borrows at shorter tenors (in particular, the banking sector). Further, concerns that sovereign restructuring could lead to a tightening of credit conditions in the corporate sector, force deleveraging, or impose balance sheet losses, could also contribute to an increase in spreads. This effect would be mostly felt in countries, where the transmission of higher borrowing cost from the sovereign to private firms and households is stronger.

Box AIII1. The Long-Term Effects of Reprofiling on EM Borrowing Costs

This box looks at the possible steady state impact of reprofiling on borrowing costs for emerging markets. The net effect on yields is likely to depend on whether the new policy is viewed as a tightening of the existing framework—relative to a bail-out—or a more flexible approach in designing programs for countries in distress. The evidence from past episodes of shifts in policy or institutional regime, or episodes of increased risk aversion suggests that for EM sovereigns with strong fundamentals, the effect of reprofiling would be small or perhaps even beneficial.

Outside of periods of heightened debt distress, the impact of the modification of Fund policy is unclear ex-ante as it would be the result of competing effects. One possibility is that markets perceive the change in policy as an alternative to a bailout, which would tend to increase yields. On the other hand, investors may view the proposal as an alternative to a deeper debt restructuring for countries in the gray zone in the current framework. This perception would presumably be associated with lower borrowing costs. To analyze this question, three episodes of shifts in policy or institutional regime or changes in risk aversion for emerging markets are examined. Although past experience is not conclusive, it may shed light on the potential effects of the proposed policy.

The evidence suggests that the effect of the proposed policy change would be negligible or even beneficial for highly-rated sovereigns. These results are based on the analysis of three specific episodes:

- **EM yields following the introduction of the 2002 Exceptional Access framework.** As noted in Annex I, this change in Fund policy constituted a tightening of the Fund's lending framework. Because the Fund could no longer lend unless debt was sustainable with high probability in capital account crises, it was perceived as making the incidence of debt restructuring more likely on the margin. Figure A shows the percentage impact on EM spreads (i.e., if Mexico's spreads were 100 basis points before the change, they fell to 90 basis points after the change). For strongly rated countries, the change in policy resulted in falling borrowing costs. Middle-rated countries saw little change in their yields while yields increased for poorly rated sovereigns.

Box AIII1. The Long-Term Effects of Reprofiling on EM Borrowing Cost (continued)
Figure A
Marginal effect of 2002 EAP on EMBI spreads 1/
(in percentage change)
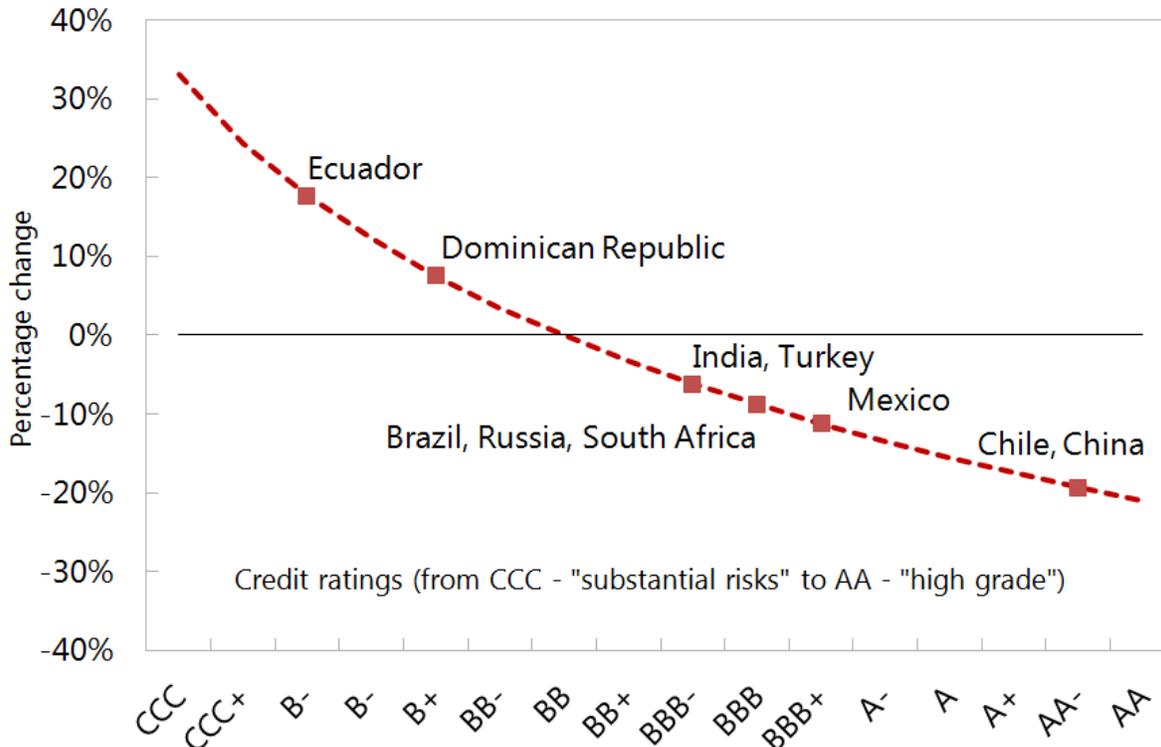
Sources: Fitch Ratings; Moody's; S & P; Bloomberg; IFS; WEO; and Fund staff calculations.
[1] Panel of 15 Ems for which EMBI spreads are available since at least Jan 1998: ARG, BRA, BUL, COL, ECU, MAL, MEX, PAN, PER, PHL, POL, RUS, SAF, TUR, VEN. Date of policy changes: 3/2003. Ratings for countries displayed on the chart refer to Mar/2014 (average across the three rating agencies). DOM, IND, CHL, and CHN are not included in the panel.

- **Borrowing costs and collective action clauses (CACs).** In theory, the impact of CACs on sovereign yields is ambiguous. CACs can make debt restructuring more efficient, lowering yields on sovereign debt. On the other hand, by reducing the costs of restructuring, they may increase the likelihood of sovereign default. In 2003, a number of EMs issued sovereign bonds with CACs under New York Law. At the time CACs were seen as making debt restructurings easier to achieve. Figure B show a non-discernible difference in maturity adjusted yields between bonds with and without CACs for Mexico and Turkey. This is consistent with the existing literature. Bardozzetti and Dottori, (2013) for example find that the amount by which CACs lower borrowing costs depends on the sovereign's credit rating.

- **EM yields during the global financial crisis.** To analyze how EM borrowing costs behaved during a generalized increase in risk aversion towards EM as an asset class, staff examined the evolution of spreads following the Lehman Brothers failure (a large shock to risk aversion). In Figure C, EM countries are categorized according to their rating in the IMF's 2008 Vulnerability Exercise using the overall and fiscal vulnerability indices. The figure suggests that borrowing costs spiked briefly for all countries but soon decoupled according to macroeconomic fundamentals.

Box AIII1. The Long-Term Effects of Reprofiling on EM Borrowing Costs (concluded)
Figure B
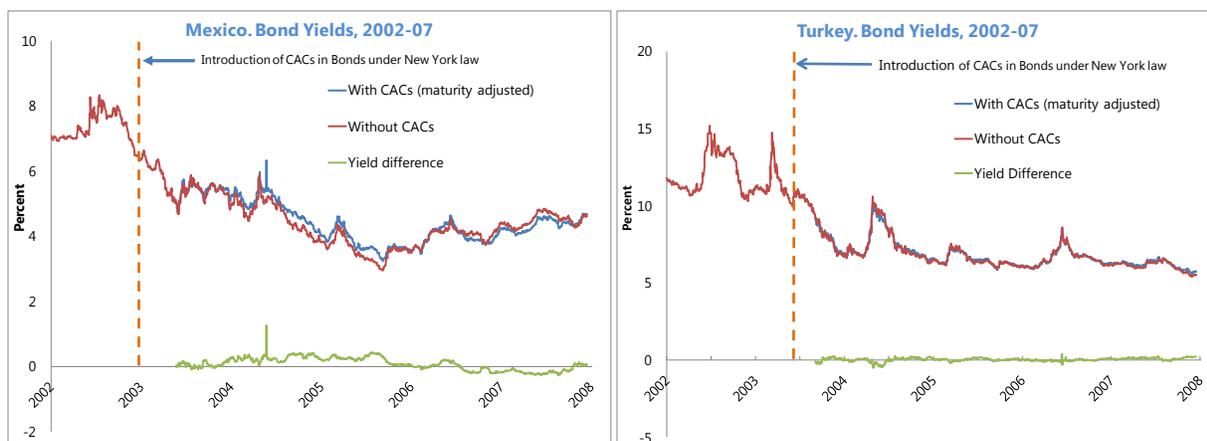
Sources: Bloomberg; and Fund staff calculations.

Figure C
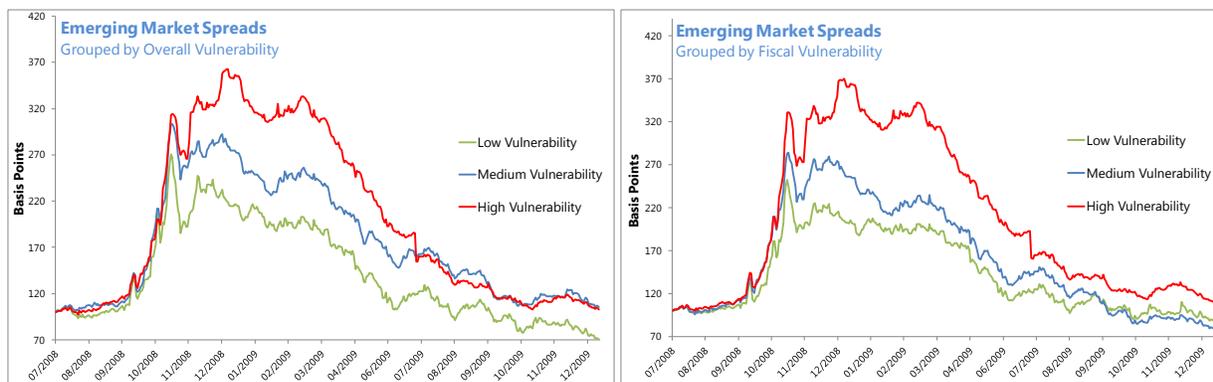
Sources: JPMorgan EMBI spreads; and Fund staff calculations.
Note: Countries grouped according to VEE as of 09/2008. Indexed to value as of 7/1/2008.

46.   ***In periods of heightened* stress,** the new Fund lending policy might lead to the following:

- **The introduction of a reprofiling option may help calm market concerns at times of stress, though it could advance the onset of distress.** In periods of heightened stress, spreads may rise above levels consistent with debt sustainability and may trigger the loss of market access. Should investors lose confidence in a government's ability to honor its commitments, they may stop purchasing the newly issued government bonds or sell their existing holdings of government debt. If a reprofiling option is available, it may help calm down market jitters by signaling that at least temporarily the government will not permit short-term creditors to exit at

the expense of longer-term creditors. Nonetheless, if reprofiling is seen to be triggered earlier, it could advance the advent of stress.

- **A reprofiling option might reduce spreads volatility in times of stress.** Under a situation when reprofilings become more likely, moral hazard associated with the bailouts is reduced. While in the steady state the change in policy would be associated with higher spreads (as risk is more fully reflected in the price), in times of stress, one would expect the spreads to widen less as the average borrowing costs would be higher in the steady state. In a way, the existence of the middle option (reprofiling) will smooth the spreads volatility compared to outright bailouts or to debt restructurings involving higher net present value (NPV) haircuts.

- **By preventing payments to external creditors, reprofiling would leave more resources in the domestic economy.** If reprofiling involves external debt, by preventing inefficient payments in the case of bailouts, the sovereign may be able to undertake social expenditures that would raise growth. In times of crisis, a reprofiling option might give the sovereign more room to pursue countercyclical fiscal policy and undertake needed reforms (see Annex V). However, if a large share of government bonds is held domestically, stopping payments may hurt banks' profitability which could translate to a slowdown in the real economy.[57]

- **Contagion might spread to more countries, but the magnitude of the shock will likely be reduced.** Under the assumption that more sovereigns will be considered "at risk" for reprofiling at any given time, investors might demand higher spreads on sovereign debt from countries with similar fundamentals to the crisis country. However, given that a reprofiling option might give a crisis government more room and more time to resolve its issues, the effects of contagion would not be as pronounced. Spreads are likely to rise in more countries but at a lesser magnitude than under the status quo (old policy).

- **Reprofiling would be growth-enhancing and volatility-reducing only if it is successful in avoiding a restructuring in the future.** Reprofilings would fail to resolve a debt crisis if they are used in a situation where debt is clearly unsustainable. Such reprofilings would eventually be followed by deeper restructurings. The overall impact of the reprofiling option on borrowing costs and growth will depend on whether reprofiling was successful in preventing a debt restructuring.

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[57]Under a reprofiling, thanks to forbearance, the regulator is likely to allow the banks to accrue the postponed interest revenue and to carry the government bonds at par.

B.   Do Reprofilings and Restructurings Have Significantly Different Impacts on Spreads, Credit Ratings, and Market Access?

47.   **Reprofilings, on average, appeared to be less costly than face value cut restructurings.** Based on a sample of 12 restructuring country episodes, equally divided between cases of reprofiling and debt restructuring with face value cut, we find some further empirical support for reprofilings being less costly, on average, than restructurings.[58] The scope of this analysis is to assess the relative costs of restructurings and reprofilings, without judging whether individual debt operations were appropriate for the individual country.

48.   **Reprofilings were generally less costly than restructurings with face value cuts in terms of their effect on spreads, credit ratings, and market access.** Restructurings with nominal reductions have been associated with weaker fundamentals and more disruptive market conditions. Specifically, in our sample (i) sovereign spreads were generally higher in restructurings compared to reprofilings, both at the time of the announcement and the time of the debt exchange; (ii) credit downgrades were more severe in restructurings with nominal reductions than in reprofilings, with sovereign credit ratings recovering faster in reprofilings than in restructurings within 12 months after the exchange (it took twice as long for restructurings to recover to precrisis credit ratings); (iii) the time to re-access the markets was longer for restructuring countries than for reprofiling ones, both in terms of time to a new global bond issuance or normalization of spreads to precrisis levels; and (iv) negotiations in restructurings took longer than in reprofilings, while participation rates were higher and litigations were fewer in reprofilings than in restructurings with nominal debt reductions.

49.   **The results should be interpreted with caution.** While our preliminary results indicate that past reprofilings have, in general, been less costly than restructurings and are consistent with the existing literature on the topic, any inferences regarding the applicability of these results on the proposed new regime should be cautious given (i) the lack of sufficient reprofiling cases to conduct a rigorous empirical study, leading to low statistical power of the results; (ii) the difficulty of disentangling the effects of the debt exchange itself from the policies implemented following the debt operation; and (iii) the uncertainty stemming from the introduction of the new framework on

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[58]The reprofiling cases included in the sample are Pakistan (1999), Moldova (2002), Uruguay (2003), Grenada (2004), the Dominican Republic (2005), and Belize (2006), while the restructurings with nominal reductions are Ecuador (1999), Russia (1999), Dominica (2004), Argentina (2005), Seychelles (2008), St. Kitts and Nevis (2011), Greece (2012), and Belize (2012). The selection of the country sample for restructurings and reprofilings does not explicitly differentiate between "successful" vs. "failed" operations. For the purposes of this annex, reprofiling is defined as a moderate, face- value preserving maturity extension and NPV reduction.

market dynamics and domestic and cross-border financial stability. Moreover, when restructuring was necessary to resolve sovereign distress, reprofiling was not a viable alternative.

Effect on spreads

50.   **Restructurings have been associated with higher spreads at the time of the announcement of the debt operation than reprofilings.** At the time of the announcement of the credit event, sovereign spreads were generally higher in restructuring cases (median of 2,119 bps) than in reprofiling cases (median of 1,053 bps), though with a great deal of variation within each subsample.[59] Moreover, spreads increased by 727 bps over the median spread of the previous 12 months in restructurings compared to 216 bps in reprofilings.

Figure AIII1. Spreads: Restructuring vs. Reprofiling Cases

(in bps, t= announcement of restructuring)

Sources: Bloomberg; and Fund staff calculations.
Note: The spread calculations for the country samples are based on the median.

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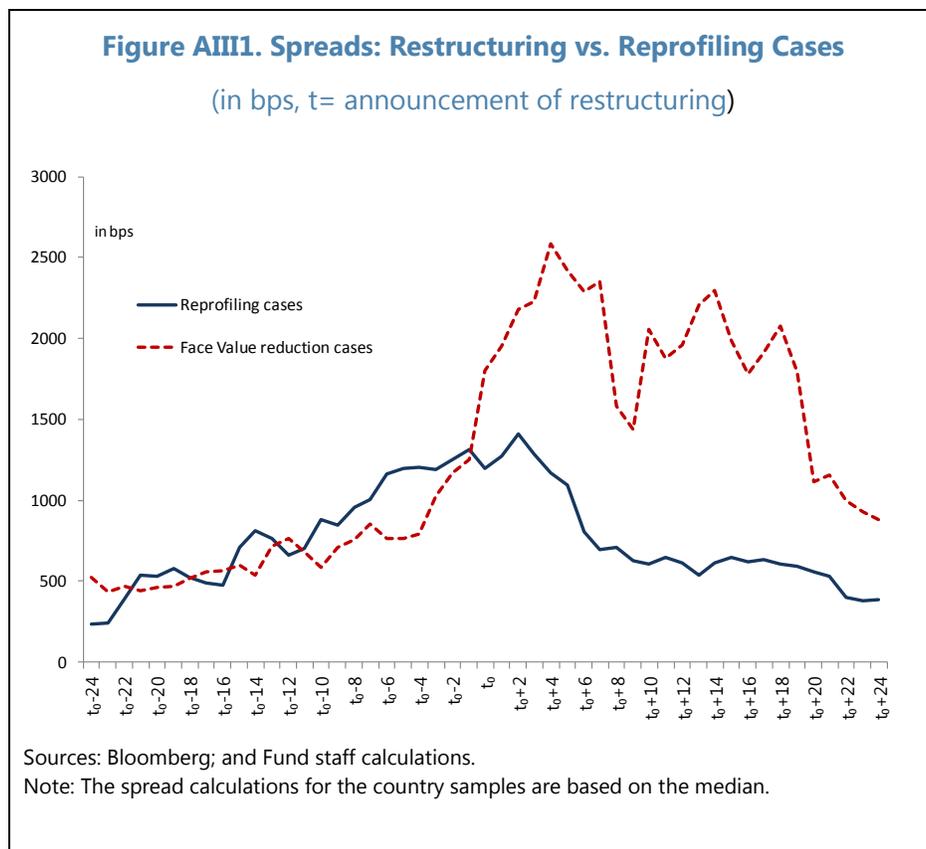
[59]Pakistan, with the spread of almost 20,000 bps at the time of the reprofiling, was a clear outlier and is not reported in Figure AIII2.

Figure AIII2. Spreads at the Time of the Announcement of Restructuring/Reprofiling
(In basis points)

Sources: Bloomberg; and Fund staff calculations.
Note: EMBI spreads or available external bond yields are used.
1/ Announcement date of restructuring (Russia, Argentina and Belize (2013), Greece), reprofiling
(Uruguay, Dominican Rep. and Belize (2007)) or default (Ecuador and Seychelles).

51.   **Similarly, spreads have been higher in restructuring cases at the time of the debt exchange, but less so than at the time of the announcement.** Sovereign spreads have also been higher in debt restructuring cases (with the exception of Pakistan) than in reprofiling cases at the time of the debt exchange. However, the difference between the two groups is typically smaller by the time the restructuring operation takes place, and statistically not significant (Figure AIII3). This could reflect the fact that uncertainty was resolved by the time the country concluded the debt exchange.

Figure AIII3. Spreads at the Time of the Debt Exchange
(In basis points)

Reprofiling Cases

median = 491
st. dev. = 313

Restructuring Cases

median = 1077
st. dev. = 701

Sources: Bloomberg; and Fund staff calculations.
Note: EMBI spreads or available external bond yields are used.
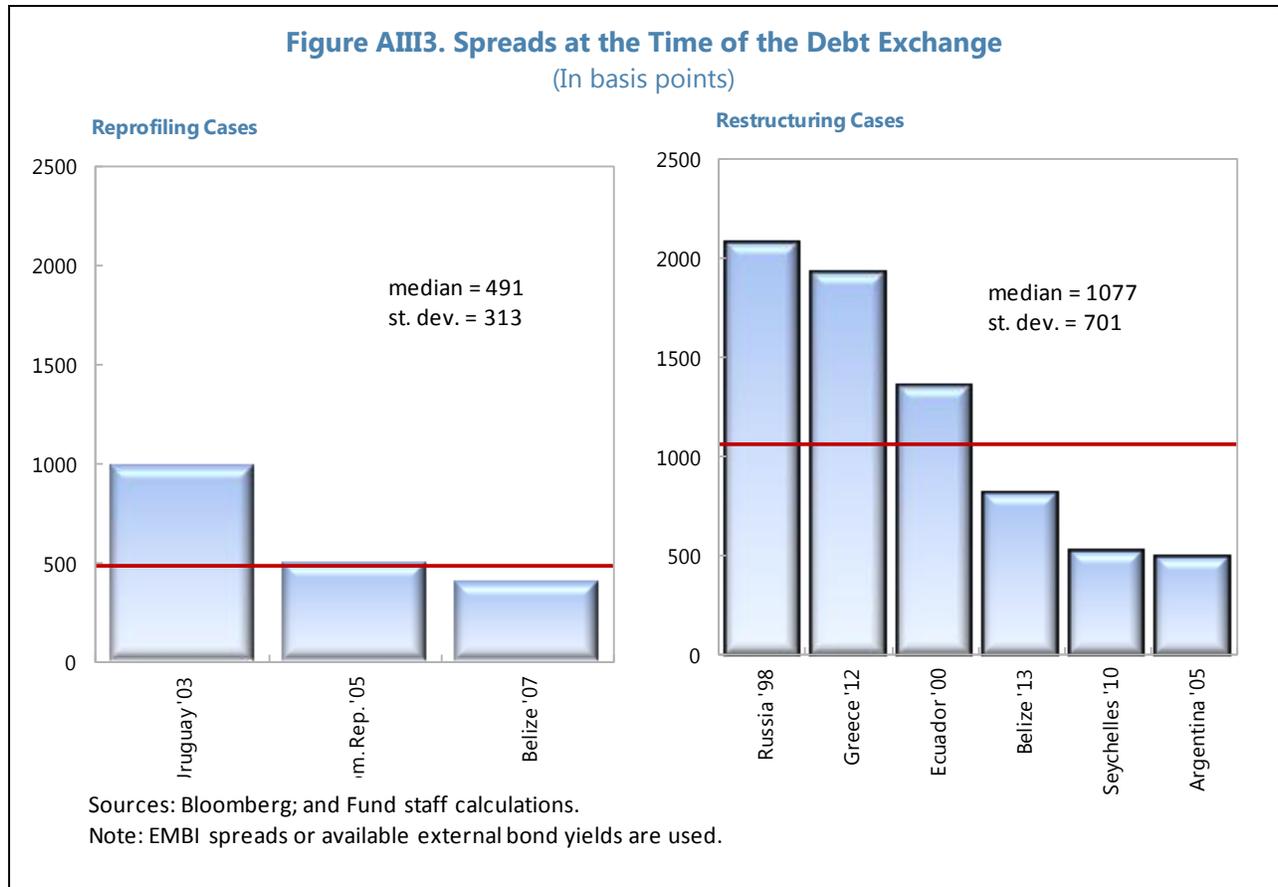
Effect on Credit Ratings

52.   **For credit rating agencies that assign a default rating, both reprofilings and restructurings resulted in a selective default rating.** However, selective default ratings are technical, not judgmental: they apply from the moment a country announces a change in the contractual terms of its debt or misses a payment to the moment that it returns to servicing its debt. More importantly, reprofilings were associated with smaller drops in credit ratings than restructuring cases, measured by the credit rating before and after the period of selective default. Credit downgrades were more severe in restructuring cases compared to reprofiling cases, with the median downgrade being almost twice as large (in number of notches) (Figure AIII4).

Figure AIII4. Credit Downgrade in the Year of Restructuring/Reprofiling
(In notches)

Reprofiling Cases

median = 2.9
st. dev. = 2.6

Grenada '05, Uruguay '03, Pakistan '99, Moldova '02, Dom. Rep. '05, Belize '07

Restructuring Cases

median = 5.3
st. dev. = 3.4

Argentina '05, Greece '12, Russia '98, Seychelles '10, Ecuador '00, Belize '13

Sources: S&P; Moody's; Fitch; and Fund staff calculations.
Note: average of the 3 agencies.

53.   **Sovereign credit ratings recovered faster in reprofilings compared to restructurings within 12 months after the exchange.** Figure AIII5 demonstrates that, within 12 months of the debt operation, credit ratings recovered by an average of 3 notches in reprofiling cases, while they increased by an average of 2 notches in the restructuring cases.

Figure AIII5. Credit Rating Recovery a Year After Restructuring/Reprofiling
(In notches)

Reprofiling Cases

median = 3
st. dev. = 0.3

Grenada '05, Uruguay '03, Pakistan '99, Moldova '02, Dom. Rep. '05, Belize '07

Restructuring Cases

median = 1.7
st. dev. = 1.4

Argentina '05, Greece '12, Russia '98, Seychelles '10, Ecuador '00, Belize '13

Sources: S&P; Moody's; Fitch; and Fund staff calculations.
Note: average of the 3 agencies.

54.   **Further, it took longer for restructuring cases to recover to the pre-crisis ratings (Figure AIII6).** It took on average four times as long for restructuring cases to recover to precrisis credit ratings in comparison with reprofilings. The experience is diverse, however: some have risen to investment grade (Russia and Uruguay), some languished in the B category (Grenada, Ecuador, Belize, Jamaica, Pakistan, Greece, and Cyprus), while others were withdrawn at the government's request (Seychelles).

Figure AIII6. Credit Rating Recovery to Precrisis Levels
(In months)

Sources: S&P; Moody's; Fitch; and Fund staff calculations.
Note: average of the 3 agencies.
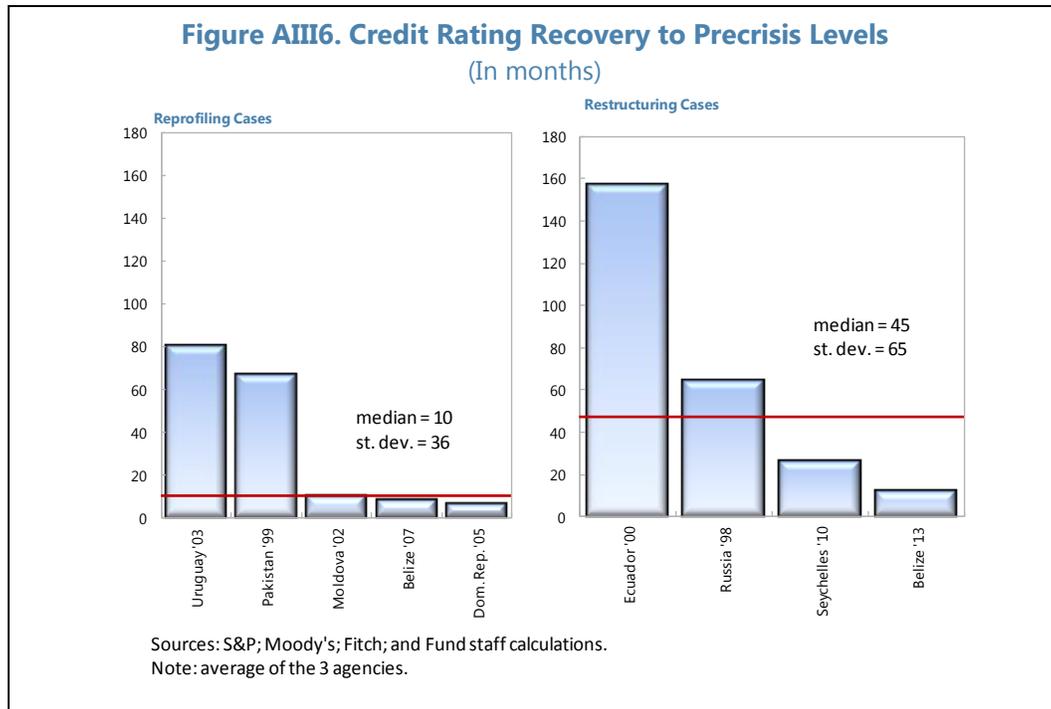
Effect on Market Access

55.   **Our analysis suggests that it takes longer for governments that undergo debt restructurings to re-access the market than those that undergo reprofilings,** irrespective of whether time to reaccess is defined as new global bond issuance or normalization of spreads to precrisis levels. Obviously, the time to complete the debt exchange is a key factor influencing the length of time to re-access markets.

56.   **It took longer for sovereigns that restructured to return to international markets following the credit event as compared to reprofiling cases.** The median time for governments

that underwent a restructuring to re-access international capital markets and issue global bonds was 57 months, compared to 35 months for reprofiling cases (Figure AIII7).[60, 61]

Figure AIII7. Time to Market Access—Defined as International Security Issuance
(In months)

Reprofiling Cases

median = 35
st. dev. = 52

Moldova '02 * | Belize '07 * | Pakistan '99 | Grenada '05 | Dom. Rep. '05 | Uruguay '03

Restructuring Cases

median = 57
st. dev. = 42

Russia '98 | Argentina '05 | Ecuador '00 | Seychelles '10 * | St. Kitts '12 * | Greece '12

Sources: Bloomberg; Dealogic; and Fund staff calculations.
Note: time to market access is defined by counting number of months from completion of the debt exchange and until another international security was issued.
* As of April 2014, Moldova, Argentina, Belize, Seychelles, and St. Kitts have not yet issued in international security.

57.   **Likewise, when time to re-access is defined as return of spreads to precrisis levels, the median time for restructuring cases was 35 months as compared to 8 months for reprofiling cases (Figure AIII8).** This measure of market re-access implies that the government that underwent reprofiling/restructuring could re-access the market, as rates were not prohibitively high, even if the government did not issue a global bond.

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[60]It should be noted that Argentina has not re-accessed international markets since the date of the exchange in April 2005. Moldova has not yet regained market access following its 2002 reprofiling, partly due to conditionalities under the Fund program not to undertake nonconcessional borrowing.

[61]Belize (2013) and Cyprus (2013) were not included in the sample (see note 1 of Figure 9).

Figure AIII8. Time to Market Access—Defined as Spreads Normalization
(In months; from the time of the debt operation)*

Reprofiling Cases

Restructuring Cases

median = 8
st. dev. = 9

median = 35
st. dev. = 24
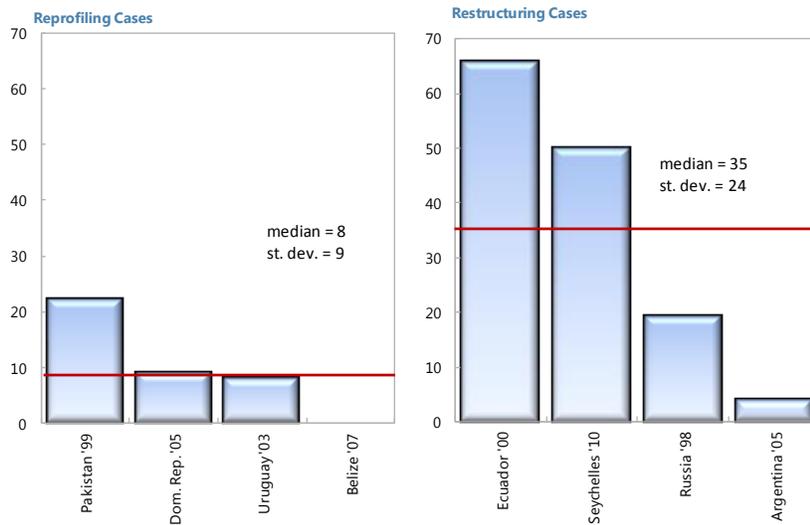
*Should be interpreted with caution for countries that took a long time to finalize the exchange (Argentina).

Sources: Bloomerg; Dealogic; and Fund staff calculations.
Note: normalization is defined as the time it took for spreads to drop to the 12-month average prior to the distress event (announcement of default, restructuring, Fund program, suspension of debt payments).

C. What Factors Affect the Speed at Which Market Conditions Normalize After Different Types of Restructuring?

58.   **Several factors have been analyzed in the relevant literature as contributing to the speed of market re-access, including restructuring-related characteristics, domestic policies, and external risk environment.** We have considered two measures of market re-access throughout this analysis, namely the time it took for a country to tap international markets following the debt operation and the time it took for spreads to normalize to pre-crisis levels. The second measure may be more indicative, especially in cases where the fiscal and external positions of a country do not require the issuance of an international bond (e.g., Russia).

59.   **Market conditions tended to normalize faster for governments that imposed a smaller haircut.** Related to the restructuring characteristics, empirical studies (Cruces and Trebesch, 2013) have shown that the size of the NPV loss suffered by investors during the sovereign bond exchange was correlated with the length of time until market re-access. In particular, there is evidence that governments that underwent debt reprofilings involving relatively small NPV losses have re-accessed markets relatively quickly (e.g., Uruguay and the Dominican Republic). In contrast, countries with

debt restructurings that involved sizeable nominal reductions and NPV losses have experienced much longer periods before re-access of markets (e.g., Argentina and Russia) (Figure AIII9).

Figure AIII9. Market Access Loss and NPV Haircut 1/2/
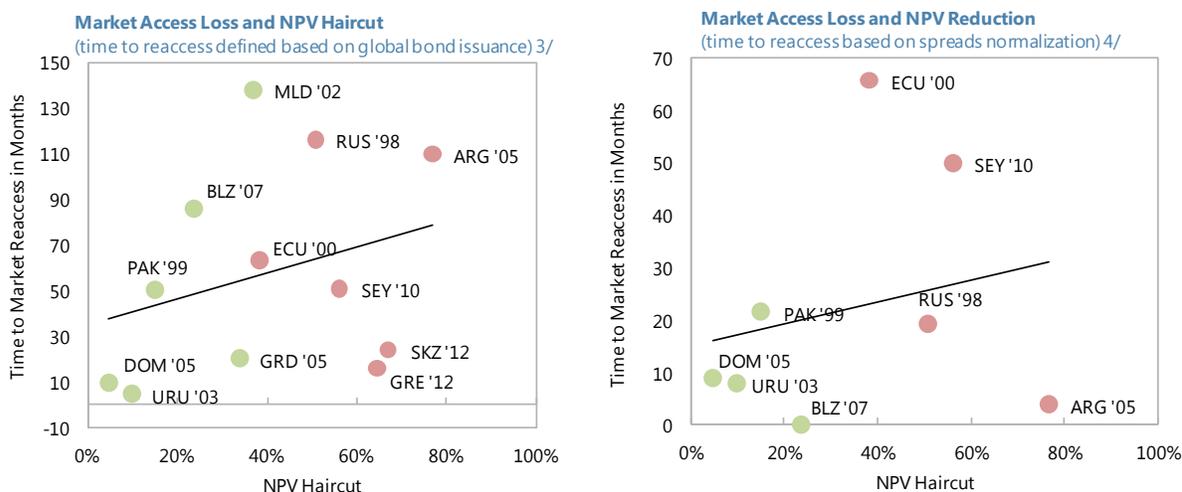
Sources: Moody's Sovereign Default Series, October 7, 2013; and Bloomberg.
1/ Red dots depict restructuring cases and green dots depict reprofiling cases. NPV calculations come from Cruces and Trebesch (2013) with the exception of St. Kitts where we used Sturzenegger and Zettelmeyer (2006, 2008). Cruces and Trebesch (2013) compute the NPV reduction based on the NPV of aggregate cash flows of old instruments and of new instruments. Sturzenegger and Zettelmeyer (2006, 2008) compute the weighted average of NPV reduction for each instrument based on outstanding instruments (computed using the exit yield of the new instrument).
2/ The analysis excludes cases of Belize (2013) and Cyprus (2013) as it is not clear when these countries will reaccess the markets. For countries that have not yet regained market access (as defined below), the duration of market access loss is based on April 2014 cut-off date.
3/ Time to reaccess based on global bond issuance after the last debt exchange.
4/ Time to reaccess based on spreads normalization following the last debt exchange. Normalization is defined as the time it took for spreads to drop to the 12-month average prior to the distress event (announcement of default, restructuring, Fund program, or suspension of debt payments).
Note: Reprofilings are proxied by cases involving moderate (face-value preserving) maturity extensions and NPV reductions. In the case of Argentina, the default occurred in January 2002, while the debt exchange took place in June 2005. In this regard, time to market reaccess based on spreads normalization may not represent the actual impact of the credit event.

60.   **Market conditions took longer to normalize in countries with high levels of government indebtedness at the time of the restructuring.**[62] Governments with lower debt-to-GDP ratios at the time of the restructuring achieved normalized spreads faster than governments with higher debt-to-GDP ratios (Figure AIII10). Since time to re-access is counted from the time of

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[62]It should be noted that defaulting governments had a large external financing requirement and the country's balance of payment and IIP positions were weak as well. The governments that emerged from default successfully made not only a fiscal adjustment, but also an external adjustment.

the credit event, the results must be taken with caution for a country like Argentina that took a long time from the time of the announcement to complete its debt restructuring.

Figure AIII10. Market Access Loss and Debt to GDP Ratio 1/2/

Sources: Moody's Sovereign Default Series, October 7, 2013; Bloomberg; and WEO.
1/ Red dots depict restructuring cases and green dots depict reprofiling cases.
2/ The analysis excludes cases of Belize (2013) and Cyprus (2013) as it is not clear when these countries will reaccess the markets. For countries that have not yet regained market access (as defined below) the duration of market access loss is based on April 2014 cut-off date.
3/ Time to reaccess based on global bond issuance after the last debt exchange.
4/ Time to reaccess based on spreads normalization following the last debt exchange. Normalization is defined as the time it took for spreads to drop to the 12-month average prior to the distress event (announcement of default, restructuring, Fund program, or suspension of debt payments).
Note: Reprofilings are proxied by cases involving moderate (face-value preserving) maturity extensions and NPV reductions. In the case of Argentina, the default occured in January 2002, while the debt exchange took place in June 2005. In this regard, time to market reaccess based on spreads normalization may not represent the actual impact of the credit event.

61.   **Credibility of fiscal adjustment was associated with faster normalization of market conditions and quicker market re-access.** For both reprofiling and restructuring cases, another factor that has been stressed in the literature and market reports is the ability of the individual country to implement appropriate government policies and actions to restore its credibility in financial markets after the credit event.[63] These policies and actions include credible fiscal adjustment measures. When investors perceive that there is a break with past policies that led to the credit event, market access will be restored. Often the credibility of the measures is embodied in the conditionality of Fund-supported programs that accompany debt restructurings and assure medium-to long-term debt sustainability. Strong creditor relations and a clear communication of policies and

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[63]See, for example, Gelos, R. Gaston, Ratna Sahay, and Guido Sandleris (2011) and Moody's (2013).

objectives can also play an important role in reestablishing market access. When Fund programs go off track, the government's credibility is damaged and market access recedes farther into the future. In Figure AIII11, fiscal slippage (horizontal axis) is defined as cumulative deviation (over two years) of primary balance-to-GDP ratios from the primary balance envisioned at the time of the program request. Governments that went off track and did not achieve the fiscal consolidation they initially projected (based on assessments in staff reports) at the time of the credit event took longer to reaccess the market, at least based on evidence using the global bond issuance measure.

Figure AIII11. Market Access Loss and Fiscal Slippage 1/2/
(Fiscal slippage=difference between actual and projected primary balance at the time of the program request, cumulative over two-year period)

Market Access Loss and Fiscal Slippage
(time to reaccess defined based on global bond issuance) 3/

Market Access Loss and Fiscal Slippage
(time to reaccess based on spreads normalization) 4/

Sources: Moody's Sovereign Default Series, October 7, 2013; Bloomberg; and WEO.
1 /Red dots depict restructuring cases and green dots depict reprofiling cases.
2/ The analysis excludes cases of Belize (2013) and Cyprus (2013) as it is not clear when these countries will reaccess the markets. For countries that have not yet regained market access (as defined below), the duration of market access loss is based on April 2014 cut-off date.
3/ Time to reaccess based on global bond issuance after the last debt exchange.
4/ Time to reaccess based on spreads normalization following the last debt exchange. Normalization is defined as the time it took for spreads to drop to the 12-month average prior to the distress event (announcement of default, restructuring, Fund program, or suspension of debt payments).
Note: Reprofilings are proxied by cases involving moderate (face-value preserving) maturity extensions and NPV reductions. In the case of Argentina, the default occured in January 2002, while the debt exchange took place in June 2005. In this regard, time to market reaccess based on spreads normalization may not represent the actual impact of the credit event.

62.   **The international environment also played a significant role for the time taken for restructuring country to re-access markets (IMF, 2005).** In particular, the prevailing international investors' risk appetite, global financial liquidity conditions, issuance and volatility in mature bond markets, and the general economic and financial situation in major countries are often considered to affect the length of time taken to re-accessing markets. Nevertheless, a favorable external environment cannot substitute permanently for required domestic policy changes, a prerequisite for a restructuring country seeking market re-access. Figure AIII12 shows that there was a positive relationship between global risk aversion and volatility (proxied by VIX index) prevailing at the time of restructuring/reprofiling and the time it takes for market conditions to normalize.[64]

Figure AIII12. Market Access Loss and Global Risk Aversion or Volatility (VIX) 1/2/
(Global risk aversion and volatility are proxied by VIX index)

Market Access Loss and VIX
(time to reaccess defined based on global bond issuance) 3/

Market Access Loss and VIX
(time to reaccess based on spreads normalization) 4/

Sources: Moody's Sovereign Default Series, October 7, 2013; and Bloomberg.
1/ Red dots depict restructuring cases and green dots depict reprofiling cases.
2/ The analysis excludes cases of Belize (2013) and Cyprus (2013) as it is not clear when these countries will reaccess the markets. For countries that have not yet regained market access (as defined below), the duration of market access loss is based on April 2014 cut-off date.
3/ Time to reaccess based on global bond issuance after the last debt exchange.
4/ Time to reaccess based on spreads normalization following the last debt exchange. Normalization is defined as the time it took for spreads to drop to the 12-month average prior to the distress event (announcement of default, restructuring, Fund program, or suspension of debt payments).
Note: Reprofilings are proxied by cases involving moderate (face-value preserving) maturity extensions and NPV reductions. In the case of Argentina, the default occured in January 2002, while the debt exchange took place in June 2005. In this regard, time to market reaccess based on spreads normalization may not represent the actual impact of the credit event.

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[64]Higher risk aversion is reflected by increases in the VIX index.

D. How Did Sovereign Distress Spill Across International Borders?

How did sovereign contagion evolve during crisis periods? Was there any difference in the evolution of sovereign contagion between restructuring and reprofiling cases?

63.   **This section presents an analysis of international spillovers in crisis episodes that involved restructuring and reprofiling of sovereign debt.** International spillovers were assessed by the evaluating sovereign contagion across crisis countries and related countries. Sovereign contagion was quantified by the vulnerability index (VI), which allows contagion to be assessed in two ways: first, by evaluating how vulnerable crisis countries were to distress in other countries; second, by quantifying how relevant crisis countries were as a source of contagion to related countries.[65] This assessment was made by estimating the VI for all the related countries and then quantifying the percentage contribution of crisis countries to the VI of related countries. The VI was analyzed in five crises episodes, including sovereign debt restructuring cases (Greece, 2010; Argentina, 2001; Russia, 1998) and reprofiling cases (Uruguay, 2002; Dominican Republic, 2005).[66] This section presents empirical evidence on (i) the evolution of contagion in crises episodes; (ii) the differences in the magnitude of sovereign contagion between restructuring and reprofiling cases; and (iii) the impact of contagion on sovereign risk. However, past history does not allow an evaluation of the implications of the proposed regime change for contagion. The transition to the new regime could be a period of heightened contagion risk as markets adjust and re-price sovereign debt.

64.   **Sovereign contagion rose significantly during crises until policy actions to resolve sovereign distress were taken, irrespective of the sovereign debt exchange decision chosen.**

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[65]The VI characterizes the probability of distress of a country conditional on other countries becoming distressed. The index ranges from zero to one. A low/high value indicates low/high vulnerability (Segoviano and Goodhart, 2009). The VI embeds distress dependence across sovereigns and their changes throughout the economic cycle, reflecting the fact that dependence increases in periods of distress. Distress dependence captures both direct and indirect linkages among countries. Direct linkages include macro-financial linkages though trade, capital flows, and financial sector. Indirect linkages include interconnections through common risk factors and contingent liabilities. While distress dependence does not imply causation, it provides relevant insights about spillovers across sovereigns. The VI is presented in Box AIII1.

[66]For each crisis case, contagion was assessed across all (related) countries for which information was available at the time of the crisis. A country was defined as "related" if it was perceived to have either direct or indirect linkages to a crisis country. The related county set included Argentina, Brazil, Chile, Colombia, Indonesia, Malaysia, Mexico, Philippines, Poland, Russia, Thailand, Turkey, the United States of America, Japan, the United Kingdom, France, Germany, Italy, Spain, the Netherlands, Belgium, Austria, Greece, Ireland, Portugal, and Sweden. The VI was estimated using EMBI spreads for emerging economies and sovereign CDS spreads for advanced economies. When data availability allows, the resulting data set spans from at least 12 months before the beginning of each crisis through at least 12 months after spreads appear to go back to normal levels. Information was not available for all of the related countries in each crisis case.

While the nature of each crisis was different, in all cases, sovereign contagion rose significantly as long as uncertainty about the resolution of sovereign distress prevailed. Once policy responses to address sovereign distress were embarked upon, sovereign contagion subsided, irrespective of the debt exchange policy decision taken (i.e., restructuring or reprofiling). This is illustrated by a rising VI in the run-up to the crises as market access is lost and uncertainty about the resolution of sovereign distress prevailed (Figures AIII13 and AIII14).[67] Similarly, the contribution of crisis countries to international contagion increased in periods of heightened uncertainty; yet, the relevance of crisis countries as a source of international contagion declined when uncertainty was diminished (Figure AIII15).[68] A complementary empirical analysis using a different approach, presented in Box AIII4, finds similar results.

Restructuring Cases

Russia (1998):

- **Increased uncertainty.** The weakening fiscal position of Russia in the first half of 1998 caused market sentiment to deteriorate and resulted in a rising interest bill. Russia was also negatively affected by exogenous shocks to oil prices and the Asian crisis. During the second half of 1998, Russia lost market access while the situation continued to deteriorate. Sovereign default and currency devaluation in August 1998—one month after the Board approval of a new Fund program—caused the breakdown of the banking sector. When sovereign debt restructuring was announced in September 1998, Russian sovereign spreads exploded and Russian contagion peaked (Figures AIII13 and AIII15).

- **Diminished uncertainty.** By May 1999, the start of debt negotiations in Russia, as well as improvements in economic prospects (which coincided with an improvement of commodity prices), seems to have diminished uncertainty of sovereign distress resolution, while sovereign spreads of other countries gradually decoupled and contagion subsided.

Argentina (2002):

- **Increased uncertainty.** As the economic situation continued to deteriorate from the end of 2000, Argentina experienced a loss of market access. During 2001, the attempts to deal with the

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[67]The definition of market access loss used in this section is as follows: a country loses market access when it is unable to place or replace debt in markets typically accessed by foreign investors at maturities and spreads that are within a reasonable range from its prior pattern of issuance.

[68]Periods of uncertainty are periods for which the contagion indicator is high or rising.

liquidity crisis failed (the "mega-swap" in June, as well as the voluntary debt exchange in November), culminating in sovereign default in December 2001, while Argentine sovereign risk significantly increased. During 2002, Argentina devalued and GDP collapsed, while the financial sector was drastically affected. These developments led to a credit crunch, which put further pressure on economic activity; contagion soared in the last quarter of 2002, as the situation in Uruguay and other Latin American countries worsened (Figure AIII13).

- **Diminished uncertainty.** In 2003, the positive expectations of a new government taking office, and the announcement of the intention to implement a debt exchange, raised hopes for an orderly resolution of the Argentine situation, thus diminishing contagion.

Greece (2010):

- **Increased uncertainty.** With Greece participating in a monetary union, contagion seemed to be significantly affected by events happening not only in Greece, but also in other currency union members, since distress in one country represents a contingent liability for other countries in the union.[69] In October 2009, the government revealed that it had understated debt and deficit figures. This, along with other negative economic news, triggered an erosion of market confidence in Greece and its debt sustainability, resulting in a number of rating downgrades in December 2009. In March 2010, the government announced an agreement with the Troika on an adjustment program supported by a financing package; all the while, the economic situation continued deteriorating, with spreads over German bonds soaring during the second quarter of 2010, effectively excluding Greece from access to bond markets. In April 2011, the European Commission released budget figures for Greece that were worse than expected, leading to a spike in contagion. At this point, Greece (but also Ireland, Portugal, and to some extent Italy and Spain) was highly vulnerable to distress in other countries (Figure AIII13), but also was a major source of contagion to other countries in the euro area (Figure AIII15).

- **Diminished uncertainty.** Various policies implemented not only in Greece but also in other euro area member countries, which culminated with the announcement of the OMT, appear to have diminished uncertainty about resolution of sovereign distress in Greece and other euro area members, henceforth reducing contagion.

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[69]This is because the market might attribute a high probability to the event that a country experiencing sovereign distress would be ultimately supported by other countries in the union.

Reprofiling Cases

Uruguay (2002):

- **Increased uncertainty.** Due to Uruguay's close economic and financial links with Argentina, Uruguay's economic activity and banking system were significantly affected by the collapse of the Argentine economy. Uruguayan authorities tried to stem the deteriorating situation by accelerating the crawl of the devaluation path (early 2001) and drastically reducing public expenditures in real terms. However, these measures were not sufficient to offset the negative impact from Argentina's collapse. The vulnerability of Uruguay to contagion increased significantly in the first half of 2002, as the deposit freeze in Argentina led residents to draw down their accounts in Uruguay, resulting in a run on Uruguayan banks (40 percent of deposits in Uruguay were from Argentina). These events put pressure on Uruguay's banking system and reserves, which were depleted in a short period of time, and led the government to adopt a floating currency. Uruguayan sovereign risk soared by mid-2002 (Figure AIII14). However, even in this period, Uruguay's contribution to contagion was not the highest in the region (Figure AIII15).

- **Decreased uncertainty.** In March 2003, the announcement of a debt restructuring through an extension of debt maturities was undertaken. In addition, a good communication strategy about improved economic prospects for Uruguay in 2003 seems to have diminished uncertainty about Uruguay's sovereign resolution and contagion.

Dominican Republic (2005):

- **Increased uncertainty.** The economy slowed in 2003 as a result of decreased tourism following the September 2001 terrorist attack in the United States. In 2003, a crisis erupted due to a fraud scandal in the banking system, which led to the closing of one of the largest banks in the country. This event raised the public debt level as the government assumed the losses of the banking sector. Moreover, liquidity injection fueled currency depreciation as well as high inflation. The combined effect doubled the debt–to-GDP ratio from 26 percent in 2002 to 54 percent at the end of 2003. The situation deteriorated substantially in early 2004, when fiscal slippages continued, inflation remained high, and spreads soared, triggering the loss of market access and a significant increase in contagion (Figure AIII14).

- **Decreased uncertainty period.** During the second half of 2004 and the first half of 2005, debt restructuring of commercial banks and external bonds was successful in bringing down uncertainty about sovereign resolution; hence, reducing contagion (Figure AIII14).

Figure AIII13. Contagion: Restructuring Cases

Russia 1998: Vulnerability Index

(In percent)

Argentina 2002: Vulnerability Index

(In percent)
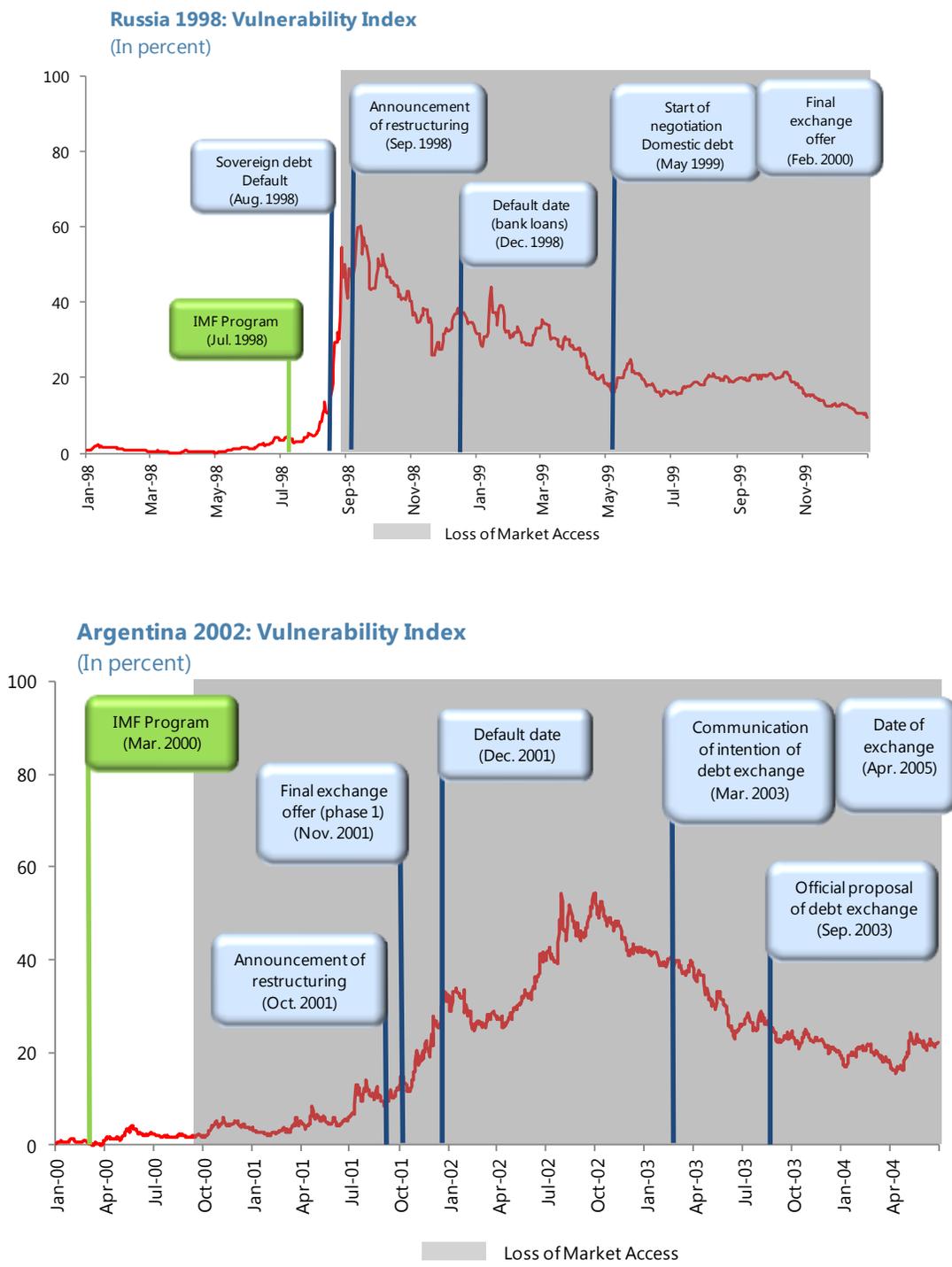
Sources: Bloomberg, DataStream, and Fund staff calculations.

**Figure AIII13. Contagion: Restructuring Cases (concluded)**

Greece 2010: Vulnerability Index
(In percent)
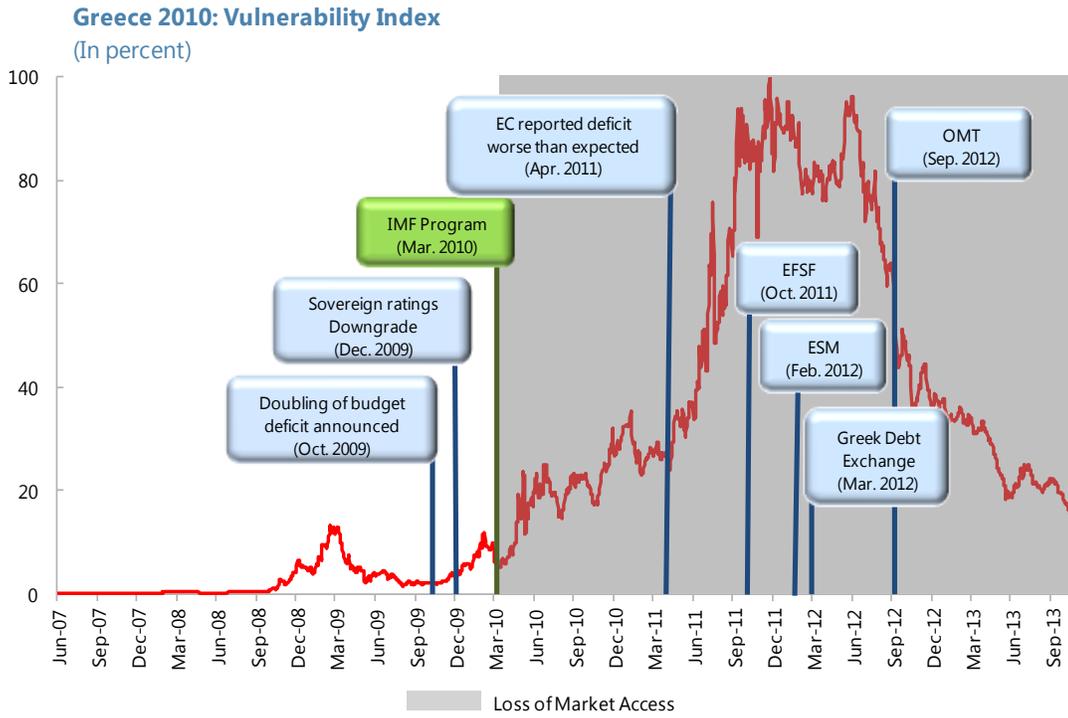
Sources: Bloomberg, DataStream, and Fund staff calculations.

Figure AIII14. Contagion: Reprofiling Cases

Uruguay 2002: Vulnerability Index
(In percent)

Argentina failed restructuring (Nov.2001)

Argentina Default (Dec. 2001)

Banking Crisis (Jul. 2002)

Restructuring announced (Mar. 2003)

Loss of Market Access

Dominican Republic 2005: Vulnerabilty Index
(In percent)

Announcement of restructuring (Apr. 2004)

Start of negotiation (bank loans) (Aug. 2004)

Start of negotiation (ext. bonds) (Jan. 2005)

Final exchange offer (Jun. 2005)

Date of exchange (Ext. bonds) (May 2005)

Loss of Market Access
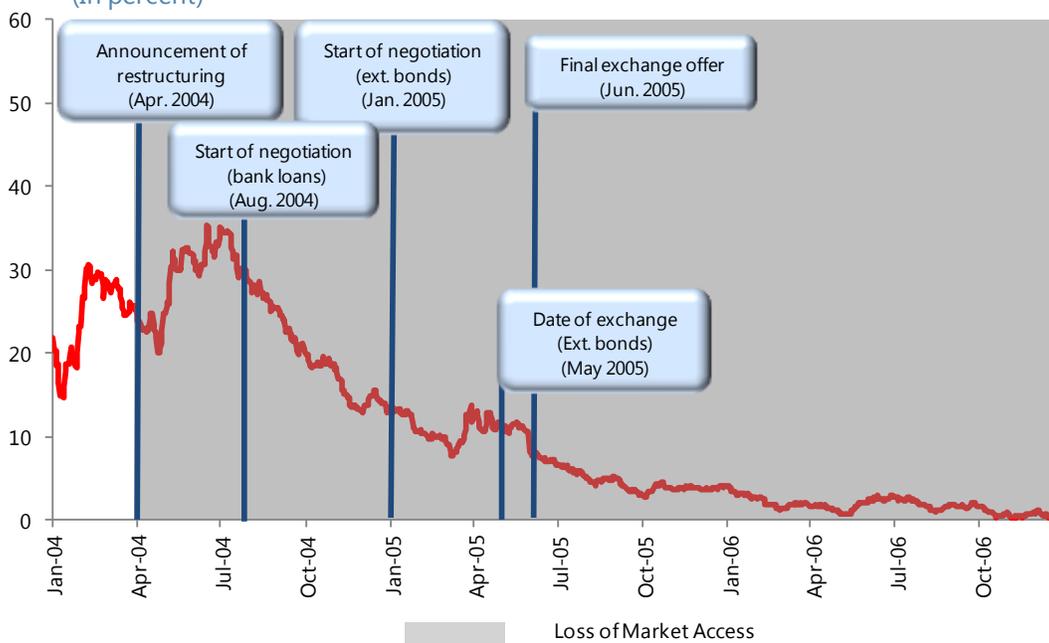
Sources: Bloomberg and Fund staff calculations.

Was the magnitude of sovereign contagion different between restructuring and reprofiling cases?

65. **Empirical results show that contagion appears to be higher in restructuring than in reprofiling cases in the sample of crises that was analyzed.** The contributions to international contagion from Russia, Argentina, and Greece were significant and in each case the highest among their related countries in the periods of increased uncertainty. In contrast, even in the periods of increased uncertainty, the contributions to international contagion from Uruguay and the Dominican Republic were not the highest among their related countries (Figure AIII15).

66. **Nevertheless, empirical results are subject to important caveats.** Data availability and quality restricted the sample size, making it difficult to draw robust inference. It is also important to note that the crisis countries in our sample that went through reprofiling are not major economies and do not host major financial centers; therefore, it is possible that contagion from these countries would have been limited irrespective of the debt exchange decision taken. Moreover it is difficult to separate the effects of debt exchange decisions stemming from policies that have an effect on uncertainty about the resolution of sovereign distress from other factors that affect uncertainty. For example, while contagion in the Greek restructuring dwarfs that observed in all other cases under analysis, the contribution from other euro area countries (Portugal, Ireland, Italy, and Spain) to international contagion during the crisis was highly significant even though these countries did not go through debt exchanges (Figure AIII15). This fact suggests that the magnitude of contagion might be the effect of a composite of factors. This is further investigated in the next section.

Figure AIII15. Contributions to Contagion
(In percent)

Russia, 1998

■ Period of Increased Uncertainty
■ Period of Diminished Uncertainty

Argentina, 2001, and Uruguay, 2002

■ Period of Increased Uncertainty
■ Period of Diminished Uncertainty

Dominican Republic, 2005

■ Period of Increased Uncertainty
■ Period of Diminished Uncertainty

Euro Area Countries, 2010

■ Period of Increased Uncertainty
■ Period of Diminished Uncertainty

Sources: Bloomberg, DataStream, and Fund staff calculations.
Red bars indicate that a "crisis country" had the highest contribution to contagion among its peers in the period of "increased uncertainty."

Box AIII2. The Vulnerability Index

International spillovers were assessed by the evaluation of sovereign contagion across crisis countries and related countries. Sovereign contagion was quantified by the vulnerability index (VI), which allows an assessment of how vulnerable a country is from distress in other countries. Hence, the VI allowed quantification of how vulnerable crisis countries were from distress in other countries and also how relevant crisis countries were (as a source of contagion) to distress of related countries. Essentially, the VI characterizes the probability of distress of a country conditional on other countries becoming distressed. For each country A_i, the VI is computed using the formula:

$$SC(A_i) = \sum P(A_i/A_j) \cdot PoD(A_j) \qquad \text{for all} \quad j \neq i$$

Which is essentially the weighted sum of the probability of distress of country A_i given distress in each of the other countries in the sample, appropriately weighed by the probability of each of these events to occur. In order to assess the relevance of each country (as a source of contagion) to distress of related countries, we estimated the contribution to contagion by:

Contribution to Contagion (A_i) = $\sum [[P(A_i/A_j) \cdot PoD(A_j)]/SC(A_i)]$ for all $j \neq I$

This is essentially the percentage contribution of each country to the vulnerability index of all the related countries. The probability of sovereign distress in country A_i given distress in country A_j, referred here as the probability of A_i given A_j, denoted by $P(A_i/A_j)$ embeds distress dependence among countries and is obtained in three steps (Figure A1):

Figure A1: Modeling Framework
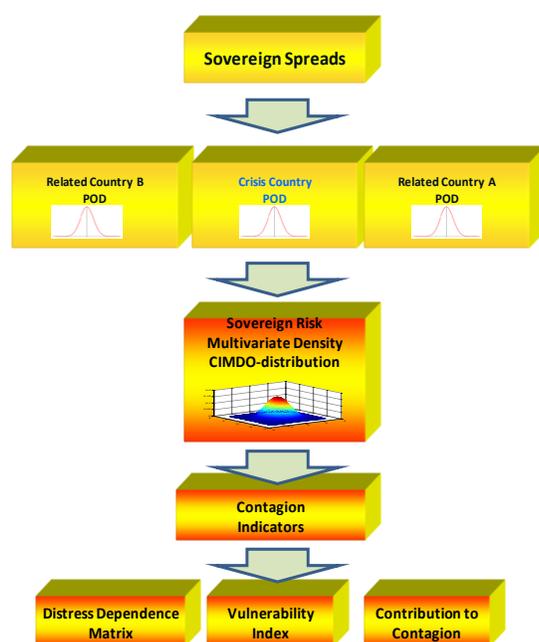
Source: IMF staff.

(i) The marginal probabilities of distress for countries A_i and A_j, PoD (A_i) and PoD (A_j) respectively, are extracted from the individual EMBI or CDS spreads for these countries.

(ii) Then, the joint probability of default of A_i and A_j, $P(A_i, A_j)$, is obtained using the CIMDO methodology developed by Segoviano (2006). This methodology is used to estimate the multivariate empirical distribution (CIMDO-distribution) that characterizes the probabilities of distress of each of the sovereigns under analysis, their distress dependence, and how such dependence changes along the economic cycle. The CIMDO methodology is a non-parametric methodology, based on the Kullback (1959) cross-entropy approach, which does not impose parametric pre-determined distributional forms; whilst being constrained to characterize the empirical probabilities of distress observed for each institution under analysis (extracted from the EMBI or CDS spreads). The joint probability of distress of the entire group of sovereigns under analysis and all the pair wise combinations of sovereigns within this group, i.e., $P(A_i, A_j)$, are estimated from the CIMDO-distribution.

(iii) Finally, different contagion indicators, including the conditional probability of default $P(A_i/A_j)$ is obtained by using the Bayes' law: $P(A_i/A_j) = P(A_i,A_j) / P(A_j)$.

Contrary to simple correlations, or relationships based on the first few moments of different default probability series, the CIMDO methodology enables us to characterize the entire distributional links between these series (i.e., linear (correlations) *and* nonlinear distress dependence) and their evolution throughout the economic cycle. This reflects the fact that dependence increases in periods of distress. This is a key technical improvement over traditional risk models, which usually account only for linear dependence (correlations) that are assumed to remain constant over the cycle, over a fixed period of time, or over a rolling window of time. Such dependence structure is characterized by a copula function (CIMDO-copula), which changes at each period in time, consistently with changes in the empirically observed distress probabilities.

Box AIII2. The Vulnerability Index (concluded)

The CIMDO Methodology

The detailed formulation of CIMDO is presented in Segoviano (2006). CIMDO is based on the Kullback (1959) minimum cross-entropy approach (MXED). For illustration purposes, we focus on a portfolio containing two different types of assets (sovereigns in this application), whose logarithmic returns are characterized by the random variables x and y, where $x, y \in [^i$ s.t. $i=1,..,M$. Therefore, the objective function can now be defined as

$C[p,q] = \int \int p(x,y) \ln \left[\dfrac{p(x,y)}{q(x,y)} \right] dxdy$, where q(x,y) the is prior distribution and $p(x,y)$ the posterior distribution.

It is important to point out that the initial hypothesis is taken in accordance with economic intuition (default is triggered by a drop in the Sovereigns' asset value below a threshold value) and with theoretical models (Structural Approach), but not necessarily with empirical observations. Thus, the information provided by the frequencies of distress of each type of asset making up the portfolio is of primary importance for the recovery of the posterior distribution. In order to incorporate this information into the recovered posterior density, we formulate moment-consistency constraint equations of the form

$$\int \int p(x,y) \chi_{\left(x_d^x, \infty\right)} dxdy = PoD_t^x, \int \int p(x,y) \chi_{\left(x_d^y, \infty\right)} dydx = PoD_t^y$$

where $p(x,y)$ is the posterior multivariate distribution that represents the unknown to be solved.

PoD_t^x and PoD_t^y are the empirically observed probabilities of distress (PoDs) for each borrower in the portfolio and $\chi(x_d^x, \infty), \chi(x_d^y, \infty)$ are the indicating functions defined with the distress thresholds for each sovereign in the portfolio. In order to ensure that p(x,y) represents a valid density, the conditions that p(x,y) ≥0 and the probability additivity constraint,

$\int \int$ p(x,y) dxdy=1, also need to be satisfied. Imposing these constraints on the optimization problem guarantees that the posterior multivariate distribution contains marginal densities that in the region of default are equalized to each of the borrowers' empirically observed probabilities of default. The CIMDO density is recovered by minimizing the functional

$$L[p,q] = \int \int p(x,y) \ln p(x,y) dxdy - \int \int p(x,y) \ln q(x,y) dxdy$$

$$+ \lambda_1 \left[\int \int p(x,y) \chi_{[x_d^x, \infty)} dxdy - PoD_t^x \right] + \lambda_2 \left[\int \int p(x,y) \chi_{[x_d^y, \infty)} dydx - PoD_t^y \right] + \mu \left[\int \int p(x,y) dxdy - 1 \right]$$

Where λ_1, λ_2 represent the Lagrange multipliers of the moment-consistency constraints and represents the Lagrange multiplier of the probability additivity constraint.

By using the calculus of variations, the optimization procedure is performed. The optimal solution is represented by the following posterior multivariate density as

$\hat{p}(x,y) = q(x,y) exp \left\{ - \left[1 + \hat{\mu} + \left(\hat{\lambda}_1 \chi_{[x_d^x, \infty]} \right) + \left(\hat{\lambda}_2 \chi_{[x_d^y, \infty]} \right) \right] \right\}$

How does contagion impact sovereign risk in crisis episodes? How does contagion compare to other factors that determine sovereign risk?

67.   **In order to explore this question, we analyzed factors that may have impacted euro area sovereign spreads during the global financial crisis (GFC) (Figure AIII16).** As the GFC unfolded, several factors may have affected the valuations of sovereign spreads. First, the global

market price for risk went up, as investors sought higher compensation for risk. Investors developed a systemically stronger preference for a few selected assets vis-à-vis riskier instruments. This behavior not only benefited sovereign securities, as an asset class, at the expense of corporate bonds and other riskier assets, but also introduced a higher degree of differentiation among sovereigns. Second, as the crisis spread to the public sector and policy authorities stepped in to support troubled financial institutions, probabilities of distress went up across sovereigns. In this context, two distinct channels may be identified: a domestic channel, as fundamentals started deteriorating, and an external channel, as higher probabilities of distress spread among sovereigns. Conclusions are set out below.[70]

Figure AIII16. Euro Countries: Sovereign Spreads
(In basis points)
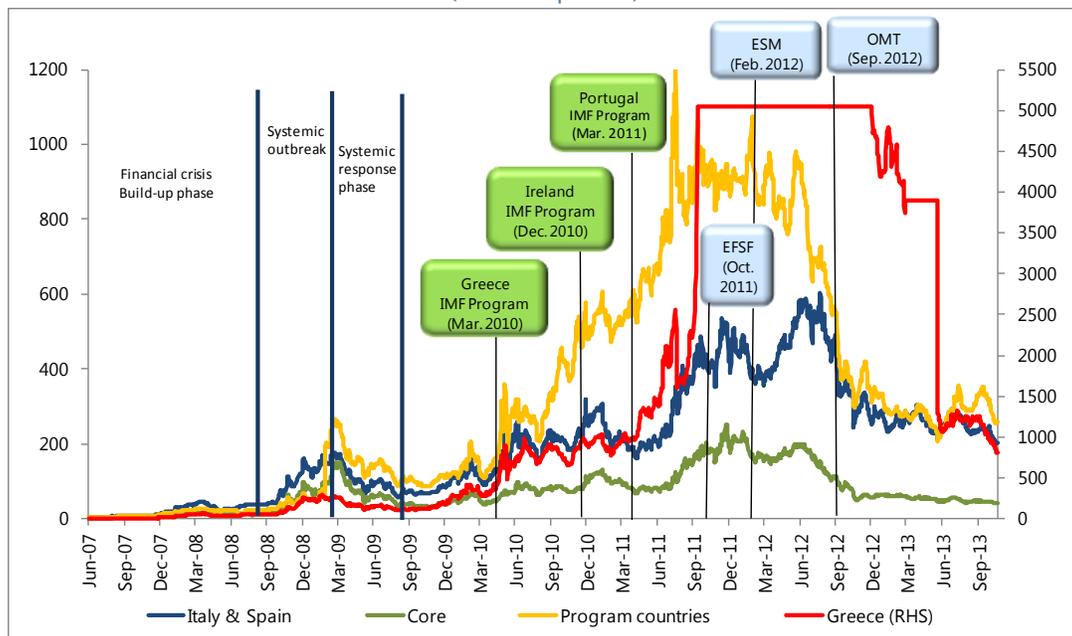
Sources: Bloomberg, DataStream, and Fund staff calculations.
Note: Core countries: Germany, France, Austria, Netherlands and Belgium. Program countries: Ireland and Portugal.

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[70]The analysis presented in this section follows Caceres, Guzzo, and Segoviano (2010) and is based on a GARCH model described in Box AIII3. Euro area spreads were measured as spreads of sovereign bond yields to the 10-year euro swap yield. The explanatory variables included (i) global risk aversion, measured by the index of global risk aversion (IGRA) presented in Espinoza and Segoviano (2011); (ii) contagion, measured by the VI presented above; and (iii) fiscal fundamentals, measured by two country-specific fiscal variables, the overall balance as percent of GDP and the debt-to-GDP ratio.

Box AIII3. Determinants of Sovereign Risk

The model specification employed in order to analyze the determinants of sovereign swap spreads at a daily frequency is essentially a General Autoregressive Conditional Heteroskedasticity model (i.e., GARCH (1,1)), which is modified to include a set of explanatory variables in the mean equation. The resulting specification can be formulated as below.

[1] $Y_t = \alpha Y_{t-1} + \boldsymbol{\beta'X_t} + \varepsilon_t$

[2] $\sigma_t^2 = \omega + \theta\varepsilon_{t-1}^2 + \gamma\sigma_{t-1}^2$

In this framework, equation [1] is the so-called "mean" equation, whereas [2] describes the evolution of the conditional variance of the error term, ε_t.

The dependent variable Y_t denotes the swap spread which is measured as the spread of sovereign bond yields to a common numeraire. For the specific case of the euro area, this is chosen to be the 10-year euro swap rate. The matrix X_t (including a constant term) contains the explanatory variables. These are listed as follows:

• **Index of Global Risk Aversion (IGRA).** The price of an asset reflects both market expectations of the asset's returns and the price of risk (i.e., the price that investors are willing to pay for receiving income in "distressed" states of nature). The IGRA typifies the market price of risk. It allows us to extract from asset prices the effects of the price of risk and thus to compute the market's expectation of the probability of distress. This result is achieved by using the methodology developed in Espinoza and Segoviano (2011).

• **Contagion,** captured by the vulnerability index (VI), which characterizes the probability of distress of a country conditional on other (related) countries becoming distressed. This indicator embeds distress dependence across sovereigns and their changes throughout the economic cycle, reflecting the fact that dependence increases in periods of distress (see Box AIII2).

• **Country specific fundamentals,** identified by each country's stock of public debt and budget deficit as a share of GDP.

The inclusion of the lagged dependent variable in equation [1] is motivated by the need to capture the high persistence inherent in daily frequency swap spread data. In addition, this variable captures lagged interaction between the dependent and set of explanatory variables.

The framework allows us to quantify the relative contributions of factors in explaining movements in swap spreads over time while robustly catering for potential data-driven biases which may arise during inference.

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Note: The conditional variance σ_t^2 is a function of the last period's conditional variance and lag of squared errors from the mean equation.

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68.   **Empirical analysis of euro area sovereign spreads shows that global risk aversion, fiscal fundamentals, and contagion have a significant impact on sovereign spreads.** Furthermore, the effect of these factors on sovereign spreads changed at different stages of the crisis (Figure AIII17).

• **During the financial crisis build-up (July 2007–September 2008), contagion did not seem to be a particularly significant factor.** Germany and, to some extent, other core euro area sovereigns (France), benefited from global risk aversion (via flight-to-quality flows), whereas peripheral countries saw their sovereign spreads risk rising as global risk aversion weighed adversely on these lower-rated issuers. In general, fundamentals were supportive of sovereign

- bonds, as both deficits and debt levels were still improving at this stage in the periphery as well as core countries. During this phase, contagion did not seem to be a particularly significant factor in driving up sovereign spreads.

- **During the systemic outbreak (October 2008–March 2009), contagion gained significance as problems in the banking sector spilled over to sovereign balance sheets and fundamentals started to deteriorate.** Following the collapse of Lehman Brothers and as sovereigns stepped in to support financial institutions, spreads rose on contagion from countries more directly involved in the financial crisis (Austria, the Netherlands, and Ireland) and from fundamentals which had started deteriorating. Global risk aversion was no longer playing such a favorable role as crisis-related interventions and fiscal stimulus packages had diluted the perception of sovereigns as a riskless asset class.

- **During the systemic response phase (April-September 2009), the effect of contagion on spreads decreased as lower probability of distress in some countries favorably affected others.** Spreads converged, and the correction was larger among those bonds, such as Italy and Greece, which had underperformed during the systemic outbreak, as lower contagion was further offset by deterioration in fundamentals; however, spreads remained wider than before.

- **In the sovereign risk phase (October 2009–August 2012), swap spreads started to be driven by country specific developments.** Starting in March 2010 a clear decoupling in sovereign spreads took place in countries with weaker fundamentals, as the emphasis shifted towards short-term refinancing risk and long-term fiscal sustainability. The effect of contagion remained unchanged or marginally increased for countries with stronger fundamentals (especially for core euro area countries), but increased substantially for countries with weak fundamentals, especially Greece, Portugal, and Ireland, but also Spain and Italy. Finally, contagion started decreasing from the end of 2011 after the implementation of various pan-European policies, which aimed to dissipate uncertainty about the impact of sovereign distress from Greece and other countries with weak fundamentals. These policies included the EFSF, which became effective October 2011, and the signing of the treaty creating the ESM in February 2012. From August 2012, sovereign spreads, and hence contagion, decreased significantly across all European countries with the announcement of the OMT. However, spreads remained differentiated according to fundamentals, which in some countries started improving by mid 2012, for instance, as a result of fiscal consolidation.

69.   **Moreover, these factors appear to interact, exerting a compounded effect on sovereign spreads irrespective of debt exchange policy decisions.** These results provide evidence that the magnitude of contagion seems to depend on a compound of factors, irrespective of debt exchange policy decisions. This is particularly the case when a country transmits contingent liabilities to related countries (e.g., through interconnected financial systems and/or economies) or by belonging to a monetary union in which fiscal transfers are absent, since the market might attribute a high probability to the event that a country experiencing sovereign distress would be ultimately supported by other related countries.

**Figure AIII17. Contributions to Changes in Euro Area Swap Spreads**
(In percent)

Greece

Legend: Fundamentals, Contagion, Global Risk Aversion

Periods: Jul 07-Sep 08, Oct 08-Mar 09, Apr 09-Sep 09, Oct 09-Feb 10

Ireland

Legend: Fundamentals, Contagion, Global Risk Aversion

Periods: Jul 07-Sep 08, Oct 08-Mar 09, Apr 09-Sep 09, Oct 09-Feb 10

Portugal

Legend: Fundamentals, Contagion, Global Risk Aversion

Periods: Jul 07-Sep 08, Oct 08-Mar 09, Apr 09-Sep 09, Oct 09-Feb 10
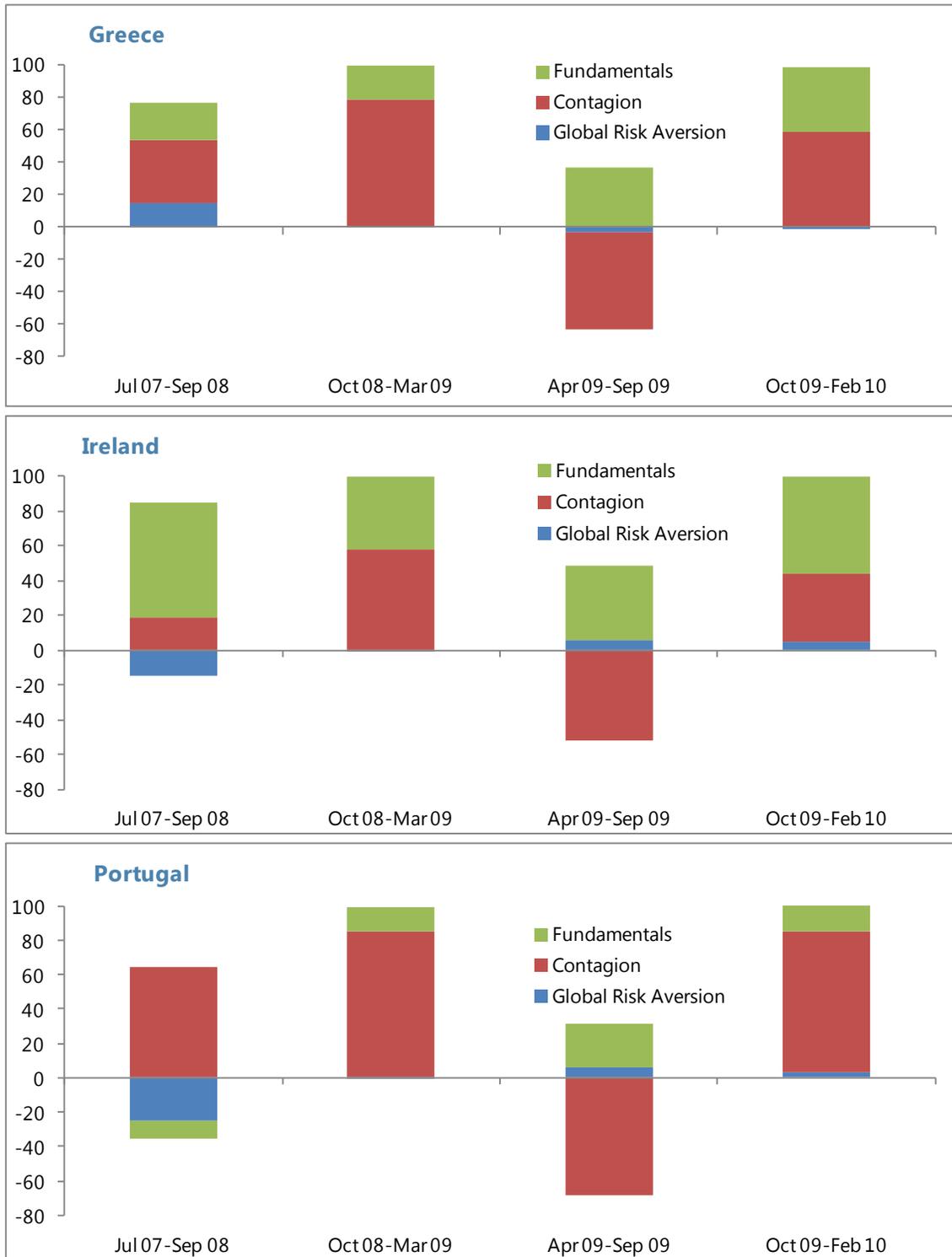
Figure AIII17. Contributions to Changes in Euro Area Swap Spreads (continued)
(In percent)

Italy

Spain

Germany
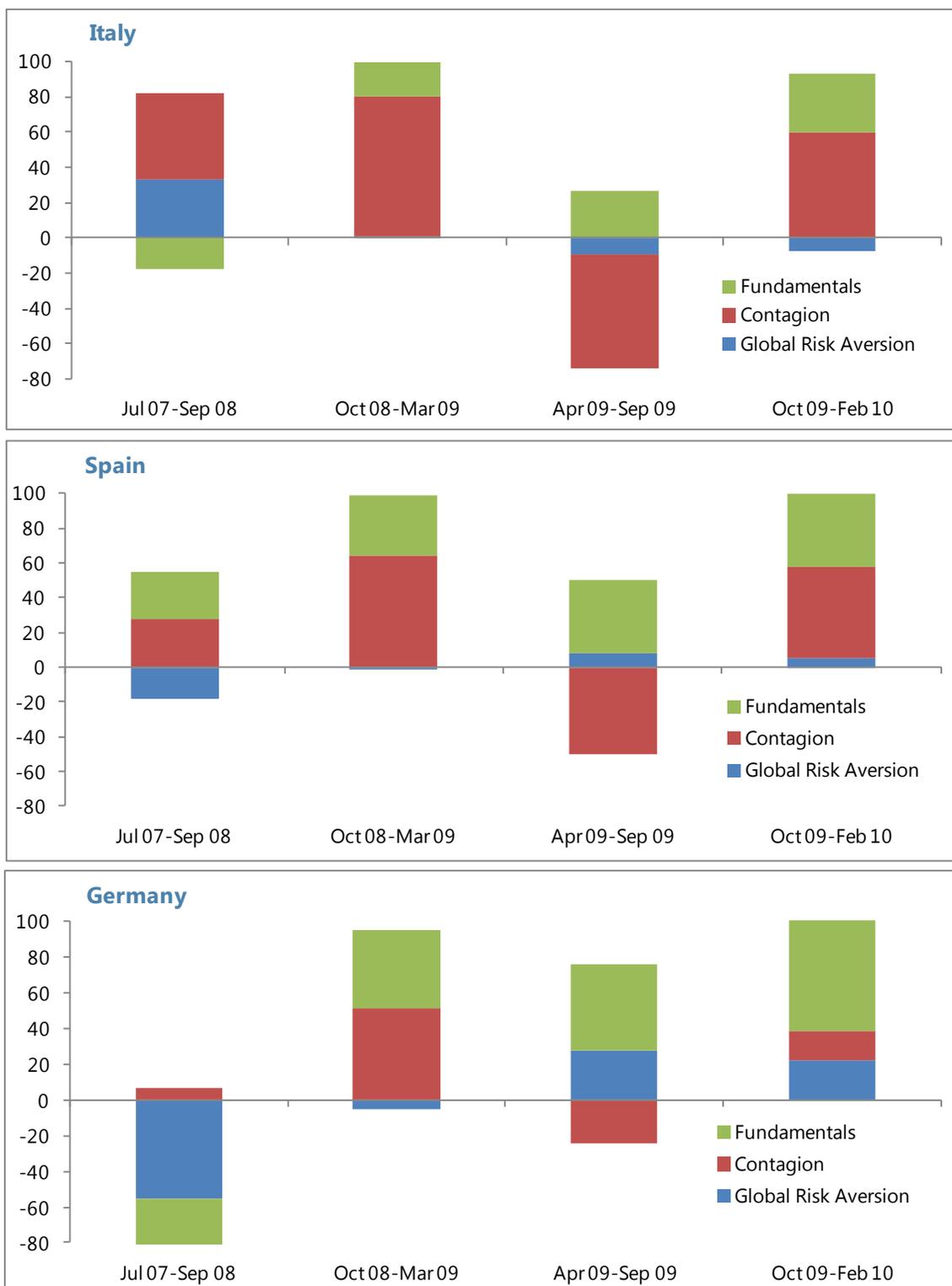
Figure AIII17. Contributions to Changes in Euro Area Swap Spreads (concluded)
(In percent)

Austria

- Fundamentals
- Contagion
- Global Risk Aversion

France

- Fundamentals
- Contagion
- Global Risk Aversion

Netherlands

- Fundamentals
- Contagion
- Global Risk Aversion
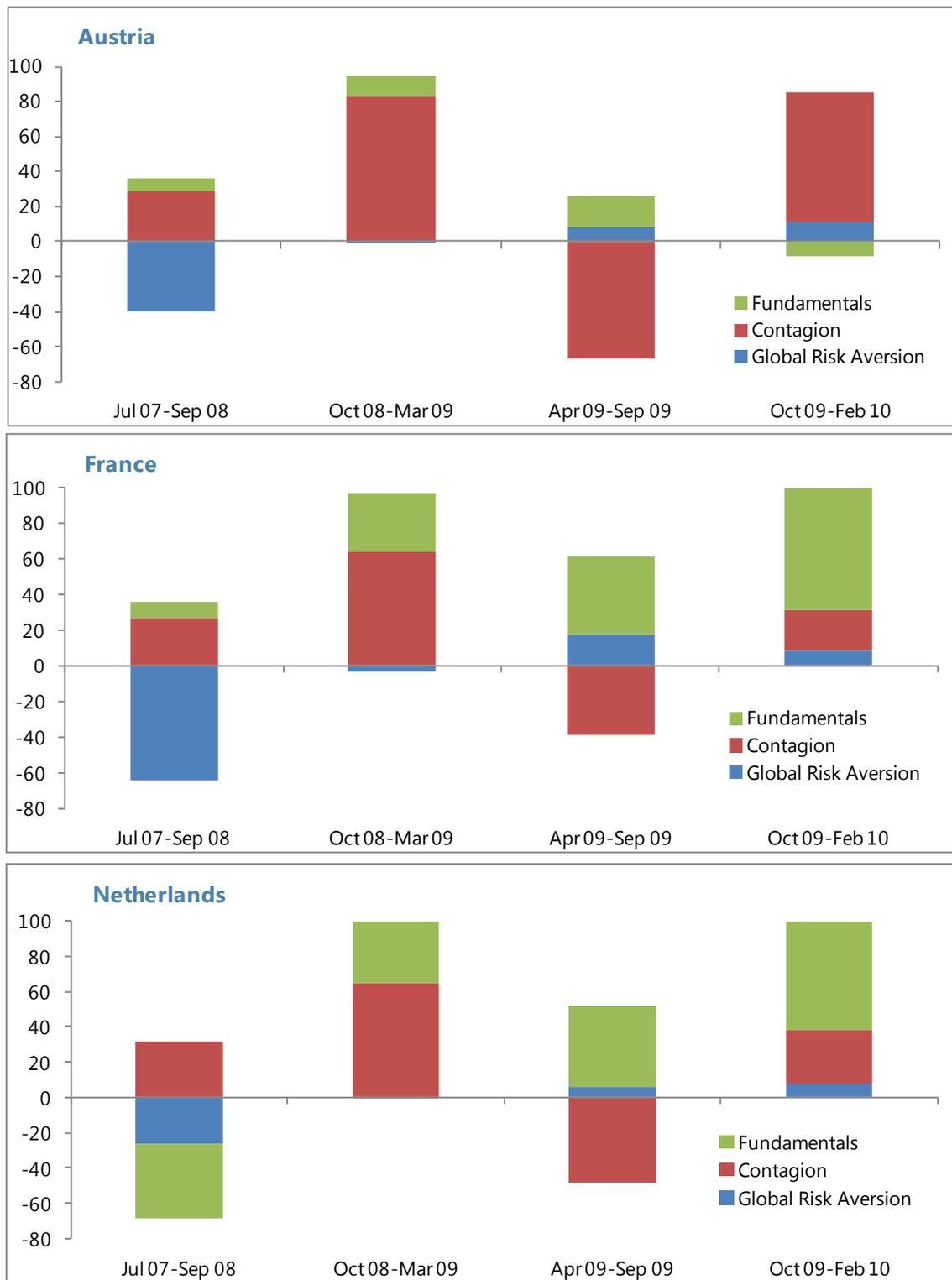
Sources: Bloomberg, DataStream, and Fund staff calculations.

Box AIII4. Multivariate GARCH

To complement the analysis using the Vulnerability Index (VI) (Box AIII2), a multivariate GARCH framework is also employed.[1] This essentially models multiple time-series of daily bond spreads jointly, thus allowing the extraction of heteroskedasticity and time-varying correlations (co-movements) in the conditional variances which may be present in these series, specifically, the Dynamic Conditional Correlation (DCC) specification proposed by Engle (2002).[2]

The underlying intuition is that low estimated co-movements between a crisis country and other related economies can be indicative of relatively low levels of spillovers. Alternatively, if outward financial spillovers are high, then this would translate into higher co-movement being seen in the data. The main results from the multivariate GARCH analysis are as follows:

1. In the run-up to most crisis cases, contagion increased significantly, as evidenced by high bond spread correlations.

2. Contagion in the specific case of Greece declined once credible policy decisions on the sovereign debt restructuring were made.

3. In the case of Argentina, sovereign bond spread spillovers with other EMs, such as Brazil, Mexico, and Russia only started to decisively subside after the eventual default in early 2002.

4. For Uruguay, the magnitude of sovereign debt contagion appears much smaller in comparison to Argentina.

5. Overall, the analysis highlights that credibility in policy decisions are key to the solution of contagion, whether it is a bailout or debt restructuring.

**Estimated GARCH Bond Spread Correlation of Greece with Euro Area Countries**
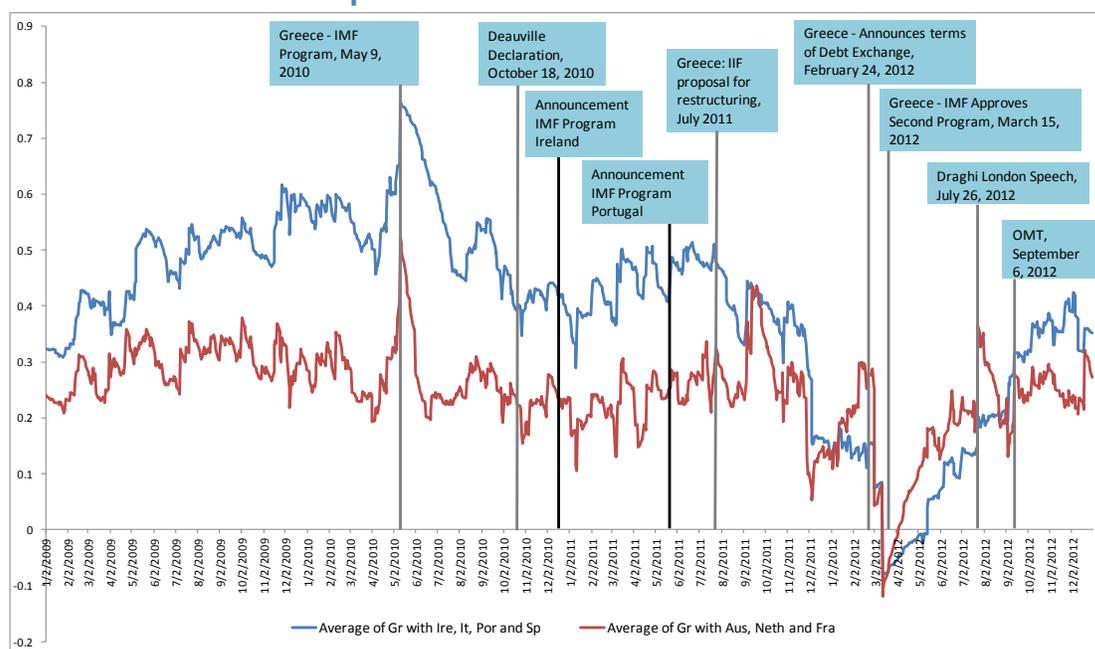
Sources: Bloomberg and Fund staff calculations.

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[1]This is a generalization of the Constant Conditional Correlation (CCC) model by Bollerslev (1990).
[2]Following Frank and Hesse (2009).

Box AIII4. Multivariate GARCH (concluded)

Estimated GARCH Bond Spread Correlations of Argentina with Other EMs
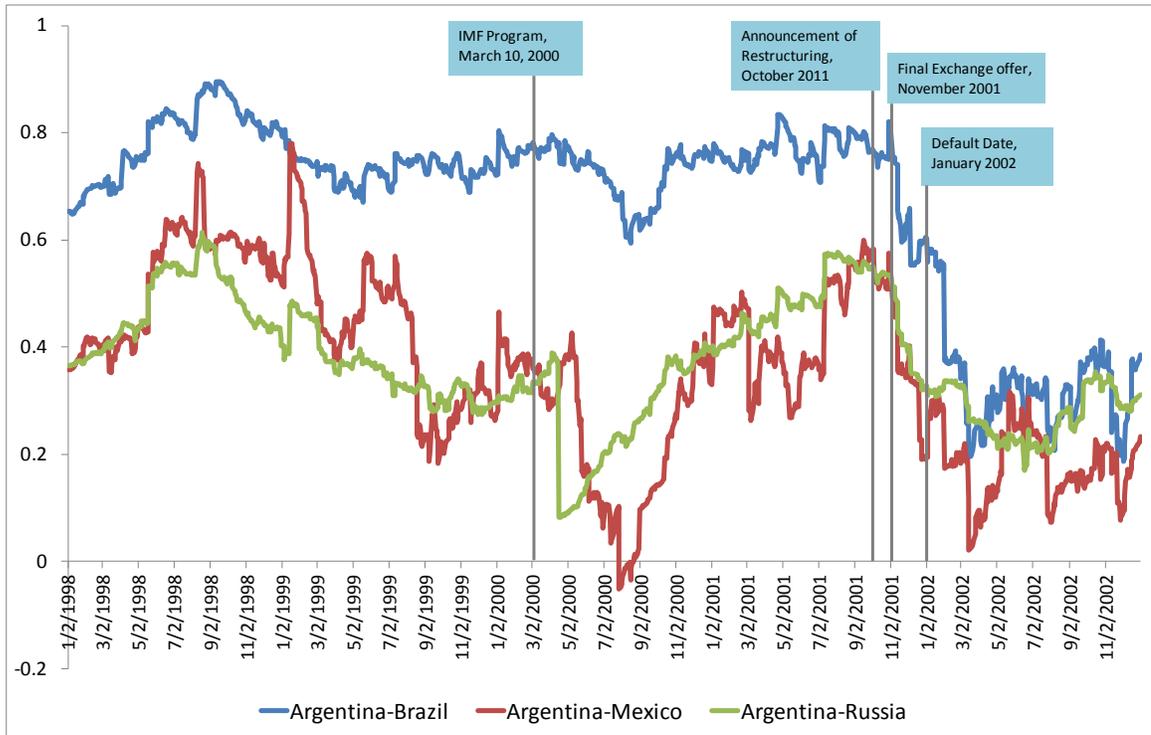
Sources: Bloomberg; and Fund staff calculations.

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ANNEX IV. REPROFILING AND DOMESTIC FINANCIAL STABILITY: RECENT EXPERIENCES[71]

This annex analyses the experience with past cases of reprofiling to assess whether they had destabilizing effects on the domestic banking system. It examines several past maturity extensions (Cyprus, Jamaica, Pakistan, and Uruguay) and finds that destabilizing effects did not materialized. Several factors contributed to the generally successful outcomes under maturity extensions: financial stability concerns were taken into account in the design of the restructuring and program strategy; banks mainly held their sovereign assets as held-to-maturity (HTM); a reprofiling was not assessed to be an impairment event requiring a write down of these assets (e.g., Cyprus, Jamaica); regulatory incentives for banks were provided (e.g., Jamaica or Uruguay); capital and liquidity support mechanisms were established (e.g., Jamaica) or were present (Cyprus); the amount of bank holdings of sovereign bonds in most cases was not very large; and some forbearance was used. The Jamaican case illustrates how a restructuring was designed to be light in order to ensure a limited impact on the financial system. The annex also proposes possible measures that could help protect the banking system during a reprofiling and encourage participation by domestic banks in the exchange. Finally, the annex examines financial stability implications of creditor bailout. Although a reprofiling may have some disruptive effects, a bailout does not necessarily insulate the domestic financial system, as the Greek experience demonstrates.[72]

70.   **A debt restructuring or reprofiling can potentially have several disruptive effects on domestic banks and other financial institutions holding government debt.** In general, domestic banks can be affected by sovereign stress because of the role of the sovereign as backstop to the financial system and through direct exposure to the sovereign. Some of the possible effects include the following:

- Banks can suffer mark-to-market losses on their holdings of government bonds which could lead them to being undercapitalized.

- A concern about the health of domestic banks could lead to deposit runs in the domestic financial system which could affect otherwise healthy banks.

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[71]This Annex was prepared by Heiko Hesse with input from Christopher Dielmann under the supervision of Geneviève Verdier (SPR).

[72]"Reprofilings" are proxied by cases involving limited (face-value preserving) maturity extensions that lead to moderate NPV reductions.

- Banks' short-term external wholesale funding could become more expensive or even evaporate.

- Banks could face larger haircuts on their sovereign exposure for collateral operations (e.g., interbank or central bank repo operations) from the increased sovereign yields and asset valuation changes.

- Exchange rate depreciation associated with worsening market sentiment could feed into higher bank FX funding costs and could expose unhedged FX (corporate) borrowers.

71.   **A reprofiling can potentially also have beneficial effects on the banking system.** If a reprofiling improves the prospects for debt sustainability and is seen to help avoid a potentially deeper debt restructuring subsequently, it can speed up the recovery thereby reducing debt overhang and benefiting the financial sector. Compared to an alternative were markets may have priced in a deep debt restructuring, a reprofiling would remove the uncertainty and could lead to a relief rally and market-to-market gains on bank balance sheets. In general, the extent of the gains or losses on banks' balance sheets would depend on the portfolio structure of bond holdings.

72.   **The Fund's experience indicates that past debt reprofiling cases have not had destabilizing effects on the domestic financial system.** Staff reviewed the experience in four Fund-supported programs that entailed a reprofiling (Cyprus, Jamaica, Pakistan, and Uruguay). The detailed analysis finds that in none of these cases did the reprofiling have a disruptive impact on the domestic banking system. Several factors helped to contain the effects on the banking system: financial stability considerations were taken into account in the design of reprofiling; banks mainly held their sovereign assets as HTM and the reprofiling was not assessed to be an impairment event requiring a write-down of these holdings; regulatory incentives for banks to participate in the bond exchange were provided (see Boxes AIV1 and AIV2); bank holdings of sovereign debt were not large in some cases; domestically held debt was excluded from reprofilings in some cases; and capital and liquidity support mechanisms were established or were present and some forbearance was used. Box AIV1 provides details on each country case.

- For example, in Jamaica, the restructuring was intentionally designed to be light so as to minimize the impact on the financial system.

- In Cyprus, banks did not need to write down their holdings of domestic sovereign debt as the reprofiling was not assessed to be an impairment event, given that bonds were close to maturity and principal and coupon were being preserved.[73]

- Where domestic financial stability was a concern in past reprofiling cases, program design explicitly provided for bank recapitalization and/or liquidity support to successfully limit the impact on the financial sector. In any event, such funds often did not need to be fully utilized or were not used at all.

- Finally, Cyprus and Uruguay are examples where a reprofiling worked smoothly and in parallel with an ongoing program to address vulnerabilities in the banking system and address problem banks. For example, a bail-in of bank creditors closed the imminent capital hole in some of the Cypriot banks.

73.   **Some caveats need to be borne in mind.** While the review of experience shows that reprofilings have worked relatively smoothly in the past, this evidence should not be taken as conclusive. There are always risks in the design of a restructuring that need to be adequately addressed through the design of the restructuring, and more generally, the design of the Fund-supported program. Past reprofilings were also not done under the regime being considered. While temporary forbearance seems to have worked in the past in containing the impact on the banking system, it can adversely affect credit growth. It is also possible that the benign outcomes in past reprofilings could have been the result of better initial macroeconomic conditions compared to those countries that undertook a deep debt restructuring. However, this does not seem to be the case: the text table shows that initial macroeconomic conditions were very similar in past cases of reprofilings and deeper debt restructurings.

Indicators of Fundamentals and Policy Track Record

	Reprofiling		Debt reduction	
	Mean	Median	Mean	Median
Public Debt (percent of GDP, year before restructuring)	96.8	93.0	100.2	101.6
Current Account Balance (percent of GDP, average over three years before restructuring)	-6.4	-7.7	-5.7	-5.5
Overall Fiscal Balance (percent of GDP, average over three years before restructuring)	-5.0	-4.6	-3.4	-2.9
Primary Balance (percent of GDP, average over three years before restructuring)	0.5	0.4	0.7	0.9

Source: Staff reports, WEO
Reprofilings: Belize (2007), Cyprus, Dominican Republic, Grenada, Jamaica (2010), Jamaica (2013), Pakistan, Paraguay, Uruguay
Debt reductions: Argentina, Belize (2013), Ecuador (2000), Ecuador (2009), Greece, Russia, Seychelles, St. Kitts & Nevis, Ukraine

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[73]Nevertheless, while these measures in the Cyprus and Jamaica cases were important, the debt reprofilings could have had a market impact on their domestic banking system had there not been a credible design of safety measures to limit any potential fallout. In addition, the approach in Cyprus was part of a broader program strategy which included a restructuring of Cypriot banks with the bail-in of bank creditors.

74.   **These findings notwithstanding, program design would in any event seek to address such concerns, as typically common in Fund-supported programs.** As in past restructurings, program design would be expected to build in measures to safeguard financial stability during and after the reprofiling.[74] In the specific circumstances of a currency union with highly interconnected financial markets, limiting the impact on the domestic banking system as well as overall contagion to other members would also need to rely on credible system-wide backstops, with prompt action taken to strengthen such backstops if necessary. While the exact set of measures to be used would depend on country specific considerations, some of the measures used in the past have included the following:

- ***Creation of backstops, in the event that stress tests suggest possible financial stability concerns.*** Examples include Jamaica's use of a Financial Sector Stability Fund (FSSF) in 2010 and 2013, and the Fund for Fortifying the System of Banks in Uruguay. Fund program resources could potentially contribute to the backstop.

- ***Increased central bank liquidity provision prior to and during debt reprofiling episodes.*** Central banks typically play a fundamental role during debt reprofiling episodes as the lender-of-last-resort. Central bank liquidity provisions would be especially important if domestic banks lose market funding on account of an SD rating, and could include a temporary expansion of eligible collateral if banks face large haircuts on collateral of government bonds for repo purposes. Where relevant and needed, FX swap lines with other central banks could provide some temporary FX funding buffers to the domestic banking sector, and indirectly to corporate, should there be a squeeze on FX funding. The availability of ample FX funding would also enhance the confidence in the financial sector, including amongst potentially-fickle depositors. Box AIV2 provides an overview of how central banks have provided banking sector liquidity during the past reprofiling cases of Cyprus, Jamaica, Pakistan and Uruguay.

- ***Regulatory measures.*** Various measures could be taken to help banks and nonbanks participate in the bond exchange and limit some potential direct as well as indirect impact. These include applying different risk weights on old versus new bonds, providing liquidity support subject to eligible collateral for viable financial institutions, and granting some

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[74]Under the proposal, specific financial sector measures would differ on a case-by-case basis. Past recommendations, as described above, cannot necessarily be a guide to future advice in different cases.

temporary forbearance (e.g., on provisioning requirements).[75] Box AIV3 provides an overview of the accounting treatment of banks' holdings of domestic sovereign debt.

- **Capital and deposit controls.** In the extreme case where nonresident capital outflows (such as bank deposits) could destabilize the financial system over the short-run, prior to or following a debt reprofiling, temporary capital controls—as were deployed in Cyprus and Iceland—might be also part of the crisis management toolkit. Capital controls would need to be implemented carefully, with clear communication and a credible exit strategy.

- **Bank resolution tools, such as bail-in.** If banks were found to be undercapitalized prior to or as a consequence of a debt reprofiling, it would be appropriate from a financial stability perspective—and to safeguard limited public resources—to require bank shareholders and possibly other bank creditors to contribute to a resolution of the problem. For instance, in the case of Cyprus, the bail-in of bank creditors closed the imminent capital hole of the main Cypriot banks.

75.   **The alternative to reprofiling—bailing out holders of sovereign debt—would not necessarily eliminate risks of financial instability or the need to build in appropriate program safeguards.**[76] In past programs, countries which benefited from access to Fund resources did not always avoid banking crises, particularly in cases where a restructuring was eventually needed. A case in point is Greece, where the banking sector was perceived as relatively sound in 2010 when the first Fund-supported program started. With the severity of the Greek recession, ongoing sovereign debt problems and fears about a Greece euro exit, the domestic banking system increasingly faced existential liquidity, asset quality and capital problems even before a restructuring was envisaged. Strong program measures were taken in response, including on bank recapitalization and restructuring as well as by the ECB on substantial liquidity support. Box AIV4 provides an overview of relevant banking sector developments in Greece during the crisis.

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[75]Regulators would need to strike the right balance in the use of forbearance. In this context, forbearance would typically involve allowing affected financial institutions more grace time to book any bond losses from the bond exchange than is stipulated under IFRS accounting standards. Forbearance is in general not recommended, since it could undermine market confidence in the domestic banks if provisioning and capital holes are suspected as a result of adverse bond yield developments around and after the time of the bond exchange. If financial stability concerns are a serious issue following the debt reprofiling, however, temporary relaxation of some regulations could be justified as a last resort, if considered necessary to avoid "cliff effects" on affected banks.

[76]For the purposes of this annex, a bailout is defined as cases where creditors are paid out before an eventual restructuring. See Annex I on past cases of creditor bailout.

Box AIV1. Impact of Sovereign Debt Maturity Extensions on Domestic Bank's Balance Sheets

This box examines several past maturity extensions (Cyprus, Jamaica, Pakistan, and Uruguay) and finds that they did not have destabilizing effects on the banking system. Staff reports and other sources were examined for each case to obtain information on the banking system impact. The criterion used to assess whether the bond exchange had a material impact on the banking sector was if, as a direct result of the bond exchange, any bank in the country needed either additional provisioning or recapitalization. The cases highlight a number of factors that contributed to the preservation of financial stability in the wake of a maturity extension, and may also help explain the short duration of the SD downgrade in most cases (less than two months except in Pakistan where it lasted 11 months).

Cyprus (2013): A few weeks ahead of when its (primarily domestically-held) bonds were originally due, Cyprus exchanged them with new bonds with the same coupon, and extended maturities through 2019-2023 (IMF, 2013a). The main reason Cypriot banks did not have to book losses during the bond exchange was that banks held the affected sovereign bonds as Hold-to-Maturity (HTM) and they assessed, with the tacit consent of the regulator, that there was no impairment event. This allowed Cypriot banks to maintain the newly exchanged bonds as HTM and not move them to the Available for Sale (AFS) portfolio, where fair value measurement would have been required (as market prices were well below par). The temporary SD assessment of the rating agencies did not bind Cypriot banks to book losses with the affected sovereign bond holdings as the sovereign did not default on its payments and issued new bonds with the same face value and other terms. Finally, the prior bail-in of bank creditors closed the imminent capital hole of the main Cypriot banks.

Jamaica (2010, 2013): Overall, the restructuring was designed to be light, in order to avoid destabilizing the financial system. In both bond exchanges, most of the affected domestic debt was primarily held by banks as HTM, and as there was no impairment event banks did not take any immediate additional provisioning or capital hit from the debt reprofiling exercise. Rating agencies ruled Jamaica's domestic government debt as SD but then upgraded the sovereign following the successful completion of the bond exchange. A Financial Sector Stability Fund (FSSF)—set up to help with any capital and liquidity support for financial institutions—was not tapped (see Grigorian and others, 2012).

Pakistan (1999): Pakistan's restructuring of external sovereign debt in November 1999 had a limited impact on the domestic banking sector. The restructuring involved a slight nominal increase in principal outstanding for two of the three Eurobonds, to roll in unpaid interest, and the offered terms were relatively attractive to the creditors. About 30 percent of restructured bonds were held by domestic investors. One participating domestic bank received a capital injection 6 months after the exchange following a bank audit, though the undercapitalization does not seem to be related to the earlier bond exchange (IMF, 2001).

Uruguay (2003): The overall immediate direct impact on the domestic banking system from the domestic and external bond exchange in 2003 was small. More than 50 percent of the bonds were held by domestic creditors, mostly retail investors, while domestic bank holdings of government bonds were relatively low, at less than 5 percent of total bank assets, and mostly held as HTM. In this case, the fact that domestic banks were mostly holding the sovereign debt as HTM did not matter since the bank supervisor provided strong regulatory incentives for banks to participate in the exchange (see Box AIV2).

Box AIV2. Central Bank Liquidity Provision in Past Reprofiling Cases

In general, central banks provide liquidity to banks subject to eligible collateral and appropriate haircuts. Banks need to be solvent to have access to central bank liquidity (varying maturities and frameworks). If banks lose eligible collateral, they can often gain access to Emergency Liquidity Assistance (ELA) with a wider pool of collateral accepted. But this is typically more expensive and with more conditions attached, given the higher level of credit risk for the central bank.

A debt reprofiling would immediately affect the regular central bank liquidity provision. A debt reprofiling typically leads to a Selected Default (SD) rating of the affected sovereign debt securities, which cease to be eligible for regular central bank liquidity. Banks will then have to access ELA until the bond exchange is successfully completed and the SD rating is lifted. Past experience from some successful debt reprofiling episodes indicates that the duration of the SD tends to be rather short: 0.2 months in Cyprus (July 2013), 0.5 months in Uruguay (May 2003), and 0.7–1.3 months in Jamaica (2010, 2013), with Pakistan (July 1999) an outlier at 11 months.[1] Even in the Greek debt restructuring case in March 2012 the SD rating only lasted 2¼ months. So the length of ELA provision during a debt reprofiling SD can be typically minimized unless other factors are at play (e.g., bank collateral scarcity or bank solvency concerns).

The central bank liquidity provision framework in past debt reprofiling cases has been heterogeneous:

Cyprus (2013): At the time of the debt reprofiling in June 2013, the affected Cypriot banks already had only liquidity access through ELA from the Central Bank of Cyprus and not the ECB and Eurosystem. Thus, no ECB and Eurosystem liquidity provision was involved. Even if prior to the bond exchange, Cypriot bank were drawing regular ECB liquidity, ELA during the SD duration (0.2 months) would have been very short.

Jamaica (2010, 2013): In the case of these bond exchanges, the authorities set up a Financial Stability Support Fund (FSSF) to help with any liquidity (with new bonds as collateral) and solvency support for financial institutions that exchanged the majority of their sovereign holdings. For instance in the 2010 exchange, the FSSF was established to provide liquidity in case of external funding or deposits withdrawals, or if assets under management were affected by the debt reprofiling (Grigorian and others, 2012). Financial institutions qualified to access the FSSF if they at least exchanged 90 percent of their old bonds. Banks also had access to the Bank of Jamaica temporary discount window subject to liquid collateral. Affected banks were subject to a maximum liquidity maturity (6 months) or increased regulatory intervention. In the end, no Jamaican bank has drawn on the FSSF liquidity support (IMF, 2013c).

Pakistan (1999): Following the bond exchange in December 1999, the State Bank of Pakistan provided liquidity through its lender-of-last resort (LOLR) discount window and also offered liquidity through its regular open market operations (though there was no take up in the immediate months after the exchange). There was no destabilizing impact on the domestic banking sector after the bond exchange.

Uruguay (2003): In the May 2003 bond exchange, the central bank only allowed new bonds as eligible collateral, thus encouraging domestic banks to participate in the debt reprofiling (IMF, 2003). Prior to the exchange, the central bank announced that old bonds would no longer be eligible for liquidity assistance. The old bonds were effectively deemed not-marketable, which would have penalized the banks' provisioning and capital adequacy ratios, had they failed to participate in the exchange.

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[1]Pakistan's sovereign debt was downgraded to selective default in January 1999 because of external arrears accumulated in late 1998. A rescheduling agreement with the Paris Club—reached in January 1999—compelled the Pakistan government to seek comparable treatment with its private external creditors. The Eurobond exchange was completed in December 1999, with an upgrade in sovereign rating.

Box AIV3. Accounting Treatment of Bank Holdings of Government Bonds

The impact of changes in bond valuations on a bank's balance sheet depends on the account in which the securities are held. In general, banks' balance sheets are directly impacted from valuation changes in their trading sovereign portfolios, while a prudential filter on Available-for-Sale (AFS) securities excludes a regulatory capital impact (in Basel II), and HTM securities are not marked to market.

Trading Portfolio

Banks have to mark-to-market (MTM) their trading book, typically on a daily basis, affecting their regulatory capital calculation, via the profit & loss (P&L) account. Thus, if a bank has not already divested its trading holdings of sovereign bonds by the time of a reprofiling, it would stand to make MTM gains following the exchange, as yields have usually fallen after past cases of maturity extensions (partially compensating for any MTM losses prior to the reprofiling).

Available for Sale (AFS) Portfolio

For AFS sovereign securities, unrealized gains and losses are taken to OCI (Other Comprehensive Income), which is excluded from the capital calculation via a prudential filter in Basel II. This avoids swings in capital from, for example, large changes in yields. If, as part of an impairment test, a bank assesses that there is objective evidence that an AFS sovereign asset has become impaired, impairment losses are recorded in P&L and the cumulative losses that have been recognized in OCI are recycled to P&L (subject to certain criteria) and would therefore impact capital. The impairment loss can be reversed if, after recognizing the loss, the fair value of the AFS sovereign asset increases. As a general matter, it is not clear if a reprofiling would be treated as an impairment event, although the cases reviewed in this annex show that in practice it has not been treated as such (Cyprus, Jamaica).[1]

While the prudential filter for AFS is to be phased out under Basel III, the European CRDIV/ CRR allows an exemption. Basel III eliminates the prudential filter with a 20 percent phase-in period a year. Thus, after the phase-in period, banks' regulatory capital could be subject to swings. However, the European CRDIV/CRR legislation introduced an exemption that allows national discretion to maintain the prudential filter so that banks' common tier 1 capital from the exposure to central government securities will not be subject to any unrealized gains and losses.[2] Some EU countries such as Ireland or Italy already allowed their banks to keep the AFS prudential filter under Basel III.

Held to Maturity (HTM) Portfolio

HTM sovereign securities are held as longer-term investments, and thus are not marked-to-market. Similar to AFS, HTM securities are also subject to an accounting impairment test. Any impairment loss recognition and measurement would happen for fair presentation of financial statements at reporting date (e.g., quarterly or yearly). For both AFS and HTM, incurred impairment losses are taken to the P&L and directly affect capital. As mentioned above, only market fluctuations for AFS are taken to OCI and recycled (due to the prudential filter) when there are impairment losses.

In certain conditions, reclassifications from AFS into HTM are allowed. For instance, during the global financial crisis in October 2008, international accounting standards (IAS 39/ IFRS 7) were amended. As a consequence, many bank supervisors allowed their banks to reclassify their sovereign assets. For example, the Turkish bank regulator in October 2008 allowed domestic banks to reclassify on a one-time basis their AFS securities to HTM, thereby avoiding the need for mark-to-market pricing and recording capital write-downs when securities prices fall. Philippines allowed a similar one-time reclassification during the 2008 crisis. In contrast, there are conditions by which a HTM security would have to be reclassified as AFS and re-measured at fair value.[3]

Box AIV3. Accounting Treatment of Bank Holdings of Government Bonds (concluded)

If domestic banks hold sovereign bonds as HTM and those are then reprofiled before maturity, there has been flexibility in practice as to whether banks were able to keep them as HTM or had to classify them as AFS and re-measure them at fair value. According to paragraph 9 in IAS39, a bank that has sold or re-classified a sizable amount of HTM before maturity during the current financial year or the previous two financial years is not allowed to classify any financial assets as HTM. Importantly, there are exceptions if, for instance, the sale or re-classification of the HTM security occurs close to the maturity date (e.g., three months), the bank has already collected the significant amounts of the original principal through schedule payments or prepayments, or they are related to an "isolated event that is beyond the entity's control, is nonrecurring and could not have been reasonably anticipated by the entity."

Overall, there appears to be some accounting scope during a debt reprofiling episode (including potential forbearance) for a bank not to move its HTM securities to AFS and re-measure at fair value. This can occur if the debt reprofiling happens just before the maturity date (as e.g., in the case of Cyprus in 2013), or if the bank deems the reprofiling as an isolated and unforeseen event. Forbearance could occur as a result of (i) an objective assessment at the level of the bank (as part of an impairment test and following evidence); (ii) a captive auditor or (iii) regulatory rules that might facilitate it. For instance, the 100 percent risk-weight on FX bonds during the 2010 Jamaica bond exchange was phased-in during a 2-year period. Even if banks keep the sovereign debt as HTM following the bond exchange, an impairment test based on objective evidence would eventually indicate that the bank would need to provision if bond prices are well below the par value. Overall, it is fair to say that a reprofiling will not per se require a reclassification.

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[1] The relevant accounting references are made in IAS 39: "The cumulative loss that had been recognized in OCI shall be reclassified from equity to P&L...," when there is objective evidence that the AFS asset is impaired. Furthermore, "if, in a subsequent period, the FV of a debt instrument classified as AFS increases, and the increase can be objectively related to an event occurring after the impairment loss was recognized in P&L, the impairment loss shall be reversed, with the amount of the reversal recognized in P&L."

[2] The CRR article 467 allows the ASF prudential filter. The forthcoming new accounting rules IFRS 9 are still unclear whether the AFS category will be eliminated or kept in some form.

[3] According to IAS39, Article 51, "if, as a result of a change in intention or ability, it is no longer appropriate to classify an investment as held to maturity, it shall be reclassified as available for sale and re-measured at fair value, and the difference between its carrying amount and fair value shall be accounted for."

Box AIV4. Banking Sector Developments in Greece during the Crisis[1]

The Greece experience showed that a bailout does not necessarily insulate the domestic financial system. The banking system was perceived to be relatively sound when the Stand-by Arrangement program began in May 2010. The bank capital ratio was 11.7 percent, aided by a recapitalization in 2009, but balance sheets came under pressure from higher nonperforming loans (NPLs) once the economy weakened. Moreover, liquidity conditions tightened in 2009 due to banks losing wholesale market access and some deposit outflows.

As the recession intensified and liquidity tightened, the Greek financial sector became increasingly vulnerable. Financial sector distress was a result of the protracted recession and sovereign debt problems. By 2011, deleveraging in the financial sector and restructuring of state-owned banks was perceived as necessary. ATE, the largest state-owned bank and the only Greek bank to fail the Europe-wide stress tests in mid-2010, had to be recapitalized. Sizable deposit outflows began in the second half of 2011, fanned by fears of a Greek euro exit.

The ECB provided substantial and extraordinary liquidity support. From May 2010, the ECB suspended the link between sovereign credit ratings and eligibility of collateral for refinancing operations and intervened directly in the government bond market under the Securities' Market Program (SMP). The ECB also began to accept uncovered bank bonds guaranteed by the government as collateral eligible for refinancing operations.

As expected, the debt restructuring eliminated the banks' capital but appropriate remedial measures were implemented under the program. Greek banks were heavily exposed to the sovereign, holding government bonds with a book value of about €40 billion (after some initial June 2011 impairments). By contrast, core capital was €22 billion, or about the same magnitude as the capital needs arising from the Private Sector Involvement (PSI). Only €1.5 billion was drawn from the Hellenic Financial Stabilization Fund (HFSF) during the SBA-supported program, but the banks' capital needs subsequently dwarfed the HFSF provision. As of the fourth review, the purpose of the HFSF changed from a means of topping up capital for banks that had tried and failed to raise private capital to providing a substantial injection of public funds for banks that had been severely affected by the PSI and the deep recession: the amount needed for the HFSF in the context of the EFF was estimated at €50 billion.

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[1]This discussion is based on IMF (2013b).

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ANNEX V: POTENTIAL GAINS FROM SLOWER FISCAL CONSOLIDATION[77]

Compared to a bailout, reprofiling can expand the near-term financing envelope for a country in distress and allow for a more gradual pace of fiscal consolidation. To the extent that fiscal multipliers are higher in the early stages of a crisis, slower fiscal consolidation may lead to significant benefits for the country.

76.   **For countries in debt distress, shortfalls in financing can often force frontloaded adjustment with adverse effects on output.** In debt crises, the IMF often acts as a lender of last resort to help countries meet their financing needs. Oftentimes, however, the size of the program and the Fund's catalytic role are on their own insufficient to meet the obligations coming due. At the beginning of the crises, financing shortfalls are further exacerbated when private creditors decide not to roll over their lending. In such circumstances, Fund resources can be used to pay out exiting creditors while the country must undertake large fiscal adjustments to close the remaining financing gaps. Given an already vulnerable economic outlook, such adjustments will often further deepen the recession.

77.   **Debt reprofiling as an alternative to bailing out creditors can expand the near-term financing envelope for a country in distress and allow for a more gradual pace of fiscal consolidation.** Maturity extensions on bonds falling due in addition to IMF financing can be significant in relieving the financing pressure and could allow for a more gradual fiscal adjustment path. This technical annex provides a framework for assessing the potential benefits of reprofiling exclusively in reference to allowing for a more gradual pace of fiscal consolidation.[78] A stylized calibrated model of output, fiscal policy and debt accumulation is used to illustrate the tradeoff between a frontloaded and a more gradual fiscal adjustment path.

78.   **The rationale for slowing the pace of consolidation relies on the fact that fiscal multipliers are likely to be higher during a crisis.** Recent empirical research (Auerbach and Gorodnichenko, 2013) suggests that fiscal multipliers vary with the economic cycle. In particular, multipliers tend to be higher during recessions and in periods of negative output gaps when the economy operates below potential. One possible reason is that during severe crises, monetary policy

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[77]Prepared by Damiano Sandri (RES) and Suchanan Tambunlertchai (SPR).

[78]The implications for debt reprofiling for financial markets, including contagion, are analyzed in other Annexes.

can become less effective in responding to fiscal policy shocks, for example due to the zero lower bound problem.

79.   **A slower pace of consolidation may thus be beneficial since it postpones part of the fiscal adjustment to a point in time when multipliers will be lower.** Delaying fiscal consolidation provides an immediate benefit to the country since it leads to a temporary increase in GDP. However, it also requires greater consolidation in the future that weighs on medium-term GDP. If fiscal multipliers are constant over time, the short-term increase in GDP is exactly offset by the GDP contraction over the medium-term and there are no net benefits for the country. But if fiscal multipliers are higher in the early stages of a crisis, postponing consolidation generates an overall increase in GDP since the fiscal consolidation is achieved under lower average multipliers.

80.   **The gains from slowing fiscal consolidation are magnified by the presence of hysteresis effects.** The notion of hysteresis captures the fact that a temporary underutilization of productive resources may feed into a permanent reduction in potential output. For example, a crisis that determines a temporary increase in unemployment may induce some unemployed to drop out of the labor force. In this regard, a slower path of fiscal consolidation that reduces the negative output gaps has the potential to limit hysteresis effects and deliver higher potential growth.

81.   **The gains from smoother adjustment may go beyond the increase in GDP.** A smoother path for consolidation may help prevent many of the other dislocations that are typically associated with sharp fiscal consolidations: lack of program ownership, political and social unrest, abrupt dislocations in the economy as public services are cut. Although some of these economic costs could be captured as lost output, the model does not fully account for their potential significant disruptions.

82.   **The annex is organized as follows.** Section A presents the model while section B describes the calibration. Section C presents the results and discusses some caveats to the analysis.

A. Model

83.   **In this model of the economy, output evolves according to potential growth.** Deviations from this underlying path are due to fiscal policies and demand shocks. The output level is given by:

$$Y_{t+1} = P_{t+1} + \rho\, \Gamma_t - \mu_{t+1}(S_{t+1} - S_t) + \varepsilon_{t+1}$$

where P_t is potential GDP,

Γ_t is the output gap defined as the difference between actual and potential GDP,

ρ controls the persistence of the output gap,

μ_t is the fiscal multiplier which varies over time, depending on the output gap,

S_t is the primary structural balance, and

ε_t represents demand shocks which are used to match the model with baseline data.

84.   **Potential GDP evolves according to an underlying potential growth rate net of hysteresis effects.** The assumption on hysteresis implies that output gaps can have a permanent effect on the economy's potential, for example because depressed economic activity leads to older capital equipment being scrapped and limited new capacity being installed. The equation below describes the dynamics of potential GDP:

$$P_{t+1} = G_{t+1} P_t + h \Gamma_t$$

where G_{t+1} is the gross growth rate of potential GDP and h captures the strength of hysteresis.

85.   **The primary fiscal balance evolves as follows:**

$$F_t = S_t + \tau \Gamma_t$$

where τ captures the elasticity of the fiscal balance to the output gap. And the stock of debt is given by:

$$D_{t+1} = D_t R_t - F_{t+1}$$

where R is the real interest rate.

B. Calibration

86.   **The starting point of the model is calibrated to reflect the evolution of a typical crisis country with a Fund program.** The calibration point relies on six years of actual and projected data for ten exceptional access cases between 2009 and 2013, starting with the onset of distress, the program request, and five years after the outbreak of the crisis.[79]

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[79]These countries are Armenia, Belarus, Greece, Ireland, Jordan, Portugal, Romania, Sri Lanka, St. Kitts and Nevis, and Ukraine. The sample excludes the Maldives and Mongolia, which were PRGT-eligible countries that had exceptional access GRA programs.

Table AV1 shows the average initial conditions across these countries. The variables form the "baseline" scenario in which the distressed country undertakes strong fiscal adjustments in the first years of the crisis.

Table AV1. Average Initial Conditions in Countries with Exceptional Access Programs						
Variables:	t_{-1}	t_0	t_1	t_2	t_3	t_4
Annual growth (percent)	0.7	-1.9	1.6	1.8	2.0	2.2
Output gap (percent of potential GDP)	3.3	-1.4	-2.4	-3.2	-3.1	-2.9
Primary balance (percent of GDP)	-4.7	-5.2	-1.9	0.5	0.1	0.5
Structural primary balance (percent of potential GDP)	-7.4	-4.6	-2.1	-0.8	1.0	2.1
Gross debt (percent of GDP)	67.5	79.4	84.9	83.7	84.9	85.3

Sources: WEO; and Fund staff calculations.
Note: Time t_0 is the year of program request. The last year of actual data is 2013. Programs starting in 2009, therefore, have actual data up until t_4. Later programs have 1–3 years of projection.

87. **After t_4, output, potential output, and debt follow the dynamics of the model.** Starting at t_5, the primary structural balance stabilizes at 1.5 percent of potential GDP; potential growth and the real interest rate are, respectively, set to 2 percent and 2.5 percent; and demand shocks go to zero. These variables drive the dynamics of the other variables in the model going forward, as described in Section A. The calibration of other parameters in the model are described in Table AV2. The strength of hysteresis follows from Delong and Summers (2012). The persistence of the output gap and the elasticity of the primary balance with respect to output gap are estimated from the countries used to construct the baseline scenario.

88. **Following the literature, the fiscal multiplier is assumed to be larger in economic recessions than in economic expansions.**[80] When the output gap is zero or positive, the economy is at full employment and thus fiscal expansion will have only a small impact on the economy. This is also a consequence of the fact that monetary policy operates to stabilize the cycle and offset fiscal shocks. A negative output gap, on the other hand, creates scope for higher fiscal multipliers. In particular, a deep recession that pushes nominal rates close to the zero lower bound limits the ability of monetary policy to counterbalance the contractionary effects of fiscal consolidation. In this annex, the fiscal multiplier varies nonlinearly with the output gap, ranging between 0.25 and 1.5, as shown in the bottom left chart of Figure AV1.

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[80]Auerbach and Gorodnichenko (2011); Woodford (2011); Christiano and others (2011); Blanchard and Leigh (2013).

Table AV2. Calibrated Parameters					
Persistence of the output gap		0.5	Growth of potential GDP from t_5 onwards	G	1.02
Hysteresis in the output gap	h	0.1	Real interest rate from t_5 onwards	R	1.025
Elasticity of primary balance with respect to output gap	τ	0.48	Intertemporal discount factor	β	1/R

C. Results

89.   **The analysis compares the frontloaded fiscal consolidation under the baseline with a more gradual adjustment path (first row of Figure AV1).** As illustrated in the top right chart of Figure AV1, both consolidation paths bring debt down to 75 percent of GDP in fifteen years. In the baseline scenario, the country undergoes an initial fairly sharp tightening of the structural primary balance. The gradual adjustment scenario assumes a more moderate tightening in the first few years of the crisis which must be later compensated by some additional consolidation to ensure that the debt ratio comes back down to the baseline level. Benefits from a more gradual pace of fiscal consolidation are reflected in gains in the present discounted value of GDP over the baseline scenario as well as a permanent end-point increase in potential GDP due to hysteresis effects.

90.   **With the more gradual adjustment, GDP growth is preserved at a higher level and the output gap is smaller in the first years of the crisis (second row of Figure AV1).** By containing the size of the negative output gap in the early stages of the crisis, delaying consolidation also reduces the fiscal multiplier that in these simulations varies with the output gap (bottom right panel). This in turn reduces the costs of fiscal consolidation and supports GDP within a beneficial virtuous circle. However, the additional consolidation required during the medium term to bring the debt-to-GDP ratio back to the baseline level triggers an opposing vicious cycle of larger negative output gaps and moderately higher fiscal multipliers.

91.   **Gradual fiscal consolidation leads to an overall increase in GDP and permanently higher potential GDP (third row of Figure AV1).** The gains from slowing consolidation are through the increase in the present discounted value of GDP relative to the baseline (third row, left panel). Delaying consolidation leads to an increase in GDP by more than 0.5 percent during the first 5 years. This increase is partly reversed in the subsequent years when extra consolidation is need, but it remains positive (at 0.15 percent) over the first 15 years. Furthermore, a more gradual pace of consolidation has beneficial effects on potential GDP (third row, right panel) since it reduces

negative output gaps and thus the associated negative hysteresis effects. After 15 years, potential GDP is 0.1 percent higher than under the baseline. Importantly, this is a permanent gain.

92.   **A more gradual pace of fiscal consolidation involves a temporary increase in the debt-to-GDP ratio.** The top right chart of Figure AV1 shows that the delay in fiscal consolidation can lead to a slight increase in the debt-to-GDP ratio during the medium-term, before convergence toward the baseline path begins. Importantly, this increase can persist beyond the 2–3 year horizon under reprofiling.[81] While this temporary increase in debt reflects a more gradual fiscal adjustment and is beneficial for the country—it increases overall GDP and should thus be perceived as a beneficial development—it may pose challenges to countries that are dealing with particularly high debt levels. In any case, this increase remains limited, less than 10 percentage points of GDP.

93.   **The results are consistent with the existing literature—the case for delayed adjustment is strongest when fiscal multipliers are higher at times of crisis and hysteresis effects are present.** Batini, Callegari and Melina (2012) use regime-dependent fiscal multipliers and find that smooth and gradual fiscal consolidation is preferable than an up-front fiscal consolidation when output is already contracting. Similarly, Bi, Qu, and Roaf (2013) find that for a highly indebted economy, hysteresis and time-varying multipliers are important elements in the case for gradual adjustment.

94.   **Whether delaying fiscal consolidation is beneficial requires a case-by-case assessment.** The model simulations have been based on the assumption of fiscal multipliers being larger when the economy operates below potential and on a baseline scenario that involves a large negative output gap. Under alternative conditions, for example in crises that initiate during periods of overheating and positive output gaps, delaying consolidation may actually be counterproductive. Furthermore, a delayed path of consolidation requires that the country is able to commit to greater fiscal adjustment over the medium term. Whether this is a tenable assumption crucially depends on country-specific characteristics.

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[81]This raises the issue of whether a relative short debt reprofiling—for example, that pushes all maturities out by only 1 to 3 years—is able to generate the financing space required by delayed fiscal consolidation over the medium term. The amount of fiscal space generated by reprofiling and whether it is concentrated over the short of medium term depends on the maturity structure of the country.

Figure AV1. Simulations of Frontloaded and Gradual Fiscal Adjustments

Cyclically adjusted primary balance
(percent of potential GDP)

Government debt
(percent of GDP)

Baseline

Gradual
consolidation

GDP real growth rate
(percent)

Output gap
(percent)

Cumulative discounted GDP under gradual consolidation
(percentage increase relative to baseline)

Potential GDP under gradual consolidation
(percentage increase relative to baseline)

Assumption about fiscal multiplier

Output gap (%)

Fiscal multiplier

Years

Source: Fund staff calculations.

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