OECD Journal: Financial Market Trends
Volume 2010 – Issue 2
© OECD 2011
Pre-Publication Version, February 2011

A Market Perspective on the European Sovereign Debt and Banking Crisis

by

Adrian Blundell-Wignall and Patrick Slovik [*]

Europe has been beset by an interrelated banking crisis and sovereign debt crisis. Bond spreads faced by Greece and Ireland, and to a lesser extent Portugal followed by Spain, have increased. This paper explores these issues from the perspective of financial markets, focusing mainly on the four countries in the frontline of these pressures: Greece and Portugal, on the one hand, where the problems are primarily fiscal in nature; and Ireland and Spain, on the other, where banking problems related to the property boom and bust have been the key moving part. The paper first examines the probabilities of default implicit in observable market spreads and considers these calculations against sovereign debt dynamics. It then explores the implications of the interaction between bank losses and fiscal deficits on the one hand, and the feedback that any debt haircuts anticipated by markets could have on bank solvency. The study finds that market-implied sovereign default probabilities do in fact discriminate quite clearly between countries based on five criteria that affect the probability of debt restructuring. The discussion highlights some implications for banking system balance sheets of expected losses and shows the potential impact on them of sovereign restructuring implicit in market analysis. While the paper does not make any recommendations for policy action, it does explore a range of policy options and the implications each might have for the financial markets.

JEL Classification: G01, G12, G15, G18, G21, H06, H60, H62, H63, H68

Keywords: financial crisis, sovereign risks, public deficits and debt, bond markets, banks.

[*] Adrian Blundell-Wignall is Special Adviser to the OECD Secretary General on Financial Markets and Deputy Director of the Financial & Enterprise Affairs Directorate (www.oecd.org/daf/abw). Patrick Slovik is an economist at the OECD. This article is a revised and updated version of a document discussed at the October 2010 meeting of the Committee on Financial Markets and takes into account some of this discussion and comments by Delegates and Secretariat staff members. All remaining errors are those of the authors. This work is published on the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein are those of the authors and do not necessarily reflect the official views of the Organisation or of the governments of its member countries.

I. Introduction

Europe has been beset by a banking crisis and a sovereign debt crisis, both of which are interrelated

Europe has been beset by two interrelated crises: *(i)* a banking crisis, stemming from losses in capital market securities (including US subprime and other structured products), as well as home-grown, boom-bust problems in the property markets of some EU countries; and *(ii)* a sovereign debt crisis exacerbated by recession, transfers to help banks, and in some cases very poor fiscal management over a number of years that was inconsistent with the principles laid down in the Stability and Growth Pact and the Maastricht Treaty. In late 2010, the sovereign debt crisis worsened on market concerns about the difficulty of budget consolidation; for the first time, the European Summit in October 2010 pondered the notion that private creditors might have to bear some of the pain via mechanisms being put together to deal with future sovereign-debt crises.

Bond spreads faced by Greece and Ireland, and to a lesser extent Portugal and Spain, have increased

Greece and Ireland have faced very significant adverse movements in their yield spreads relative to euro-area benchmark bonds, and to a lesser extent this is also the case for Portugal, and Spain. The market has even begun to ponder whether the crisis could spread further, and whether the euro system in its current form is sustainable. Markets are concerned that the prospect of very weak growth and high unemployment resulting from fiscal consolidation, and years of painful structural adjustment, will make the temptation to restructure sovereign debt too great to be ignored. Such concerns add to the crisis countries' problems, making it difficult for them to borrow, while the prevailing high interest rates increase their debt service costs. Where the marginal borrowing rate exceeds the average rate on the outstanding stock of debt, the debt-service burden will rise, making consolidation efforts even more difficult to achieve. Similarly, as growth weakens, tax revenues fall.

This paper examines default probabilities implicit in market spreads, sovereign debt dynamics and their implications

This paper explores these issues mainly in respect to the four countries in the frontline of these pressures: Greece and Portugal, on the one hand, where the problems are primarily fiscal in nature, and Ireland and Spain on the other, where banking problems related to the property boom and bust have been the key moving part. The paper first examines the typical financial firm calculations of the probabilities of default implicit in observable market spreads and then considers these calculations against sovereign debt dynamics. It then explores the implications of the interaction between banks losses on fiscal deficits, on the one hand, and the feedback that debt "haircuts", implicit in market-based sovereign debt haircut assumptions, could have on bank solvency.

The study finds that market-implied sovereign default probabilities seem quite rational

The study finds that market-implied sovereign restructuring probabilities calculated by financial firms do in fact discriminate quite clearly between countries on a relative basis, reflecting fundamentals, such as debt service burdens of extrapolated debt. But these market-spreads based measures cannot be used to predict the absolute probability of default for any particular country. The reason for this is that the time varying risk premium is not observable and yet it also affects interest rate spreads. Instead, the study looks at fiscal and banking fundamentals, insofar as they provide some guidance based on five

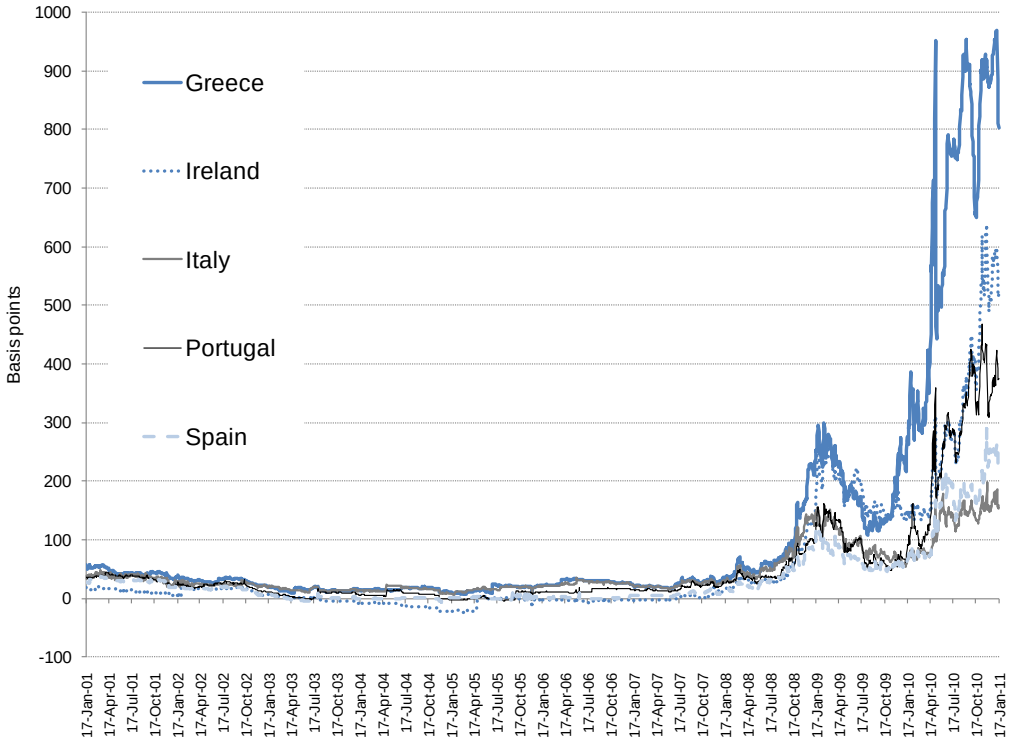
criteria that are well known to affect the probability of debt restructuring. The discussion highlights the relative sizes of bank losses and shows the potential impact of sovereign restructuring implicit in market analysis on bank balance sheets. The paper goes on to examine the pro's and con's of a range of policy options for dealing with the markets' issues.

II. Market pricing of sovereign default: the method

The EU sovereign crisis worsened and so have spreads

Figure 1 shows the bond spread of five countries *versus* German Bunds. In the last few months of 2010, the EU sovereign crisis worsened and spreads have blown out further.

Figure 1. Bond spreads versus Bunds



Source: Datastream, OECD.

The implied market probability of default for a sovereign bond can be calculated from yield spreads and a fixed rate of recovery assumption

In a risk-neutral world, the market-implied probability of default (*PD*) for a sovereign bond can be calculated from the yield on the bond (i), the yield on a risk-free benchmark bond (i^*) (here the German 10-year Bund) and a fixed recovery rate assumption (*RR*).[1] Investment arbitrage dictates that the expected return on a bond conditional on no default , plus the recovery value in the event of default, should equal the return on a risk-free asset:

$$(1+i)\times(1-PD)+RR\times PD=(1+i^*)$$

so that:

$$PD=\frac{(i-i^*)}{(1-RR+i)}$$

Recovery rates problem

History suggests that sovereign haircuts in a restructuring event can vary widely, suggesting a recovery rate of between 50% and 70%

One immediate problem that arises in this calculation is that the collateral for a government bond is simply the good standing of the issuer based on its ability to tax its citizens and service its loans. For this reason, recovery rates cannot be measured in the same way as for a corporate bond. History suggests that sovereign haircuts in a restructuring event can vary widely. Authors from the IMF calculate Russian restructuring haircuts were in the range of 45%-63%; Ukraine non-resident 30%-56%; Pakistan 31%; Ecuador 27%; Argentina 42%-73%; Uruguay external debt 13% and domestic 23%.[2] Taken together, these suggest on balance a post-default recovery rate of between 50% and 70%. Studies such as Swartz (2010) use 65%, which lies within the upper end of this range, and this study was reproduced by Citigroup (Buiter and Rahbari, 2010). Deutsche Bank (Becker, 2009) uses the 50%-70% range.

Other Problems of interpretation

Sovereign risk premia may have a number of components

Another problem is that in the real world, actual defaults are fewer than market-driven default probability calculations would indicate. That is because market participants demand a risk premium – an excess return – compared to the risk-neutral rate, and that premium cannot be observed. This makes it difficult to use the above measure to imply the likelihood of actual defaults in the periphery of Europe or anywhere else. This risk premium on sovereign bonds may have a number of components:

Liquidity

- *Liquidity:* Southern European bonds, for example, currently are not liquid, and bondholders need to be compensated for this risk. While the ECB is buying these bonds in the secondary market to support prices and provide liquidity, the spreads need to be very wide to induce buy orders from private market participants. But it is hard to disentangle liquidity risk from default risk. If there were not budgetary problems in the periphery of Europe, and high debt-service burdens, there would not be major liquidity problems. Indeed, Figure 1 shows that prior to the financial crisis, peripheral European spreads were very narrow; however, as growth fell and budget deficits ballooned, the risk of restructuring came into play and had a causal influence on the issue of liquidity. When economic performance deteriorates in this manner, market participants assign their own scenarios for default.

Contagion risk

- *Contagion risk:* bonds can be affected by common factors. For example, a failure to meet payments on one series of a corporate bond may trigger cross-default clauses in the other bonds issued by the same company: creditors then participate in a restructuring to protect the value of bond issues not yet in default. In August 1998, Russia halted payments on its rouble-denominated sovereign bonds (GKO treasury bills), which were subsequently restructured. This led to sharp declines in the value of externally held Russian debt, and this was followed by an actual restructuring of MinFin3 Soviet-era debt, after a payment halt in May 1999. Post-Soviet era debt had also collapsed in value; some

(*e.g.* MinFin7 bonds) have subsequently recovered. However, it is difficult to judge these outcomes in an *ex ante* sense, and the pricing of default risk premia may in the end not be indicative of actual defaults on all debt securities subject to common risk factors. In the EU context, similar issues arise for investors because if one government restructures its debt, others may have an incentive to follow if they face similar fiscal and debt-service issues. A risk premium will be added by the market until either growth recovers and/or fiscal problems are rectified. In this sense, the pricing of the risk of default (based on market perceptions of contagion among European countries with budget difficulties) does not mean the probability of actual restructuring is as high as the risk-neutral calculation suggests.

Risk premia are not constant

- *Time varying risk premia:* These risk premia can also not be assumed to stay constant over time, thus they cannot be used in a simple rule-of-thumb constant adjustment to the risk-neutral default probability measure based on spreads. Instead, these risk factors vary over time, and reflect the markets' perceptions of policy credibility and much more. This means that it is impossible to use the measures to estimate the absolute probability of default in any particular country. They may, however, provide some guidance on relative probabilities, particularly where common factors are driving the time varying risk premium.

Calculating the market's crude default probability surveillance indicator

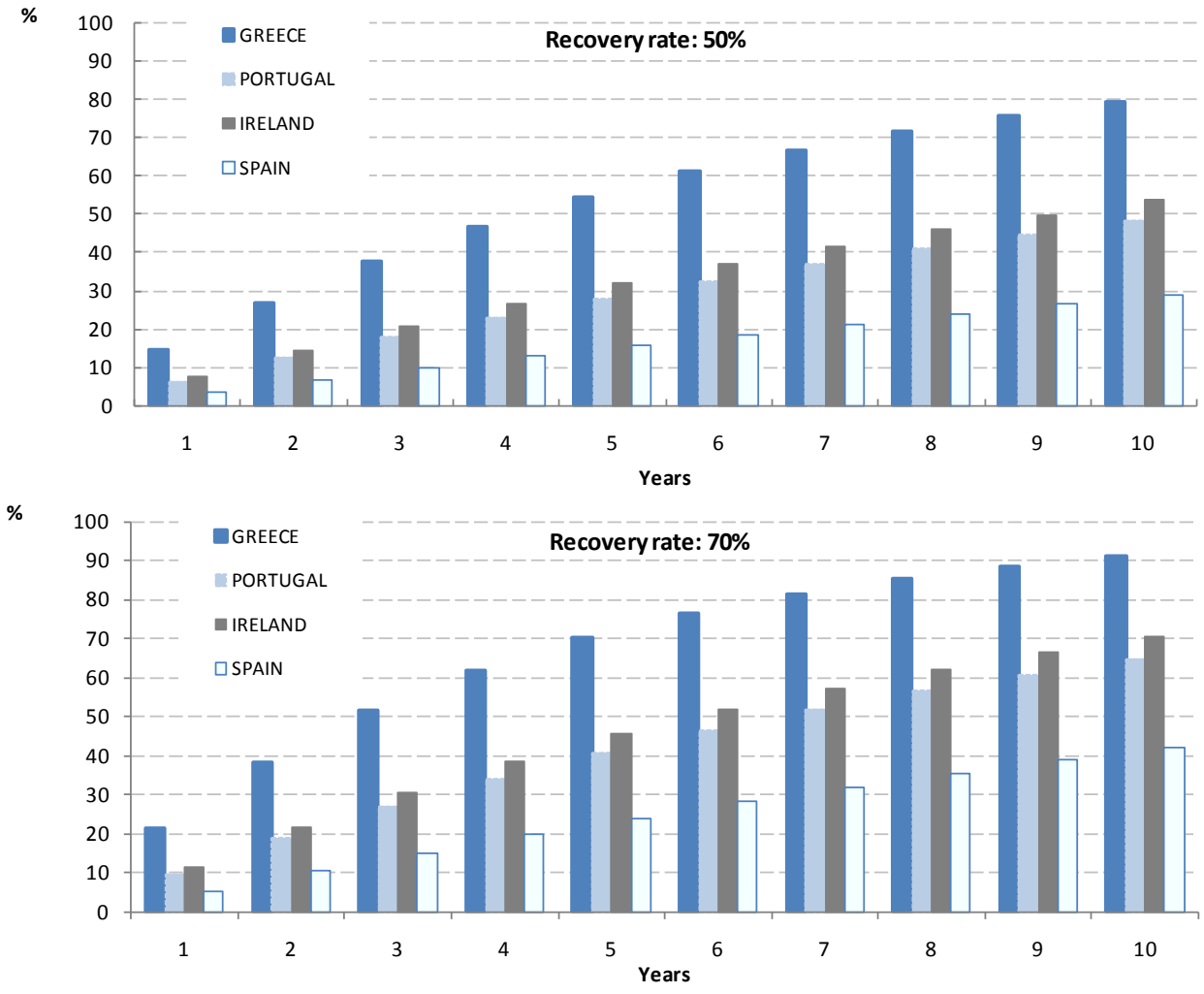
Nevertheless, these calculations are used widely

Nevertheless, these calculations are used widely in official circles as tools for financial market surveillance. An IMF study, for example, argues that: '*the estimated default probabilities can be used to enhance financial market surveillance work, as they are the basic ingredients for constructing vulnerability indicators, modeling credit risk and loss distributions, and stress-testing financial systems. Indeed, work along these lines has been done or is under progress at policy institutions worldwide'*.[3] Deutsche Bank (Becker, 2009) calculated the market implied probability of default for Italy, Ireland, Greece, Spain and Portugal using 5-year and 10-year bonds and recovery rates in the 50%-70% range. In mid-2009 spreads were much lower than they are today, and for 10-year bonds these resulted in high single digit risk neutral default probabilities for Greece and Ireland and low single digits for the others. Swartz (2010) in a Council of Foreign Relations article produced the calculations for Greece, showing much higher default probabilities. These calculations were recently reproduced by Citigroup (Buiter and Rahbari, 2010) in a publication which is highly critical of a recent IMF study that argues the calculations are not at all likely to be repeated in the real world – that the risk of default in any advanced economy including the periphery of Europe is "unnecessary, undesirable and unlikely" (Cotarelli *et al.*, 2010).

The simplistic Deutsche Bank study calculations are reproduced for the four EU periphery countries in Figure 2, which are based on the spreads shown in Figure 1 and the 50%-70% recovery rate assumptions also used by Deutsche Bank. The Citigroup study points out that the calculation may indeed risk over-

estimating the probability of default at the present juncture due to the absence of a risk premium. But it cautions that the spreads in earlier years also massively underestimated the risk of sovereign bond problems, despite the presence of very large budget deficits back in 2004 in some of the countries analysed. By 2012, at the two-year point in the chart, the financial market-based calculation implies different risk-neutral default rates for the four countries: Greece 28%-38%, Ireland 15%-21%, Portugal 12%-19% and Spain 7%-10%. These numbers rise over time, but these cumulated probabilities are based on the unlikely assumption that the spread would stay the same in each year.

Figure 2. These updated financial market (studies by Deutsche Bank and many others) implied probabilities of default cannot be used to predict absolute default rates in the real world



Source: OECD.

These calculations cannot predict the likelihood of defaults

These calculations cannot, however, be taken as the absolute likelihood of defaults that we might see in the real world, and particularly in individual countries. As noted earlier, time varying risk premia also drive interest rate spreads. The current high levels of the probability calculations are signs of extreme market concerns in a world which is not risk-neutral (as the probability calculations assume). They mix together a risk-neutral probability of default and a market risk premium. There are major budget financing and banking system issues in many countries, and it is more instructive to look at this in more detail, rather than rely on simple market-based surveillance tools. After looking at these fundamental factors, and how they bear on five criteria that condition the likelihood of restructuring, it will remain to be seen whether the spread-based measure fairly reflects the relative (as opposed to absolute) probability of restructuring based on such deeper analysis.

III. The simple economics of fiscal adjustment

Public debt will be unsustainable whenever the primary budget surplus as a share of GDP does not offset the burden of debt service as the economy grows

A country's public debt will grow continually higher as a percentage of GDP (*i.e.* will be unsustainable) whenever the primary budget surplus as a share of GDP does not offset the burden of debt service as the economy grows. Formally, and ignoring currency effects on external debt holdings, debt will grow according to:

$$\Delta d_t = -pb_t + \frac{(i_t - g_t)}{(1 + g_t)} d_{t-1}$$

where d is public debt (D) as a share of GDP; pb is the primary budget balance as a share of GDP (*i.e.* it excludes debt service); i is the effective interest rate on the public debt, g is the rate of nominal economic growth, and t refers to time.

Based on OECD growth and deficit projections for the next two years (announced policies known by November 2010) and defaulting to the OECD cyclically-adjusted deficit and trend-growth thereafter, public sector debt would be expanding in an unsustainable manner for most countries. However, this is not the case for the countries shown in Figure 3, which have already implemented ambitious fiscal consolidation packages that go a long way toward slowing debt accumulation.[4] While the debt rises sharply in the next few years, during the policy implementation phase, the trajectory flattens out after 2014.

More fiscal consolidation is required to achieve full stability of public debt by 2014

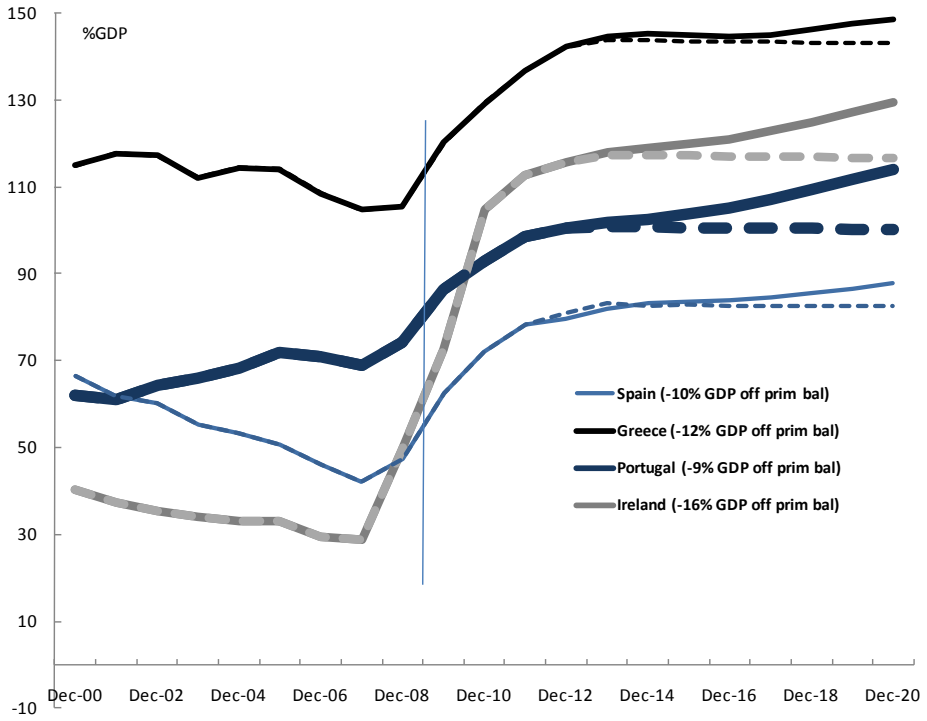
The OECD forecasts go only to 2012, so the dashed lines show the consolidation required beyond that to achieve full stability of the public debt by 2014. The cumulative primary budget cuts from the end of 2009 as a percentage of GDP required to achieve this are shown in parentheses.[5] The budget, debt-service and debt positions for the four countries associated with the Figure 3 debt outcomes (by 2014) are shown in Table 1.

Markets still see a significant default probability

Nevertheless, as noted earlier, a significant probability of default continues to be reflected in market yield spreads (particularly for Greece, Portugal and Ireland), notwithstanding these efforts.

Figure 3. Hypothetical debt scenarios

Full stability scenario (by 2014) shown in dashed lines



Note: Values in parentheses show the cumulative primary budget cuts, as a percentage of GDP, needed to achieve a stable debt ratio by 2014 (the broken lines). The solid lines are based on known policies and projections to 2012 only.

Source: OECD, Datastream.

Table 1. Hypothetical scenarios for budget-debt ratios

Primary budgets, debt service and debt/GDP

	Greece			Ireland		
	Primary Balance % of GDP	Debt Service % of GDP	Debt/GDP %	Primary Balance % of GDP	Debt Servive % of GDP	Debt/GDP %
2009	-8.9	4.8	120.2	-12.4	1.8	72.7
2010	-3.0	5.3	129.2	-26.8	5.5	104.9
2011	-2.0	5.6	136.8	-4.6	4.9	112.7
2012	-1.0	5.6	142.2	-1.7	5.7	115.6
2013	0.0	6.7	144.7	-0.5	6.5	117.8
2014	1.0	7.2	145.2	1.1	7.0	118.9
2015	2.0	7.7	144.8	1.1	7.5	119.8

	Spain			Portugal		
	Primary Balance % of GDP	Debt Service % of GDP	Debt/GDP %	Primary Balance % of GDP	Debt Servive % of GDP	Debt/GDP %
2009	-9.8	1.4	62.4	-6.5	2.8	86.3
2010	-7.5	1.6	72.2	-4.4	2.9	92.9
2011	-4.6	1.8	78.2	-1.3	3.7	98.7
2012	-2.6	1.8	79.6	-0.4	3.9	100.6
2013	-1.6	2.4	81.8	0.0	4.8	101.8
2014	-1.0	2.8	83.1	0.5	5.4	102.6
2015	-0.5	3.2	83.5	0.5	5.7	103.7

Source: OECD.

Policies to deal with unsustainable debt dynamics

There are a number of ways to deal with the problem of explosive debt scenarios

The debt dynamics equation suggests a number of ways to deal with the problem of explosive debt scenarios:

- *Cutting spending and raising taxes* to bring the budget balance to the point where it offsets the debt-service burden, after allowing for the growth of the economy. Thus setting:

$$pb_t = \frac{(i_t - g_t)}{(1 + g_t)} d_{t-1}$$

- *Causing inflation to rise* a great deal, noting that here g refers to the nominal growth of GDP (i.e. the sum of real growth and inflation). Inflation surprises essentially reduces the real burden of the debt.

- *Carrying out structural reforms* to improve the real component of the rate of nominal growth (*g*). Labour market, pension and competition reforms will improve growth over the longer run.

- *Restructuring the level of outstanding debt* (d_{t-1}). By applying a haircut to the outstanding stock of debt, the debt service burden is reduced. Alternatively, the effective interest rate can be reduced by renegotiating the terms and conditions of the outstanding debt with the holders.[6] The economic costs of doing this, however, can be to increase the likelihood of future exclusion from global capital markets, as well as credit rating downgrades that result in the bond issuer having to pay higher spreads. The main benefit is the ability to cut the debt-service burden to credible levels overnight, thereby making it easier for countries to achieve macro goals, including consistency with currency-union constraints on fiscal policy and debt – such as those embedded in the Maastricht Treaty.

Inflation is not a policy tool for the countries concerned

As EU monetary policy is in the hands of the ECB, the possibility of initiating an inflationary policy is not an option for the countries concerned. Were the ECB to carry out quantitative easing to the point where EU-wide inflation accelerated, this would benefit all European debt-service burdens; but it is not an immediate option for the crisis countries within Europe now.

The OECD favours labour market, pension and regulatory reforms that will not have an immediate effect

With respect to structural reform, the OECD certainly favours: *(a)* policies to improve the functioning of labour markets, and the requirement in a currency union that labour mobility play a key competitiveness adjustment role; *(b)* the reform of EU pension systems, to ensure they are fully funded, which is essential to reduce the fiscal burden on future generations; and *(c)* addressing the structure of competition within Europe and the consistency of regulations and governance for improving efficiency.[7] However, structural reform is likely to be a process the success of which will be measured in decades. The market tolerance for sovereign debt is unlikely to be improved by promises, of which there have been plenty, as the above market-implied probability-of-default calculations suggest.

For the near term, the market is therefore focused on budget consolidation

For the near term, therefore, the market is focused on budget consolidation: the plausibility of its success, on the one hand, and the temptation to default on the other. Governments in crisis countries have already embarked on policies of fiscal restraint, and lending-support packages are in place for the next three years to provide some breathing space for some of the countries. The market, however, is focused on 2014 and beyond, at which time the implied default probabilities rise to significant levels for Greece and Ireland, and also (though to a lesser extent) for Portugal.

When is restructuring attractive? Five criteria

Five criteria to judge whether debt restructuring is more likely

There are five criteria by which financial markets judge sovereign-debt restructuring as more likely:

1. The smaller the primary deficit: A relatively small primary deficit indicates the government has already taken significant steps to eliminate most or all of the primary deficit – it is living within its means – and going any further is likely to produce unpopular economic hardship.

2. The larger the initial stock of debt as a share of GDP. The larger the initial share, the more likely that the debt service burden in perpetuity will be too high; this is a permanent burden on taxpayers, and when a significant amount of debt is held by foreigners, this represents a real transfer abroad (and a widening gap between GDP and GNP).

3. The lower the chances of the government getting a bailout from other countries.

4. The lower the need for the government to return to the capital markets for funding (when support packages are in place), since the markets may refuse to roll over and fund new debt.

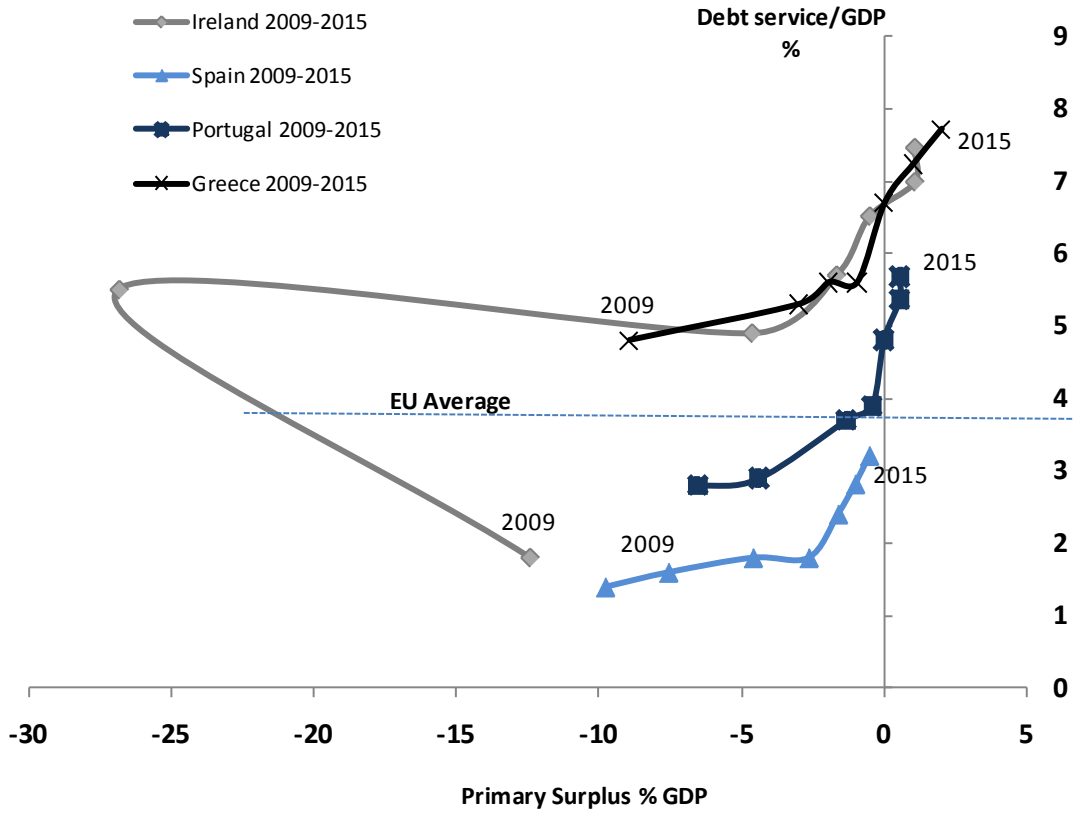
5. The lower the amount of sovereign debt held by domestic banks, since the losses on such debt could add to banking-sector problems.

Figure 4 shows a projection of the primary balance and the debt-service burden for the four countries, from 2009 to 2015. The unusual (leftward) move by Ireland toward a deteriorating fiscal deficit is related to budget transfers for bailing out the banks. The EU averages are indicated by the straight dashed lines.

Judged by primary surplus and debt criteria, market-based default probabilities appear to be quite rational

In terms of the first two criteria, all four countries will have attained a very small primary deficit by 2012, markedly less than the EU average. But after that year, the debt levels rise and the higher marginal borrowing rates begin to kick in, putting the debt-service burden on a steeper upward trajectory. The debt-service burden then rises sharply above the EU average for two of the countries (Greece and Ireland), moderately above it for Portugal, and not above it at all for Spain.

Figure 4. Projections of primary balance and debt-service burden



Source: OECD.

In terms of the third and fourth factors affecting the attractiveness of restructuring haircuts, the markets have certainly been given a very clear picture.

The Maastricht Treaty explicitly rules out national fiscal bailouts

- The Maastricht Treaty explicitly rules out national fiscal bailouts – no EMU country is responsible for the debt of any other; and the ECB is explicitly precluded from budget financing (participating in the primary (new-issues) market for government debt; it may only trade in the secondary market).

The Stability and Growth Pact (SGP) imposes fiscal limits

- The Stability and Growth Pact (SGP) requires all euro area countries to achieve debt/GDP ratios of 60% and budget deficits not exceeding 3% of GDP .[8]

"No-bailout" conditions raise the likelihood of default

In the last several months of 2010, the governments of the EU made it very clear that there will be no bailouts (other than loan facilities), raising the likelihood of default in countries where the other conditions are present. Explicit loan packages have been made available to Greece and more recently to Ireland, with both IMF and EU involvement. The European Financial

Stability Facility (EFSF) has been set up, with a remit to be able to issue debt guaranteed by EMU members in order to lend to governments directly, to a limit of €440bn, until mid-2013, so in principle all four countries could avoid going to the market before then, making a restructure more likely. Spain and Portugal, however, have thus far remained subject to the discipline of going to the market (lowering the chance of restructures).

Markets seem to be focused on some action prior to mid-2013

In terms of the first four criteria, the markets seem to be focused on some action prior to mid-2013, after the bulk of deficit-cutting has been achieved (by 2012) and while support-lending is still in place, but before debt levels reach their worst point. While Spain will also have achieved a small primary deficit by 2012, its debt level prior to the crisis was much lower, and its debt-service burden rises only to match the EU average by the time its debt situation has stabilised in 2015. Furthermore, Spain has no IMF/EU support package, *i.e.* it has an on-going need to borrow in the markets to fund itself, which according to the fourth criterion, would make it less likely to restructure.

The impact of sovereign-debt haircuts on banks' holdings might exacerbate their solvency problems

The fifth criterion concerns the impact of sovereign-debt haircuts on banks' holdings, which might exacerbate banks' solvency problems. This is examined in the next section. Two-way causation via feedback effects is an important issue here. Many EU banks are short of capital and (particularly where liabilities have been guaranteed) governments have been forced to make large fiscal transfers, causing public-sector deficits and debt levels to rise.

IV. Bank vulnerabilities and potential feedback on fiscal deficits

EU stress tests have not fully allayed concerns, and the tests' inability to subject the system to a reasonable amount of stress that would require new capital has already been surpassed by events

The EU stress tests of June 2010 did not fully allay concerns about bank losses and fiscal interplay. The stress-tested sovereign shock, for example, left out the bulk of holdings in the banking book.[9] Blundell-Wignall and Atkinson (2010) point out that, excluding the sovereign shock, many of the 91 banks included did not generate enough write-offs or other adverse pressures to lead to actual losses. Most of the losses (*i.e.* impairments to the banking book and losses to the trading book) were covered by income. In other cases, net losses were small (the main exceptions being the Spanish *cajas*, small Spanish banks, Royal Bank of Scotland, ABN/Fortis, Hypo Real Estate, Dexia and two large Irish banks). Only 7 of the 91 banks failed the test (falling below 6% Tier 1 capital). However, the test shed virtually no light on the adequacy of capital to serve as a buffer to absorb losses, since this was not actually tested. For the system as a whole, and individually for most of the banks', Tier 1 capital actually rises in the adverse scenario. Since the scenario is designed with a constant balance sheet assumption, it is unclear what is being tested besides the sensitivity of regulatory constructs. If capital rises as income exceeds losses, while the balance sheet is otherwise unchanged, a sensible capital ratio should rise. But the Tier 1 ratio actually falls by 0.7% for the system as a whole, entirely due to the rise in risk weights. This largely reflects the pro-cyclical features introduced in Basel II, which raise risk-weighted assets by EUR 824bn. This inability to subject the system to a reasonable amount of stress that would require new capital has already been surpassed by actual events.

European banks are less-well capitalised than US banks, partly due to the absence of a leverage ratio requirement in Europe

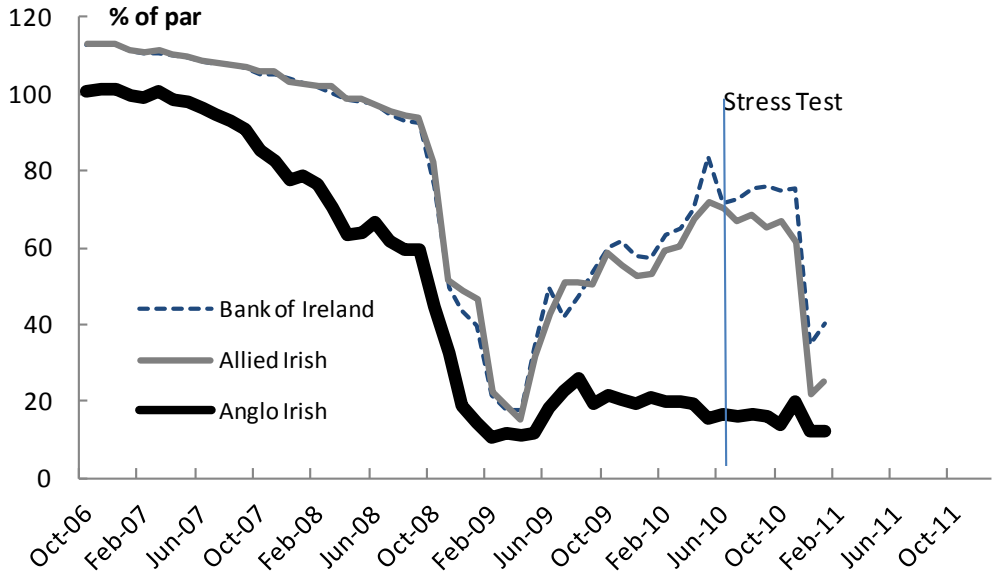
European banks are less-well capitalised than US banks. This is in part due to the absence of a leverage ratio requirement in Europe, where authorities instead rely on the Basel system, which applies capital requirements only to Risk-Weighted Assets (RWA) without any reference to the ratio of RWA to total assets (TA) in banks. EU banks systematically reduced the share of RWA to TA by a variety of techniques prior to the crisis and raised leverage commensurately to very high levels. RWA of the 91 stress-tested banks amounts to only 40% of TA (and much less than this in some large systemically important EU financial institutions).[10]

More transparency about the real situation at EU banks would help allay concerns

More transparency about the real situation at EU banks would help allay concerns in the financial markets. Just as the financial markets are factoring in the risk of restructuring for sovereign bonds, the prices of bank-debt certificates in the secondary market have again begun falling, particularly in Ireland and Spain, where the housing crises may have exacerbated pressures on banks.[11] This is especially the case for the Bank of Ireland and Allied Irish, and (though to a much lesser extent) for the *cajas* and small Spanish/Portuguese banks (see Figures 5 and 6).

Figure 5. Irish banks' straight bonds

As a percentage of par value



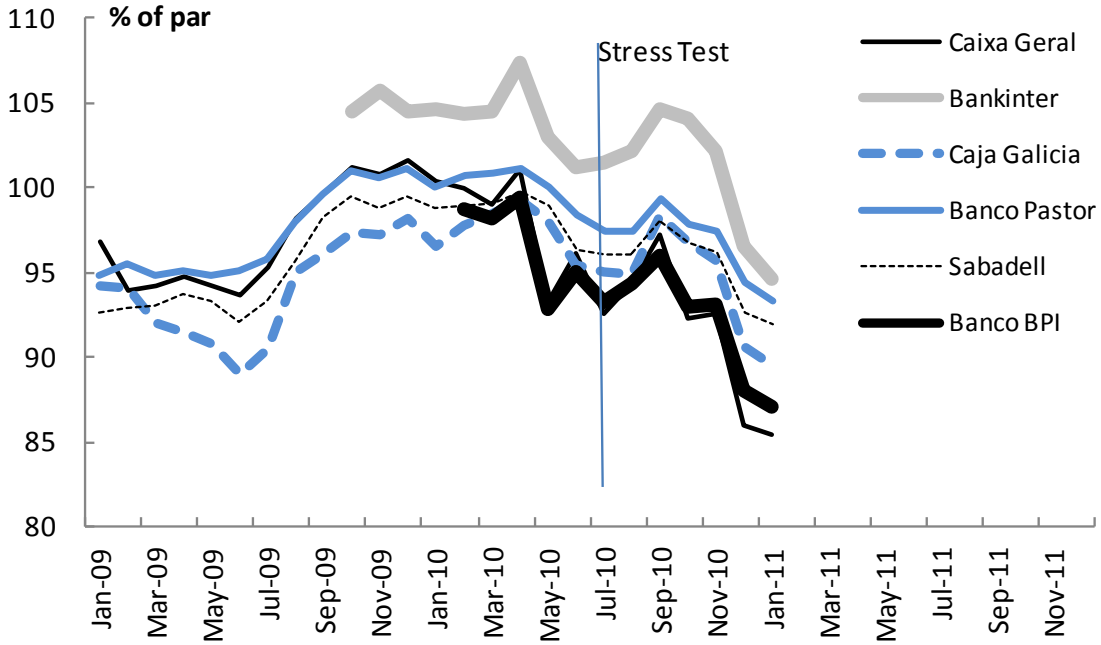
Source: Datastream, OECD.

The market has become increasingly concerned that Irish and Spain banks may require further capital injections

The market has become increasingly concerned that banks in Ireland and Spain may require further injections of capital to offset housing-related losses that were not picked up by the stress test. At the same time, the exposure of some banks in all four countries to market fears regarding a restructuring of sovereign debt would likewise require an increase in capital to act as a shock absorber. Both sets of fears may have some potential to impact fiscal policy (as has already been the case recently in Ireland).

Figure 6. Iberian banks' straight bonds

As a percentage of par value



Source: Datastream, OECD.

Market arithmetic for Spain

Spanish banks may need to raise more capital; their substantial exposure to sovereign debt makes sovereign restructuring less likely

At the start of 2010, the Spanish banking system had minimum required capital of around €168bn, and actual capital of €195bn. This suggests a capital buffer of €27bn. Moody's loss estimate (in November 2010) was €176bn, of which they suggest that about half has been recognised. This suggests that Spanish banks would need to raise more capital. Markets are concerned about the possibility that losses could be larger than these estimates due to weakening property prices, including commercial property – an issue that reduces transparency about the true position of banks. At the same time the situation is very heterogeneous, with two large Spanish banks having a large share of the profits and less legacy non-performing loans to deal with, while some of the smaller players may face greater difficulties. At the same time, there is a quite substantial exposure to sovereign debt – a 30% haircut on sovereign debt would add another €63bn to banks' capital needs. According to the fifth criterion concerning the likelihood of sovereign-debt haircuts, discussed above, this would substantially reduce the chance of debt restructuring. This may be one of the reasons that the markets give this possibility a relatively low probability at present.

Table 2. Spanish banking sector at the start of 2010

Euro (billion) and ratios

Assets		Liabilities	
		Deposits banks	524.1
Loans	2691.6	Other Deposits	1863.5
Debt	505.2	Debt certificates & bonds	648
(of which sov. exp.: GR, PT, ES, IE)	211.1	Other fair value (incl. derivatives etc)	476.9
Other	543.9	Equity	228.2
Total	3740.7	**Total**	3740.7
Income & Impairment		**Memo Items**	
		RWA/TA	0.56
Operating profits	64.2	Tier 1 ratio	0.093
Provisions	-2.5	Required capital	167.6
Impairement	-40.3	Actual capital	194.8
Profit Before Tax	22.8	Moodys Nov 2010 loss estimate (loans)	176
		30% sov debt haircut	63.3

Source: ECB, Moody's, OECD.

Market arithmetic for Ireland

Irish banks' capital buffers are small; their small exposure to sovereign debt makes sovereign restructuring more likely

The Irish banking sector had minimum required capital of €51bn and actual capital of €63bn at the start of 2010, suggesting a buffer of €12bn. The official estimate for losses (in November 2010) was €85bn.[12] This amount is large relative to GDP, and the banks' operating profits aren't large enough to cover this over any reasonable period. At the same time, the banks' exposure to sovereign debt is fairly small. In terms of criterion 5 mentioned earlier, this increases the likelihood of a sovereign-debt restructuring, according to market reasoning.

Table 3. Irish banking sector at the start of 2010

Euro (billion) and ratios

Assets		Liabilities	
		Deposits banks	283.1
Loans	772.2	Other Deposits	313.4
Debt	150.9	Debt certificates & bonds	205.2
(of which sov. exp.: GR, PT, ES, IE)	6	Other fair val (incl. derivatives etc)	473.4
Other	416.1	Equity	64.1
Total	1339.2	**Total**	1339.2
Income & Impairment		**Memo Items**	
		RWA/TA	0.48
Operating profits	10.7	Tier 1 ratio	0.098
Provisions	-0.1	Required capital	51.4
Impairement	-34.4	Actual capital	63.0
Profit Before Tax	-24	Official Nov 2010 loss estimate (loans)	85
		30% sov debt haircut	1.8

Source: ECB, OECD.

The market believes that banks' debt instruments may need to bear some of the burden in order to relieve budget pressures

The government has raised the capital requirements of the Bank of Ireland (BOI), Allied Irish (AIB), EBS Building Society and Irish Life and Permanent (ILP) to a new minimum of 10.5% core Tier 1 capital, and over-capitalisation of at least 12% by the end of February 2011, in order to cover further potential losses. This compares to the 9.8% on which the required capital is based in Table 3. This suggests on-going risk to the budget with respect to support for the banking system affecting the market assessments of restructuring via the first and second criteria above (the size of the primary deficit and debt as a share of GDP). The market probably believes that, ultimately, the bank debt instruments will need to bear some of the burden of relieving government budget pressures. This may be one of the reasons why some banks' bond prices, too, have begun to fall.

Market arithmetic for Greece

Exposures to sovereign debt indicate that a haircut could be difficult for banks to absorb

The Greek bank sector had required capital of €23bn at the start of 2010 and actual capital of €31bn, suggesting a buffer for absorbing losses of €8bn. Estimates of bank losses for 2010 are not taken into account, but the exposure to sovereign debt of €61bn means that a 30% haircut would be difficult for banks to absorb. On the fifth criterion, this argues against such a haircut. On the other hand, Greek debt is at the highest level of the four countries considered, and the market gives Greece the highest probability of a restructuring.

Table 4. Greek banking sector at the start of 2010

Euro (billion) and ratios

Assets		Liabilities	
		Deposits banks	65.9
Loans	370.3	Other Deposits	276.5
Debt	68.7	Debt certificates & bonds	50.7
(of which sov. exp.: GR, PT, ES, IE)	61.4	Other fair val (incl. derivatives etc)	63.4
Other	51.1	Equity	33.6
Total	490.1	**Total**	490.1
Income & Impairment		**Memo Items**	
		RWA/TA	0.58
Operating profits	7.1	Tier 1 ratio	0.108
Provisions	-1.4	Required capital	22.7
Impairement	-4.4	Actual capital	30.7
Profit Before Tax	1.4	Nov 2010 loss estimate (loans)	0
		30% sov debt haircut	18.4

Source: ECB, OECD.

Market arithmetic for Portugal

No buffer to absorb losses; small sovereign debt exposure

Required and actual capital positions suggest Portuguese banks have no buffer to absorb losses, but bank exposure to periphery sovereign debt is small in aggregate. According to the fifth market criterion, this should increase the likelihood of restructuring in market calculations, on fiscal grounds.

Table 5. Portuguese banking sector at the start of 2010

Euro (billion) and ratios

Assets		Liabilities	
		Deposits banks	74.7
Loans	387.6	Other Deposits	218.2
Debt	67.4	Debt certificates & bonds	116.9
(of which sov. exp.: GR, PT, ES, IE)	16.6	Other fair val (incl. derivatives etc)	69.3
Other	55.8	Equity	31.7
Total	510.8	**Total**	510.8
Income & Impairment			
		RWA/TA	0.65
Operating profits	5.9	Tier 1 ratio	0.078
Provisions	0.4	Required capital	26.6
Impairement	3.5	Actual capital	25.9
Profit Before Tax	2.2	Nov 2010 loss estimate (loans)	0
		30% sov debt haircut	4.98

Source: ECB, OECD.

Bank exposure to known holdings of sovereign debt

Not averages, but outlier cases are important in assessing risk of financial crises

As noted in Blundell-Wignall and Slovik (2010), bank exposures to sovereign debt are not evenly distributed:[13] Buiter and Rahbari (2010) have recently pointed out that average exposures to sovereign debt don't matter: Averages give little information about specific banks' capital needs, housing related losses, pre-tax income and holdings of government debt, which all differ widely. It is the outlier cases that are important in assessing the risk of financial crises. If the issue is to be properly managed by policy makers it is critical to focus on individual banks. A major lesson of the crisis was that failures of systemically important financial institutions led to counterparty and contagion effects that had widespread cross-border implications.

Results of implied haircuts

Banks for which losses by the implied haircut would exceed 5% of their Tier 1 capital are shown in Tables 6 and 7. Only the 91 banks for which EU Stress Test information are available are considered.[14] The key features of the results are as follows:

Exposure to Spanish sovereign debt

- A large number of Spanish banks are quite heavily exposed to their own sovereign debt, and 30%-50% haircuts implicit in the market-probability-of-default calculations shown earlier would have a material impact on Tier 1 capital (see Table 6). This includes the two largest banks, which are also highly diversified and profitable. The smaller banks and *cajas* shown are less profitable and are less diversified. Some German banks are also exposed to Spanish sovereign debt, which may re-enforce market beliefs that the debt is, at this stage, relatively safe from restructuring.

Table 6. Market-based scenarios on the impact of haircuts: bank exposures to Spain

Spanish Sovereign Debt

		Adverse shock: 30% to 50% haircut as % of Tier 1 capital		
Caja Espiga	ES	74%	-	123%
Grupo BBVA	ES	57%	-	96%
Hypo Real Estate	DE	54%	-	91%
Banco Financiero y de Ahorros	ES	43%	-	71%
Banco Pastor	ES	41%	-	68%
Colonya Caixa Pollença	ES	40%	-	67%
la Caixa	ES	37%	-	61%
CatalunyaCaixa	ES	35%	-	59%
Unnim	ES	33%	-	55%
Banca Cívica	ES	31%	-	51%
Caja3	ES	29%	-	48%
Banco Sabadell	ES	27%	-	45%
Banco Popular Español	ES	27%	-	45%
Grupo Santander	ES	27%	-	45%
Bilbao Bizkaia Kutxa	ES	26%	-	43%
Banco Guipuzcoano	ES	26%	-	43%
Ibercaja	ES	25%	-	41%
Unicaja	ES	24%	-	40%
Caja Vital Kutxa	ES	23%	-	39%
Banco Base	ES	23%	-	39%
Bankinter	ES	23%	-	38%
Cajasol	ES	21%	-	35%
Banco Mare Nostrum	ES	21%	-	35%
WGZ Bank	DE	20%	-	33%
Novacaixagalicia	ES	20%	-	33%
Kutxa	ES	19%	-	32%
Helaba-Landesbank Hessen-Thüringen	DE	10%	-	17%
Landes Bank Baden-Württemberg	DE	8%	-	14%
Deutsche Postbank	DE	7%	-	12%
DekaBank Group	DE	6%	-	10%
Nova Ljubljanska Banka	SL	5%	-	8%
Caixa Ontinyent	ES	5%	-	8%
WestLB	DE	5%	-	8%
Banque Raiffeisen	LU	4%	-	7%
BCEE	LU	4%	-	7%
Commerzbank	DE	4%	-	6%
KBC Group	BE	3%	-	6%
Norddeutsche Landesbank	DE	3%	-	5%
Dexia	BE	3%	-	5%

Source: OECD, individual bank data (as of 31 March 2010).

Table 7. Market-based scenarios on the impact of haircuts: bank exposures to Greece, Portugal and Ireland

Greek Sovereign Debt

		Adverse shock: 30% to 50% haircut as % of Tier 1 capital		
Agricultural Bank of Greece	GR	242%	-	403%
TT Hellenic Postbank	GR	125%	-	209%
National Bank of Greece	GR	78%	-	130%
Piraeus Bank Group	GR	73%	-	122%
Eurobank EGF	GR	48%	-	79%
Marfin Popular Bank	CY	38%	-	63%
Hypo Real Estate	DE	31%	-	52%
Bank of Cyprus	CY	27%	-	45%
Alpha Bank	GR	26%	-	43%
WGZ Bank	DE	10%	-	16%
Deutsche Postbank	DE	8%	-	14%
Banco BPI	PT	7%	-	11%
Dexia	BE	6%	-	11%
Banque Raiffeisen	LU	5%	-	8%
Landesbank Berlin	DE	4%	-	7%
DZ Bank	DE	4%	-	6%
Société Générale	FR	4%	-	6%
Banco Comercial Português	PT	4%	-	6%
Commerzbank	DE	3%	-	5%
Landes Bank Baden-Württemberg	DE	3%	-	5%

Portuguese Sovereign Debt

		Adverse shock: 30% to 50% haircut as % of Tier 1 capital		
Banco BPI	PT	56%	-	94%
Caixa Geral de Depositos	PT	34%	-	56%
Hypo Real Estate	DE	15%	-	25%
WGZ Bank	DE	10%	-	17%
Espírito Santo	PT	10%	-	16%
WestLB	DE	8%	-	13%
BNP Paribas	FR	7%	-	12%
Dexia	BE	5%	-	8%
Banco Comercial Português	PT	5%	-	8%
Landes Bank Baden-Württemberg	DE	4%	-	7%
BCEE	LU	4%	-	7%
Banco Santander	ES	3%	-	5%

Irish Sovereign Debt

		Adverse shock: 30% to 50% haircut as % of Tier 1 capital		
Hypo Real Estate	DE	41%	-	68%
Allied Irish Banks	IE	14%	-	24%
Banco BPI	PT	5%	-	9%
Bank of Cyprus	CY	5%	-	8%
WGZ Bank	DE	4%	-	7%
Bank of Ireland	IE	3%	-	5%

Source: OECD, individual bank data (as of 31 March 2010).

Exposure to Greek sovereign debt

- Six Greek banks are significantly exposed to their own sovereign debt (and to banks in Cyprus). Five German banks also have material exposures to Greek sovereign debt, but are mostly in the state sector: such banks are not listed, and may be thought of as contingent tax liabilities, rather than posing a major risk of systemic contagion and counterparty effects. Two banks in Portugal are exposed, and one bank in each of Belgium, Luxembourg and France has above 5% of Tier 1 capital exposure to the hypothetical haircut. Where large, diversified, more profitable banks are concerned, the exposures are quite small.

Exposure to Portuguese sovereign debt

- There are less significant exposures to the implied haircuts in respect to Portuguese sovereign debt: three Portuguese and three German banks are exposed.

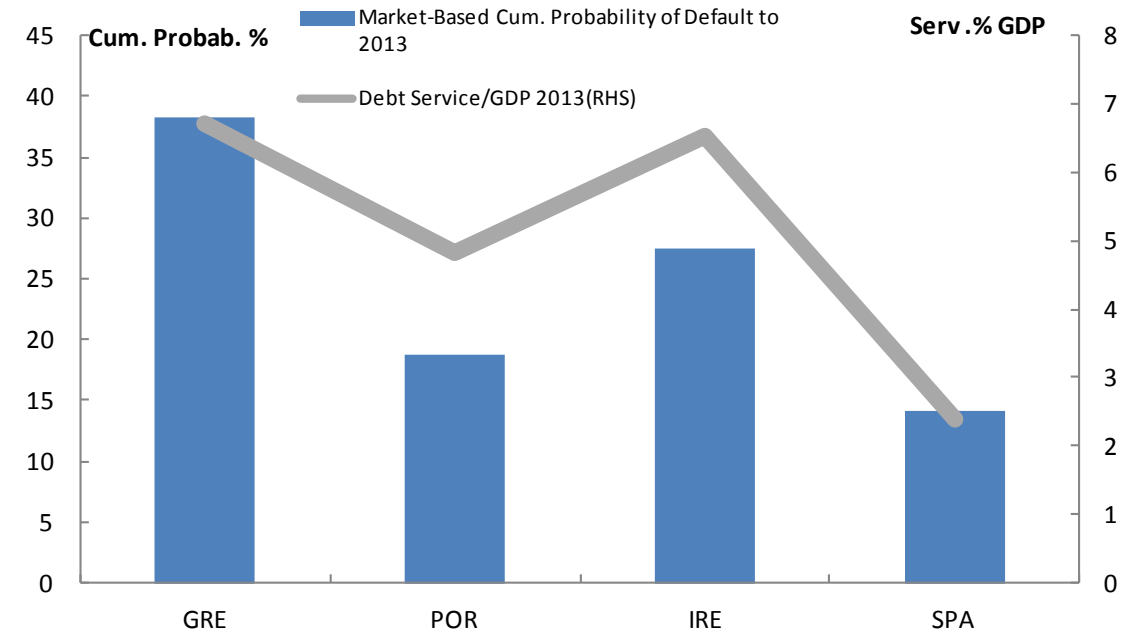
Exposure to Irish sovereign debt

- With respect to Irish sovereign debt, only one German bank has a large exposure, followed by Allied Irish. Bank of Ireland exposure is fairly small.

Summary

Figure 7 shows the relative cumulative probabilities of default implicit in yield spreads to 2014, and the projected debt-service burdens at that time.

Figure 7. Financial Market (*e.g.* studies by Deutsche Bank and others) implied cumulative probabilities of default (to 2012) and debt-service burdens



Source: OECD, Datastream.

Assessing probabilities of default: lower for Spain and Portugal, higher for Greece and Ireland

- The question of the ongoing debt-service burden after stabilisation appears to bear heavily on the market assessment of the probability of restructuring. Greece and Ireland are similar in this respect, and criteria 1 and 2 are reflected in the relatively high probability of restructuring assigned to them by the markets. Spain stands out as having the best fiscal situation and significant banks' exposure to sovereign debt, both of which are factors in its lower probability of default.

- None of the countries will be bailed out (criterion 3), which increases pressures on bondholders to bear some of the costs.

- Greece and Ireland have facilities in place to allow them to avoid having to seek additional funding through the markets, which increases the market probability of a restructuring, while Spain and Portugal have no option but to seek market funding. For the latter, this seems to be a factor keeping down the probability of default, alongside the debt-service factors.

- Irish banks have the least exposure to sovereign debt, which (other things being equal) raises the probability of default.

- Spain and Ireland had the biggest boom and bust in the property sector, and so the issue of feedback onto the budget (from the need to deal with the capital requirements of banks) remains an important consideration for the markets. This is reflected in bank bond prices, particularly for Ireland.

In short, the market based risk neutral calculations do to some extent reflect the *relative* probability of restructuring based on detailed fundamentals and five criteria that market participants are known to use when assessing these issues.

V. Policy discussion and conclusions

Two major issues put bonds under pressure

The above discussion highlights the two major issues confronting markets in Europe, causing sovereign spreads to widen and bank bond prices to be subject to pressure:

(1) The banking crises and banks' interconnectedness

- The banking crises in some of the periphery countries and in a number of German banks. Given the interconnectedness of banks, this is an issue for all of Europe. The recovery cannot gain momentum outside of Germany while deleveraging continues; and this in turn makes fiscal consolidation much harder to achieve.

(2) The fiscal crises and unsustainable debt dynamics

- The fiscal crises resulting from poor budget management, the generalised failure to respect the Maastricht criteria, some spectacular cases of fiscal transfers to support the banking system, and all countries suffering from fiscal deterioration due to the recession, all these factors

have led to very adverse debt dynamics in most European countries, and particularly in the four periphery countries analysed above.

The markets and sovereign debt and fiscal policy options

Four ways to solve the debt sustainability issue

If the current membership of the euro system is to be maintained, the fiscal problems have to be solved quickly and without causing many years of recession for countries that are in an unsustainable position. There are four ways to solve the debt sustainability issue:

Growth and inflation

- *Growth and inflation:* Policies of quantitative easing aimed at weakening the euro and pushing up inflation are against ECB rules and would push up inflation expectations, something that would be costly to reverse.

Cutting the primary deficit further

- *Cutting the primary deficit further:* This is important, but by 2013, as shown earlier, most countries will have reduced the primary balance towards zero. Were all countries to cut budgets together in a synchronised way, the impact on growth would be greater than for most fiscal multiplier calculations on an individual country basis.

Reducing the interest rate on the debt

- *Reducing the interest rate on the debt:* The financing of budgets through the issuance of EU bonds with lower interest rates (to be issued by the EFSF), would reduce the debt-service burden compared to the counterfactual situation. This certainly helps solve liquidity problems, but has only some small impact on public sector solvency problems. Improved confidence, including in the euro area institutional framework, will also help in this regard.

Restructuring

- *Restructuring:* Principal and interest rates have both been part of previous restructurings, which have normally been accompanied by negotiations with the bondholders. Such negotiations have, however, been plagued by "holdouts" on the restructuring by some bondholders and by opportunistic trading by hedge funds and others.

Options for restructuring existing debt

Debt renegotiations tend to be messy processes, which raises the question as to whether better institutional arrangements for restructuring could be considered for the future. For the outstanding stock of bonds two approaches which bypass the need for negotiations are possible:

EU bonds

1. Legislation for the successor to the EFSF could be enacted to enable it to buy bonds in the secondary market. These could be bought at current discounted prices and then restructured into EU bonds with commensurately lower interest rates. The savings on debt-servicing passed on to governments could make a significant difference, and this would reduce the need to achieve all of the budget consolidation

through budget-cutting with its negative impact on activity. While such EU bonds would reduce borrowing rates for the periphery, they would offer little advantage to the financially stronger countries, and would in fact involve contingent liabilities for them. For this reason, Germany has recently ruled out any move toward the European-wide use of such bonds. Nevertheless, the EFSF is to issue some EU bonds in order to offer loans to governments, up to a limit of €440bn in the near term, which could serve as a blueprint if there are to be future moves towards greater fiscal union. Such bonds would presumably attract a zero-risk weight in the Basel system, making them attractive for bank holdings, which would support demand. Presumably, a Basel zero-risk weighting for national issues could be phased out as the better-quality EU bond alternative became available. This longer-run goal would need to be accompanied by much stricter fiscal rules and penalties than has hitherto been the case.

Restructuring within an ECB context

2. Such restructuring could presumably also occur within an ECB context. The ECB could, for example, simply buy as much as possible of the outstanding Greek and Irish bonds at a discount now (the market price already reflects expected restructuring), restructure them, and pass the savings on to the governments. The main concern here is that it would involve quantitative easing unless huge sterilisation operations were able to be implemented at the same time. This is a risk for the ECB. The ECB would prefer to keep fiscal and monetary issues separate.

Collective action clauses in new issues

New issues could have collective action clauses built into the bond contracts to ensure that future restructuring negotiations, should they be necessary, would not be plagued by "holdouts" and opportunistic trading.

Restructuring may exclude the country from borrowing in international capital markets; however, this is not the lesson of history

One red herring often brought up in respect to restructuring is that such action will exclude the country from borrowing in international capital markets. However, this is not the lesson of history. Markets will buy debt that has been restructured, if the restructuring is perceived as enabling the issuing governments to service their obligations in the future. Aztec bonds were issued in early 1988 to restructure Mexican sovereign debt in a voluntary manner: JP Morgan issued collateralised floating-rate debt, with a 20-year maturity, to commercial bank creditors who agreed to forgive 30% of the debt. The Mexican government simultaneously purchased zero-coupon US Treasury securities (held at the US Federal Reserve), that would mature in 20 years and would at that time equal the principal repayments due. The following year, US Treasury Secretary Nicholas Brady used this scheme as a prototype for the Brady Bond mechanism. The plan required the United States, the IMF and the World Bank to co-operate with creditor banks wishing to enter into voluntary restructuring agreements with developing countries, conditional on economic restructuring programs supported by these international agencies. This allowed the banks to remove the non-performing loans from their balance sheets, and replace them with a selection of Brady Bonds reflecting the haircut negotiated between the sovereign debtor and the bank advisory committee.[15]

The markets and bank solvency and debt options

There is a need to deal with bank insolvencies and the risk that they pose for fiscal consolidation

A second major concern in financial markets addressed in this paper is the uncertainty there is about how bank insolvency issues are to be dealt with and the risk that they might pose to fiscal consolidation in some countries, particularly where bank liabilities are subject to government guarantees. Bank bond prices have been subject to significant moves following official discussion of these issues. A run on deposits or failure to roll-over debt in the wholesale markets requires emergency liquidity lending in order to keep banks operating, which has been working well enough via ECB operations. But this does not deal with solvency issues resulting from losses on the assets side. Once existing equity holders are wiped out, the full resolution of a financial institution would involve the unsecured bondholders bearing the losses and the economy experiencing the deadweight losses associated with failures, inconsistent with principle 2 above (de-leveraging and activity effects). If government guarantees are in place, the pain is borne directly by the taxpayer instead.

Historical examples

In history there have been many examples of resolution through nationalisation and other state interventions: Japan, Scandinavia, the approach of the US Resolution Trust Corporation (RTC), and more recently the Irish National Asset Management Agency (NAMA). In all cases, the depositors were guaranteed.

Japan

- In the case of Japan, recapitalisation without dealing with the asset side in early resolutions is often now given as an example of what not to do.

Scandinavia

- In the case of Scandinavia, banks were seized, existing shareholders wiped out and the government took ownership via common stock. Bondholders were protected. The bad loans were passed to asset management companies and the proceeds from subsequent sales of the assets accrued to the government. The government subsequently was able to sell shares for a profit in the privatisation process.

The US Resolution Trust Corporation (RTC)

- In the case of the RTC, Saving and Loan (S&L) institutions were placed into conservatorship-status with the RTC in control. The RTC would determine the most cost-effective and efficient way to resolve each S&L, value its assets and market them widely for sale. Sometimes, this would involve the sale of the S&L, a breakup of the S&L assets and a separate sale of the depositor franchise whenever possible (tailoring the products for sale greatly increases bidder participation). The guaranteed depositors were paid off, when necessary, with funds provided by the authorities and the proceeds of the asset sales.[16]

The Irish National Asset Management Agency (NAMA)

- In the case of NAMA, an asset-management agency was set up to buy troubled loans (typically housing development and mortgage loans) at a haircut to their book value. NAMA issued government-guaranteed debt in order to purchase the discounted assets. Government bailout capital

injections are required to write down the losses associated with non-performing loans, once existing shareholder funds are exhausted. [17] While shareholders absorb part of the losses, the guarantee of deposits and wholesale liabilities exposes the taxpayer to large liabilities. Should the haircut prove not to be sufficient, the capitalisation of the NAMA balance sheet through subordinated debt would also need to be increased at a cost to the taxpayer?

"Forbearance and time" approach

Another approach used mainly in larger countries (where there are no forcing liquidity crises) that helps avoid deadweight losses is one that has been termed in earlier publications as "forbearance and time". That is, regulators ignore technical insolvency and allow banks to keep trading in circumstances of a positive yield curve thereby allowing them to make up losses through operating income. This did not work well in the case of Japan in the 1990s. Nor is this option available to countries like Ireland and Greece, where liquidity pressures are present. Overall the approach relies on a lack of full transparency of the bank in the market place. In terms of implications for the economy, there are still deadweight losses, since bank management is cognisant of the underlying situation and deleveraging will still go on until technical solvency is restored. In essence, current operating profits are used to write off past losses which are revealed more slowly than would otherwise be the case. This approach may serve to increase share and bond price volatility in financial markets. Worse, it might lead to fundamental investors (pension funds and insurance companies) buying shares on the basis of incorrect information with subsequent losses being incurred (and very large losses where a bank might subsequently need to be resolved).

Statutory "bail-in" bond regime

Where the "forbearance and time" approach is not feasible, and there is a desire to avoid the deadweight losses of full bank resolution, the option of "bail-in" bonds is being discussed at present in government and private sector circles. This option was not a part of the earlier resolution regimes discussed above, where senior bondholders were protected and much of the risk was borne by the taxpayer. The issue here concerns whether bondholders should bear more risk in a banking crisis after equity and subordinated debt has been wiped out. If governments come in to take over a bank and keep it as a going concern then default clauses in bond contracts may not be triggered. There is in some sense a logical "contradiction": that if the bank were allowed to fail holders of its bonds would bear the pain (after equity and subordinated debt), but if taxpayers money is used to keep the bank as a going concern (when in fact it has really failed) they do not. There are two broad "bail-in" bond options here:

- The conversion of senior debt into equity at the point of failure; and
- A haircut to senior bonds at the point of failure.

The aim is to keep banks as a going concern, but to reduce the burden to the taxpayer of bank rescues that allow bondholders to be protected.

Many questions need to be resolved prior to the introduction of such regimes

There are many questions that need to be resolved prior to the introduction of such regimes, mostly to do with the smooth functioning of the markets. Some examples are:

- Senior holders of bank debt include short-term debt in the interbank market. If haircuts apply to such securities, what would happen to the interbank market in a crisis? Should deposit insurance apply to interbank holdings? If it did, would this distort bank investment decisions and lead to new forms of structured products utilising their unique characteristics?
- Are there legal enforceability issues pertaining to the offshore bondholders? and would regulatory and legislative agenda's have to reflect more cooperation?
- Could there be undesired consequences of potential investors being willing to accept only secured or very short-term bank debt in a "bail-in" bond regime? Or, alternatively, would "bail-in" bonds require too high returns to compensate them for potential haircuts (so demand for them is very weak)?
- If "bail-in" bonds only apply to new issues, where all bond covenants can be written to reflect the new requirements, they would take some time to roll fully into a bank's portfolio (as existing bonds mature). This would mean that they would only have a marginal value as a source of capital at first. This raises the issue as to whether it is possible to write legislation to allow "bail-ins" to apply to existing bond issues. But if it is possible, would this risk creating sharp movements in bond prices, some illustrations of which were illustrated earlier? Would this exacerbate liquidity problems of some banks were it to be introduced in the near term?
- Bail-in bonds might be too procyclical. While banks might find it easy to issue bail-in bonds in the upswing of the economic cycle at reasonable prices, during periods of potential market stress or economic slowdown banks might find it impossible to roll over their bail-in bonds or could only do so at a high premium. As a result, during such periods the marginal interest rate on new issues of bail-in bonds might rise dramatically which could further exacerbate potential market stress or economic slowdown.

"Bail-in" bonds certainly meet both of the two criteria concerning policy credibility: not blurring the line between monetary and fiscal policy, and helping to reduce the deadweight losses of outright bank failures. However, many practical issues have to be thought through beforehand.

Notes

1. See Sturzenegger (2002). This one-period formula assumes the probability of default is uniform over the life of the bond. The author notes that geometric spreads, *i.e.* the ratio of the rates of return on two assets, is preferred to the usual approximation (i-i*), so that the probability of default is appropriately bounded between 0 and 1.

2. See Sturzenegger and Zettelmeyer (2005).

3. See Chan-Lau (2006).

4. A return to 2% inflation and a haircut is applied to trend growth in the four countries concerned. Countries have yet to carry out key structural reforms. Wide competitiveness disparities have emerged, and the four countries have been living beyond their means.

5. Clearly, if the process is drawn out over a longer time horizon, and economic growth is strong, the cuts might be less than those shown here to achieve full stability by 2014.

6. The Paris and London Clubs are informal groups that have carried out such restructures in the past.

7. For example, there is a single market for Europe yet prudential supervision is carried out on a national basis. It is not enough to coordinate – single markets require single regulators. Similarly, in the services sector, national regulation impedes free completion in the provision of essential services, etc.

8. New proposals are currently under discussion, including debt-restructuring mechanisms and sanctions on countries that don't meet fiscal objectives.

9. See Blundell-Wignall and Slovik (2010).

10. For example, Deutsche Bank has a RWA to TA ratio of only 16%, and is highly leveraged. HSBC has a much higher ratio of closer to 45% and is a much lower leveraged bank. Any bank, by the "intelligent" use of derivatives, can make this ratio as low as they like, and thereby avoid capital, if only the supervisors in their Pillar 2 capacity don't take action to stop them. The fact that this is not covered in the *ex-ante* rules is one of the glaring faults of the Basel system. The current system gives HSBC the incentive to lever it balance sheet and hence return on capital – to turn itself into a Deutsche Bank with a nice rise in its stock price as the incentive to do so.

11. These boom bust cycles were exacerbated by too-low interest rates in some countries resulting from the one-size- fits all monetary policy of the EU.

12. See Honohan (2010).

13. See Blundell-Wignall and Slovik (2010).

14. Hence Anglo Irish is excluded.

15. There are numerous examples in the post-War period of governments running into economic difficulties and budget management problems that have led to debt restructuring. These include: Albania, Argentina, Brazil, Costa Rica, Dominican Republic, Ecuador, Jordan, Mexico, Nigeria, Pakistan, Panama, Peru, Philippines, Poland, Russia, Ukraine, Uruguay, Venezuela and Vietnam. Often, these involved a moratorium on debt servicing (default), at which time access to global credit would end, followed by a period of negotiation with creditors to exchange existing obligations for new ones that could be serviced

properly by the borrowers (*i.e.* would be more sustainable). Quite a few of these restructurings were associated with Brady Bonds.

16. See FDIC (2003).

17. A public-private partnership exists to buy the loans at a haircut valuation. The risk shared here with the private sector is that the haircut could be too small in the NAMA balance sheet. The private partners do not play a role in recapitalising banks that are losing money.

References

Becker, Sebastian (2009), "EMU Sovereign Spread Widening, Reasonable Market Reaction or Exaggeration", *Deutsche Bank Research*, June 29, 2009.

Blundell-Wignall, Adrian and Patrick Slovik (2010), "The EU Stress Test and Sovereign Debt Exposures", *OECD Working Papers on Finance, Insurance and Private Pensions*, No. 4, August 2010, available at www.oecd.org/dataoecd/17/57/45820698.pdf.

Blundell-Wignall, Adrian and Paul E. Atkinson (2010), "What Will Basel III Achieve?", paper prepared for the German Marshall Fund of the United States (GMFUS), available at http://gem.sciences-po.fr/content/publications/pdf/Blundell_Atkinson_Basel_III_achievements112010.pdf

Buiter, Willem, and E. Rahbari (2010), *Is Sovereign Default 'Unnecessary, Undesirable and Unlikely' For All Advance Economies*, Citigroup, 16 September 2010.

Chan-Lau, Jorge A (2006), Market-Based Estimation of Default Probabilities and Its Application to Financial Market Surveillance", *IMF Working Paper, WP/06/104.*

Cottarelli, Carlo, Lorenzo Forni, Jan Gottschalk and Paulo Mauro (2010), "Default in Today's Advanced Economies: Unnecessary, Undesirable, and Unlikely", *IMF Staff Position Note*, SPN/10/12, September 2010.

FDIC (2003), *Managing the Crisis: the FDIC and RTC Experience*.

Honohan, Patrick (2010), *Financial Regulation: Risk and Reward*, speech to Financial Services Summit 10 November 2010.

Sturzenegger, Federico (2002), *Toolkit for the Analysis of Debt Problems*, Working Paper 12/2002, Universidad Torcuato Di Tella.

Sturzenegger, Federico and Jeromin Zettelmeyer (2005), "Haircuts: Estimating Investor Losses in Sovereign Debt Restructurings, 1998–2005", *IMF Working Paper* 05/137.

Swartz, Paul (2010), "Greek Debt Crisis—Apocoplypse Later", *Centre for Geoeconomic Studies*, Council of Foreign Relations.