## Alternative Strategies for Resolving the European Debt Crisis

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## Introduction

The European debt crisis poses a severe challenge to the European and global economies. The crisis has spread from its original epicenter in Greece to Ireland and Portugal and, most recently, to Spain and Italy. This paper examines two categories of policy options for dealing with the crisis. In the first, a menu of approaches is considered for dealing with liquidity and, potentially, solvency problems for these sovereign debtors. In the second, three major institutional changes are considered that could affect the outcome: expansion of the European Financial Stability Facility (EFSF); allowing the issuance of eurobonds jointly and severally guaranteed by eurozone member states; and, as a more extreme possibility, exit from the euro by a country or number of countries.

The discussion first examines the severity of the debt problem in each of the five economies. The central framework is that of "debt sustainability." The main question is whether the country is on a fiscal path that will cause debt to spiral out of control or whether instead the debt burden relative to GDP can be held to, or brought down to, manageable proportions. A key diagnostic is a debt sustainability equation that calculates the size of the primary (non-interest) fiscal surplus that must be achieved to keep debt from rising relative to GDP. This equation states that this surplus, as a percent of GDP, must equal or exceed the excess of the interest rate over the nominal GDP growth rate, multiplied by the initial debt ratio (so the necessary surplus is higher if the initial debt ratio is higher). The discussion for four of the countries focuses in part on this required primary surplus. The analysis for Greece goes into greater detail, drawing on Cline (2011).

Beyond the solvency question addressed by this debt sustainability diagnosis, there is the question of liquidity. For this purpose the discussion considers magnitudes of amortization coming due. The existing support programs for Greece, Ireland, and Portugal are examined in light of these liquidity needs. For Italy and Spain, the broader question is raised regarding whether expansion of the EFSF, or other approaches, are necessary to ensure liquidity even if solvency seems plausible.

The analysis concludes with consideration of a matrix of impacts by policy approach and country, adding the implied effects for France and Germany as the main lender-of-last-resort economies. One such matrix is identified for country publics and governments of the seven euro-zone economies considered and also for the rest-of-G7 (on a heuristic basis rather than being

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quantitatively estimated). A second impacts matrix is identified for the banks of the corresponding countries. The patterns of suggested impacts may help diagnose how policy decisions would be likely to play out, and thus to provide a point of reference for the simulation game carried out on the second day of this conference.

The overall thrust of the analysis here is that the European debt crisis is one of confidence and the maintenance of liquidity, rather than one of deep insolvency. Even for Greece the finding is that debt should be sustainable if the central expectations of the Greek adjustment packaged agreed in July 2011 are attained. Even so, an ambitious primary surplus will be required. For Ireland and Portugal the solvency condition should also be met, although liquidity strains might require going beyond the present arrangements toward one involving private sector involvement (PSI) more similar to that in the recent Greek package. Solvency is also identified for Spain and Italy, but if short-term loss of confidence were to dominate, meeting liquidity requirements could require mobilizing the broader measures of euro-bonds and expansion of the EFSF. The most negative options are found to be deep debt forgiveness or even outright unilateral default. The option of exit from the euro is also viewed as potentially costly, including for a possible strong-country exit group that might seek to form a new currency—especially if public-good valuation of European monetary unity is taken into account.

## Sustainability of Greek Public Debt[2]

The first adjustment program to deal with the Greek debt crisis was launched in March, 2010, with €80 billion in support from European governments and €30 billion from the IMF, in comparison to total Greek government debt of €298 billion at the end of 2010. The program assumed that Greece could reestablish access to private capital markets by 2012, starting at annual rates of about €30 billion and rising to about €70 billion annually in 2014–15. As it became clear in recent months that it would take considerably longer to restore market access, the need for a larger and longer-term support program became clear. German and Dutch authorities pushed for substantial private sector involvement (PSI) in any such additional effort, although the ECB was opposed from concern about repercussions of rating agency classification as selective default. The new package agreed in July, 2011 did include major PSI, amounting to some €135 billion over 2011-20 in an initiative orchestrated by the Institute of International Finance. The new package pledged an additional €109 billion in eurozone support. Crucially, the eurozone support was to shift to more favorable lending terms (10-year grace, borrowing at EFSF funding rates or about 3.5 percent) than in the original 2010 program (which involved interest rates of about 5.5 percent, rising to 8 percent by 2015-16).

The new package includes a large privatization effort, amounting to €50 billion. Skeptics have criticized the high debt ratio that the program involves, with the debt to GDP ratio peaking at 172 percent in 2012. However, gross debt exaggerates the burden. A considerable amount of the debt increase will correspond to funds set aside in zero-coupon risk-free assets as collateral for the PSI. In addition, as much as 10 percent of GDP in the increase in gross debt was imputed in the IMF program to recapitalization of the banks, which should involve an increase in government claims.

Figure 1 shows the baseline trends for four key debt measures, before and after the July 2011 package. Even without the package, the IMF had projected the baseline gross debt to GDP ratio to fall to 130 percent of GDP by 2020, after peaking at 172 percent in 2012. With the package, there is an illusory greater buildup in the gross debt ratio (as just noted), but even the gross debt ratio is down to 113 percent of GDP by 2020. For the net debt ratio, which is more meaningful, the July

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[2] This section draws on Cline (2011). For specific references, see that study.

package yields a central path falling from 120 percent of GDP in 2011 to 69 percent by 2020. The estimates here take account of an initial stock of government financial assets estimated by the OECD at €76 billion (33 percent of GDP) at the end of 2010. For the third metric of debt burden, interest as a percent of GDP, figure 1 shows that in the pre-package baseline there would have been a considerable escalation, from 7.2 percent of GDP in 2011 to about 9 percent by 2016. The July 2011 package sharply reduced the central baseline, to 5.2 percent of GDP by 2020. These three metrics pertain to solvency. The fourth chart shown in figure 1 concerns liquidity. It shows that prior to the package, amortization requirements would have escalated from 12 percent of GDP in 2011 to about 20 percent annually. With the package, in contrast, the amortization rate falls to 9 percent of GDP by 2014 and then steadily declines to 0.5 percent by 2020.

The central projections for the new package make the following assumptions for growth. After a decline in real GDP by 3.8 percent in 2011, real growth is 0.6 percent in 2012, then rises from 2.1 percent in 2013 to about 3 percent by 2016 and after. The primary surplus rises from -0.8 percent of GDP in 2011 to 1.5 percent in 2012, 3.5 percent in 2013, and a plateau of 6.4 percent by 2015 and after. This target is ambitious but feasible. Figure 2 shows alternative paths of the debt burden indicators if the growth path is one percentage point lower or higher, or if the primary surplus path is one percent of GDP lower or higher. Also shown is a variant in which the primary surplus does not reach higher than 3 percent of GDP (PS3). The central message of the figure is that there should be considerable progress even under alternative assumptions. Even so, the variant with a ceiling of 3 percent of GDP for the primary surplus suggests that some alternative effort, such as greater privatization, might be needed if fiscal results did not exceed this outcome.

The PSI initiative involves 30-year par bonds with interest rates set at 4 percent for the first five years, 4.5 percent for the next 5, and 5 percent thereafter; and 30-year discount bonds that cut face value 20 percent but boost the interest rates to 6, 6.5, and 6.8 percent for the respective periods. Both obtain collateralization of principal by zero-coupon risk-free bonds, presumably German bunds. The exchange is calculated to involve a 21 percent haircut discounting at 9 percent, but arguably that is considerably too high a discount rate given the relatively secure post-exchange conditions (even though only principal, not interest, is collateralized). From the standpoint of Greece there is little present-value alleviation of the debt burden, as the original interest rates were on the order of 5 percent. The main contribution of the exchange is to remove the liquidity pressure by postponing amortization. The terms of the exchange are consistent with the intention of reaching high acceptance on a voluntary basis.

The Greek government plans to use €20 billion to repurchase debt from the secondary market. At an expected price of about 60 cents on the euro, repurchases are a relatively efficient way to reduce the debt burden. Any slippage in take-up of the exchange by bondholders can to some extent be offset by reallocating the funds that would otherwise have been earmarked for purchase of collateral for use in market buybacks.

Overall, the July package for Greece should provide a solid basis for management of Greek debt. The package helps ensure solvency and liquidity.[3] Its most challenging aspect will be achievement of the ambitious primary fiscal surplus and privatization targets.

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[3] Darvas, Pisani-Ferry, and Sapir (2011) reach the contrary conclusion that 30 percent forgiveness of Greek public debt is necessary to restore solvency, which they judge as reducing the gross debt to GDP ratio to 60 percent by 2034. However, their projections, carried out in February 2011, do not take into account the more lenient official financing terms of the July 2011 package, or the impact of the PSI arrangement.

**Figure 1 Alternative paths for Greek public debt**



Debt (percent of GDP)

Interest (percent of GDP)

Net debt (percent of GDP)

Amortization (percent of GDP)
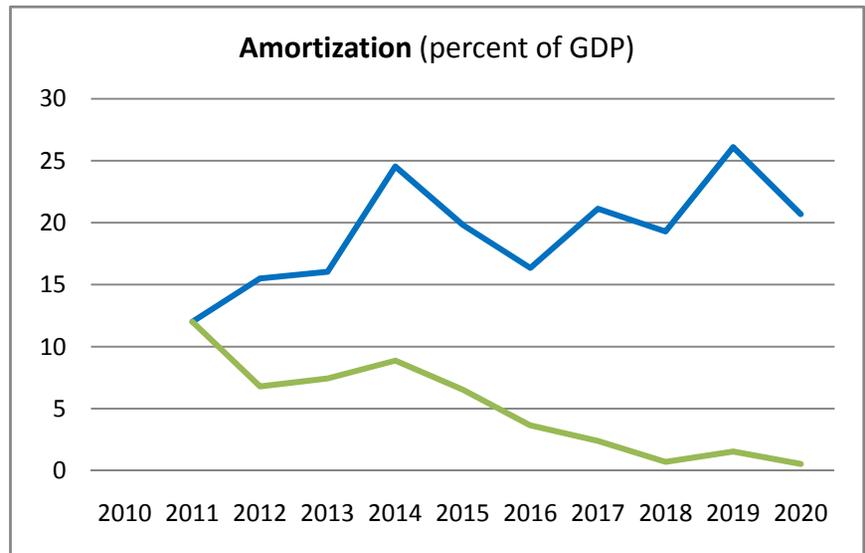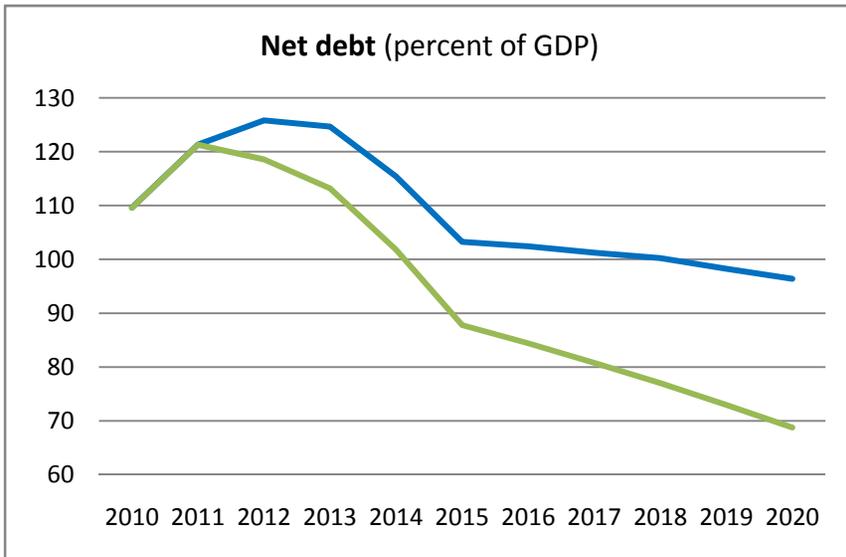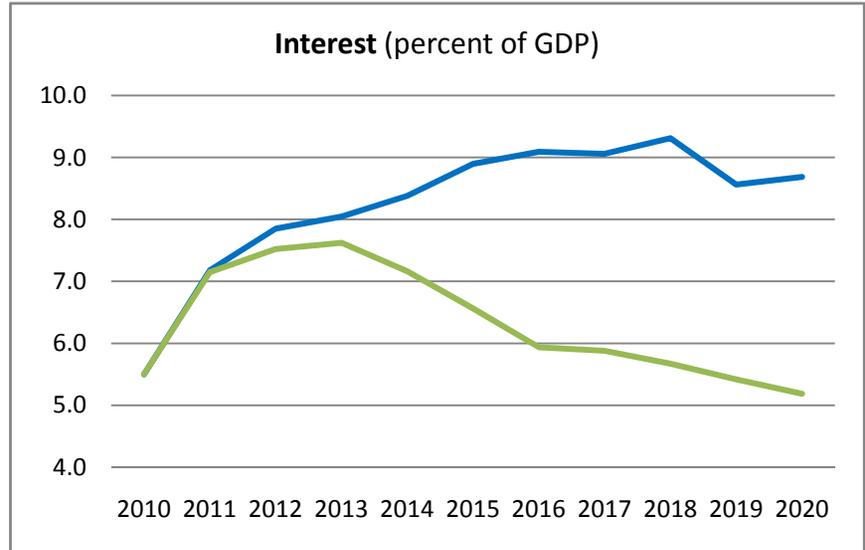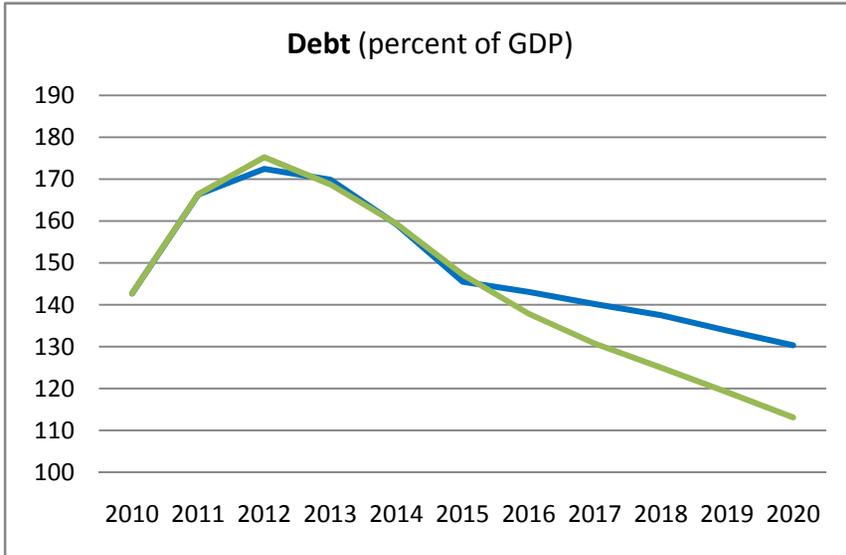
Baseline — After July Package

**Figure 2 Impact of alternative growth and primary surplus assumptions**
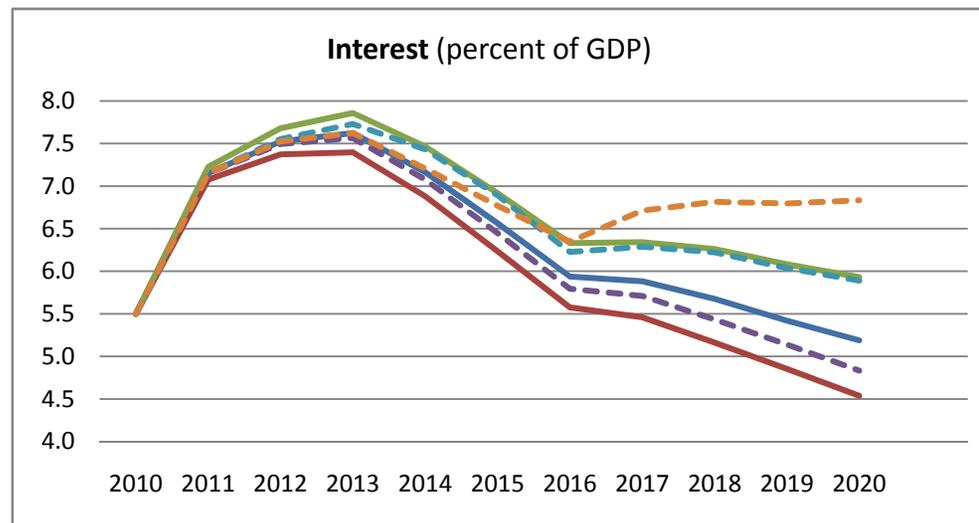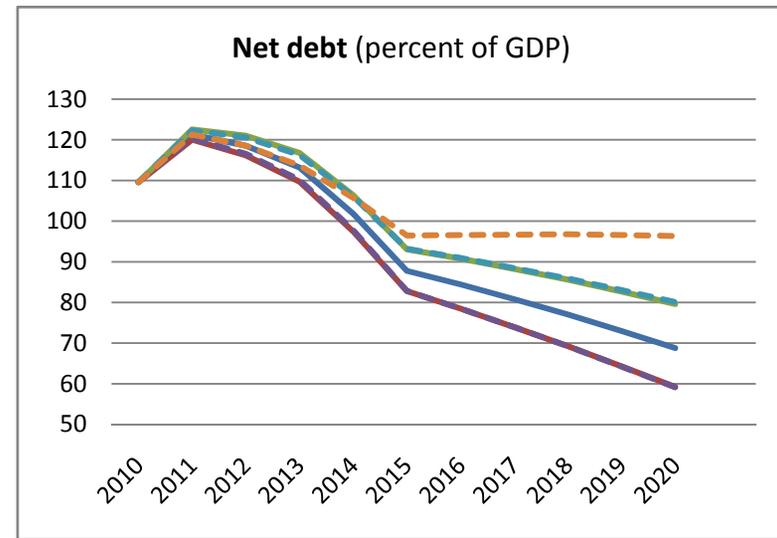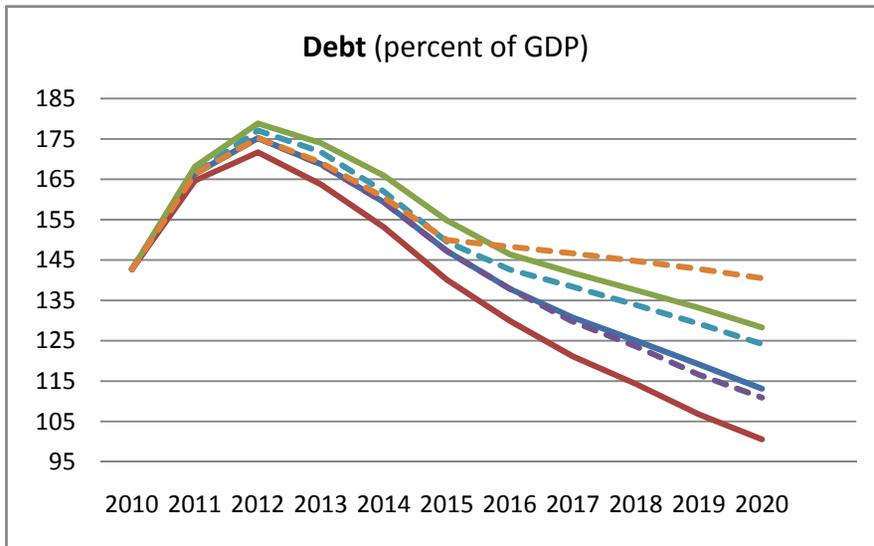
**Debt Sustainability in Ireland and Portugal**

As shown in figure 3, spreads on 10-year sovereign bonds for Portugal and Ireland have shown the same pattern of climbing to crisis levels that has characterized spreads for Greece (albeit at somewhat lower levels). Like Greece, Ireland and Portugal have been forced to enter into adjustment programs supported by the International Monetary Fund and European Union. So far, however, neither Ireland nor Portugal has become a candidate for debt restructuring. Indeed, in announcing the July package for Greece, the official European statement explicitly stated that regarding PSI, "Greece requires an exceptional and unique solution. … All other euro countries solemnly reaffirm their inflexible determination to honour fully their own individual signature …" (EU Council 2011).

**Figure 3 10-year sovereign bond spreads over German bund: Greece, Ireland, and Portugal** (percent)
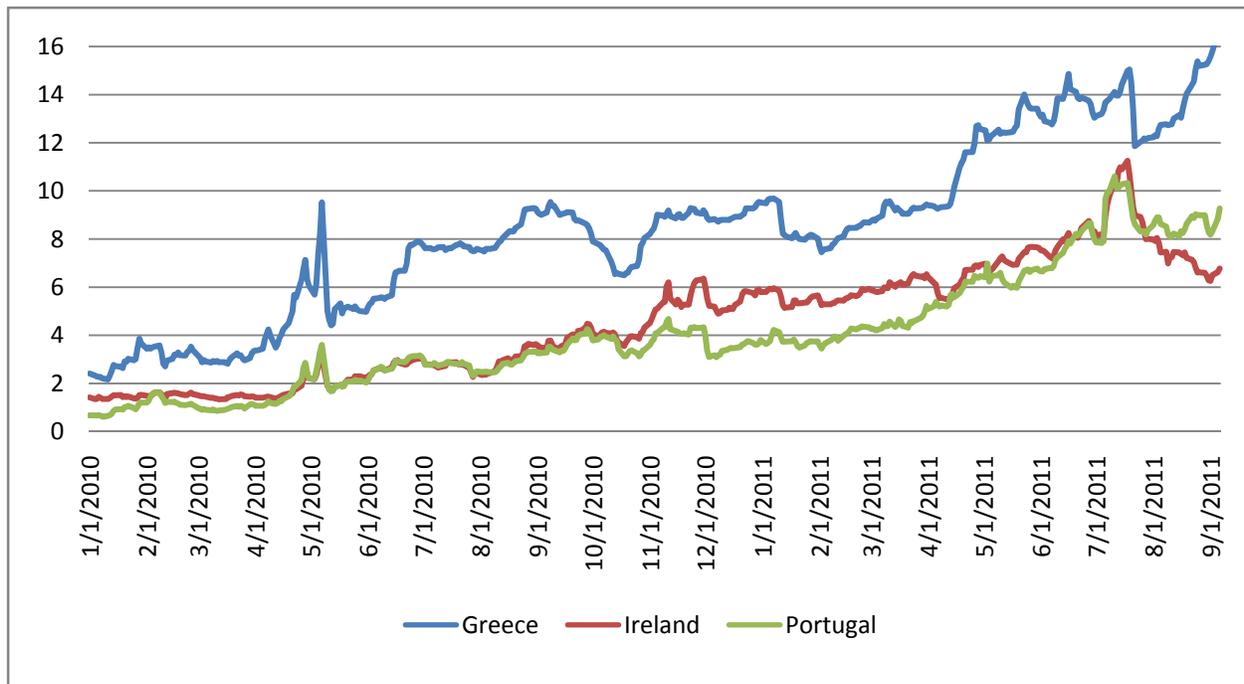


**Ireland.** Public debt has increased rapidly in Ireland as a consequence of large fiscal deficits associated with the severe recession and the cost of supporting the banking system. In 2007, public debt was only 25 percent of GDP. The debt ratio then soared to 44 percent in 2008, 66 percent in 2009, 96 percent in 2010, and a projected 111 percent in 2011 (IMF, 2011a, p. 39). From 2008 through 2011 the primary fiscal deficit excluding bank support averaged 7.9 percent of GDP, and interest payments averaged about 5 percent of GDP, placing the total fiscal deficit at an annual average of 13 percent of GDP. Fiscal deficits not counting bank support thus cumulatively added about 42 percent of GDP to public debt over the four years.[4]

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[4] Simple addition is approximately valid considering that GDP was not rising (indeed, it fell from €189 billion in 2007 to about €160 billion in 2010-11).

The banking system at its peak had assets five times the size of GDP (in comparison to 46 percent in the United States in late 2008 for banks and 170 percent for the financial sector broadly defined; Cline, 2010, p. 305). With the bursting of the real estate bubble the banks experienced major losses. In a context of international financial turmoil immediately after the collapse of Lehman Brothers, at the end of September 2008 the government of Ireland announced that it would guarantee the debt of banks. During 2009-10, public support to recapitalize the banks amounted to €46 billion, or 30 percent of GDP (IMF, 2011a, p. 14). The government took full ownership of Anglo Irish Bank and provided major recapitalization support to the two other largest banks. It established the National Asset Management Agency (NAMA) as a "bad bank" to hold distressed real estate assets purchased from banks. By late 2010 NAMA had acquired about €75 billion in such loans from banks at a discount of about half of their value (Hansen, 2010).

The large public intervention to support the banks did imply partial compensation in the form of increased public sector assets. The OECD (2011) reports that general government financial assets rose from 29 percent of GDP in 2007 to 50 percent by 2011. Net public debt rose from zero to 70 percent of GDP over the same period, and is projected by the OECD to reach 76 percent in 2012. Considering the debt buildup contribution of about 40 percent of GDP from fiscal deficits excluding bank support, the implication is that capitalization and other bank support added about 30 percent of GDP to debt even on a net basis. Although the cost of socializing bank losses is unusually high in Ireland, it turns out that it was nonetheless overshadowed by the fiscal losses associated with recession.[5]

If net public debt is on the order of 75 percent of GDP, then at more normal sovereign borrowing rates on the order of 5 percent nominal interest (i.e. 300 basis points above German bunds), the interest burden would amount to about 3.5 percent of GDP. The equilibrium debt equation states that for the (net) debt ratio to remain constant rather than rise, the primary fiscal surplus as a percent of GDP needs to be at least equal to the product of the debt to GDP ratio and the difference between the nominal interest rate and the nominal growth rate of GDP (Cline, 2010).[6] The IMF (2011 May) places average real growth for 2013–16 at 3 percent, and average (GDP deflator-) inflation at 1.5 percent. With nominal growth at 4.5 percent and a nominal interest rate of 5 percent, the net-debt/ GDP ratio could be held at 75 percent of GDP with a primary surplus of 0.37 percent of GDP. So at more normal medium term conditions, Ireland should be solvent, considering that such a small primary surplus should not be difficult to reach on the basis of international experience.

Excluding bank support costs, the primary balance was in deficit at an average of 9.2 percent in 2009–10, and 6.7 percent in 2011. The IMF program calls for the deficit to fall to 4.2 percent in 2012 and 1.4 percent in 2013, and then shift to a primary surplus averaging 1.8 percent of GDP in 2014–16. This surplus would be amply sufficient to avoid further escalation of the ratio of net debt to GDP, and modest scope for reducing it.

Nonetheless, Ireland is effectively cut off from markets, with the 10-year bond rate at about 8½ percent at the end of August 2011 (figure 3). The decline from about 13 percent in early July reflected at least temporary success in ECB intervention in the bond market. The issue for Ireland would thus seem to be the need for classic (Bagehot) lender-of-last-resort temporary financing to a

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[5] Confirming even for Ireland the Reinhart-Rogoff finding that historically it has been the recession-induced fiscal losses rather than direct banking costs that drive a large increase in public debt in recessions associated with banking crises (typically by 86 percent in real terms in the first three years after the crisis; Reinhart and Rogoff, 2008, p. 45).

[6] That is: $\pi^* = \lambda(r - g)/(1 + g)$, where $\pi^*$ is the primary surplus as a percent of GDP, $\lambda$ is the sustained ratio of (net) debt to GDP, $r$ is the interest rate, and $g$ is the nominal growth rate. With low inflation and modest growth rates, the denominator approximates unity and the numerator is the focus of analysis.

solvent entity during the time needed to restore more normal market expectations after a panic. Ireland is in the fortunate position of having a large lender of last resort, the EU.[7]

The official support should suffice to deal with the sovereign liquidity problem. Amortization of existing private medium and long-term debt amounts to €7 billion annually in 2012–13, €13bn in 2014, and an average of €10bn annually in 2015-20 (but with spikes in 2016 and 2020; EC 2011a, p. 38). Short-term was down to about €1 bn by end-June 2011, in contrast to €7 billion at end-2010 (NTMA 2011). Annual amortization is thus in the range of 5 to 9 percent of GDP, far lower than the pre-package Greek range of 20 to 25 percent for 2014–20. Ireland is thus under considerably less liquidity pressure than Greece was. Overall, for Ireland a diagnosis of fundamental solvency coupled with reasonably viable official liquidity support appears reasonable. Accordingly, the basic expectation should be that over the medium-term, market interest rates on sovereign debt should return to more reasonable and sustainable levels, so long as Ireland makes progress as planned in fiscal adjustment.

**Portugal.** Contagion from Greece has hit Portugal with approximately the same severity and timing as that encountered by Ireland (figure 3), with somewhat lesser effects for Portugal in the fourth quarter of 2010 and first quarter of 2011, but thereafter somewhat more adverse effects, especially in the emerging trends in spreads following the July Greek package and subsequent ECB intervention in bond markets. Failure of a stabilization package to pass parliament in March 2011 and the ensuing call for June elections prompted heightened market concerns and a ratings-agency downgrade. In April the caretaker government sought support from the EU and IMF. A statistical revision in April placed the 2010 fiscal deficit at 9.1 percent of GDP rather than the previously reported 7.3 percent. By May a proposed economic adjustment program received support from the main contending political parties. Support programs from the IMF and EU were agreed by late May, providing up to €78 billion (46 percent of GDP) over 2011-14. Two-thirds is to come from the EU (divided evenly between the EFSM and EFSF) and one-third from the IMF (EC 2011b, pp. 4, 15).

Portugal's debt problem is seen as one of both sovereign and external debt, with net external liabilities on track to reach about 120 percent of GDP in 2012 (EC 2011b, p. 7). The current account deficit stood at an average of 10.8 percent of GDP in 2006-10 and is projected at 8.7 percent of GDP for 2011 (IMF 2011b). Nonetheless, the internal rather than external debt problem is likely the more proximate, because as a member of the eurozone Portugal does not face the typical external debt problem of severe exchange rate pressure and loss of external reserves. Even so, some form of internal devaluation and increased competitiveness is necessary for adjustment. More fundamentally, reforms are needed to overcome prolonged slow growth. Real GDP growth was an average of only 1.5 percent annually in 2000–07, well below the eurozone average of 2.2 percent (although annual growth was approximately the same for Portugal and the eurozone in 2008-10, at -0.4 and -0.6 percent annually; ibid).

Excessive protection of employment in permanent contracts has created a two-tier labor market. The new adjustment program calls for liberalization of labor arrangements and a 5 percent cut in public sector wages, ingredients for internal devaluation. The adjustment program seeks to reduce the fiscal deficit, which has already fallen from 9.1 percent of GDP in 2010 to a projected 5.9 percent in 2011, to a target of 3 percent by 2013 and 1.9 percent by 2015 (EC 2011b, p. 33). The primary deficit has fallen from 6.1 percent of GDP in 2010 to 1.7 percent in 2011, and is to reach a surplus of 2.1 percent of GDP by 2013.

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[7] Thus, in the current adjustment program, there is €45 billion in EU support, coming from the EFSM (€22.5 billion), EFSF (€17.7 billion), and bilateral lending from the UK (€3.8 billion), Sweden (€0.6 billion), and Denmark (€0.4 billion); EC 2011a, p. 40.

Gross public debt has risen from 68 percent of GDP in 2007 to 93 percent in 2010, and is projected to peak at 115 percent in 2013–14 (IMF, June11, p. 33). The OECD (2011) places net public debt at 68 percent of GDP for 2010, and projects it to rise to 80 percent of GDP by 2012. Net debt would thus remain almost as low as that in Ireland, and far below the 126 percent projected for pre-package Greece in 2012 (discussed above). With net debt at 80 percent of GDP, and a post-normalization interest rate of 5 percent and nominal growth rate of 3.5 percent, the primary surplus required to achieve stabilization of the debt ratio would amount to 1.2 percent of GDP, lower than the target of 2.1 percent by 2013. Arguably Portugal is thus also solvent.

Liquidity pressure is relatively high, however. Short-term debt is high, at €20 billion in 2011 (IMF June, p. 28), or 12% of GDP. Medium- and long-term debt amortization is moderate, at about €11billion annually on average in 2011-13, or 6 percent of GDP. As in the case of Greece, however, there is a large one-time surge in financing requirements in 2011 for "other" uses (that is, other than fiscal deficit or amortization), primarily in bank support, amounting to €17 billion (10% of GDP).[8] The Portuguese adjustment program calls on substantial official support to cover the liquidity needs (€63 billion EU and IMF disbursements in 2011-13, a rate of 18 percent of GDP annually), but transits relatively early to substantial renewed reliance on private market financing. Thus, "market access" disbursements, which will have fallen from about €40 billion annually in 2009-10 to €17 billion in 2011 and €9 billion in 2012, rebound to an average of €22 billion or 12 percent of GDP in 2013-14.

In the first review mission for the Portuguese adjustment program, the joint memorandum from the EC, ECB, and IMF (IMF 2011d) emphasized that the decisions made at the July 21, 2011 European summit would substantially improve prospects for success. These included lowering interest rates on EU support to near the EFSF's funding rate, extending maturities, and "most importantly … stand[ing] ready to provide finacing until market accesss has normalized" (p. 1). Nonetheless, Portugal, perhaps more so than Ireland, may at some point need even broader reinforcement of liquidity support, conceivably along the lines of the Greek-style package including PSI. Although it is far too early to place much weight on recent trends, the incipient divergence in spreads between Ireland and Portugal shown in figure 1 would tend to support this comparative ordering.

**Confronting Market Pressures on Sovereign Debt in Spain and Italy**

For most of the past 18 months since the emergence of the European debt crisis in Greece, the working policy framework has been one of dealing with sovereign debt problems in three small, peripheral economies—Greece, Ireland, and Portugal—with the help of the far larger EU partner economies. Similarly, any European-wide or global threat to the financial system was limited so long as the vulnerable debt was just that of three smaller economies. Although some European banks outside these countries held substantial claims on the three sovereigns, these were nonetheless sufficiently limited as to pose no major threat to neighboring banking systems, let alone those of the United States and elsewhere.

Thus, for the eurozone as a whole, gross public debt stood at €7.88 trillion at the end of 2010; the combined gross public debt of the EP3 (Europe periphery 3) amounted to only €618.9 billion, or 7.9 percent of the total. Similarly, EP3 GDP at a combined €556.9 billion constituted only 6.0 percent of total eurozone GDP (€9.27 trillion) in 2010 (IMF 2011b). Essentially the eurozone as a whole was patently capable of dealing with problems in the three peripheral members so long as

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[8] As in the Greek program, however, the IMF country report does not analyze whether there is any corresponding increase in public sector assets associated.

the political will were present to do so. But if Italy and Spain were to enter seriously into the category of troubled sovereign debtors, the leverage for financial backstopping would change sharply. Adding these two countries would boost the periphery debtor totals to €3.10 trillion, for gross public debt, and €3.17 trillion, for GDP. Based on eurozone GDP shares, the leverage for non-troubled to troubled debtor countries, a sort of financial backstopping capacity metric, would then shift from 16.7 to one with only the EP3 in the troubled category to only 1.5 to one after adding Italy and Spain to the troubled group. The potential scope of the European debt crisis thus threatened to escalate sharply in July, 2011 when market spreads began to surge for sovereign debt of Italy and Spain.

The replacement of national currencies with the euro in 1999 had in effect converted currency risk for debt of member countries such as Italy and Spain into sovereign credit risk. However, in the context of modern industrial country experience and especially that of high-income European economies, sovereign risk was widely regarded to be minimal. As a result, the spread above German bund rates for 10-year treasury obligations went from being high for some countries, especially Greece, to virtually zero for most of the post-euro period (figure 4).[9] Only beginning in 2010 did the myth of zero intra-eurozone sovereign risk explode. As shown in the figure, the post-myth hierarchy of bond rates is largely similar to the pre-euro profile (albeit this time for credit rather than inflation reasons), with German and French rates low; Italian, Spanish rates intermediate, and Greek rates high. The two exceptions are Ireland and Portugal, which were in the low and intermediate group respectively before the euro but have jumped to the high group (lower only than Greece) since 2010.

**Figure 4 Government bond yields in seven eurozone economies, 1990-2011Q1** (percent)
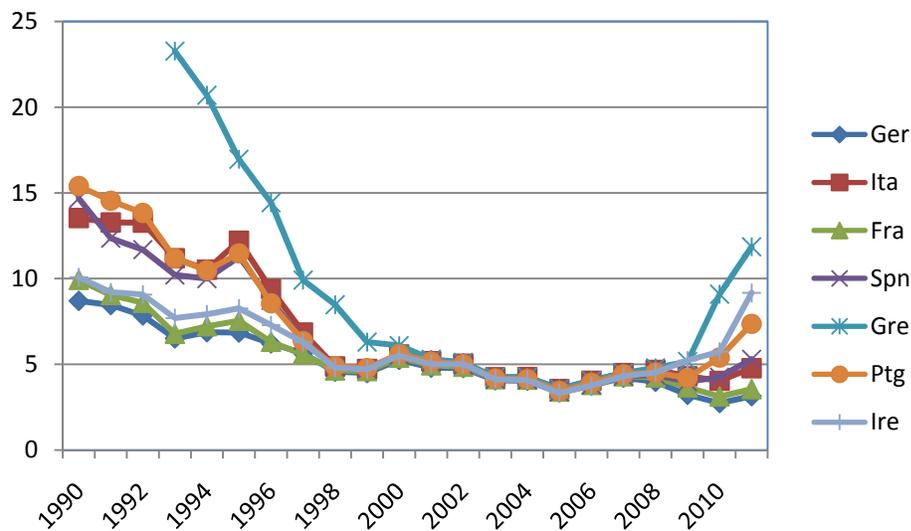


*Source*: IMF (2011e).

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[9] Most of the pre-euro difference in interest rates reflected differential inflation expectations, however, rather than perceived differential sovereign credit risk.

As recently as 2007, government bond rates in Italy were only about 30 basis points above those in Germany; for Spain the spread was only about 10 basis points. In 2008, 2009, and 2010 the spread for Italy rose to 70, 110, and 130 basis points; and for Spain, to 40, 75, and 150 basis points. By the first quarter of 2010, however, the spread had risen to 165 basis points for Italy and 215 basis points for Spain.

Still, sovereign spreads on the order of 200 basis points were essentially still modest for Italy and Spain. The implications for fiscal costs were attenuated by the fact that the German base rate had eased substantially, from 4.2 percent in 2007 to 2.7 percent in 2010 and 3.1 percent in the first quarter of 2011. However, as shown in figure 5, in July 2011 contagion to Spain and Italy from the European debt crisis entered a more forceful phase. Spreads above the German bund rose from about 200 basis points for the two countries at the beginning of July to a peak of 380 basis points in the first week of August, 2011. Instead of providing a quarantine to halt contagion, the Greek package appears to have exacerbated it, probably because of the perception of increased risks to investors associated with the move toward PSI.

Soon after the Greek package, bond market intervention by the ECB in its Securities Markets Program helped cut back the spreads by about 100 basis points by the end of August. The ECB boosted the outstanding stock of its holdings in the SMP from €74 billion on August 5 to €116 billion on August 26 (ECB 2011). Even if all of these purchases were of Italian and Spanish bonds, however (and they were presumably not, because of likely purchases for Irish and Portuguese obligations), the amounts were small relative to total debt: about €40 billion compared to €2.48 trillion (of which, about two-thirds owed by Italy and one-third by Spain). A sustained reduction of one-fourth in the risk spread (from about 380 to 280 basis points) for purchases of only 1.6 percent of the stock of debt was perhaps too much to expect, and within a few days the spread was back up to about 360 basis points for Italy and 340 basis points for Spain (figure 5).

**Figure 5 Italy and Spain: 10-year spread above German bund rate** (percent)
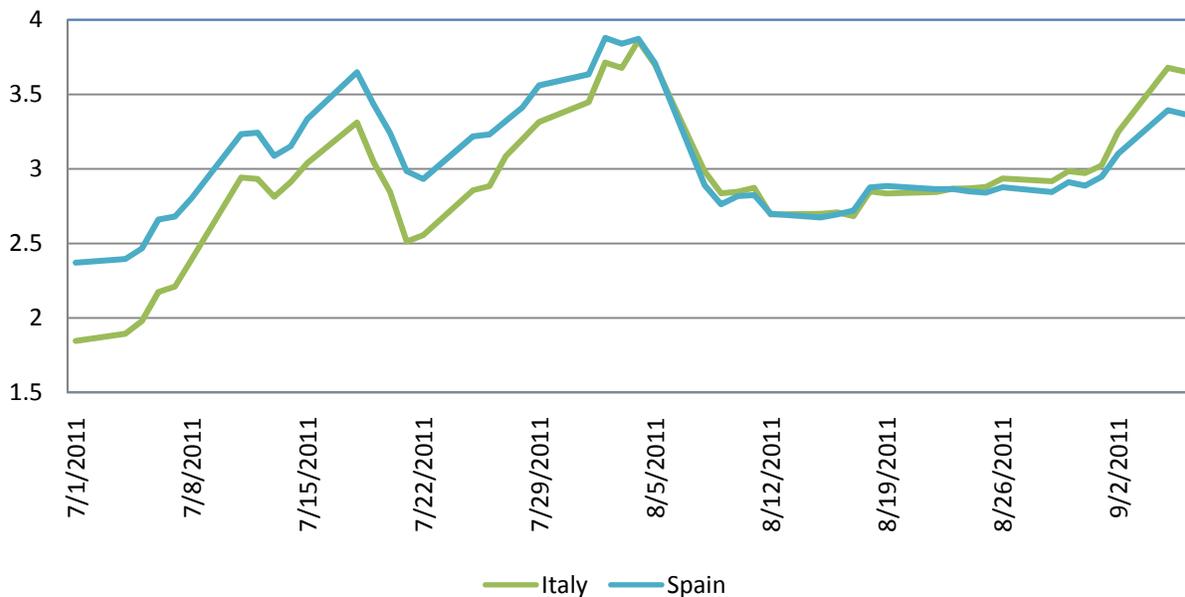
It is useful to examine the debt sustainability metrics for Italy and Spain at spreads of 300 basis points instead of 200. At the end of 2010, net general government debt stood at 99.1 percent of GDP for Italy and 40.2 percent for Spain; the ratios are projected at 100.6 percent and 45.7 percent, respectively at the end of 2011 (OECD). (For reference, gross public debt stood at 119 percent in Italy and 60 percent in Spain, Maastricht criterion.) Even allowing a 300 basis point base for the German bund (versus 200 basis points in August, 2011), spreads of an additional 300 basis points and hence borrowing costs of 6 percent could imply relatively manageable debt burdens. For Italy the IMF (2011b) projects nominal GDP growth for 2012-16 at 3.4 percent annually (1.4 percent real). The 100 percent ratio of net debt to GDP could be kept stable by achieving a primary surplus of 2.6 percent of GDP.[10]

In April, 2011 the IMF projected the average primary surplus for Italy in 2012-16 at 1.8 percent of GDP. It would thus have required only 0.8 percent of GDP in additional fiscal tightening to reach the debt-stabilizing target primary surplus. The August, 2011 fiscal package is much more ambitious: it plans to cut the total fiscal deficit (including interest) from 3.8 percent of GDP in 2011 to 1.4 percent in 2012 and zero in 2013, an improvement by 3.5 percentage points of GDP from the baseline deficit prior to the package.[11] By implication, the primary surplus would stand about 3 percent of GDP higher than in the previous baseline, reaching 4.8 percent of GDP—well above the 2.6 percent required for debt ratio stability and hence sufficient to provide scope for gradual reduction in the debt ratio.

For Spain, a low initial debt ratio in principle means that achieving debt stability should be even easier. There are two important caveats: Spain begins from a position of primary deficit rather than surplus; and contingent liabilities from the banking system could arguably impose a debt problem. Spain's low initial net debt ratio of 40 percent of GDP, combined with projected nominal GDP growth at 3.5 percent annually in 2012-16 (half real, half GDP deflator increase) means that the debt ratio would remain constant if the primary surplus were 1 percent of GDP.[12] The IMF projected the average annual primary balance at -2.3 percent of GDP for 2012-16, however. One way to interpret this baseline is that the result would be an increase in net debt from 40 percent of GDP to about 50 percent over a five-year period, still a moderate level (the same as in Germany in 2010; OECD).

With respect to contingent liabilities from bank problems, Eurostat (2011) has compiled data on contingent government liabilities associated with guarantees extended in the financial crisis. For Spain, these stand at €60 billion, or 5.6 percent of GDP. The comparable figure for France is 4.7 percent of GDP; and for the UK, 24.7 percent of GDP. By at least this indicator, then, Spain does not seem to be disproportionately vulnerable to a surge in public debt from socialization of banking losses.

Overall, both Italy and Spain would seem to warrant the diagnosis that sovereign debt is solvent. Moreover, even at recent high spreads, the incremental burden of borrowing at the higher rates as long-term debt comes due would appear to be limited. The amortization of medium- and long-term debt coming due in 2012 amounts to €195 billion in Italy (Ministero dell'Economia, 2011) and €47 billion in Spain (Dirección General del Tesoro, 2011). Suppose that both countries needed to pay even 7 percent interest instead of 4 percent (an exorbitant 500 basis point spread rather than 200 basis points above bunds) on these tranches of debt coming due. The annual extra fiscal cost

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[10] That is: $2.6\% = 1.0 \times (6\% - 3.4\%)$.

[11] Reuters, August 12, 2011.

[12] That is: $1\% = 0.4 \times (6\% - 3.5\%)$. Moreover, it could be argued that Spain could safely allow the net public debt ratio to rise somewhat above its relatively low 40 percent level.

would amount to 3 percent of the amounts involved, or about €6 billion annually on the 2012 vintage for Italy and about €1.5 billion on that for Spain. These numbers translate to about 0.4 percent of GDP for Italy and 0.15 percent of GDP for Spain. Although not inconsequential, especially for Italy, so long as the high borrowing cost were only temporary and spreads returned to more normal levels by 2013 and after, the impact on longer term solvency would be de minimus.

The spread levels for Italy and Spain shown in figure 5 are a far cry from those that would typify the classic problem of credit rationing (Stiglitz and Weiss 1981; Cline 1984, p. 210). Credit rationing occurs when the credit supply curve turns vertical and additional lending is not forthcoming even at extremely high interest rates. Such a cut-off from market access is indeed what is represented by the spreads shown for Greece and, to a lesser extent those for Ireland and Portugal (figure 3).

Another way to differentiate the market gauge of creditworthiness across these economies is to use the concept of Loss Equivalent Probability (Cline and Barnes, 1997). This measure tells the probability of complete loss versus complete payment that is implied by the spread, given the risk-free interest rate.[13] With the 10-year bund at 2 percent, the Greek spread at 15 percent implies a loss equivalent probability (LEP) of 0.54. The Irish spread at 6.5 percent translates to an LEP of 0.29; the Portuguese spread of 9 percent, an LEP of 0.39. In other words, purchasing the Greek obligation at present prices is a bit worse than flipping a coin to determine whether the paper pays completely or pays nothing. The LEPs for Italy and Spain remain much lower. With their spreads at 2.8 percent, their LEP now stands at 0.067. There is approximately a 93 percent chance that they will pay fully, but a 7 percent chance they will pay nothing, according to current market valuations.

The LEP calculations underscore the diagnosis that markets currently seem to be exaggerating expected losses for the three crisis economies, at least in contrast to the analysis presented here. Even the LEPs for Italy and Spain seem considerably overstated. Especially for Italy and Spain, however, if market concerns were to intensify and these two economies were to enter into the territory of credit rationing, the implied magnitudes of emergency lending could be very large indeed. In Italy, short-term debt is €195 billion; medium- and long-term amortization over 2012-15 is €574 billion. In Spain, short-term debt is €64 billion; amortization over 2012-15 is €191 billion. An official financing program to take both countries fully out of the markets through 2015 would require a total of €1.0 trillion. That amount would far exceed the €440 billion envisioned for the EFSF (even without considering the amounts already earmarked for the "program" economies).

For its part, the ECB has a balance sheet of €2.1 trillion (ECB, 2011). Providing €1 trillion in emergency financing to Italy and Spain through the ECB could thus imply a 50 percent increase of its balance sheet. That is not inconceivable, considering that in response to the financial crisis the ECB increased its balance sheet from €1.15 trillion at end-2006 to €1.85 trillion at end-2009. However, such a large additional expansion could prompt concerns among those worried about inflation risk, even though such lending would replace private financing rather than increase total financing to the two governments.

It is crucial, then, that contagion to Italy and Spain be stanched. If these two economies were to enter into acute debt crisis, the financial support needs could swamp EU capabilities—as suggested by the earlier calculation of an ad-hoc "financial backstop leverage capacity" of only 1.5 to one (instead of about 17 to 1) if Germany France, and other non-crisis countries are compared in

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[13] Discounting at the risk-free interest rate, the loss equivalent probability is the ratio of the present value of the spread to the present value of the bond if fully paid. Thus, $LEP = \frac{s\Gamma}{1/(1+i)^T+(s+i)\Gamma}$, where $s$ is the spread, $i$ is the risk-free interest rate, $T$ is the term of the bond (10 years, in this case), and $\Gamma$ is a discounted present value term: $\Gamma = \sum_{t=1}^{T}\frac{1}{(1+i)^t}$. Cline and Barnes, 1998, p. 36.

economic size to a group of 5 crisis countries that would include Italy and Spain (rather than just the 3 present-crisis economies, Greece, Ireland, and Portugal).

**Policy Options for Debt Crisis Resolution**

Traditionally debt crisis resolution involves an initial determination of whether the problem is one of liquidity or solvency. If the sovereign is solvent in the sense that with realistic adjustment measures (including privatizations) it is plausible that in the medium-term the debt can be fully honored at pre-crisis interest rates. In this case, the (Bagehot) central-banking principle of lender-of-last-resort lending to banks to stem a panic applies to the sovereign. This approach was adopted in the first phase of the Latin American debt crisis in the 1980s, and to more recent crises including that of Korea in 1998. In the opposite case, where it is patently obvious that debt has reached levels impossible to manage, the initial determination is that the sovereign is insolvent, and that some form and extent of debt forgiveness by creditors is unavoidable. Instead of new lending, the solution involves debt restructuring. For the 1980s debt crises that involved primarily bank debt, this restructuring began in a mild form with concerted lending by large banks, and took a much more concrete form in the Brady Plan conversions into long-term obligations collateralized by zero-coupon US Treasury bonds and typically with forgiveness of about 30 percent of the debt obligation.

    Inevitably the illiquidity-insolvency dichotomy is a policy metaphor or framework rather than an unambiguous distinction. Political will has classically been a critical ingredient in determining whether the country sought to fully honor the debt or instead asked for debt forgiveness. Thus, whereas Chile had much higher debt ratios than Venezuela at the beginning of the Latin American debt crisis, Chile eventually avoided even Brady debt reduction, whereas Venezuela insisted upon it. The "debt overhang" literature seeks to instill a more purely economic basis for the distinction, based on the notion that new investment and growth will suffer if potential investors fear that excessive debt will cause the government to tax future profits from real-sector investment projects rather than allow reasonable returns.

*Official Refinancing Only (ORO).* The continuum of debt policy options thus begins with the mildest form of liquidity problem, in which an official sector lender of last resort provides financing to tide over the sovereign until panic subsides and there is a return to market access. This "official refinancing only" (ORO) option characterizes the adjustment programs presently in place for Ireland and Portugal.

*Refinancing with Voluntary PSI (RVPSI).* The next basic debt policy option involves more extensive refinancing coupled with private sector involvement (PSI) of a form that in some sense does not involve forgiveness. The early stage of the Latin American debt crisis was precisely of this form, because banks rescheduled debt. Later, by 1985-87, the banks entered into more substantial PSI through commitments to provide additional new lending rather than merely roll over principal (Baker Plan). This option can be described as "refinancing with voluntary full-value PSI," or "RVPSI". This category describes the July package for Greece, with its increase in EU financing coupled with the private holder exchange offer led by the Institute of International Finance. That initiative is voluntary; some holders will not exchange, and the debt held by those that do not will not become superseded in any formal way, such as by a statement that the Greek government will no longer honor debt not exchanged. Private creditor participation despite the lack of compulsion reflects the internalization of "free-rider" externalities, or collective action, by a finite number of relatively large private holders of the debt that benefits them as a group if most participate.

The terms of the Greek PDI package maintained pre-crisis interest rates but extended maturities sharply to 30 years, while providing zero-coupon risk-free collateral of the principal. As noted above, the widely publicized "haircut" of 21 percent for the initiative is based solely on the use of a 9 percent "exit" discount rate. Arguably that rate is too high to reflect the much-improved security of the obligations; at a discount rate of 5 percent there would be no haircut at all. This is one reason that there are grounds for optimism that the 90 percent participation sought by Greece may well be achieved.

*Market Buybacks (MB).* Sovereign repurchases of debt at a discount in the secondary market are an important market-oriented form of debt relief. The ECB has already conducted substantial purchases of bonds of Greece, Ireland, Portugal, Italy, and Spain in its Securities Markets Program (SMP). However, so far there is no mechanism for the conveyance to Greece of savings from difference between the ECB's purchase price and the face value of these bonds. In contrast, in the July 2011 Greek package there was specific provision for the use of some of the official support funds for the repurchase of some €20 billion in Greek public debt.

Critics of buybacks have argued that by repurchasing debt at a higher price than it otherwise might be extinguished in a debt reduction deal, buybacks are not helpful (the classic statement is Bulow and Rogoff, 1988). The problem with this critique is that it ignores that the ideal anti-monde is not still deeper forgiveness and greater damage to credit reputation, but full honoring of the debt on its original terms and thereby maintenance of long-term creditworthiness reputation. For Greece in particular, with recent market prices on the order of 50 cents on the euro, the use of official support from the EU for the purpose of market repurchases offers an important opportunity for improving debt sustainability without jeopardizing credit reputation. Market buybacks are strictly voluntary on the part of the sellers, so long as the country is not engaging in strategic positioning by stating that it cannot meet debt repayments but does have funds to repurchase at a discount.

In the context of the present crisis, the most relevant formulation of the buyback option would seem to be in two alternative forms. For the cases of Italy and Spain, the relevant form would be bond market intervention through ECB purchases in its SMP. The benefit would be indirect in terms of reducing market borrowing rates, rather than direct in the form of reduction of debt at a repurchase discount. In contrast, for Greece, Ireland, and Portugal, there would seem to be considerably more scope for direct debt reduction through repurchases, presumably financed by EU funding from the EFSF. So the MB options become MB-SMP and MB-Ctr, for SMP intervention and country-government repurchases, respectively.

*Exchange Offer with Maintenance of Value (EOMV).* Still toward the mild end of the debt restructuring spectrum is an exchange offer with maintenance of value. In effect, this instrument for bonds is the analog of a comprehensive debt rescheduling for bank loans with no reduction in value. The Uruguay restructuring in 2002 is the most widely cited prototype for this approach. After extensive cooperative consultation with creditors, the exchange converted existing market debt longer maturities at interest rates unchanged from the prior obligations, usually adding 5 years to the maturity (but also including options with longer maturities; Sturtzenegger and Zettelmeyer, 2006, pp. 216-17). Discounting at the yield curve of new US bonds, the bulk of claims exchanged involved present value haircuts on the order of 8-12 percent (p. 220), relatively low for international restructuring experience. The outcome reflected the authorities' goal of preserving credit reputation and enlisting high participation, which reached 89-99 percent depending on the category of debt.

*Restructuring with Moderate Debt Reduction (RMDR).* Next in order of severity is a formal, comprehensive debt restructuring with moderate debt reduction. The Brady Plan deals for Mexico,

Argentina, and Brazil in 1989-92 are in this category. They involved conversion of claims to 30-year bonds with a 35 percent reduction in value (Cline, 1995, p. 234). These were either "discount bonds" that formally reduced the principal but continued to pay interest rates at originally contracted levels, or "par bonds" that kept 100 cents on the dollar in face value but reduced interest rates to well below their original levels. The Brady bonds were backed by zero-coupon US Treasury bonds, which were cheap at the time because of high interest rates. In the precedent-setting Mexican deal, funding for these "enhancements" came from the IMF, the World Bank, and the Export-Import Bank of Japan (p. 221).

*Restructuring with Deep Debt Reduction (RDDR)* . The sixth and most extreme form of restructuring is similar to RMDR but with much deeper debt forgiveness. The prototype is the Argentine debt restructuring of 2005, which imposed a haircut of approximately 70-75 cents on the dollar (Sturtzenegger and Zettelmeyer, 2006, p. 193). Excluding official aid initiatives for highly-indebted poor countries (HIPCs), such deep debt reduction is rare and reflects aggressive unilateralism by the debtor. Thus, prior to the Argentine exchange, Cline (2003, p. 5) estimated that with a target primary fiscal surplus of 4.5 percent of GDP, Argentina could achieve debt sustainability with a haircut of 47 percent. The Argentine negotiating tactics were unilateral and did not involve negotiations with bondholders' committees (Porzecanski, 2005). Among foreign holders of Argentine debt, the acceptance ratio of the exchange offer was only 60 percent.[14]

This option inevitably involves lasting damage to the sovereign credit reputation. Of the modest amount of external debt Argentina was subsequently able to issue, the bulk was in politically-motivated purchases by Venezuela.[15] As of mid-2006, Argentina's credit rating by Moody's at B3 stood only slightly above those of Cuba and Nicaragua. The contemporary higher ratings of Brazil (Ba3) and investment-grade Mexico (Baa1), combined with international relationships between ratings and spreads, meant that whereas Argentina could be expected to pay risk spreads of 600 basis points, Brazil could expect 350 basis points and Mexico 100 basis points. By implication, the present value of future excess interest costs as a legacy of the unilateral default was on the order of 20 percent of one year's GDP (Cline, 2007, pp. 79-80).[16]

*Unilateral Default (UD).* Finally, at the severe extreme of the continuum is unilateral default *sine die*, the indefinite suspension of payment with at most a vague expression of intent to convene with creditors at some future date to work out a debt reduction agreement. UD could transit to RDDR (or conceivably RMDR) but with great uncertainty. Usually it will have been a domestic political upheaval that precipitates UD (such as that by Argentina at the end of 2001).

**EFSF Expansion**

Three overarching policy options are crucial to add to what essentially amounts to a restructuring options menu, just discussed. These are: substantial expansion of the EFSF; fiscal integration and eurozone bonds; and exit from the euro. These may be labeled *EFSFX*, *EB*, and *EXIT*.

The existing support programs for the three troubled debtor countries amount of EU and eurozone commitments of €189 billion for Greece (including both the March 2010 program and the

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[14] Mussa (2006).

[15] From 2005 through 2007, Venezuela purchased $5 billion in Argentine bonds (*Economist*, January 3, 2008).

[16] The view that Argentina enjoyed rapid growth despite its default ignores the fact that much of the growth was from a deeply depressed level of GDP in 2002 that was far lower than would have been expected in the absence of the unilateral default, as well as from the good luck of high international commodity prices later in the decade.

July 2011 expansion), €40.2 billion for Ireland, and €51.4 billion for Portugal. Of the total of €281 billion euros, €48.2 billion is to come from the EU-wide European Financial Stability Mechanism (EFSM; €22.5 billion for Ireland and €25.7 billion for Portugal). The €80 billion support for Greece in the March 2010 program predated the EFSF and came from euro-area member states, but would ideally be transferred to the EFSF and enjoy its now more favorable lending terms. The programs already in place thus imply EFSF commitments on the order of €230 billion. In comparison the amount currently authorized for the EFSF is a total of €440 billion.

As discussed above, the lender-of-last-resort capacity needed to deal with potential liquidity problems in Italy and Spain could be on the order of €1 trillion. Adding the amount already set aside for the three acute-problem countries, the total of €1.23 trillion is approximately three times the current size of the EFSF. Economist and former Greek labor minister Louka Katseli has called for a tripling of the size of the EFSF.[17] Application of the *EFSFX* policy option might thus be conceptualized as expanding the current authorization three-fold.

An important limitation of the EFSF is that in practice its borrowing capacity seems likely to be limited to the guarantee portions provided by the stronger (AAA) countries. Together, Greece, Ireland, Portugal, Italy, and Spain account for 36.7 percent of the guarantee commitments of the EFSF.[18] None has a rating of AAA.[19] In order to attain lending capacity of €1.2 trillion, with only two-thirds of potential member guarantees available, the EFSF total would need to reach €1.8 trillion, a quadrupling of the present authorized amount. With a share of 27.1 percent, Germany would then have exposure of €490 billion, or 19 percent of GDP. At a share of 20.4 percent, France would have exposure of €367 billion, also 19 percent of GDP. The increased exposure could weaken prospects for at least France's country rating (currently AAA).

**Fiscal Integration and Eurozone Bonds**

An important potential alternative to debt restructuring, in the European cases, is the development of institutional arrangements to permit country issuance of public debt jointly and severally guaranteed by eurozone (or EU) members, so-called euro-bonds (the *EB* option). Access to such guarantees would sharply reduce borrowing costs for especially Greece, Ireland, and Portugal, but also Italy and Spain, but might marginally raise borrowing costs for France, Germany, the Netherlands, and other eurozone members.

Delpla and von Weizsäcker (2010) have proposed a variant of this approach in which EU countries would pool their debt up to a limit of 60 percent of GDP for each member for joint liability, in "Blue Bonds." For a member with total debt exceeding this level, the excess amount would be ineligible for the joint guarantee, thereby having the status of "Red Bonds." Although this arrangement might have appeal for the longer term, under current circumstances the borrowing at the margin for all of the countries under stress—with the sole exception of Spain—would have to be in red bonds. Gross public debt stands far above 60 percent for Greece, Ireland, Portugal, and Italy, as noted above. Nor would the refinancing of the stock of existing debt, up to a 60 percent of GDP limit, have much near-term benefit. As shown in figure 4 above, until very recently there have been virtually no sovereign spreads, so the bulk of the debt outstanding will have been contracted at relatively low interest rates, and the service on that earlier debt is not the principal problem.

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[17] Dow Jones, August 8, 2011.
[18] EFSF (2011).
[19] Standard and Poor's currently rates the five countries as follows: Spain, AA; Italy, A+; Ireland, BBB+; Portugal, BBB-; Greece, CCC. S&P (2011).

Euro-bonds would transform the monetary (eurozone) and economic (EU) union into a transfer union. One study estimates that the Eurobond approach would boost German interest rates by enough to raise annual borrowing costs by 1.9 percent of GDP.[20] Some counter that the much wider market for consolidated EU debt would increase liquidity and provide some offsetting interest rate reduction. In Germany especially, however, the notion of a transfer union (through Eurobonds or otherwise) has particularly been anathema, and only seems to linger as an option to consider because an alternative of breakup of the euro is even more unattractive.

It is useful to consider what might be the redistributive effects of sovereign debt pooling in the eurozone. Figure 6 shows what might be called stylized-fact spreads by (S&P-type) ratings categories. For single A to CCC, the data are median spreads above US Treasuries for 35 emerging market economies from December 1997 to February 2010 (Jaramillo and Tejada 2011, p. 9). There were no AA or AAA countries in the data set, and for these categories the figure sets a spread of zero for AAA and an interpolated value of 55 basis points for AA.

**Figure 6 Stylized-fact spreads by sovereign ratings** (basis points)
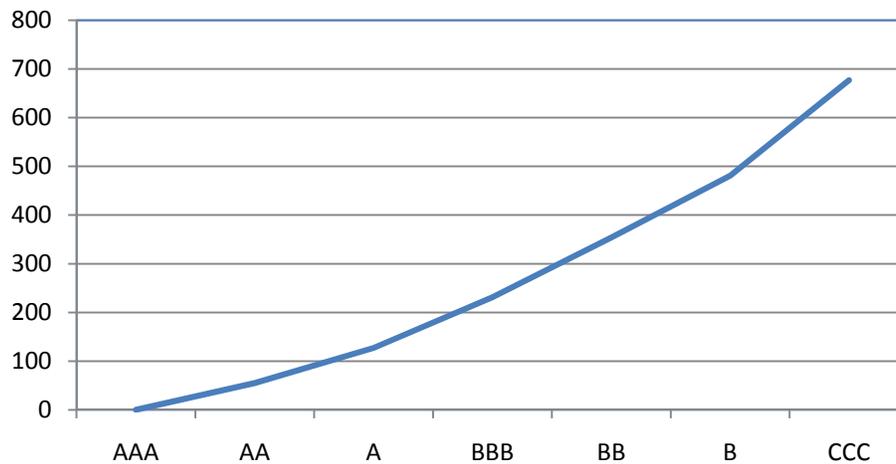


Annex table A.1 reports current S&P ratings for each of the eurozone member countries, along with 2011 GDP and end-2010 gross public debt as reported by the IMF. Using the spreads of figure 6, for the eurozone weighted average spreads can be imputed at about 43 basis points (average of GDP weights and gross debt weights). The zero-spread (in principle) AAA debt of Germany, France, Austria, Netherlands, and Finland, together with the 55 basis point (imputed) AA debt of Spain, Slovenia, and Belgium (AA+) dominate the overall group. The table shows that if debt pooling shifted the pricing for all members to the weighted average, the consequence would be modest increases in debt costs by about 0.35 percent of GDP for Germany and France, but large interest savings for Portugal (1.9 percent of GDP annually), Ireland (1.3 percent), and Greece (albeit at a too-large to be plausible 9.0 percent of GDP). The averaging of creditworthiness would produce modest net interest cost savings for the group as a whole, at 0.19 percent of annual GDP. Intuitively, the net gain from pooling reflects the nonlinearity of the spread with respect to the successively lower credit rating categories.

Although extremely heuristic, this exercise suggests that some of the recent estimates of fiscal costs of fiscal integration may be overstated. If the estimate here is anywhere near correct, then another way of looking at the cost of fiscal integration is to ask whether it would be worth about one-third of one percent of GDP annually to the strong, larger economies to ensure that the

[20] By Kai Carstensen of IFO, as reported in *Economist*, August 20, 2011.

eurozone avoids breakup caused by the debt problems of the weaker economies. At the same time, the more fundamental consideration is that the right to borrow in Eurobonds would be equivalent to the right to tax eurozone members, and arguably that right should not be granted without a fiscal union that imposes much more effective control over member states' fiscal performance than has been possible so far under the Maastricht obligations.

**Euro Exit**

Finally, an even more fundamental policy option is exit from the euro (option *EXIT*), either by the weakest member(s), or by a core of strong economies that would create their own new single currency, leaving the euro free to devalue.[21] Some economists argue that a debt-growth trap cannot be escaped by Greece and other weak peripheral economies because they are in the strait-jacket of the single currency and do not have the option of spurring growth through devaluation and stimulus to the export sector. That argument ignores both the possibility for "internal devaluation" through such reforms as labor market liberalization and the fact that devaluation would impose a windfall loss through effective increase in euro-denominated debt relative to GDP.

There would also be the loss of welfare associated with the single currency.[22] There are few measurements of welfare gains from the single currency. A 2007 study by the OECD focusing on structural reform found that euro-area countries had "undertaken more comprehensive and far-reaching reforms than other OECD countries over the past decade", but that reform intensity had "fallen since the advent of EMU in 1999" (OECD 2007).

In principle the welfare gains from the single currency could be large, because of optimal currency considerations; if so, exit could impose large welfare costs on the economy leaving, for a small country, and on all members, if the breakup involved a large group of countries. Alternatively, the euro could be viewed as a political good, worth a considerable amount in terms of "contingent valuation" welfare but with little economic benefit or even net economic costs.[23] If so, the fracturing of the euro would sacrifice the welfare value of the political goal otherwise achieved. There could also be large market disruption costs from breakup of the euro, although these might be modest if the change only involved the temporary exit of a small member. There would be institutional barriers to overcome; one ECB study concluded that "a Member State's exit from EMU, without a parallel withdrawal from the EU, would be legally inconceivable" (ECB 2009, p.4). Such a withdrawal would sacrifice the gains from participation in free trade and factor movement provided by the EU, suggesting that the existing legal arrangements might need to change if some form of exit were to be pursued.

**Benefits and Costs of Alternative Options for Stakeholders**

Suppose there are *m* policy options and *n* stakeholders. Then for each of the stakeholders, the welfare effects of the policy decisions taken can be conceptualized as:

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[21] The latter is proposed by Hans-Olaf Henkel, former head of the Federation of German Industries. "A Sceptic's Solution – A Breakaway Currency." *Financial Times*, August 30, 2011.

[22] The European Commission in 2008 issued a report on the "EMU at 10" that found the euro a "resounding success" that had "secured macroeconomic stability and boosted cross-border trade, financial integration, and investment" (EC, 2008, p. 3). However, the report did not attempt to quantify welfare gains, and also noted that slow productivity growth and growing concerns about income distribution has qualified the success.

[23] In the environmental economics literature, contingent valuation is the economic value attached to a particular environmental good based on sample surveys.

1) $\underset{nx1}{W} = \underset{nxm}{\beta'} \underset{mx1}{X}$

where $\beta$ is a matrix of impact coefficients by policy and party, and $X$ is a vector of policy activities. Arriving at a policy solution can then be viewed from the standpoint of a global planner, who would maximize some (weighted) sum of the elements of $W$, or from the standpoint of a strategic uncooperative game, in which there may or may not be a stable Nash equilibrium.

Table 1 sets forth a mapping of the policy options to countries, indicating which options are relevant for which countries. For Greece, events have already bypassed ORO (official refinancing only); the current program is RVPSI (refinancing with voluntary PSI) along with MB-ctr (country market buybacks). Market buybacks by the ECB (MB-SMP) are also relevant. The list of more drastic restructuring options remains open, however, in case the current approach does not suffice (RMDR for moderate debt reduction; RDDR for deep debt reduction; or, in the case of political breakdown, unilateral default, UD). For Ireland and Portugal, the relevant spectrum essentially moves up one notch, and begins with ORO, running down through RMDR but not plausibly extending to RDDR or UD. The option of EFSF expansion (EFSFX) seems of little relevance to Greece, Ireland, and Portugal, because the currently agreed size should suffice to provide the lender-of-last-resort function for the three. The Eurobond option (EB) seems relevant for Ireland and Portugal but not Greece, simply because Greece is sufficiently further along in debt difficulty that its eligibility for a plausible Eurobond scheme would seem doubtful. The question of exit from the euro (EXIT) is ultimately relevant for all three economies, and has received the most discussion for Greece.

**Table 1 Relevance of policy options across seven European economies**

| Policy | Greece | Ireland | Portugal | Italy | Spain | France | Germany |
|---|---|---|---|---|---|---|---|
| ORO | | x | x | | | | |
| RVPSI | x | x | x | | | | |
| MB-SMP | x | x | x | x | x | | |
| MB-Ctr | x | x | x | | | | |
| RMDR | x | x | x | | | | |
| RDDR | x | | | | | | |
| UD | x | | | | | | |
| EFSFX | | | | x | x | | |
| EB | | x | x | x | x | | |
| EXIT | x | x | x | | | x | x |

Italy and Spain are in the position of prospectively needing support but being too large for support to take place in the existing framework, except in the form of market intervention by the ECB (MB-SMP). For these two economies, the most relevant policy options are expansion of the EFSF so that it becomes large enough to provide financing to them; and issuance of Eurobonds if some regime becomes available for that purpose. Neither economy seems anywhere near conditions that might induce them to exit from the euro in a desperate effort to increase competiveness through devaluation.

Finally, as the lenders of last resort rather than the crisis-enveloped recipients, France and Germany are not likely candidates for receiving assistance from any of the crisis-resolution options (although they would be crucially involved in decisions about the use of these options to help their

partners). For them, the most relevant policy option is that of exit from the euro toward a strong-subgroup initiative (call it the New Franc).

Of the seventy combinations of policies (10) and countries (7), there are thus 29 that are relevant. Table 2 presents a heuristic evaluation of the impact of each of these 29 policies on publics (and hence perceived impact for the governments) of each of the seven euro-zone economies considered, as well as the rest of the G7 major industrial countries (RG7). The entries are on a scale of −5 for extremely adverse to +5 for extremely favorable. To facilitate reading of the table, all zero (neutral impact) entries are omitted. Euro exit by France and Germany is considered jointly, as it would make little sense for one to leave without the other, so 28 options remain.

**Table 2 Illustrative impact of policy option on publics/governments**

| | | | GR | IR | PT | IT | SP | FR | DE | RG7 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ORO | IR | | 4 | | | | | | |
| 2 | ORO | PT | | | 4 | | | | | |
| 3 | RVPSI | GR | 5 | | | | | | | |
| 4 | RVPSI | IR | | 2 | | | | | | |
| 5 | RVPSI | PT | | | 2 | | | | | |
| 6 | MB-SMP | GR | 3 | | | | | | | |
| 7 | MB-SMP | IR | | 3 | | | | | | |
| 8 | MB-SMP | PT | | | 3 | | | | | |
| 9 | MB-SMP | IT | | | | 3 | | | | |
| 10 | MB-SMP | SP | | | | | 3 | | | |
| 11 | MB-Ctr | GR | 3 | | | | | | | |
| 12 | MB-Ctr | IR | | 3 | | | | | | |
| 13 | MB-Ctr | PT | | | 3 | | | | | |
| 14 | RMDR | GR | 3 | | | | | | | |
| 15 | RMDR | IR | | 1 | | | | | | |
| 16 | RMDR | PT | | | 1 | | | | | |
| 17 | RDDR | GR | -2 | -1 | -1 | -1 | -1 | | | |
| 18 | UD | GR | -5 | -2 | -2 | -2 | -2 | -1 | -1 | -1 |
| 19 | EFSFX | IT | | | | 4 | | | -1 | 1 |
| 20 | EFSFX | SP | | | | | 4 | | -1 | 1 |
| 21 | EB | IR | | 4 | | | | | -1 | |
| 22 | EB | PT | | | 4 | | | | -1 | |
| 23 | EB | IT | | | | 4 | | -1 | -2 | 1 |
| 24 | EB | SP | | | | | 4 | -1 | -2 | 1 |
| 25 | EXIT | GR | -2 | | | | | -1 | 1 | |
| 26 | EXIT | IR | | -2 | | | | -1 | 1 | |
| 27 | EXIT | PT | | | -2 | | | -1 | 1 | |
| 28 | EXIT | FR,DE | -2 | -2 | -2 | -2 | -2 | -3 | ±2 | -2 |

Note: from -5 = extremely adverse, to +5 = extremely favorable.

For Greece, the table indicates that achieving success with the current program (including PSI) would be an extremely favorable outcome. If Greece were forced to shift toward moderate debt reduction (Brady-style), the effect would likely remain positive but less so because of reputational damage. If Greece sought HIPC or Argentina-style deep debt reduction, the effect is imputed at negative, because of the severe reputational effect. Market buybacks are favorable whether by the ECB (SMP) or the country (not only in Greece but also in Ireland and Portugal, as well as Italy and Spain where however it is assumed that it is only the ECB that makes market purchases). Ireland and Portugal obtain favorable results (score of 4) from success of the current official-refinancing-only packages; their results are less favorable but still positive if they find it necessary to resort to a Greek-style package (RVPSI), and barely favorable if they must enter into moderate debt reduction. If Greece enters deep debt reduction, there are adverse spillover effects for Ireland, Portugal, Italy, and Spain (-1 in each case). If Greece goes into unilateral default, these adverse effects are larger, and some adverse effect occurs even for France, Germany, and RG7 because of the shock to general financial market confidence.

Access to Eurobonds is placed at a quite favorable impact (4) for Ireland, Portugal, Italy, and Spain. (Again, Greece is considered not eligible.) However, if Italy and Spain access the Eurobond market, there is a negative effect for France (-1) from potential liability (or simply the modest increase in interest rates discussed above), and an even larger negative impact for Germany (-2) because of the political "bad" of exposure as the ultimate European lender of last resort, combined with the large potential volumes of Italian and Spanish borrowing. There is a similar but smaller negative effect for Germany even if the measure is just expansion of the EFSF. In contrast, the RG7 has a mildly positive effect from expansion of the EFSF as well as Eurobond access, because of the perceived market-stabilizing effects.

Finally, the last five rows of the table posit that euro exit would be negative for all parties except, possibly, Germany. Exit by Greece, Ireland, or Portugal would on balance be negative for each of them because long-run integration losses would exceed short-term gains in competitiveness. France would perceive mild negative effects because of the loss of the political good of the historic monetary integration initiative, whereas the corresponding effect in Germany might be a perception of improvement. If France and Germany were both to leave the euro and enter a strong New Franc union, all partners would suffer; France would pay an even larger "political bad" cost. In contrast, Germany could perceive even greater "political good" gains, but in long-term economic effects Germany could experience loss because of the end to its ready export market in the face of New Franc appreciation; hence the sign for Germany is ambiguous. There would be a sizable loss perceived by the rest of the G7 because of an essentially backward step in global financial integration, although a likely currency appreciation of the New Franc could benefit RG7 current accounts in the medium-term.

A similar exercise can be conducted with respect to effects of alterative policies on banking systems. Separate consideration of the banks is warranted because an important risk in the European debt crisis is that it returns Europe and to a lesser extent the international economy toward the financial crisis environment of 2008-09 as a consequence of undermining European banks in light of their sizable holdings of claims on the five economies. Table 3 shows the qualitative results for the banks.

**Table 3 Illustrative impact of policy option on banks**

| | | | GR | IR | PT | IT | SP | FR | DE | RG7 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ORO | IR | | 4 | | | | 1 | 1 | |
| 2 | ORO | PT | | | 4 | | | 1 | 1 | |
| 3 | RVPSI | GR | 4 | | | | | -1 | -1 | |
| 4 | RVPSI | IR | | 2 | | | | -0.5 | -0.5 | |
| 5 | RVPSI | PT | | | 2 | | | -0.5 | -0.5 | |
| 6 | MB-SMP | GR | 3 | | | | | | | |
| 7 | MB-SMP | IR | | 3 | | | | | | |
| 8 | MB-SMP | PT | | | 3 | | | | | |
| 9 | MB-SMP | IT | | | | 3 | | 2 | 2 | 1 |
| 10 | MB-SMP | SP | | | | | 3 | 2 | 2 | 1 |
| 11 | MB-Ctr | GR | 3 | | | | | | | |
| 12 | MB-Ctr | IR | | 3 | | | | | | |
| 13 | MB-Ctr | PT | | | 3 | | | | | |
| 14 | RMDR | GR | -3 | | | | | -1.5 | -1.5 | |
| 15 | RMDR | IR | | -3 | | | | -0.75 | -0.75 | |
| 16 | RMDR | PT | | | -3 | | | -0.75 | -0.75 | |
| 17 | RDDR | GR | -4 | | | | | -2 | -2 | |
| 18 | UD | GR | -5 | -1 | -1 | -1 | -1 | -3 | -3 | -1 |
| 19 | EFSFX | IT | | | | 3 | | 1.5 | 1.5 | 1 |
| 20 | EFSFX | SP | | | | | 3 | 1.5 | 1.5 | 1 |
| 21 | EB | IR | | 4 | | | | 2 | 2 | |
| 22 | EB | PT | | | 4 | | | 2 | 2 | |
| 23 | EB | IT | | | | 3 | | 3 | 3 | 1 |
| 24 | EB | SP | | | | | 3 | 3 | 3 | 1 |
| 25 | EXIT | GR | -2 | | | | | | | |
| 26 | EXIT | IR | | -2 | | | | | | |
| 27 | EXIT | PT | | | -2 | | | | | |
| 28 | EXIT | FR,DE | | | | | | -1 | -1 | |

The first policy option, ORO in Ireland and Portugal, is positive for the French and German banks because it provides official support to shore up the sovereigns and hence the bank holdings of the sovereign debt. The impact is especially favorable for Irish banks, from ORO for Ireland, and the Portuguese banks, for ORO support for Portugal, because typically the holdings of home-country sovereign debt are particularly high for the banking system in question.

The current Greek package is highly favorable for Greek banks for this same reason, but mildly negative for German and French banks, which perceive the PSI as equivalent to a 21 percent haircut (as discussed above). A shift to this mode to shore up Irish and Portuguese public debt would on balance remain positive for Irish and Portuguese banks but less so than simple ORO; the effects would again be mildly negative for French and German banks, this time only about half the size (in each case) as for the impact of Greece because of the relative sizes of the debt and economies in question.

Market purchases of bonds by either the ECB (SMP) or the countries would have favorable effects for the banks of the country in question by strengthening sovereign bond prices. The magnitudes in the cases of Italy and Spain would be sufficient to have a noticeable impact for French and German banks and, mainly because of lesser financial market turmoil, US and other G7 banks.

Restructuring with moderate debt reduction would adversely affect banks of the country in question, as well as French and German banks because of their holdings. Restructuring with deep debt reduction would impose larger losses, and unilateral default, even larger losses.

Expansion of the EFSF with corresponding increased official support to Italy and Spain would benefit the banks in the countries and to a lesser extent in France, Germany, and RG7. There would be corresponding and potentially larger gains from access to Eurobond borrowing.

Finally, exit from the euro would likely impose losses on Greek, Irish, or Portuguese banks as they would be exposed to euro debt but now their domestic currency basis would be devalued. If France and Germany were to exit, and form a new currency that appreciated, banks could also face some losses because of reduced competitiveness of their economies.

**Conclusion**

The European sovereign debt crisis is a crisis of confidence. With the possible exception of Greece, the levels of public debt, especially net debt, are manageable at reasonable interest rates. Even in Greece, the July 2011 package provides sufficient interest rate relief on EU support and liquidity relief through conversion to 30-year maturities in the PSI that under central projections the net debt, interest burden, and amortization rates are all consistent with debt sustainability. Ambitious primary surplus and privatization targets will however need to be largely achieved to assure sustainability.

Contagion from Greece has driven market interest rates to levels that, for Ireland and Portugal, could make insolvency a self-fulfilling prophecy, so the key policy challenge is to ensure official liquidity support and, if needed, PSI such that, together with fiscal adjustment, confidence can be restored and interest rates reduced back to levels consistent with sustainable market access. The eurozone has gone a long way toward mounting efforts capable of carrying out this task, especially in the creation of the EFSF but also in the market intervention by the ECB. Contagion to Italy and Spain after the July Greek package has substantially increased the stakes and scope of the crisis, and if the recent market pressures were to persist, support from a much enlarged EFSF could become necessary, or the advent of borrowing in jointly and severally guaranteed euro-bonds, or both. An examination of fiscal plans and debt dynamics reinforces the conclusion, however, that for these much larger economies the debt problem is one of liquidity from temporary loss of confidence rather than insolvency that would necessitate large haircuts and debt reductions.

An attempt to illustrate the pros and cons of alternative policy options, from the vantage points of the main countries involved as well as their banking systems, highlights the challenges in cooperative decision making that may lie ahead. However, the broad implication is that even for the stronger economies (and Germany in particular), the indirect benefits of sustaining the euro seem likely to warrant the escalation of support efforts that may become necessary. At the same time, such approaches as the Eurobond would imply a move toward much greater fiscal integration and more centralized control of fiscal performance than has proven feasible under the current Maastricht arrangements.

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Annex A

**Table A.1 Eurozone member GDP, gross general government debt, and S&P ratings**
(billion euros and categories)

| | GDP | Debt | Rating | Index | Spread | Impact* | %GDP |
|---|---|---|---|---|---|---|---|
| **Austria** | 284.0 | 198.4 | AAA | 1 | 0 | 0.8 | 0.30 |
| **Belgium** | 351.0 | 340.9 | AA+ | 1.5 | 25 | 0.6 | 0.17 |
| **Cyprus** | 17.5 | 10.8 | BBB+ | 3.5 | 179 | -0.1 | -0.84 |
| **Finland** | 180.3 | 87.2 | AAA | 1 | 0 | 0.4 | 0.21 |
| **France** | 1946.3 | 1639.7 | AAA | 1 | 0 | 7.0 | 0.36 |
| **Germany** | 2498.8 | 1998.9 | AAA | 1 | 0 | 8.5 | 0.34 |
| **Greece** | 230.2 | 326.9 | CC | 8 | 677 | -20.7 | -9.01 |
| **Ireland** | 153.9 | 148 | BBB+ | 3.5 | 179 | -2.0 | -1.31 |
| **Italy** | 1548.8 | 1843.2 | A+ | 2.5 | 91 | -8.9 | -0.58 |
| **Luxembourg** | 41.4 | 6.8 | AAA | 1 | 0 | 0.0 | 0.07 |
| **Malta** | 6.2 | 4.2 | A | 3 | 127 | 0.0 | -0.57 |
| **Netherlands** | 590.3 | 375.9 | AAA | 1 | 0 | 1.6 | 0.27 |
| **Portugal** | 172.8 | 144 | BBB- | 4.3 | 272 | -3.3 | -1.91 |
| **Slovak Republic** | 65.9 | 27.7 | A+ | 2.5 | 91 | -0.1 | -0.20 |
| **Slovenia** | 36.1 | 13.4 | AA | 2 | 55 | 0.0 | -0.05 |
| **Spain** | 1062.6 | 638.8 | AA | 2 | 55 | -0.8 | -0.07 |
| total | 9186.1 | 7804.8 | | | | -17.1 | -0.19 |
| **GDP-weighted:** | | | | 1.69 | 37.5 | | |
| **Debt-weighted:** | | | | 1.87 | 47.8 | | |

*change in annual interest costs, billion euros

*Sources:* IMF (2011 WEO); S&P (2011).