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## HIGHLIGHTS

- In this report we present alternative scenarios for the evolution of public finances for eight European countries, with particular emphasis on Greece, Ireland, Portugal, and Spain
- Our analysis shows that Spain should maintain manageable debt service cost levels
- However, even under optimistic assumptions, it will be extremely difficult for Greece to avoid a debt-restructuring
- Given the risks of a debt default, it is critical to assess the potential financial implications of such an outcome and consider how Europe might deal with potential undercapitalized banks in the region
- This is not only critical from a financial stability perspective, but fundamental to help avoid a potential monetary contraction stemming from weaker confidence in the banking system, which, combined with ongoing fiscal tightening efforts, could severely undermine the economic recovery

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## EUROPEAN SOVEREIGN DEBT: STRESS TESTING BANKS FOR “SOVEREIGN DEFAULT” IS KEY NEXT STEP

In the wake of the Irish bail-out, the early months of 2011 could reflect the calm before the storm on the European sovereign debt front line. Market sentiment improved and sovereign bond yields declined after a very successful inaugural debt auction by the European Financial Stability Facility (EFSF) on January 25<sup>th</sup>. However, this relative tranquility was interrupted in mid-February when, in reaction to a sharp increase in its government bond yields, Portugal announced that it would conduct a reverse auction on February 16<sup>th</sup> to buy back roughly €9.4 of outstanding government debt set to mature in April and June of this year. This effort by the Portuguese government, as well as others recently announced by Spain, are attempts to reassure bond holders that these countries would not suffer the same fate of Greece and Ireland. The actions occur against a backdrop of collective feet-dragging at the broader European level to deal effectively with the sovereign debt risks. After months of debate, European leaders have yet to agree on how to combine broader capabilities for the EFSF with tougher austerity measures and closer oversight of debt-burdened member states. This policy delay, in combination with a pause in sovereign debt purchases by the ECB, were the main reasons for the spike in Portuguese yields.

So how big are the risks that a European country could default on its sovereign debt? In this report we present alternative scenarios for the evolution of public finances for eight European countries, with particular emphasis on Greece, Ireland, Portugal, and Spain. Our analysis shows that Spain should maintain manageable debt service cost levels. However, even under optimistic assumptions, it will be extremely difficult for Greece to avoid a debt-restructuring, a point we have stressed in prior reports on the European debt situation. Therefore, the main conclusion is that euro zone countries must go beyond the current measures of fiscal tightening and growth-boosting structural reforms. As a starting point, it is critical to assess the potential financial implications of a debt restructuring and consider how Europe might deal with potential undercapitalized banks in the region.

### Fiscal consolidation: a long uphill battle

To demonstrate the vulnerability from debt service payments, we begin with an analytical exercise that considers four alternative scenarios for the evolution of gross debt levels. To construct our base case scenario, we apply forecasts for general government gross debt, primary fiscal balances, and nominal GDP growth for the period 2011-2015 from the IMF's November 2010 Fiscal Monitor. It is worth noting that those projections already incorporated most of the fiscal adjustment plans announced earlier last year by the European countries under consideration.

The first alternative scenario (column 5 in the table on the next page) captures an optimistic path by assuming nominal GDP growth (i.e. national income growth supporting the tax base) outperforms the base case scenario by 2 percentage points this year and next, and then returns to the path projected by the IMF. The second scenario (column 6) reflects a downside risk of a 2 percentage point underperformance of nominal GDP growth relative to the base case. The third alternative is

a fiscal underperformance scenario (column 7), which assumes a 1% lower primary fiscal balance than in the base case during 2011-12. Lastly, we show the results of the direst scenario, which combines the latter with a 1 percentage point underperformance of nominal GDP growth during the same period (column 8).

Under the optimistic scenario, Greece would experience a reduction of debt service costs from an annual average of 6.40%-of-GDP to 6.17%-of-GDP, while Germany would see them fall from 2.18%-of-GDP to 2.10%-of-GDP. This suggests that moderately stronger income and tax growth is not enough to solve the deficit problems. Abnormally high nominal GDP growth would be required to achieve meaningful reductions.

The three downside scenarios presented above reflect deviations from economic growth or fiscal targets that are very reasonable to conceive from a macroeconomic perspective. Were any of these scenarios to materialize, they would surely grab media headlines and elicit financial market jitters; however, none of them yield dramatic changes in debt servicing costs. In other words, these deviations on their own right would not tip the scale from the base-case scenario and send a country into default – or, by the same token, bring it back to fiscal sustainability. This outcome can be interpreted in a positive or negative light, depending on the particular situation of each country. For simplicity, we will only comment on the four countries that are under the financial market spotlight at this juncture: Greece, Ireland, Portugal and Spain.

### Spain is rushing to build its defense line while Portugal teeters

Spain has the advantage of a low gross debt level, which translates into a low debt servicing burden. Indeed, the table shows that even under our most severe scenarios, Spain's financing costs would remain below 2.7%-of-GDP. This

is a low burden and should be manageable – barring any further shocks – if the country maintains its commitments to fiscal discipline. This is particularly relevant for Spain at this conjuncture. After a government-led consolidation drive last year, which reduced the number of regional saving banks from 45 to 17, the Spanish government has been pressuring the remainder saving banks to address their real estate non-performing loans and to recapitalize their balance sheets accordingly by mid-September. Those who fail to attract private investors will be encouraged to consolidate through mergers and acquisitions, or will receive public capital injections through the Fund for Orderly Bank Restructuring (FROB). According to Spanish authorities, preliminary estimates put the total recapitalization need at around €20 billion, although estimates from market analysts are closer to €50 billion. If push comes to shove and the FROB has to foot the entire bill under the larger recapitalization assumption, it would entail a roughly 5%-of-GDP increase in the gross debt level of the Spanish sovereign. This is a relatively moderate figure, which would raise Spain's gross debt to roughly 68.5% of GDP. This suggests that the debt burden should remain manageable even under the negative scenarios. Moreover, tackling the difficulties of the country's banking system head-on will pay as big a dividend to Spain, as its ongoing fiscal tightening efforts.

Distinguishing between the strong and the weak banks renews the public's confidence in the healthy portion of the local banking system. This allows for the reallocation of deposits within the country, and a more rapid restoration of the overall lending capacity of the banking system. Paying testament to this, Spanish banks borrowed €57 billion from the ECB in January, the lowest level in two years, and a one of its leading banks also issued the first senior bond from a Spanish financial institution this year.

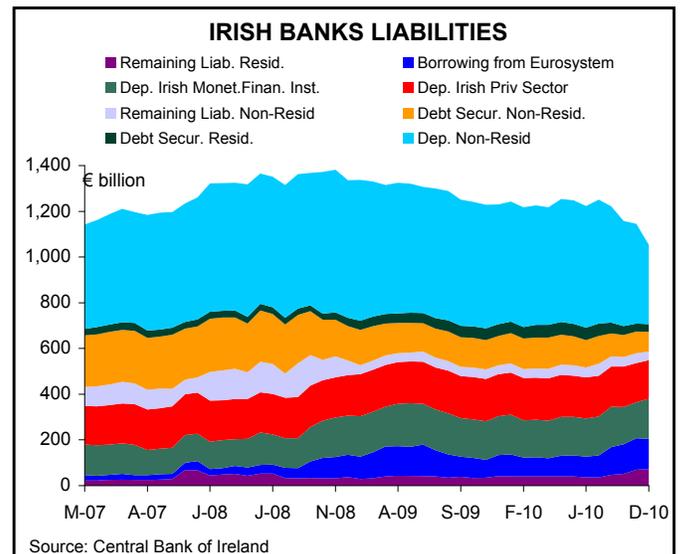
	FISCAL POSITION (% of GDP)		INTEREST PAYMENTS (% of GDP, average 2011-2015)				
	Gross Debt <sup>^</sup>	Primary Balance avg 2010-15 <sup>^</sup>	Base Scenario <sup>*</sup>	Alt. Scen. 1 <sup>*</sup> NGDP growth + 2%	Alt. Scen. 2 <sup>*</sup> NGDP growth - 2%	Alt. Scen. 3 <sup>*</sup> Primary Bal - 1%	Alt. Scen. 4 <sup>*</sup> NGDP growth -1% & Primary Bal -1%
France	84.2	-2.53	2.72	2.62	2.81	2.77	2.82
Germany	75.3	-1.11	2.18	2.10	2.25	2.23	2.27
Greece	130.2	1.76	6.40	6.17	6.63	6.49	6.60
Ireland	99.4	-8.49	5.27	5.10	5.44	5.35	5.44
Italy	118.4	0.88	3.77	3.63	3.91	3.82	3.89
Portugal	83.1	-2.22	3.50	3.38	3.62	3.57	3.63
Spain	63.5	-3.88	2.55	2.47	2.63	2.61	2.65
United Kingdom	76.7	-3.35	3.22	3.12	3.33	3.29	3.35

Source: <sup>^</sup> IMF Fiscal Monitor November 2010, <sup>\*</sup> TD Economics

## Ireland and its banks

Ireland's debt servicing costs amount to an already high 5.3%-of-GDP under the base case scenario. However, under Ireland's worse case scenarios, this ratio edges up to only 5.44% – a marginal increase. Such a change in debt servicing costs would only make Ireland negligibly more likely to default than it already is. However, there are aspects that render Ireland's debt position far more vulnerable than the figures on the table would suggest. The fragile position of Irish banks represents a significant potential liability to the Irish government, which is not captured in the sovereign debt data. In fact, even after significant injections of public funds – some €46 billion, which swelled the Irish fiscal deficit to 32.3% of GDP last year – the worsening situation of largely-nationalized Irish banks remains a major risk factor. As the accompanying chart shows, growing difficulties to secure wholesale funding through capital markets, coupled with significant declines in deposits, have made Irish banks increasingly dependent upon liquidity support from the European Central Bank and the Central Bank of Ireland (CBI).

From the end of May 2010 until the end of December 2010, deposits by non-residents (as shown by light blue area on top of the chart) declined by an alarming €191 billion, while deposits by residents shrank by €15.7 billion. Although the latter is small relative to the former, resident outflows are running close to 10% of GDP, making it very significant relative to the size of the Irish economy. Funding from debt securities' issuance by Irish banks also contracted by €67.1 billion during the same period. To partially offset these declines, Irish banks borrowed €41.5 billion from the ECB (blue area second from the bottom of the chart); but, that amount was not enough to cover the funding shortfall. Thus, over the May-December period, the CBI provided €32.3 billion of emergency liquidity to them (purple area at the bottom of the chart). Those funds do not constitute Eurosystem monetary policy operations; therefore, in the event Irish banks fail to honor those loans, the cost of recapitalizing the CBI would ultimately fall to the Irish government. Should this occur, it would elevate



Irish gross sovereign debt to around 121% of GDP and the country's debt servicing costs would increase by half a percentage point of GDP. This is a risk which warrants close monitoring because it could have a significant impact beyond Ireland through financial market linkages. We discuss this topic further below, but before closing this section, it is important to highlight another critical consequence of the public mistrust of Irish banks.

Despite the official liquidity injections the Irish banking system has received in recent months, the massive deposit withdrawals illustrated above by December led to an 8.7% annual contraction in the M2 monetary aggregate. Thus, on top of harsh fiscal tightening, if confidence in the banking system is not restored, the Irish economy will be enduring a very contractionary monetary environment, which is being generated endogenously and beyond the control of monetary authorities. Because the country is a member of the currency union, it is barred from the nominal depreciation of its currency induced by capital outflows that would realign relative prices, facilitating an economic recovery. Therefore, the shock would have to be absorbed only by domestic prices via deflation. Such an outcome is toxic

### Some Curious Aspects Of Irish Banks' Balance Sheets

Interestingly, while the largely-nationalized Irish banks were receiving emergency liquidity assistance from the central bank, they were also doing their share of lending to the Irish government. In the seven months to December 2010, they extended loans for €16.3 billion to the general government and bought government debt securities for roughly €4 billion. In fact, outstanding loans by Irish banks to the general government skyrocketed from €1.3 billion in December 2009 to €31.6 billion a year later. Perhaps it was this combination of fiscal and monetary policy unorthodoxy which convinced the ECB that it was about time for Ireland to seek a bail-out in late November, and it has lately led ECB board members to emphasize that there will not be any concessions to Ireland in the terms of that arrangement.

for economic growth because it reduces aggregate wealth, delays consumption and cripples profit margins – all of which fosters social pressures that could prove flammable. For all these reasons, it is paramount to restore confidence in the banking system. Unfortunately, there is a high risk the Irish bail-out program in its current configuration will fall short of this mark.

### Portugal on the fringe

When compared to its Iberian neighbor Spain, Portugal's significantly larger gross debt-to-GDP ratio translates into debt servicing costs which are roughly 1%-of-GDP higher than Spain's under each alternative scenario. These factors greatly reduce the country's fiscal maneuverability. In addition, Portuguese banks have much larger exposures to Greek and Irish debt than their Spanish peers. This could prove very destabilizing for the country's financial system, a risk factor that is being priced into its sovereign bonds, which have recently moved more in tandem with those of Greece and Ireland's as the accompanying chart shows.

### Greece and the Unpleasant Sovereign Debt Arithmetic

Turning to Greece, under the most favorable alternative scenario we considered, the country would still face a relatively high annual debt service cost of close to 6.2%-of-GDP during the period 2011-2015. In other words, even if Greece carries through the herculean feat of reverting its primary fiscal balance from an estimated deficit of 2.2% of GDP in 2010 to a 5.8%-of-GDP surplus by 2015, while at the same time nominal GDP growth rate surprises on the upside by a full 2 percentage points over the next two years, its annual interest payments would still consume, on average, 16% of the fiscal budget. Moreover, under the most negative of our

scenarios, interest payments on Greek debt would amount to an annual average of roughly 6.7%-of-GDP. When debt servicing costs remain this high, despite grueling fiscal tightening efforts, debt restructuring begins to look inescapable. This is one of the reasons why investors have been pricing Greek bonds at a large discount despite the financial assistance package the country received from the EU and the IMF in May last year.

Given that investors are confronted with the high risk that Greek may ultimately need to restructure its debt, what would this mean in terms of investor losses and financial market repercussions?

### Previous Debt restructuring experiences

History shows that sovereign debt defaults/restructurings are extremely disruptive events with damaging and long-lasting consequences for creditors as well as debtors. Debt restructuring eases the burden of the required fiscal adjustment, but it does not eliminate it completely. Moreover, in some circumstances, having the funding taps tightened by global financial markets can exacerbate the bluntness of the required post-restructuring adjustment.

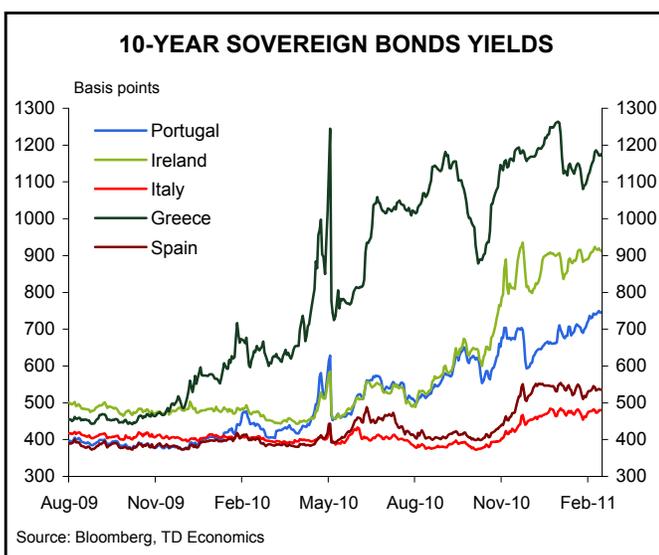
Regarding investor losses, research by the IMF<sup>1</sup> which analyzed a series of emerging markets debt restructurings during 1998-2005 found that there were very large variations in "haircuts" within their study group. The largest loss – computed as the difference between pre- and post-default net present value of debt instruments being restructured – was estimated at 74% in the 2005 Argentinean debt restructuring. The lowest loss corresponded to Uruguay in 2003 with an estimated 13% haircut. However, in the vast majority of defaults, investor losses ranged from 25% to 35%.

The authors of that study found no clear pattern in the treatment received by domestic debt holders relative to non-resident debt holders. In some cases, the terms of restructuring for residents were as harsh as those for non-residents.

There were several instances in which debt holders within the same restructuring process suffered different haircuts. Large restructurings involving a wide array of debt instruments made this outcome more likely.

Creditor participation rates for the restructurings under analysis were 90% or higher, except in the Argentinean 2002 and 2005 exchanges (65% and 76%, respectively).

Taking these facts into account, a key difference to highlight between the current European debt situation and the circumstances of those Emerging markets defaults discussed in the IMF study resides in the size of the outstanding claims to be restructured. The largest restructuring within the IMF



group was the 2005 Argentinean default, with a notional amount of US\$79.7 billion. While significant, it pales in comparison with the debt levels of even the smallest European countries under consideration. Ireland's outstanding debt and interest payment is in the order of US\$170 billion, while Greece's runs close to US\$530 billion.

In addition, a European sovereign debt restructuring would also impose a significant negative wealth effect on European citizens because public debt holdings are an important component of private savings. This in turn would hamper economic growth through reduced consumption and credit. This channel is also more relevant now in Europe than it was in previous experiences.

However, a more fundamental difference with the Emerging markets experiences analyzed in the IMF study comes from the potential ramifications of a prospective European default through financial markets linkages, which in this case are farther reaching due to the depth of financial systems in advanced economies. The more immediate impact comes from the contagion through financial institutions' balance sheets. Public debt haircuts reduce the value of assets and eventually translate into losses for financial institutions. This transmission channel can potentially generate a destructive vicious circle, triggering the restructuring of financial institutions' liabilities. We illustrate this point in the following section.

### Financial system linkages exacerbate contagion risks

The accompanying table shows the exposures of various European countries' banking systems to our group of eight countries. Outstanding claims are measured as a percentage of each banking system total capital and reserves. For instance, as of end-September 2010, Irish banks had claims on Greek private and public institutions equivalent to 7.4% of total capital and reserves of Ireland's banking system. By the same token, French banks had an exposure to Spain equivalent to 29.5% of the total capital and reserves of the French banking system.

To analyze the impact of a hypothetical Greek sovereign debt restructuring with a 30% haircut, let's assume for simplicity's sake that foreign banks have lent evenly to Greece's private and public sector. Moreover, assume – somewhat naively – the Greek sovereign debt restructuring does not affect Greek private debt. Under that scenario, German banks would take a hit equivalent to 1.3% of total German banking capital and reserves, and French and Portuguese banks would have to recognize losses equivalent to 1.5% and 2.9% of their total capital and reserves, respectively.

A hypothetical Irish restructuring, either of sovereign debt or by the largely-nationalized banks, would pose more dire consequences to financial markets across the region,

FOREIGN BANKS CLAIMS ON PIIGS and CORE EUROPE										
(% OF LENDER BANKS' HOME COUNTRY BANKING SYSTEM CAPITAL AND RESERVES )										
	Portugal	Ireland	Italy	Greece	Spain	Total Exposure to PIIGS	France	Germany	United Kingdom	Total
Belgium	3.0	73.3	34.0	2.9	27.3	<b>140.5</b>	42.5	30.7	51.0	<b>264.7</b>
Germany	8.3	32.0	36.8	8.3	41.7	<b>127.1</b>	43.2		102.5	<b>272.8</b>
France	6.0	8.4	72.6	9.6	29.5	<b>126.1</b>		50.4	56.6	<b>233.1</b>
Netherlands	4.7	17.4	37.3	3.5	60.7	<b>123.6</b>	73.1	129.6	122.1	<b>448.4</b>
Portugal		39.1	6.7	19.3	46.5	<b>111.6</b>	15.3	7.1	13.9	<b>147.8</b>
Ireland	5.0		38.6	7.4	23.8	<b>74.8</b>	17.8	38.0	193.2	<b>323.8</b>
Switzerland	2.3	12.6	12.9	2.4	9.6	<b>39.6</b>	44.3	57.0	142.8	<b>283.7</b>
United Kingdom	2.4	17.3	6.3	1.2	11.9	<b>39.1</b>	26.7	19.0		<b>84.9</b>
Spain	22.8	3.5	8.7	0.3		<b>35.4</b>	7.8	11.7	112.2	<b>167.1</b>
Austria	1.5	3.0	20.2	2.9	6.2	<b>33.9</b>	8.8	49.2	17.6	<b>109.4</b>
Denmark	0.3	22.5	0.5	0.1	2.4	<b>25.8</b>	3.2	17.7	51.7	<b>98.4</b>
Sweden	0.5	5.9	1.8	0.7	5.3	<b>14.3</b>	12.2	96.0	51.4	<b>174.0</b>
Italy	1.0	3.3		1.0	5.9	<b>11.3</b>	8.9	56.7	10.5	<b>87.4</b>
Greece	0.3	1.5	1.6		0.6	<b>4.0</b>	4.6	12.8	37.0	<b>58.4</b>

Source: BIS, ECB, Swiss National Bank - September 2010, TD Economics

because of the significantly larger exposure of European countries to Irish public and private debt. In particular, note the large exposures to Ireland of the two European financial heavy-weights: 32% in the case of Germany and 17.3% for the U.K. An Irish debt restructuring could certainly inflict considerable damage to Belgian (exposure equivalent to 73% of total reserves), Portuguese (39%), and Danish banks (22%).<sup>2</sup>

Granted, this is a simplified analysis because it does not capture the mitigating effect brought about by the use of derivatives, such as credit default swaps. However, the fact that financial institutions could defray direct hits by means of derivatives hedging does not eliminate the losses from the financial system since somebody else has to cover them.

Another important caveat is that exposures of individual institutions are naturally above and below the average of each country's banking system. Therefore, a debt restructuring could potentially destabilize an individual bank, which, in turn, could trigger systemic reactions with considerable larger consequences. From this perspective, it is critical that the second round of stress tests to be conducted this summer by the newly established European Banking Authority contemplate a stress scenario originated in a sovereign default, and assesses the impact on the entire balance sheet of financial institutions.

### **Stringent stress tests are the key next step to solving this crisis**

A major flaw in last year's European stress tests was that its design ignored a hypothetical sovereign default. Therefore, by construction, the test did not penalize banks for their holdings of sovereign debt instruments carried as "held-to-maturity" on their balance sheets. As a result, recapitalization needs were underestimated not only because potential losses were understated, but also because the design of the stress tests ignored the fact that sovereign debt constitutes a sizeable portion of banks' capital buffers. The latter means that under a hypothetical default scenario, banks would not only sustain losses on their assets but also see their capital base shrink, which further weakens their ability to withstand the shock.

The latter argument highlights another major advantage of performing stringent stress tests considering sovereign default scenarios. The assessment of hypothetical impacts on banks assets and capital structures would provide invaluable information that could, in turn, help to develop the actual menu of new instruments to be offered to bond holders under a debt restructuring.

Sovereign debt renegotiations usually involve a number of combinations of face value reductions (i.e., haircuts), maturity lengthening, and interest rate reductions. Of course there are trade-offs to be considered in calibrating these options. For instance, extending the maturity of a 10-year old bond with a 20-year new bond would likely carry – other things equal – a larger haircut or lower coupon payment than those of an alternative new 30-year bond. These are the kind of complexities which make the current European debt crisis extremely difficult to resolve. For example, the reader could think of a "friendly" restructuring which extends the maturity significantly but imposes a low haircut, aiming to reduce the losses of those sovereign bonds carried as "held-to-maturity" in banks' balance sheets, and consequently reducing the need to increase capital levels. Again, this would have to compensate banks with a relatively higher coupon payment, or otherwise it would hurt their profitability – which in the end impacts their resilience. But higher coupon payments go in the opposite direction to the objective of alleviating the debtor's debt servicing costs, which was the reason for debt restructuring in the first place.

At the end of the day, the fundamental difficulty at the root of this conundrum is that, for countries with fiscal positions that are not fixable through fiscal tightening, aside from miraculously high economic growth, there is only one approach, debt restructuring, to achieve two objectives: first, to bring at-risk countries back to fiscal sustainability; second, to preserve financial stability by reducing investor losses. Unfortunately, these two objectives run counter to each other. Imposing a harsh restructuring on creditors would help to restore fiscal sustainability, but would also run the risk of sending the financial system into a tail-spin. This is why, as we argued above, the information obtained through stringent stress tests could help to strike a fine balance between these two objectives. This would reduce the overall economic cost of a debt restructuring process which appears to be likely for some countries.

### **Final Remarks**

Last year, most European nations outlined, or began to implement, fiscal tightening plans to contain ballooning public debt levels and to assure long-term fiscal sustainability. These efforts combined short-term deficit reduction strategies with structural policies, such as pension and labor markets' reforms. However, even if these plans are successful, they will deliver tangible results over a time horizon that runs the risk of disappointing impatient financial markets. Given this situation, we felt it prudent to assess outcomes

under varying scenarios. Our analysis shows that Spain's debt burden should remain manageable – making a default unlikely unless financial market confidence plunges. In contrast, Greece's debt servicing costs will remain elevated for many years even under optimistic assumptions, making the country a candidate for a possible debt restructuring.

Given the impact such an event would have on European financial systems, and the lack of comparable previous restructuring experiences, it is essential to have a reliable systemic assessment of the potential losses this could generate, paired with a clear European action plan as to how to

address potential capital shortages. This is not only critical from a financial stability perspective, but fundamental to avoid an endogenously generated contractionary monetary environment (i.e. capital flight) which would significantly hurt the economic recovery. Recent actions by Spain constitute a necessary complement to fiscal austerity and structural reform; and, as such, signal a feasible way forward in this European debt crisis. It would be very encouraging to observe similar actions pursued more rapidly and decisively in a broader number of countries.

#### Endnotes:

- 1 “Haircuts: Estimating Investor Losses in Sovereign Debt Restructurings, 1998-2005”, IMF Working Paper WP/05/137, by Federico Sturzenegger and Jeromin Zettelmeyer.
- 2 The sharp contractions in external funding suffered by Irish banks since September 2010 (please see chart on third page) will show materially lower exposures once December 2010 statistics become available.

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