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Focus on

- Challenges in sovereign debt markets

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Foreword

Financial Market Trends *provides regular updates of trends and prospects in the international and major domestic financial markets of the OECD area and beyond. It provides timely analysis of and background information on structural issues and developments in financial markets and the financial sector, focusing on areas where changes are most substantial.*

This issue deals with current challenges arising in various areas of financial markets and features a special focus on debt management and bond markets. The articles

- *discuss the market view on the European sovereign debt and banking crisis and proposals for its solution, and summarise discussions held with the private sector on these and related issues;*
- *evaluate options to fund resolution of systemic financial crises and look at various risks arising in financial group structures;*
- *discuss challenges and developments in the financial systems of the Southeast Asian Economies;*
- *present the most recent sovereign borrowing outlook as well as a debt managers' perspective regarding proposals for restrictions on short selling of sovereign debt;*
- *examine the labour, financial and demographic risks to retirement income from defined-contribution pensions; and*
- *assess corporate governance in the Middle East and North Africa.*

An Index of Recent Features provides the reader with a list of articles published in Financial Market Trends *over the past few years.*

In between the biannual publication schedules of the entire volume and print version of Financial Market Trends, *individual articles are being released online as soon as they are available (**www.oecd.org/daf/fmt**) and subscribers can order and download articles and full issues of the book at **www.sourceOECD.org/periodical/fmt**.*

We hope this issue of Financial Market Trends *will again serve our readers with valuable information and analysis.*

*Comments and questions should be addressed to the Financial Affairs Division of the OECD Directorate for Financial and Enterprise Affairs (e-mail: **fmt@oecd.org**).*

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PART I

Current Issues in Financial Markets

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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

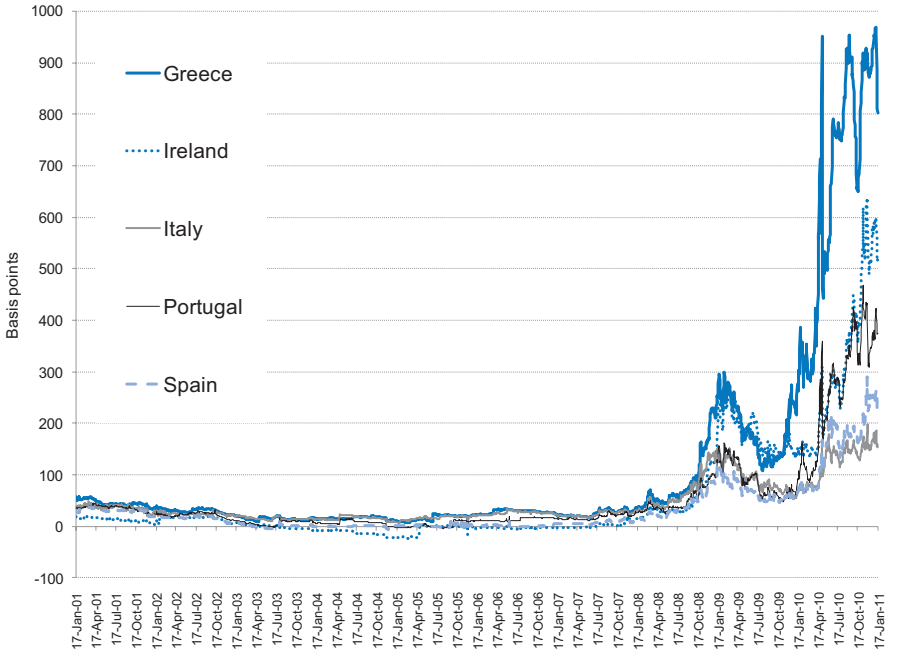
criteria that are well known to affect the probability of debt restructuring. The discussion highlights the relative sizes of bank losses and shows the potential impact of sovereign restructuring implicit in market analysis on bank balance sheets. The paper goes on to examine the pro's and con's of a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

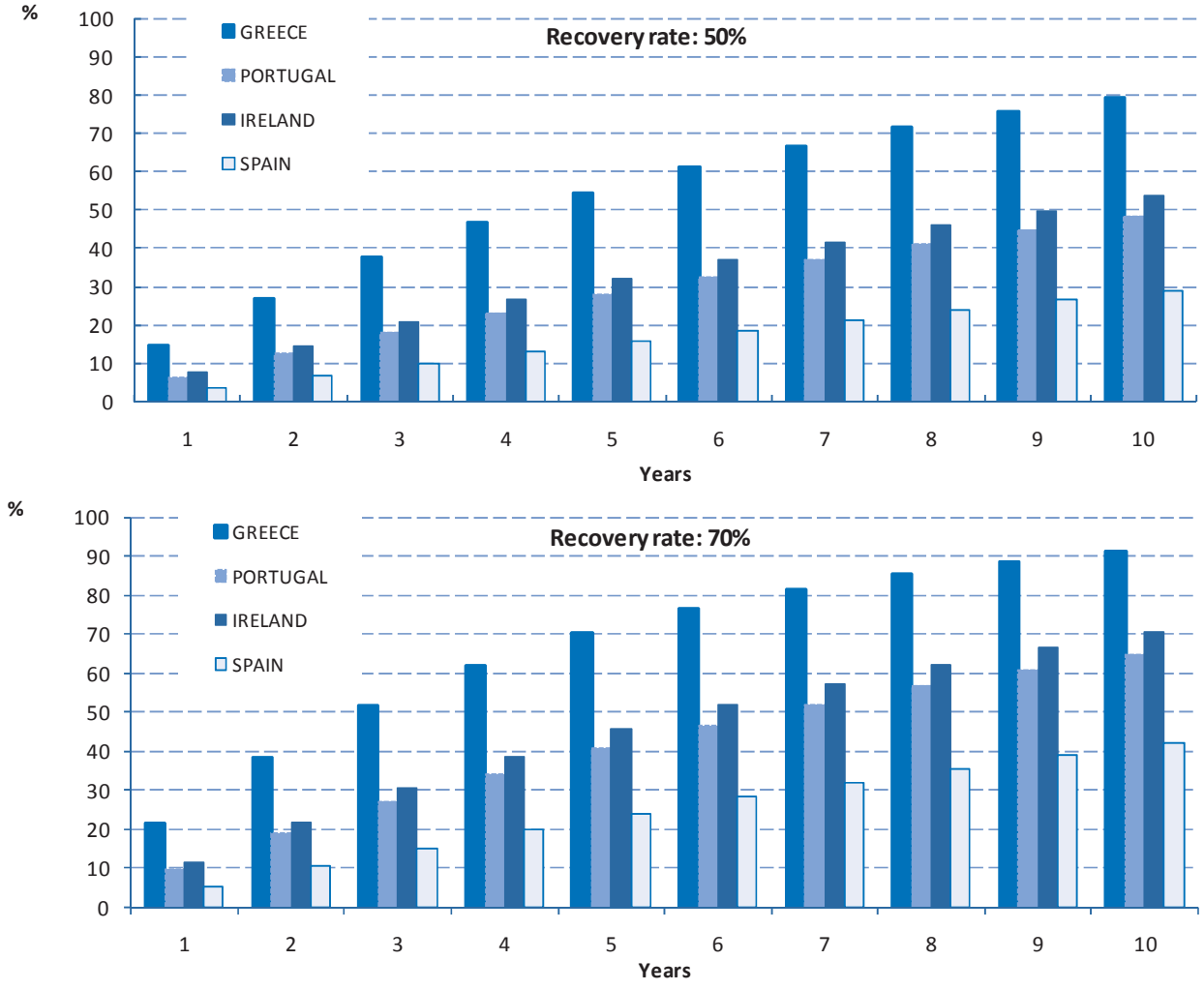
Nevertheless, these calculations are used widely

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

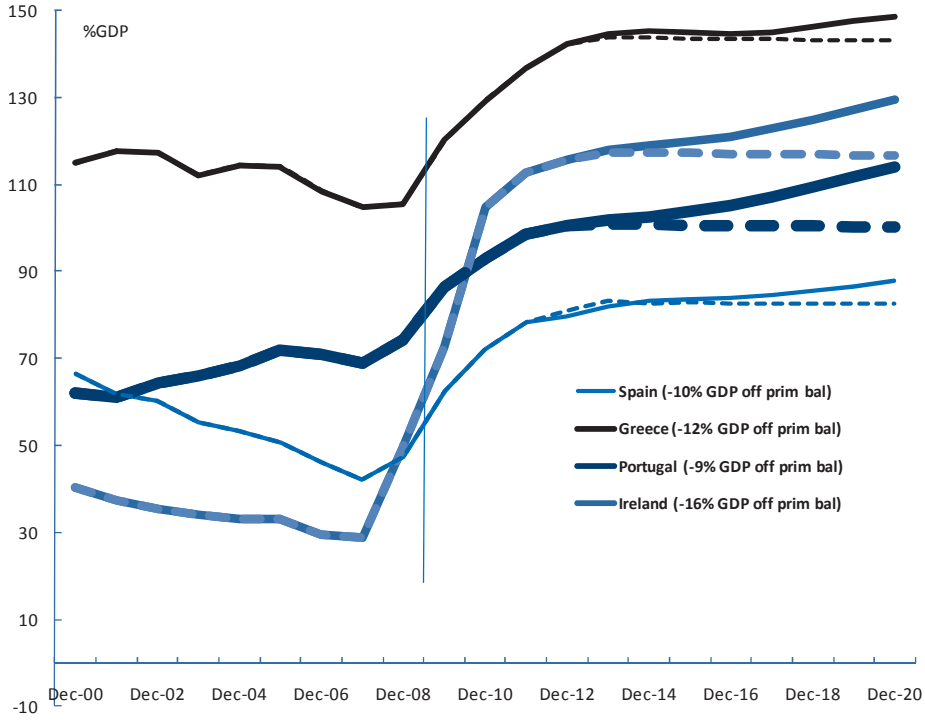
The OECD forecasts go only to 2012, so the dashed lines show the consolidation required beyond that to achieve full stability of the public debt by 2014. The cumulative primary budget cuts from the end of 2009 as a percentage of GDP required to achieve this are shown in parentheses.[5] The budget, debt-service 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 Serve % 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 Serve % 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.

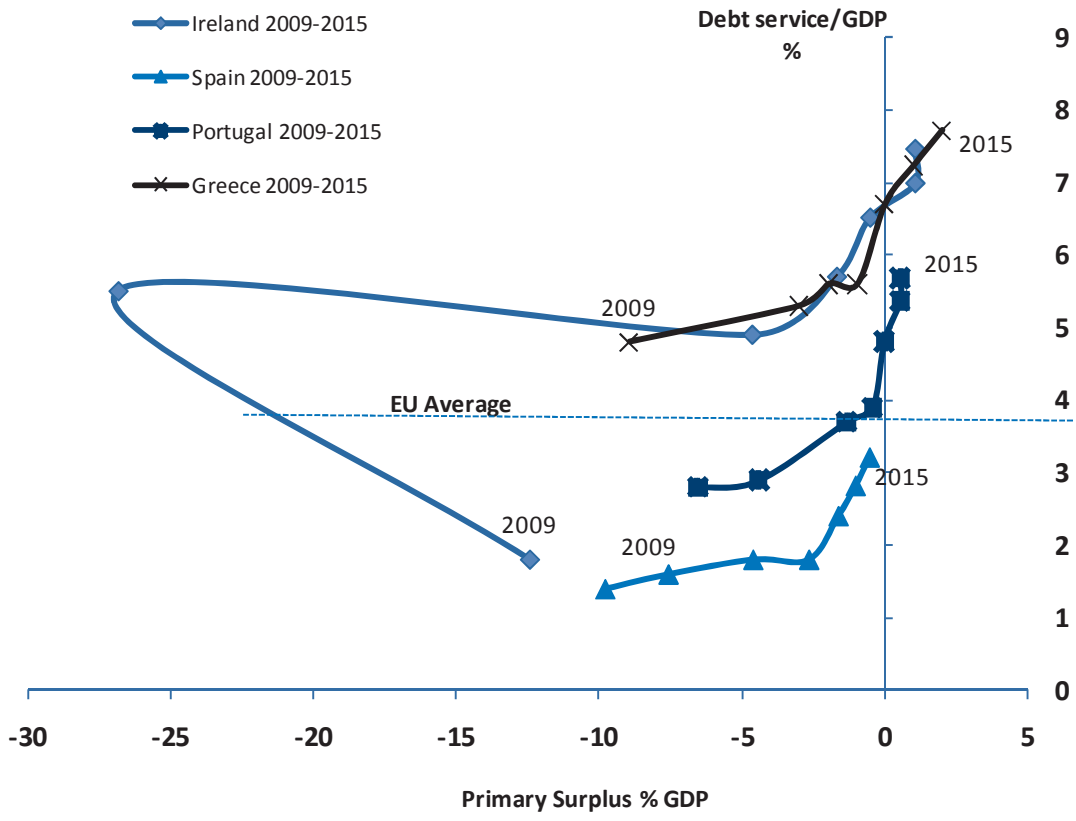
5. The lower the amount of sovereign debt held by domestic banks, since the losses on such debt could add to banking-sector problems.

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

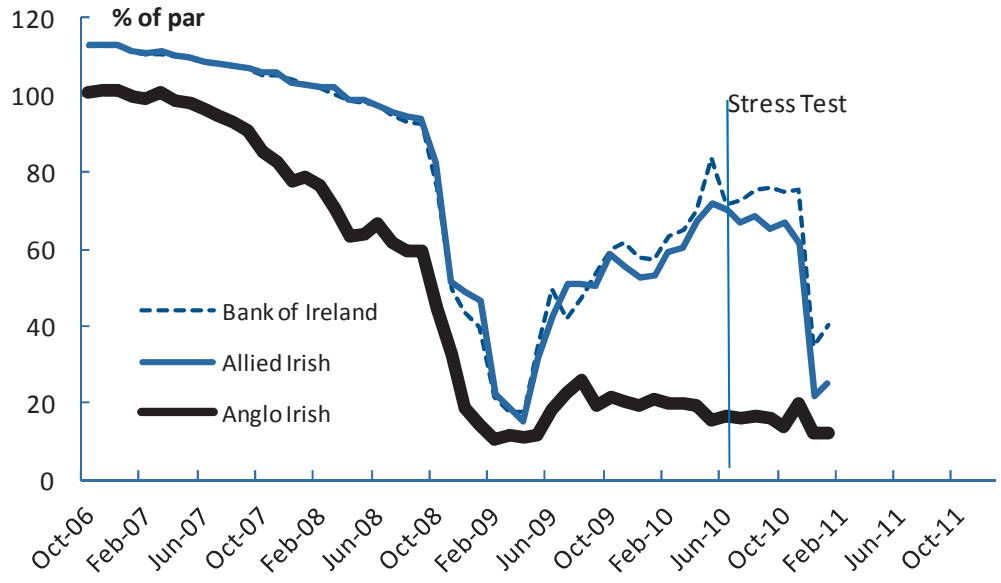
European banks are less-well capitalised than US banks. This is in part due to the absence of a leverage ratio requirement in Europe, where authorities instead rely on the Basel system, which applies capital requirements only to Risk-Weighted Assets (RWA) without any reference to the ratio of RWA to 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



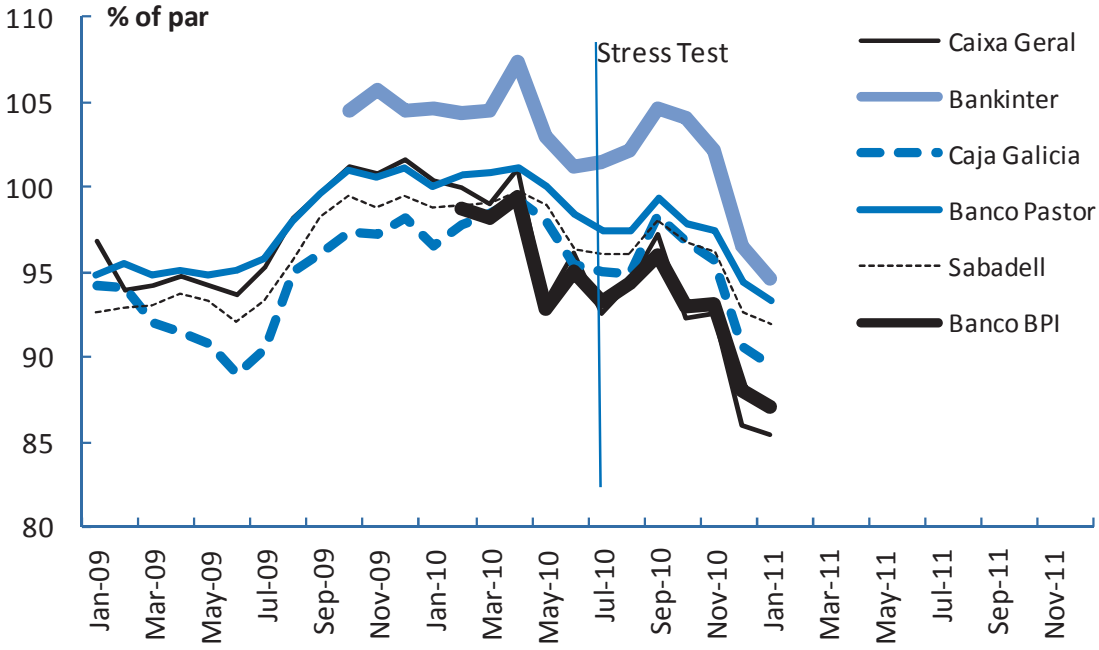
Source: Datastream, OECD.

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.

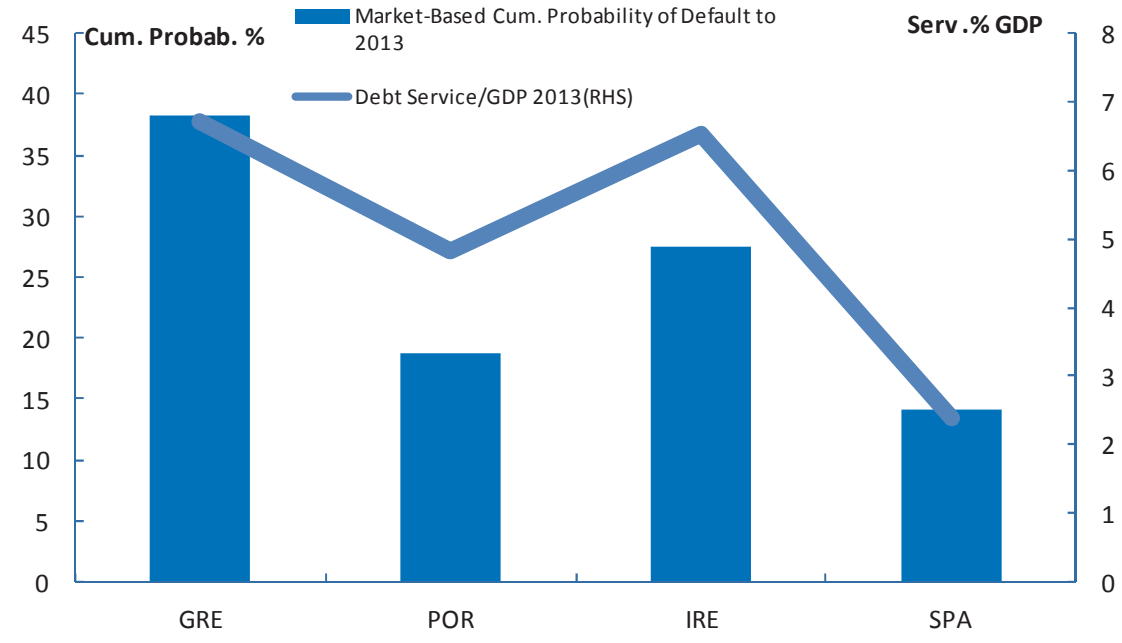
Exposure to Irish sovereign debt

- 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.

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Sovereign Debt Challenges for Banking Systems and Bond Markets

by

Gert Wehinger*

Discussions at the October 2010 OECD Financial Roundtable conveyed a rather sombre view regarding the current outlook and risks, heightened by financial sector weaknesses, ongoing deleveraging and sovereign debt. Policy makers should be prepared for downside risks to materialise along the way to recovery. Low interest rates and low returns pose specific challenges for institutional investors. While sovereign risk is currently a major concern, its measurement is rather complex and markets do not always provide proper guidance. Sovereign ratings can serve as a useful point of reference but should be made more forward-looking and less procyclical. Should default or debt restructuring become necessary, strong political backing can minimise its costs. The European Financial Stability Facility (EFSF) was seen as helpful in providing a backstop. Some optimism was expressed as to the current fiscal adjustments underway to bring public finances back onto a sustainable path. Banking sectors remain fragile, especially in Europe, where, however, the transparency provided by recent stress tests has calmed some fears. Reactivating the wholesale markets for bank funding will be essential going forward. Capitalisation of the US banking sector has improved, but pockets of risk remain in exposures to commercial property by regional and small banks. Contingent convertible (bail-in) bonds could become a useful instrument for sharing the costs of crises, but they need to be made attractive for investors.

JEL Classification: G01, G12, G15, G18, G21, G32, H06, H60, H62, H63, H68

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* Gert Wehinger is an economist in the Financial Affairs Division of the OECD Directorate for Financial and Enterprise Affairs. This article is based on a summary of the discussions that took place at the OECD Financial Roundtable held on 7 October 2010 with participants from the private financial sector and members of the OECD Committee on Financial Markets, and a background note prepared for that meeting, taking into account selected developments that have since taken place. The author is grateful for additional comments from OECD staff members. The author is solely responsible for any remaining errors. This work is published on the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein do not necessarily reflect the official views of the Organisation or the governments of its member countries.

I. Background and summary

This dialogue with the private sector focused on issues related to sovereign risk challenges for banking systems and bond markets

The OECD Committee on Financial Markets held a dialogue with selected representatives of the financial-services sector (the "Financial Roundtable") on 7 October 2010, to discuss issues related to the sovereign debt challenges faced by banking systems and bond markets. Three rounds of discussions covered *(i)* the current outlook and risks, including capital flows and global rebalancing; *(ii)* sovereign risks: measurement, rating and policy responses; and *(iii)* challenges for the banking sector. The following sections summarise the issues raised, and the conclusions that emerged, from the meeting. The summary is complemented by charts, boxes and a table to illustrate some of the arguments presented and to update information where appropriate. Following is an overview of the main points.

The current outlook is rather bleak

Roundtable participants conveyed a rather sombre view of the current outlook and risks. The recovery in the financial markets and economies of most OECD countries remains fragile, and the risks are heightened by the interconnectedness between the real and the financial sectors, which are both still weak. Getting back to normal is expected to take a long time, and policy makers should be prepared for additional downside to materialise and more challenges to appear along the way to recovery. While some individual banks are coping well, the sector as a whole may not. Deleveraging still has some way to go, and while the financial sector has made strides in the right direction, sovereign debt has now become a major concern. Investors – pension funds were mentioned in particular – will have to, and are starting to, accept lower returns as profitability has diminished more broadly. But the low interest rate environment poses a challenge for many institutional investors since their investments in alternative, riskier (and potentially higher-yielding) asset classes has been restricted.

Sovereign risk poses challenges for debt managers

As reported at the Financial Roundtable, government debt managers did not perceive a systemic weakness in the government bond markets, but they felt that there was no more "business as usual" in this new market landscape. The gross borrowing needs of OECD governments are expected to rise. A great challenge for several sovereigns is how to raise large volumes of funds at the lowest possible cost while maintaining manageable levels of roll-over risk; most OECD debt managers continue to rebalance their debt portfolios toward longer-term instruments.

However, the measurement of sovereign risk remains complex and markets provide unsatisfactory guidance

There was widespread agreement that the measurement of sovereign risk is a rather broad undertaking and several aspects and interrelated risks (sovereign, political, institutional, transfer, and counterparty risks) need to be taken into account in its assessment. CDS spreads have shortcomings (the relatively low liquidity and high volatility of the CDS markets) and should not be used as an absolute measure of sovereign risk, but rather as a directional measure of market sentiment. While markets attach a positive probability to a default by Greece, it was felt that a restructuring could be manageable and its negative effects could be attenuated by political and financial backing (similar to the Brady bond arrangements put in place to resolve the 1990s Latin American debt crisis). The new European Financial Stability Facility (EFSF)

and also the IMF could play a role in this. But it was also pointed out that fiscal adjustments in many of the affected countries are well underway and above-forecast, and structural reforms could help them grow out of indebtedness and get back on a sustainable path. The recently observed flight to quality could soon be reversed as positive signals become more apparent.

Sovereign ratings can serve as a useful point of reference but should be made more forward-looking and less procyclical

Rating agencies were in the difficult position of not "crying wolf" too early and then being accused of "sleeping on the deck" when sovereign risks surfaced in the markets. Rating agencies are trying to improve their models and become more forward-looking in their assessments. It was also pointed out that ratings are confined to the quality of debt and do not give an opinion on the more complex issues of sovereign risk and the probability of default. Also, ratings have to duly take into account official support and guarantees that markets may perceive as rather doubtful in some cases. There was some support for proposals to decrease regulatory/legislative dependence on ratings, and to take into account a wider variety of ratings, including from smaller rating agencies.

Challenges for the banking sector remain substantial, especially in Europe

The recent stress tests of European banks were perceived as helpful, and despite their shortcomings they have calmed the markets as a lot of information that was released could be used by market participants to make their own assessments. It was noted that the size of the EU/IMF rescue package (EUR 750bn) roughly matches the capitalisation of the European banking sector, and as such provides a credible standby and support plan. However, restoring the bank-lending channel remains a major challenge, especially in Europe with its more bank-based financial system. Reactivating the wholesale bank-funding markets will also be essential in this respect. Capitalisation of the US banking sector has improved, but pockets of risk were seen to persist, especially in exposures to commercial property by regional and small banks. Contingent convertible (bail-in) bonds could become a useful instrument for more evenly distributing the costs of future crises, but they need to be made attractive to bond investors.

II. Current outlook and risks, capital flows and global rebalancing

1. General outlook

The outlook remains sombre and risks remain

A rather sombre economic outlook was presented by the many participants. The crisis has spread from the financial markets to the general economies, and it has now come to affect government debt. The policy measures to cope with the crisis were not decided in a framework of discipline and good governance, but were taken out of necessity, and with a good amount of pragmatism. Therefore, how to exit from these measures remains a major challenge. Getting back to normalcy and to discipline will be very difficult, and markets seem to anticipate a lot of risk in doing so. Unpleasant surprises should be expected on the way to recovery, and policy makers should be prepared for unforeseen events. After the near-collapse of the banking system, the severe economic downturn and now the problem of massive sovereign debt and the unsustainability of fiscal policies, monetary policy remains as the only

remaining support, which if broken, would result in monetary chaos. There is also a danger that despite the global efforts undertaken to harmonise policies, many of the measures actually taken may be inconsistent and lead to inflation and currency misalignments.

Risk is elevated by the inter-connectedness between financial, economic and government systems

The interconnectedness between the financial, economic and government systems elevates all risks. Each of these sectors is currently very vulnerable, and adverse shocks in one area could lead to repercussions in another triggering a negative chain reaction. For example, a double-dip recession could start a downward spiral affecting savings and bank lending and reinforcing an economic downturn. The EU especially, with its low-growth potential, lack of political cohesion and large banking sector, is seen as being vulnerable. The banking sector's size relative to GDP makes the EU's problems potentially bigger than in the rest of the world.

While many large banks have undergone necessary adjustments, systemic weaknesses in the banking sector persist

Many large banks have undergone necessary adjustments, and their situation is now perceived as stable, their fundamentals are sound and balance sheets relatively well-structured. Previous liquidity problems are under control, liquidity is now better-managed and risks are anticipated. In general, the risk-profile of many banks has improved and provides an important element of stability and resilience. These are all crucial improvements that banks can continue to make at the company level. But while at a micro level the situation has improved, these improvements may not carry through to the sector as a whole, where systemic weaknesses persist.

2. Deleveraging issues

We are entering the middle phase of deleveraging with sluggish growth and a weak recovery

The results of a comprehensive study on debt and deleveraging were presented.[1] This study analysed 45 episodes of significant economy-wide deleveraging that lasted between five to seven years. As with this crisis, previous ones usually began with a build-up of leverage in the private (and later the public) sector, followed by periods of deleveraging, with weak or negative growth. Right now, we are two years into the deleveraging process, and judging from a historical perspective, this means we are entering the middle phase. While a double-dip recession seems unlikely, one should not be surprised to see sluggish growth and a weak recovery.

Deleveraging in the financial sector is well advanced, but households have further to go, and the public sector is only about to start the process

Deleveraging is happening at different speeds in different sectors of the economy, with the financial sector well-advanced in terms of reducing its debt. But households, in the US and UK in particular, have only just begun to reduce their debt. In the US, household debt-to-income has been reduced from its peak of 132% of income, to 122%. To put this in perspective, debt-to-income of US households was roughly 100% in the year 2000 (before the housing bubble). If this were the target of deleveraging, at the current rate it would take until 2014 to reach it. Governments have continued to leverage up, and many of them have not even begun stabilising or reducing their debt.

Global cross-border capital flows have dropped sharply, but

Global imbalances and capital flows were a source of major concern. Global cross-border capital flows peaked at about USD 11tn in 2007 and fell by 80% in 2008, to less than USD 2tn, and dropped further in 2009, to about

should again increase

USD 1.5tn. These developments were mainly driven by a contraction in cross-border bank lending. Even though large, interconnected globally active financial institutions pose risks, those capital flows should again resume strongly in support of an upswing, given the need to channel savings to productive investments on a global level.

However, global capital flows should not be hindered by regulatory actions

Financial regulation should do its part to create a financial system where such flows can take place and not be unnecessarily restricted. While there are no major obstacles put in place in this regard by current regulations, there was some fear among many of the globally active banks that policy makers would eventually restrict banks, for example, from taking deposits in one country (*e.g.* the UK) to lend in another (*e.g.* as mortgages in Spain). Such fears were also fed by regulators' recent concerns about capital flows from Germany and Austria into eastern Europe, and how regulators may react to these concerns. Regulatory barriers against such activities would create pools of trapped capital and in the end increase the cost of capital.

Furthermore, non-harmonised restrictions could hamper capital movements

A participant from the international regulatory sector confirmed that such restrictions were currently not under serious consideration. However, a private sector comment hinted at the fact that bank supervisors are using their own, national terms and standards for liquidity stress testing and could therefore "ring-fence" different types of capital. Without cross-border harmonisation this could lead to different national regulations and would indeed hamper the efficient movement of capital across borders, raising bankers' concerns.

3. The risks associated with low returns

A low-interest rate environment fosters more risk-taking in search for yield

Financial repression could be a possible outcome if governments try to influence long-term interest rates. This happened after World War II, in order to bring down debt levels based on low interest rates and some modest growth. Thus, we may see a number of initiatives by governments trying to restrict long-term interest rates.[2] Currently, very low interest rates are the result of massive monetary stimulus, which raises several concerns. While low interest rates have helped the corporate sector to increase profitability via low debt-financing costs, savers and investors are left looking for yield. But investors have, or will come to accept, the fact that returns will be lower in the years ahead.

The quest for higher yields leaves the financial system more vulnerable

The search for yield by institutional investors leads them to increase their investment in potentially riskier assets (like high-yield bonds, emerging market debt and equity, and carry trades); this leaves the financial system in a rather fragile state. While liquidity is ample, it is not clear where relatively high, productive returns could come from. This fragility also means than minor adverse events could lead to major negative disruptions in the financial and economic systems.

And pension funds, in particular, are put in a no-win situation

Anecdotal evidence shows that, for example, pension funds are lowering their benchmark hurdle rates, but only by a little (perhaps half a percentage point), meaning they are still looking for returns of 7% to 8%, which seem to be very difficult to obtain in the current environment. But if pension funds

were to accept lower yields, they would also need to bear the consequences of an increase in the amount of unfunded liabilities and the need to raise contributions, which is very hard to do in the midst of the current recession. This may be a major reason why hurdle rates have not yet been significantly lowered, but further downward adjustments may be expected in the future.

The insurance industry, too, would suffer from a low-rate environment

A low interest rate environment was also seen as a major challenge for the insurance sector. In particular for the life insurance industry, low interest rates make it difficult to earn the anticipated (promised) returns if these were calculated using past higher rates, and assets are not perfectly matched to liabilities. It also makes new business for life insurance companies less attractive. Furthermore, as opposed to banks, insurance companies do not have access to central bank liquidity, thus they cannot profit from low funding rates as set by the central banks.

In response, it is likely that insurers will ultimately raise prices at the expense of policy holders

Thus, while low interest rates help the recovery and support banks, they pose challenges for other parts of the financial industry, such as the insurance sector. In order to cope with low interest rates, insurance companies could take on more risks; however, investment in riskier assets classes and higher leverage is restricted by insurance regulations, and the trend is towards even more strict capital and investment requirements. Ultimately, insurers will have to raise prices at the expense of policy holders. High inflation rates that would pose challenges, especially for the long-term business lines of the insurance industry, were not seen as a high-probability, near-term scenario.

4. Interest rate risks

Fears are that an upward adjustment in interest rates will be sudden, and add to sovereign debt

Since currently low interest rates may eventually return to more normal levels, there is some concern about interest rate risk and strategies to protect against this risk.[3] Indeed, there are fears in some parts of the private sector that an upward adjustment in interest rates will be sudden, and driven by changes in market sentiment and expectations of higher inflation. Higher rates would also increase the financing cost of sovereign debt. In the US, the average maturity of government debt outstanding is four years, with a sizeable part maturing in three years. Refinancing this debt at higher interest rates would add to the current public-sector debt problems.

The banking sector also faces major potential problems should interest rates start to rise

It was also noted that macroeconomic volatility, measured over several years, has unleashed asset price volatility. This has been observed in equity markets, in commodity markets and now in selected foreign exchange markets (inducing carry trades). Increases in macroeconomic volatility have usually been accompanied by increases in inflation volatility (measured over seven years). Thus, inflation can be expected to rise in the future, even though deflation seems the bigger concern currently. Since higher exchange rate volatility may eventually raise inflation-risk premiums, the bond bubble may burst. These developments pose major risks for the banking sector in the years ahead.

5. *Fiscal consolidation issues*

The credibility of fiscal consolidation needs to be enhanced

Concerns were raised that inflation – instead of fiscal austerity – may eventually become the way out of high public debt and sovereign risk. Thus, current efforts at strong fiscal adjustments are necessary. But the private sector, too, needs to reduce its high debt levels. The challenge that arises then is how to make fiscal consolidation more credible. National limits on deficit spending could provide significant and sufficient contributions to that effect, and be among the measures to strengthen fiscal discipline going forward.

Fiscal consolidations need to be growth-enhancing, and growth is necessary to bring deficits down in a sustainable manner

The premise of contractionary fiscal consolidation was questioned based on research showing that fiscal consolidations have often occurred at times when unemployment has been falling. When unemployment is relatively high or rising, however, fiscal adjustments that cannot deliver on improving the employment outlook can hardly be sustained. Expansionary fiscal consolidation is possible if there is rising private-sector employment (which tends to be more productive than public-sector employment), or a stimulatory monetary-fiscal policy mix that causes an increase in investment (this is key), leading to a decline in unemployment. Growth is considered necessary to bring deficits down, but this may also entail higher inflation; going into recession and deflation cannot bring about fiscal restructuring or fiscal consolidation very quickly. The notion that growth can be an important outcome of consolidation (and a re-enforcing factor for it) was supported more broadly. However, for this argument to be valid, timing was considered key. While in the current situation fiscal consolidation cannot be preconditioned on growth, the positive effects of consolidation on long-term economic growth should be expected.

The EMU's joint monetary policy is not seen as imposing restrictions on national fiscal adjustments

In the euro area, difficulties may arise from a joint monetary policy underpinned by national fiscal policies that lack a proper framework for co-ordination. Consolidation efforts by some fiscally stronger centre countries could make adjustments in the periphery, where they are more urgently needed, more difficult. However, it was pointed out that in the end, a very aggressive fiscal policy would lead to adjustments in monetary policy (be it exogenous or endogenous) via exchange rates. With monetary policy a given, and nominal exchange rates fixed, the adjustment would be put into effect through real (inflation-adjusted) exchange rates. In this context, the ECB's rather easy monetary policy stance (as opposed to its rather strict Taylor rule-based stance 1999-2007) was welcomed, as it supports German economic growth, which tends to support growth in the euro area as a whole.

Consolidation efforts in the European periphery are progressing better than previously expected

Some Roundtable participants were rather surprised by the financial markets' lack of recognition that consolidation efforts in the European periphery have made much more progress than expected: unemployment fears have dropped in the core of Europe. According to the most recent official estimates available at the time of the Rountable, the Greek deficit-to-GDP ratio is expected to fall to 7.8% in 2010 and to 7% in 2011.

III. Sovereign risks: measurement, rating and policy responses

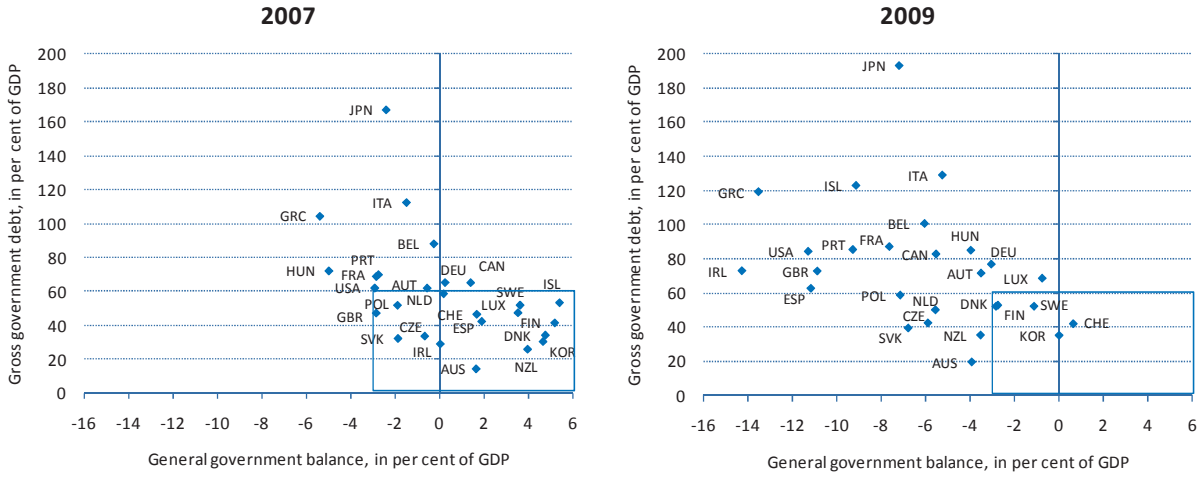
1. Sovereign risk and its measurement

Sovereign risks pose challenges for debt managers; they are a result of the crisis affecting most advanced economies

Government debt managers, as reported at the Roundtable, did not perceive systemic weakness in the government bond markets, but they felt that there was no more "business as usual".[4] The current sovereign debt problems are an outcome of the global financial crisis, as governments across the globe have sought to mitigate its negative effects (Figure 1). Sovereign debt problems are not limited to the periphery of Europe, but are global and affect many of the advanced economies. Sovereign risk will thus remain a key risk feature for the time being, until credible consolidation efforts bear fruit.

Figure 1. Public finances deteriorated during the crisis

General government balances vs. gross government debt, in percent of GDP



Notes: The shaded areas indicate positions within the 3% deficit and 60% debt limit of the EU Stability and Growth Pact.[5]

Source: OECD Economic Outlook database.

Sovereign risk is a complex issue, and the complexity also applies to credible consolidation

Sovereign risk is a complex issue, as it is interlinked with various other factors, and its many indicators cannot be looked at in isolation. Sovereign risk should be regarded as part of overall country risk, which includes sovereign, political, institutional, transfer, and counterparty risks. This complexity also applies to efforts aimed at reducing sovereign risk, which cannot be achieved by fiscal consolidation alone but must be complemented by measures that reduce weaknesses in the financial sector, as well as structural reforms to enhance growth. Such a comprehensive, viable and credible long-term fiscal consolidation plan was seen as currently missing by many of the Roundtable participants, and becomes more urgent taking into account the long-term fiscal burdens of ageing societies.

"Flawed metrics", especially a fixation

Criticism was levied against some of the "flawed metrics" used in assessing sovereign risk. In particular, it was argued that there has been a

on simple debt-to-GDP ratios are problematic

fixation on debt-to-GDP ratios, sometimes without regard to standardising definitions. For example, in the United States, general government debt is now close to 100% of GDP, but many analysts look only at the central (or federal) government debt. Another problem is that high debt ratios can be more easily sustained given the currently low interest rates. However, what counts is whether debt service can also be sustainable in a higher interest rate/lower-growth environment.

2. Problems of using CDS for measuring sovereign risk

CDS spreads are not a good measure for sovereign risk; they are hedging instruments and only express a specific market sentiment

Credit default swaps (CDS) were seen as being too volatile to be considered a good measure of sovereign risk (Figure 2). Factors like market liquidity, investor sentiment or simply portfolio shifts – triggered by hurdle restrictions that may cause investors to retreat from fundamentally sound markets – all have an effect on CDS spreads, which are unrelated to underlying sovereign risk or probability of default. CDS spreads are an indication of market sentiment but should not be taken as a serious measure of default risk – more so as these instruments are usually not purchased as standalone instruments against the risk of a country's default. Often these CDS are used as hedges to remove sovereign risk (or the sovereign element) from another long exposure to a country. Thus, CDS should not be seen as bets against a country's default but as instruments used to hedge exposure to a country, or to take a medium-term position on changes in perceived risk.

CDS volatility in May 2010 was caused by risk hedging of institutions; more recently, price movements are being driven by fundamentals

In particular, the risk-hedging activities of institutions were seen as the major cause of the price movements and high volatility observed in the CDS markets during the sovereign debt crisis (around May 2010). More recently, CDS price movements were seen as being driven more by fundamentals. For example, Ireland which earlier in 2010 got a lot of credit for being one of the first countries to impose fiscal austerity, is being more harshly judged by the markets. What analysts look at is whether there is the political will to bring down deficits. In this early stage of fiscal consolidation, there is a lot of uncertainty whether adjustments are going to be politically feasible and successful.

Differing underlying assumptions in CDS markets make interpretation difficult; standardisation could help

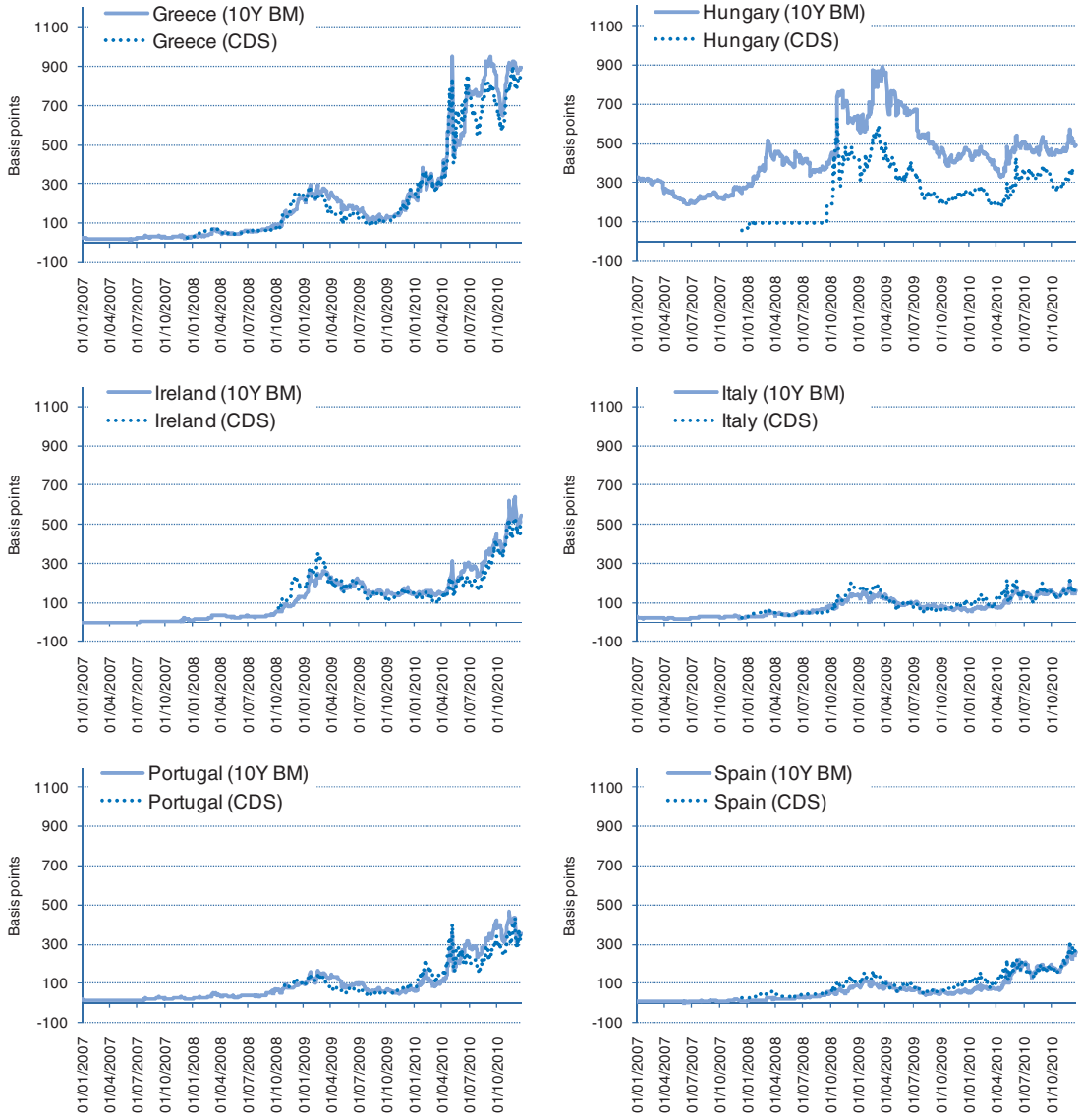
It was also pointed out that CDS markets operate on varying underlying assumptions. For example, assumptions about recovery rates can differ widely, leading to values that are hard to interpret in terms of sovereign risk. In order to do that one has to look at a wide variety of instruments. Standardisation could help, like specifying the underlying recovery rates, and also trading CDS on exchanges. Given that the market is sufficiently liquid, one could also look at the information obtained from options, like the skewness of their implied distributions.

Regulators are trying to improve transparency and functioning of the CDS markets

Regulators are trying to improve transparency in the CDS market, and there are co-ordinated efforts in this regard at the EU level. For example, the EC has just put forward a proposal regarding short-selling and CDS that should improve the market framework and give regulators better monitoring tools.This should also lower the risks associated with these markets and improve their functioning.

Figure 2. Market perceptions of sovereign risk

Spreads over 10-year EMU benchmark bond yields vs. credit default swap (CDS) spreads



Notes: Senior 10-year credit default swap premiums (mid) for sovereign bonds. Note that Hungary is not a euro area member and its spreads against the EMU benchmark therefore also reflect currency risk.

Source: Thomson Reuters Datastream.

3. Sovereign ratings

Sovereign ratings are a useful point of reference but they could be improved

The role of rating agencies in the sovereign crisis was viewed rather positively. Sovereign ratings did not undergo the problems that had occurred earlier with the (overly positive) ratings of structured financial products. While timing could be improved and ratings should become more forward looking, they remain a useful point of reference. However, over-reliance on external credit ratings for sovereign debtors should be avoided, also on the part of regulators.

Efforts are underway to make ratings more forward-looking and less procyclical

Various efforts have been undertaken to make ratings more forward-looking and avoid some of the procyclicality involved in sovereign ratings. For example, communication regarding an agency's stress test scenarios has been improved, being made more specific regarding the baseline scenario and its alternatives and how this impacts the rating. Furthermore, the comparability of ratings across asset classes has been improved by associating specific stress scenarios to the various ratings levels. For example, triple A-rated debt has to withstand stress equivalent to the Great Depression without defaulting. Also, rating throughout the cycle is implemented by taking into account various cycle lengths.

But doubts remain about the validity of ratings in a crisis

However, some doubts were raised regarding such improvements, and the models applied in principle, since these models may not work in a crisis. As the subprime crisis has shown, rating agencies were late in recognising the true risks of structured financial products. Consequently, market participants who took a more pessimistic view than the ratings indicated stood to make a lot of money.

Rating agencies should not rush into up or downgrades and take a medium, structural view

Regarding the room for improvement in ratings, four aspects were mentioned about what markets and issuers of debt should expect from rating agencies. First, agencies should respect and abide by the outlook and review process ("traffic light"), without rushing into an upgrade or downgrade, even though at times this may be unavoidable. Second, while rating though the cycle has been implemented, it is now important to define the cycle. That is, making a judgment whether developments are cyclical or structural is very critical, and it is important to take a medium-term view. Third, rating agencies should not try to compete with signals given by CDS spreads, even though there is at times pressure to explain and perhaps align ratings with what is happening in those markets. Fourth, governments should be rated in the same way as corporates, *i.e.* the same methodologies and scrutiny should apply, in order to ensure comparability across asset classes.

It is also important to look at ratings from multiple sources; smaller rating agencies can also contribute, especially by covering countries not rated by the "big three"

Regarding the methodologies used by rating agencies, those of the large rating firms operating across the OECD are rather similar. However, their results may be quite different. It is therefore important to have several views on sovereign risk. A recent IMF study[6] was rather positive in the assessment of the big rating agencies' performance, but it would be worthwhile to also include in such a study the many other, smaller rating agencies operating around the globe. Some smaller firms rate countries that are not covered by the big three rating agencies. For sovereign risk assessments, it would be important to take into account a range of views including those of smaller agencies. For example, taking an average of various ratings could lead to less market disruption than focusing on the ratings of individual agencies..

A sceptic view was expressed about reducing regulatory reliance on credit rating agencies

Some of the regulatory initiatives regarding rating agencies, and efforts to reduce regulatory reliance on ratings were highlighted (for additional information, see Box 1 for a global overview of CRA regulation). Some scepticism was expressed by the private sector Roundtable participants regarding reform initiatives that do away with the use of ratings in regulation and legislation matters, as well as the proposal that regulatory supervisors

should provide a framework for risk assessment with the agencies then providing the ratings. This would create conflicts of interest on behalf of the regulators as they would have to set the methodology as well as enforce it.

Box 1. Credit rating agency (CRA) regulations: an overview

G20 and Financial Stability Board (FSB)

- **Strengthening CRA regulation and making it more consistent**: At the November 2010 Seoul Summit, the G20 leaders expressed their continued firm commitment "to work in an internationally consistent and nondiscriminatory manner" to strengthen the regulation and supervision of credit rating agencies.
- **Reducing reliance on credit ratings**: Likewise, the G20 leaders endorsed the FSB's principles on reducing reliance on external credit ratings, saying that "standard setters, market participants, supervisors and central banks should not rely mechanistically on external credit ratings." (Seoul Summit declaration)

United States

Credit Rating Agency Reform Act of 2006:

- **The Securities and Exchange Commission** (SEC) is given authority to regulate CRAs, aiming at improving ratings quality by fostering accountability, transparency, and CRA competition. The Act requires the SEC to prohibit, or require the management and disclosure of, any conflicts of interest relating to the issuance of credit ratings.
- Establishes a transparent registration system and oversight regime for "nationally recognized statistical rating organizations" (**NRSROs**).
- Improves **transparency** and **disclosure** *(i)* by requiring NRSROs to publish a description of their rating methodologies and procedures, plus certain rating performance analytics; and *(ii)* by requiring issuers to share with the other NRSROs all information they provide to any particular NRSRO with respect to structured credit product ratings.

Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010:

- Creates an **Office of Credit Ratings** within the SEC to administer rules, promote accuracy in ratings and ensure ratings are not unduly influenced by conflicts of interest. In particular, the Office *(i)* will conduct annual reviews of NRSROs and make key findings public; *(ii)* has the ability to fine rating agencies; and *(iii)* the authority to deregister a rating agency for providing consistently inaccurate ratings over time.
- Subjects NRSROs to the **expert liability** regime from which they were previously exempt. In addition, the SEC may fine NRSROs for certain violations of the securities laws. If a violation affects the integrity of a rating, it may lead to a suspension or revocation of the NRSRO's registration.
- Seeks to improve **investor due diligence** by setting a more stringent threshold of evidence when bringing lawsuits against a credit rating agency, requiring investors to demonstrate they were intentionally misled, except when the complaint strongly indicates that the credit rating agency knowingly or recklessly failed.
- Improves **transparency** and **disclosure** by *(i)* requiring NRSROs to disclose their methodologies, use of third parties for due diligence and ratings track record; *(ii)* eliminating the rating agency exemption from the fair disclosure rule (Regulation FD) that requires firms to provide investors equal access to information about companies; *(iii)* requiring NRSROs to clearly define and disclose the meaning of any ratings symbol and apply this symbol consistently for all instruments for which the symbol is used.
- Seeks to improve the credit rating process for **structured finance products** and to avoid the **conflicts of interest** associated with the issuer-pay and subscriber-pay models by requiring the SEC to undertake a two-year study (Credit Rating Agency Board Study) to establish a system (**Credit Rating Agency Board** or other). This system would designate (by a random matching process, if no other solution eliminating conflicts of interest can be found) the NRSROs qualified to provide initial ratings for structured finance products and thus prevent issuers from picking the agency they think will provide the highest rating.

Box 1 (cont'd). Credit rating agency (CRA) regulations: overview

- Enhances **corporate governance** by requiring each NRSRO to have a Board of Directors of which at least half (but not fewer than two) are independent members, and some of whom are users of NRSRO ratings. Members must not have a financial stake in the ratings issued; they would serve a fixed term of up to five years, with their compensation not linked to business performance.
- Prevents **conflicts of interest** arising from employees of NRSROs providing services to issuers of securities that are unrelated to the issuance of credit ratings by *(i)* prohibiting compliance officers from working on ratings; *(ii)* requiring a review when an agency employee begins working for an underwriter of a security subject to a rating by that agency; *(iii)* requiring a report to the SEC when rating agency employees begin working for a company that had been rated by the agency within the past year.
- Requires the **removal of certain statutory references to credit ratings** and requires that all federal agencies review and modify regulations in order to remove references to, or reliance upon, credit ratings and to substitute an alternative standard of creditworthiness.
- Asks the SEC to provide **additional studies** on *(i)* creating an organisation to establish a standards and ethics code for rating agency professionals (Independent Professional Analyst Organisation Study); *(ii)* establishing standardised ratings terminology and market stress conditions used to evaluate ratings (Standardisation Study); *(iii)* compensation alternatives for rating agencies (Alternative Business Model Study); *(iv)* on the independence of rating agencies and the effect on ratings issued (Independence Study).

Europe

EU Regulations of September 2009 (in force as of December 2009):

- Require **mandatory registration** for all CRAs operating in the European Union (EU). Specific treatment can be extended on a case-by-case basis to CRAs operating exclusively from non-EU jurisdictions provided that their countries of origin have established regulatory and supervisory frameworks as stringent as the one now put in place in the EU.
- Require registered CRAs to comply with a comprehensive set of rules to make sure that ratings are not affected by **conflicts of interest**; that CRAs remain vigilant, ensuring the quality of the **ratings methodology**; and that they act in a **transparent manner**. The regulation also includes a **surveillance regime** for CRAs. In particular, CRAs:
    - May not provide advisory services;
    - Will not be allowed to rate financial instruments if they do not have sufficient quality information on which to base their ratings;
    - Must disclose the models, methodologies, and key assumptions on which they base their ratings;
    - Must differentiate the ratings of more complex products by adding a specific symbol; and
    - Should have at least two independent directors on their boards whose remuneration cannot depend on the business performance of the rating agency.
- **The Committee of European Securities Regulators** (CESR) to be in charge of the **registration and day-to-day supervision** of the CRAs.

EU Regulations of June 2010:

- The CESR is being converted to the newly created **European Securities and Market Authority** (ESMA), which has greater authority and starts operations in January 2011. ESMA is entrusted with **exclusive supervisory powers** over CRAs registered in the EU (thus making CRAs the first type of institution subject to centralised EU supervision).
- ESMA will have the authority to request **information**, launch **investigations**, perform **on-site inspections**, impose **fines** and suspend or terminate a CRA's **license**. Unlike the SEC in the United States, ESMA has the power to evaluate the **methodologies** and procedures used by a CRA to rate securities.

Box 1 (cont'd). Credit rating agency (CRA) regulations: overview

- As with the US legislation and SEC regulations, ESMA is also empowered to reduce **conflicts of interest** by barring a CRA from issuing a rating for an issuer for which it has advised on the structuring of the security, and by prohibiting an analyst who participates in issuing a rating from negotiating the fee that the security's issuer or marketer pays to obtain the rating. When departing from a rating previously issued by another CRA, an explanation of the reasons for the differing assessment must be given.
- Similar to the US rules, EU issuers of **structured financial products** must provide the information they give to the CRA rating their product to all other interested CRAs, thus enabling the other CRAs to issue unsolicited ratings.

Japan

Amendment of the Financial Instruments and Exchange Act, June 2009 (effective April 2010)

- Ensuring *(i)* **independence** of CRAs from security issuers; *(ii)* **quality and fairness** in the rating process; and *(iii)* **transparency** for market participants.
- The Financial Services Agency (FSA) of Japan has introduced a **registration system** that requires registered CRAs to **disclose rating policies** in a timely manner, take measures to **control quality** and **prevent conflict of interests** by avoiding the provision of advisory services. Unregistered CRAs are still allowed to operate, but in using their credit ratings, issuers must notify investors of the fact that those ratings are issued by unregistered CRAs, effective October 2010.
- The FSA also recently adopted a proposal to amend the relevant cabinet office ordinances with the aim of **reducing the use of credit ratings** in the regulatory and supervisory framework, effective January 2011.

Australia

- Since January 1, 2010, CRAs in Australia have been required to hold an Australian Financial Services **license**, requiring them to, among other things, manage **conflicts of interests**, have in place **risk management systems**, lodge annual **compliance** reports, and **disclose** procedures, methodologies, and assumptions for ratings.
- Measures have also been taken to enhance CRA exposure to legal **liability**.

Canada

- In July 2010, the Canadian Securities Administrators (CSA) published for comment a proposal aimed at introducing securities **regulatory oversight** of credit-rating organisations.
- Central to the proposal is the requirement for credit rating organisations to apply to become a "**designated rating organization**" (DRO) in order to allow their ratings to be used for various purposes within securities legislation.
- Once designated, a DRO would be required to have and enforce a **code of conduct** that is based on the code published by the International Organization of Securities Commissions (IOSCO). A DRO would also be required to establish policies and procedures to manage **conflicts of interest**, prevent inappropriate use of **information**, appoint a **compliance** officer and make an annual **filing**. In addition, DROs could be subject to regulatory compliance reviews and enforcement action. The CSA will not oversee the content or methodology of ratings (unlike ESMA).

Sources: G20 (2010), IMF (2010), ch.3 ; Deutsche Bank (2010); national sources: US: http://www.sec.gov/divisions/marketreg/ratingagency.htm; *Dodd-Frank Wall Street Reform and Consumer Protection Act*; EU: http://ec.europa.eu/internal_market/securities/agencies/index_en.htm; Japan: FSA regulations on Credit Rating Agencies, at http://www.fsa.go.jp/en/news/2010/20100331-4.html; Australia: www.asic.gov.au/asic/asic.nsf; Canada: www.securities-administrators.ca/aboutcsa.aspx?id=915.

Ratings are more stable than market sentiment and should counteract mispricing

There was a general view that ratings have been more stable than market sentiment. While credit ratings reflect credit quality, markets may react in response to many other factors. Nevertheless, there may be an accelerating feedback effect from markets to ratings in cases when higher financing costs affect credit quality. But more generally, rating agencies should have an obligation to counteract some of the mispricing within markets by taking a more detached, thoroughly analytical view.

But there is also pressure on rating agencies to react ahead of markets

But there is also some pressure on rating agencies to react ahead of the markets (see Box 2 for a proposal made at a previous Roundtable to introduce more market discipline early on in the process). Before the crisis, the poor ability of markets to price risk and to put proper sanctions on (deficit) offenders was observed. At a time when Greek sovereigns were almost at par with German bunds, rating agencies were accused of "sleeping on their watch" – a situation that later changed. But now markets again have overreacted, perhaps in a way that leads some governments to reign in budget deficits more than they would have if based only on fundamentals.

Earlier ratings for euro area countries did not differentiate enough; they should assess a country's economic potential more broadly

As there has been too little differentiation in the ratings of euro area countries, some countries became fiscally more imprudent than they would have been if the financing costs for their sovereign debt had been higher. Going forward, a broader concept of sovereign risk will be needed, looking at economic performance more generally. For example, the Greek economy will need to be assessed for its potential for growth and whether structural reforms are in place that can unleash this potential. Inflation was also viewed as a likely partial solution to fiscal consolidation because it may be the most viable option politically.

4. Sovereign risk and the markets

Central banks' gold purchases indicate systemic fear

It was pointed out that the level of sovereign debt is correlated with the price of gold, and both are currently rising. The fact that many central banks are currently buying gold may indicate a systemic fear. The exception to this is the United States, as the US dollar is a global reserve currency, which gives that country's monetary and fiscal policy more leeway.

A flight to quality is lowering yields and spreads below their fundamental values

A flight to quality "within the flight to quality" is lowering yields and spreads below their fundamental values. For example, the currently low long-term rates in France and Germany, and the yield spread favouring France, are not justified by fundamentals, considering that German growth is expected to rebound and France's fiscal situation is not as robust as Germany's. But many investors have few options than to invest in these markets.

Market failures need to be addressed by better disclosure at the launch of new issues and reducing fragmentation in secondary markets

Questions were raised about the proper functioning of the markets and their efficiency as there have been severe market failures recently. Liquidity has disappeared or become one-sided and confidence has evaporated, increasing bid-offer spreads. Therefore, the industry has to analyse such deficiencies carefully and make proper recommendations. For example, the International Capital Market Association (ICMA) is engaging in such efforts. First, in the primary markets for sovereign debt there is a need for more

disclosure to investors at the launch of new issues. This can be achieved, for example, by improving due diligence and prospectus quality. Also, it is important to make clear whether an issue is registered and documented under domestic or international law, which can have serious consequences for restructuring or other aspects. On the secondary market, liquidity needs to be improved. Currently, there is a lot of fragmentation between different trading platforms that needs to be addressed in order to achieve more orderly pricing.

Box 2. A proposal to implement market discipline to foster fiscal prudence in the EU

Given the experience of the recent sovereign-debt problems in Europe, it is important that fiscal discipline should be encouraged early and progressively, and not abruptly instituted due to market movements "at the end of the game", as was observed in the case of Greece and Ireland recently. While the current EU Stability and Growth Pact provides for an excessive-deficit procedure (EDP), the procedure takes effect relatively late, allows for several exceptions and there are few sanctions. A proposal to introduce fiscal discipline via markets at an earlier stage would be based on regulations regarding capital and liquidity and rules regarding the concentration of large exposures. Currently, Basel arrangements and capital requirements in the EU (The Capital Requirements Directive, or CRD) are based on the assumption that government debt is (at least in nominal terms) risk-free. The proposed new market discipline mechanism would therefore progressively have to increase the current zero-risk weight given to government debt in Basel and the CRD.

The forthcoming revision to the Capital Requirements Directive (**CRD IV**) provides a **legislative opportunity** to change how a government's securites are valued in banks' regulatory capital when that **government** becomes subject to the EDP due to deteriorating finances. The essence of the EDP procedure is that if a Member State fails to comply with recommendations and deadlines to address an excessive deficit, the Council can move to the next step of the EDP, the ultimate possibility being to impose financial sanctions. As government debt obligations have become more risky, the proposal is that **any new debts (or roll-overs) would incur a capital charge, and limits** would be placed on exposures to this new debt.

On each occasion, when a Member State fails to comply with the Council's recommendations, the riskiness of its debt obligations must be presumed to have increased, so the credit quality would be automatically downgraded, according to the CRD IV rules (perhaps subject to an override by a super-QMV). Thus, any eventual decision to impose sanctions would also be accompanied by a "junk" capital-backing and exposure limit. For example, the new debt could go from a zero-risk weighting to 20, if the existence of an excessive deficit is determined. If the government in question does nothing, the risk weighting could rise to 50, to 100, and eventually, when there are sanctions being imposed, it could hit 150%. This credit-quality downgrade would be reflected in the liquidity requirements, and the guidelines regarding large exposures and concentrations. It has to be emphasised that risk rating changes would concern new debt only. There would be a presumption that the ECB would match the eligibility rules for its "repo" facilities to correspond to the perception of increasing riskiness. Moreover, exposures to that particular Member State would be marked to market, so its higher cost of borrowing (rising rates on its newly issued debt) would compel banks to increase their loss provisioning in regard to that Member State, diminishing their appetite for further losses.

As this process would take a number of years, the government in question would have time to adjust, but it would also be fully aware that if it went to the brink of default, then the EU's banking system would have adjusted to that risk already and would not be undermined. Ideally, at the brink of default, the EU financial system would have a relatively small exposure and would be already fully provisioned.

A policy along these lines could be implemented quickly, as the only requirements would be a change in the Regulations setting up the SGP, appropriate language in CRD IV, and corresponding changes in other sectoral legislation – just as the Omnibus Directive is doing toward the creation of the European Supervisory Authorities (ESAs). The changes may sound modest, but they would be profound in protecting the European Union from the all-too-apparent risk of fiscal crises as the baby-boomers move into an expensive old-age.

Note: A draft of this proposal was presented at the OECD Financial Roundtable on 15 April 2010.

Source: Bishop (2010).

Markets attach some probability to a Greek default, but should this happen there would be a structured, politically backed solution

As far as Greece is concerned, the market is attaching a significant probability to a Greek sovereign default. However, for political reasons an outright default is likely to be avoided. Rather, market participants expect there will be some politically backed arrangements, like a structured agreement, lower payback or a programme covered by the IMF or the European Financial Stability Facility. Whether after a default a sovereign will soon again have access to the markets will depend on how politically important that sovereign is. For example, it was noted that regaining market access for Argentina was more difficult than for Russia. If a default were to occur in Europe, this would challenge the European integrity, thus there would be a European solution. Unlike in Argentina or Russia, it would be a structured arrangement and reorganisation with strong political backing. One should also expect some burden-sharing solution, be it via forgiveness of IMF or EU loans, or, for countries that can print their own currency, inflation.

As default is costly, governments need to make tough choices to avoid it

But the costs of a default should not be underestimated, as the country in question will certainly be stigmatised. If default is not an option, governments will have to make tough choices, often against constituencies that have become used to being insured by their governments against all adversities. The situation in Ireland is perhaps one where such choices will have to be made, also regarding safeguarding the country's banking sector. For example, it was mentioned that Kazakhstan had cleaned up its banking sector some time ago, and its sovereign yield spreads have since come down substantially.

Decisive rescue measures in Europe have reassured markets, but bondholders do differentiate among issuers

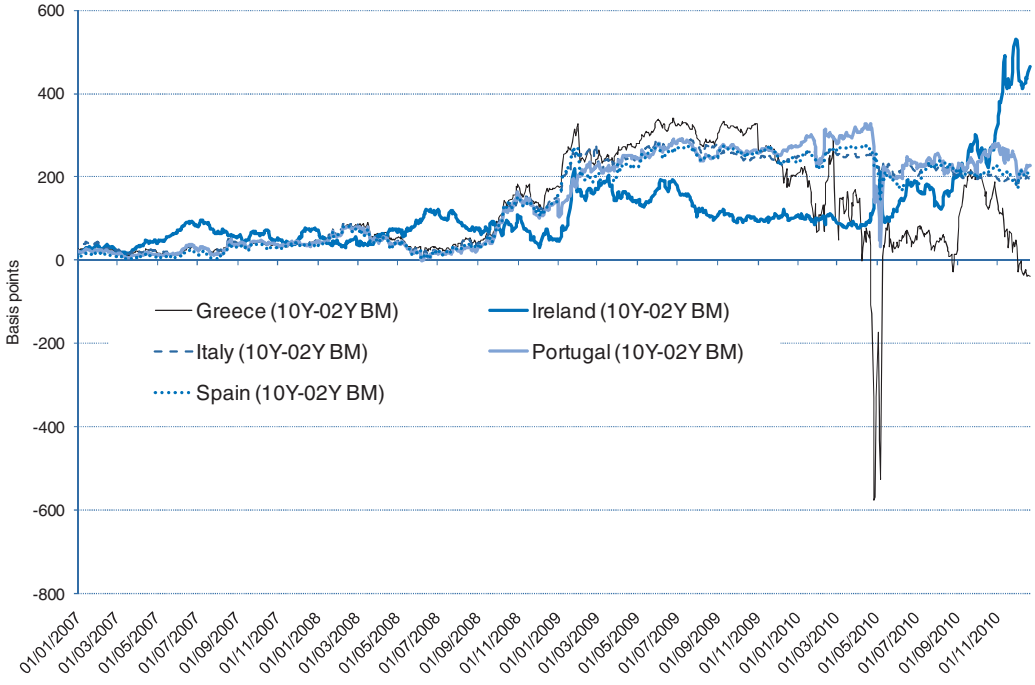
It was also noted that decisive rescue measures in Europe have reassured markets, but the reassessment of sovereign risks has led bondholders to discriminate among issuers. Markets do in fact look beyond the short and medium term and are questioning whether deficits can be brought down to a sustainable level. It was also observed that in countries which have to start their austerity programmes from a relatively worse-off position as compared to their peers, these programmes will have more deleterious effects. Such differences will continue to be reflected in spreads.

An upward sloping yield curve, measured against a benchmark…

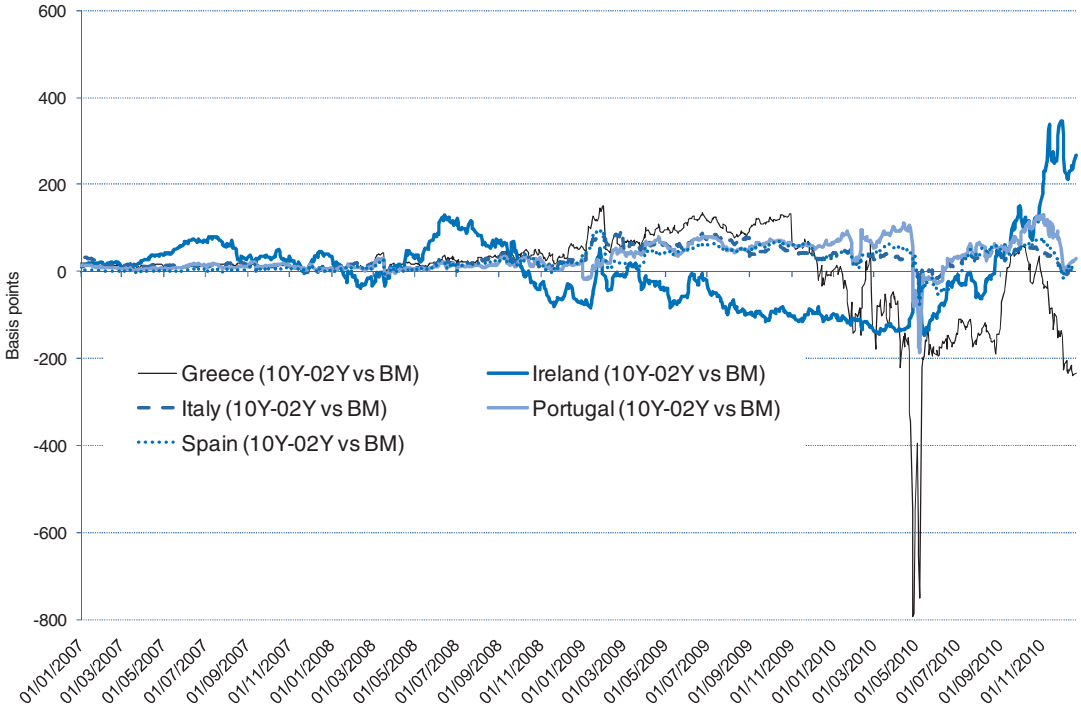
Another interpretation of the markets' perception of sovereign risk, including the risk of default, was offered by an official sector participant. While the focus had been on yield spreads across denominations, this participant noted that the slope of the yield curve, as measured against a benchmark slope, is also worth examining (Figure 3). Under normal conditions (which is the standard case for high-grade issuers), there is a positive relationship between benchmark yield-curve spreads and the term to maturity. As a result, that yield curve which charts yield at various maturities against a benchmark is normally upward sloping – the longer the maturity, the higher the yield. But the yield curve may become inverted (*i.e.* shorter-term yields become higher than longer-term ones, measured against a benchmark) when the credit quality of an issuer deteriorates, as was the case during the sovereign debt crisis in April and May 2010. Back then, the spread between 10-year and to 2-year yields, compared with EMU benchmark yield spreads for the same maturities, was ranging from -30 b.p for Italy, -70 b.p for Spain, -100 b.p for Ireland, -200 b.p for Portugal, and, as outlier, -800b.p. for Greece.

Figure 3. Disruptions in yield curve spreads

(a) 10-year vs 2-year spreads



(b) 10-year vs 2-year spreads vs EMU benchmark 10-year vs 2-year spreads



Source: Thomson Reuters Datastream.

…could indicate that sovereign risk is abating for Greece and other European peripherals

When the European rescue mechanism was put in place, the spreads started to normalise. However, the Greek yield spread measured against the EMU benchmark was inverted for most of 2010. At the end of August 2010, the spread started to enter positive territory, even though Greece had another episode of sovereign risk escalation. This was seen as an indication that the market perceived the sovereign risk to be abating and that this episode would not have a systemic impact (more recently, however, the Greek spread became negative again, and the behaviour of, for example, the Irish spread is more difficult to reconcile with this view). The positive effects of the EU/IMF support package were pointed out, and that some investment firms had issued a recommendation for 30-year Greek government bonds.

The perception of European sovereign risks is differentiated among investors globally, and also their view on inflation risks

It was also noted that the perception about sovereign risks in Europe is very much geographically differentiated among investors globally. In Asia, investors seem to be more confident than in the United States. However, this has to be seen within the context that investors are very much biased by their own experiences. In the case of Asia, Asian economies have ridden though the crisis relatively better, but in the United States, at the height of the crisis, things were more bearish than anywhere else. Even though that negative sentiment has since improved, it has more recently deteriorated again. Similar trends can be seen regarding views on inflation. Investors from low-inflation countries, for example, can hardly see how inflation could soon rise substantially. On the other hand, evidence from some hedge managers in Brazil, a traditional high-inflation country (historically) shows that investors there are clearly more worried about inflation risks.

US investors are bearish and mistrust European deficit statistics, thus governments should ensure their quality to reassure markets

Nevertheless, the sentiment in the US *vis-à-vis* Europe was seen to be surprisingly bearish. In particular, some mistrust regarding the reliability of EU countries' budget figures (drawing on previous experience with Greece) in meetings with US investors was cited. This observed disbelief in some of the European deficit numbers should be a call upon governments to do their best to ensure the quality of their statistics beyond any reproach. Reassuring the markets should be policy makers' key objective. Many investors indicated they are waiting to see the EFSF working and issuing bonds in order to regain confidence.

5. Prospects for emerging market bonds

Search for yield has made emerging market bonds an important asset class...

Regarding the private sector's view on the prospects for emerging markets, it was noted that quantitative easing and low interest rates have created a "subprime goes global" phenomenon, and search for yield is pushing a lot of international funds into these markets. This makes emerging market bonds an important asset class, also because emerging markets growth is more promising than in the US and other advanced economies. On top of that, foreign exchange movements are also favouring these markets.

...but the "subprime goes global" phenomenon bears risks

At the same time, there is a danger that, similar to what happened in the build-up of the subprime crisis, ample liquidity and low rates and risk spreads again will lead to excess and inappropriate capital investment. Thus, financial institutions and other investors may one day find themselves again with

problematic paper on their balance sheets. However, these risks were not seen as being very significant in the near-term.

IV. Challenges for the banking sector

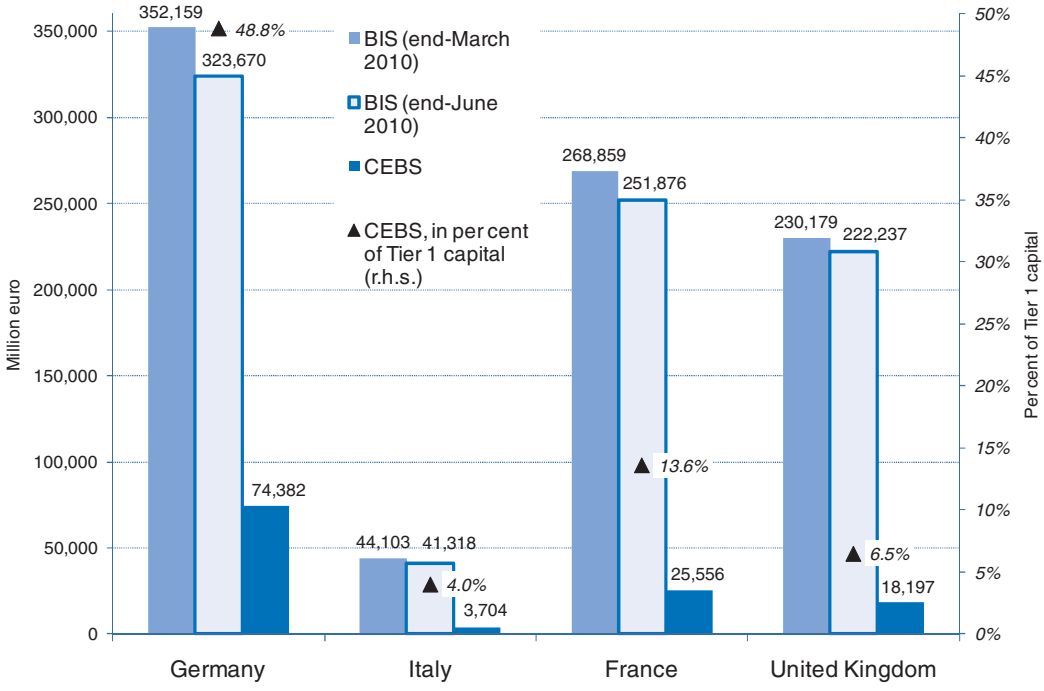
1. Banks, sovereigns and the macroeconomy

Banking sector risks cannot be delinked from sovereign risk, therefore reforms reducing pressure for public bank bailouts and moral hazard are key

It was emphasised that the risk of the banking sectors cannot, in the minds of investors, be detached from the risk of the sovereigns (Figure 4). Credible fiscal plans need credible plans to restore financial sector soundness. Going forward, should new problems emerge, governments cannot allow themselves to be held hostage by a fragile banking sector. Currently proposed reforms to delink the public sector from financial sector problems, such as the writedown of facilities or bail-ins of investors (via hybrid bonds), are key for putting sovereigns in a better position, which in and of itself will also improve the state of the financial sector. Such measures would lower the pressure for the public bailout of banks and would therefore reduce moral hazard. If such problems are not addressed, the widening of risk spreads in the next crisis could be massive even for the more financially sound debt issuers.

Figure 4. Sovereign exposure is still an issue

Exposures to Greece, Portugal, Spain, and Ireland; amounts outstanding as of end-March 2010, in million EUR



Note: BIS: consolidated foreign claims of reporting banks vis-à-vis selected countries, ultimate risk basis; provisional data; CEBS: exposure of stress-tested banks to sovereign debt of selected countries. Note that BIS and CEBS data are not fully compararble.[7]

Sources: BIS Consolidated Banking Statistics, July 2010; CEBS (2010); Blundell-Wignall and Slovik (2010).

The health of the banking sector depends on the health of the economy; credit quality and credit demand has to rise for banks to increase lending

Furthermore, the health of the banking sector depends on the health of the economy. And in order to assess the challenges for the banking sector, one also needs to assess the challenges the economy is facing due to the banking sector. There is a misperception that the economy cannot recover without a recovery in the credit cycle. However, as research has shown, there can be "creditless recoveries"; these are of much lower quality, however, and more subject to shocks.[8] In Europe, where bank financing is more predominant, it would seem that monetary policy would be more effective if implemented through the bank-lending channel. But with credit quality and credit demand low, banks cannot be expected to rush lending. Thus, a lot of the recovery in the banking sector will depend on the recovery of the economy as a whole.

Lending does not pick up because there is a lack of confidence

There was also a view that transparency is not an issue, and that it was possible to see what was happening and likely to come if one took a close look (like back in 2000 when people were investing in ever-higher-priced TNT stocks). Consequently, lending does not pick up because there is a lack of confidence, and no amount of collateral or other risk-reducing measures can restore that quickly. And whenever risk is reduced, investment return is also reduced. Lending activity will pick up once attractive returns can be made again. It was, however, noted that that the regulatory reforms being discussed now are geared to avert future crisis and restore confidence in the future, but they are not targeted to restore confidence now. Other measures may be needed for that. Thus, timing issues are important in discussing these arguments. But then again, the argument was that confidence is about perception, not instruments. For example, after the German hyperinflation of the 1920s the new *Reichsmark* was backed by all the property in the country, and even though this was not actually the case, it was perceived to be so and this restored confidence in the currency. Thus the perception that a security is backed by "real" assets is important.

While regulatory uncertainty has diminished, uncertainty about monetary policies has increased

It was also observed that markets have been influenced more by uncertainty than risk. There has been some regulatory uncertainty, in particular about new capital rules, but most of this has been resolved. The most relevant uncertainty regarding lending was seen to be about monetary frameworks. Many central banks officially target inflation, but it seems they are more focused on a nominal GDP target or bringing down unemployment (in fact, the US Fed has a double mandate). As long as there is uncertainty as to how monetary policy is going to be normalised, it will be very hard to reactivate lending, and restore confidence more generally.

2. *Global banking sector stability issues*

Crisis-related losses have been revised downwards and banks have recognised the majority of them

The recently published *Global Financial Stability Report*[9] revises downwards the estimate for total losses from the crisis, from USD 2.3 tn six months ago to USD 2.2 tn in the new report, due to slightly higher securities prices. Banks have been recognising the major part of these losses, with the remainder being estimated at slightly more than half a trillion US dollar. Across the G3, banks' Tier 1 capital (including governments' capital injections) has risen on average to over 10% of risk-weighted assets.

Refinancing needs could pose risk in the near term, particularly for banks in Europe and the United Kingdom

While these developments indicate that the banking sector is recapitalising itself and slightly stabilising, one major risk that banks are facing particularly in Europe and the United Kingdom is seen in the refinancing hump of wholesale liabilities coming due the rest of this year and into next year. This is both the result of five-year securities issued during the middle of the decade, as well as shorter-term, government-guaranteed liabilities issued during the crisis, from which governments now want to exit. This need for refinancing also coincides with large sovereign borrowing requirements over the next two years. While this gives banks and sovereigns the chance to refinance at low interest rates (if everything goes well), it makes the system more vulnerable to refinancing risk and operational risk. This can be expected to create incentives for European banks to deleverage, and in fact, European banks have been negative net issuers of wholesale funding over the past few months.

As Japanese banks expand JGB holdings, sovereign and banking risk interaction is rising

In Japan, banks are now becoming the main marginal funder of the government, and they are extending their holdings of JGBs down along the yield curve in an attempt to increase nominal earnings. While these banks may be trusted to manage their interest risk well, it has to be noted that the interaction between sovereign and banking risk is rising in Japan.

The US banking sector has been well recapitalised but regional small banks are exposed to commercial property risks

In the United States, the recently performed FSAP and its stress tests[10] indicated that the US banking sector as a whole has been adequately recapitalised. However, pockets of vulnerabilities remain, in particular in exposures to commercial property by regional and small banks. Stress testing with a (reasonably mild) adverse scenario regarding housing prices and commercial property showed that 15 banks needed about USD 57 bn of capital to maintain a 6% Tier1 ratio.

Currently, many lending losses are accumulated to the US government; therefore, major mortgage market reform is required

However, it is worth noting that the capital needs of US banks seem to be well in check because many lending-related losses continue to be accumulated to the government, in particular via the Government Sponsored Enterprises (GSEs) and the shortfalls in the Federal Deposit Insurance Corporation (FDIC), the Federal Housing Administration (FHA) and other government-related entities. The problem of the GSEs needs to be addressed – a major area of reform that was not covered in the recent Dodd-Frank financial sector reform bill. As of yet, it seems there is no major consensus on how to get the government out of the mortgage markets.

A draft reform bill for the US mortgage market is to be presented by the US Treasury

However, the US Treasury is currently looking into reforms for the US mortgage market, and the GSEs in particular. Treasury plans to present a comprehensive reform plan to Congress in January 2011. Besides the Treasury, there are other agencies involved, like the Department of Housing and Urban Development (HUD).

3. European banking sector issues: EFSF and stress tests

The EFSF can provide a credible backstop; however,

A bigger part of the discussion was dedicated to the situation in the European banking sector, which is still fragile and where confidence in the sector's resiliency overall is relatively low. An important element in creating

investors will need to see how it operates

confidence are backstops. The European Financial Stability Facility (EFSF) was seen as potentially helpful in this respect. While sovereigns and markets would not want to see it being used, investors would be reassured if they saw how this system operates, and actually saw it working, before putting their confidence in it. In any case, the Facility is already fully operational and can be used immediately if necessary. Road shows are planned in the very near future to explain the functioning and use of the EFSF to investors. While it is not yet clear how to deal with any stigma that may be attached to countries that need to draw on the facility, incentives to do so may be low, as borrowing from the EFSF will be relatively expensive.

The size of the EU/IMF rescue mechanism is comforting

The size of the rescue mechanism as a whole (the EU/IMF rescue package) of EUR 750bn, which corresponds roughly to the size of the capital of the European banking sector, was seen as comforting. Because of this, investors should be confident that strained public finances could receive relief funding in case more sovereign bank bailouts become necessary.

Transparency about risks should lead to better and more appropriate liquidity positions

Transparency about risks is important. It would be helpful if there were some information about how close a country is to receiving EFSF funds, but there are admittedly no simple solutions to this. In times of crisis, it is impossible to distinguish between solvency and liquidity, and between idiosyncratic *vs.* systemic risk. However, more transparency would lead to better liquidity positions, which should be a key benefit of the stress tests.

European stress tests were helpful in enhancing transparency

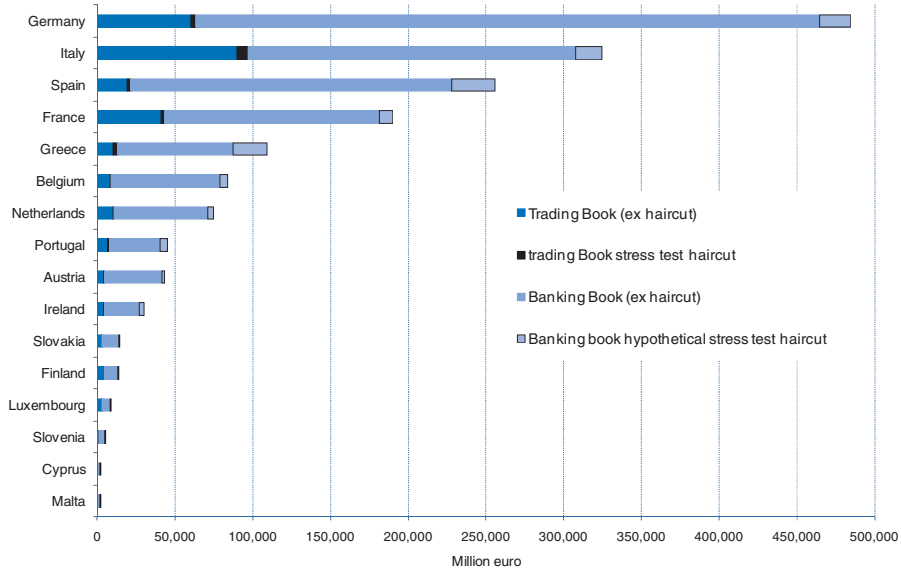
In this context, the European stress tests were seen as helpful.[11] While they can be criticised for not having properly taken into account all relevant risks, they have led to the release of some useful information that has allowed private analysts to make their own assessments (Figures 5 and 6). Even so, it was felt that the information could have been more comprehensive overall, like the one released for the Spanish banking sector, which was seen as most useful. Also, even though the tests have introduced some standardisation, it was pointed out that there was also a lot of national discretion over assumptions and how these were incorporated into loan-loss models. But an indication of how these tests have calmed investors is the fact that about two days after the test results were released, the news coverage ebbed.

Stress tests, however, were a lost opportunity for raising European bank capital

It was also noted that the stress-test exercise was also a lost opportunity in terms of strengthening European banks' balance sheets. In the United States, after the stress tests of 2008, banks raised capital well above the limits indicated by the tests, partly because being able to raise private capital was a precondition for being allowed to pay back the (relatively expensive) public TARP funds. In Europe, this was not the case, and banks (with few exceptions) were basically told by the stress tests that their capitalisation was sufficient. However, levels of capital in the European banking sector are conditioned on economic growth. Thus, banks are leveraged against the macro economy, even if their financial leverage is low. It would have been good if banks had used the opportunity offered by the stress tests to raise additional capital in order to bolster their balance sheets against an economic downturn. A related issue is that some of the bigger banks in Europe have an extremely low return on equity. Funding thus becomes more difficult and investment performance will tend to suffer.

Figure 5. Some risks were not sufficiently reflected in recent stress tests

Exposures to EU sovereign debt, consolidated over CEBS stress-tested banks in respective country, as of end-March 2010, in million euro

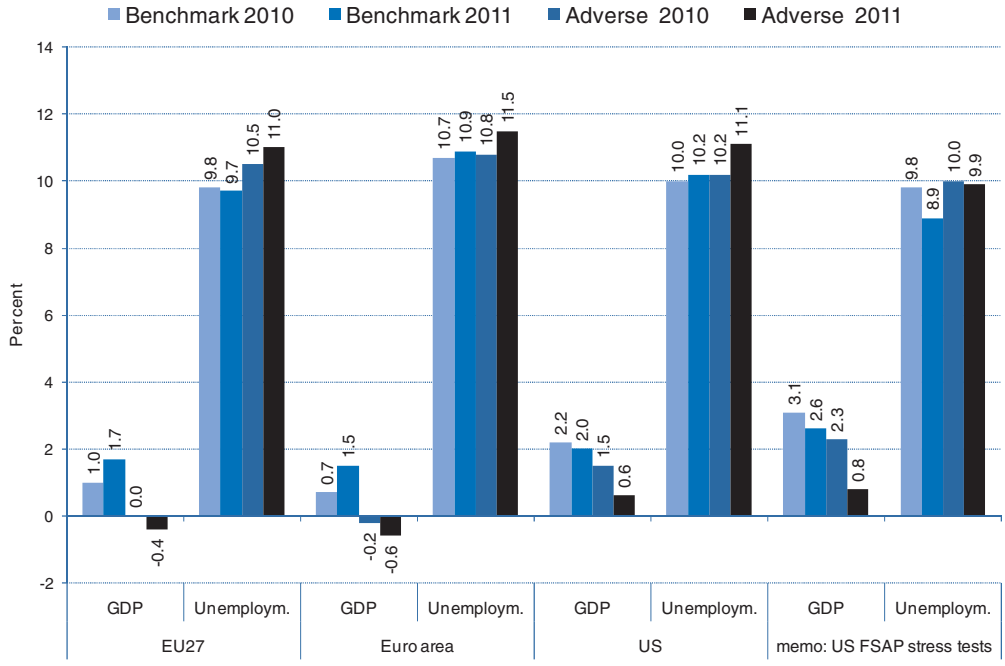


Notes: Haircuts in trading book valuation as applied in CEBS stress tests; hypothetical haircuts in banking book applying the same relative haircuts as in the trading book to the banking book.

Sources: CEBS (2010); Blundell-Wignall and Slovik (2010).

Figure 6. Stress test assumptions may have been too lenient

Real GDP growth and unemployment rate under alternative US (FSAP) and EU (CEBS) bank stress-test scenarios



Note: For details on scenario assumptions and definitions see sources.

Sources: CEBS (2010), (IMF) (2010b).

European periphery banks deleveraged to reduce sovereign exposure; sounder banks are buying assets of weaker peers

It seems that several European SIFIs have leveraged and expanded their balance sheets massively, while others are contracting. There is some evidence that some banks in the European periphery countries, in particular, were deleveraging heavily in order to reduce their sovereign exposure. On the other hand, some banks (normally those with strong balance sheets) were expanding their balance sheets by taking the opportunity of acquiring cheap assets that weaker banks had to sell off.

Bank restructuring has been successful in Spain and needs to be further advanced in Germany

In terms of policy recommendations, bank restructuring should be undertaken where necessary. Spain has been successfully active in this area, and it has reassured sovereign investors that the problem of the *caixas* can be handled. Germany still has to make sure that sovereign risk is being minimised, either by restructuring or closing the *Landesbanken*.

4. Interbank markets and wholesale funding

Interbank markets have recovered from the crisis and are back to normal

While ample liquidity provision by central banks could be damaging for the interbank market, which needs to be put "back on track", one should not overlook the positive developments that have taken place in that segment after the tensions following the Lehman default (September 2008) and the sovereign debt crisis in the spring of 2010. Since about mid-2010 the overnight market has been observing increasing flows to levels that are in line with historical averages.

Price dispersion, however, remains high

Pricing was seen as taking place in the standard fashion, taking into account credit and counterparty risks. However, the dispersion of prices is still sticky and remains quite high. This can, for example, be observed in the Euribor fixing, where the price dispersion among panel banks is still significant, even though one has to keep in mind that these are fixings and not real transaction prices and may therefore not be too relevant for real market transactions.

Government action will be needed to restore the interbank markets in full

In order to restore the interbank markets in full, government action will be needed. As could be observed, major problems were faced by banks that had relatively high exposures to securities issued by governments for which sovereign debt worries are highest. Credible mechanisms to address these problems are needed, like resolution mechanisms for insolvent banks or capital injections, as well as a solution to the sovereign debt crisis more generally. Such solutions need to be in place before the ECB can start thinking about exiting form its currently very loose monetary policy stance.

Wholesale funding conditions deteriorated during the sovereign crisis

Attention was also drawn to the fact that during the period of sovereign crisis in April and May 2010, when interbank and sovereign spreads were rising, wholesale funding conditions for banks deteriorated substantially. There was also some substitution observed between unsecured and secured funding instruments.

Not loss of confidence, but

According to an inside view, the strains on the interbank market were not caused by a breakdown of mutual confidence among banks, as has often been

funding needs have led banks to withdraw liquidity from interbank markets

thought. It was not so much fear about other institutions nor stringent constraints being put on interbank lending operations, but rather a desired increase in liquidity that caused banks to withdraw cash that would have historically been used as a temporary source of liquidity, not a long-term funding provision. Something similar happened at the outset of the crisis when the dislocation was caused by the SIVs. Back then, within about three months, there was a massive one-off transfer of about USD 1 tn in off-balance sheet liabilities (SIVs and conduits) that had to be brought back onto banks' balance sheets; this move was misinterpreted, scaring and confusing markets at the time.

The reactivation of wholesale funding markets should be a priority and could be achieved by enhancing transparency

In the view of an official sector participant at the Roundtable, the reactivation of wholesale funding markets should be one of the biggest priorities going forward. But this can only be achieved if investors regain confidence. However, confidence can only be regained if there are more transparent instruments, better post-trade transparency, and increased liquidity, perhaps through the standardisation of instruments and transactions via trading platforms. The industry was asked to work on this and put forward proposals in this respect.

Central banks need to exit from their extraordinary security holdings and governments from their bond guarantees

The view that transparency and structure are key for the financial markets was broadly supported. It was also noted that probably some government support was needed to "prime the pump", and that there have been various efforts across countries in this respect. But now there are large piles of securities on central banks' balance sheets that need to be brought back into the private sector. Likewise, bonds with government guarantees should be phased out. Messages regarding interbank market exposures are ambivalent and need be consolidated. The use of secured instruments could support efforts to strengthen the interbank market and thus should receive more attention in the near term.

Mechanisms to handle counterparty risk are important

It is also considered important to have mechanisms in place to handle counterparty risk, as is the case in Italy where such a mechanism has well supported the interbank market. There was also a view that pricing policies in regard to monetary operations, such as haircuts and fees, may become more important tools for central banks, the ECB in particular, in achieving their financial stability policy objective.

The ECB will align itself gradually to investor standards thus helping the reactivation of wholesale funding markets

However, in the ECB's view, the primary goal of the collateral policy was to protect the central bank from financial risks, and there was no other policy goal attached. The best protection is vibrant secondary markets for marketable eligible assets. It is also for this reason the ECB has an interest in the reactivation of the wholesale funding market, and it will contribute to this reactivation by aligning itself gradually with investor standards. But it was argued that if central banks were to introduce haircuts on short-term, overnight lending (according to banks' risk profiles), banks in difficulties could be completely shut off from such funding.

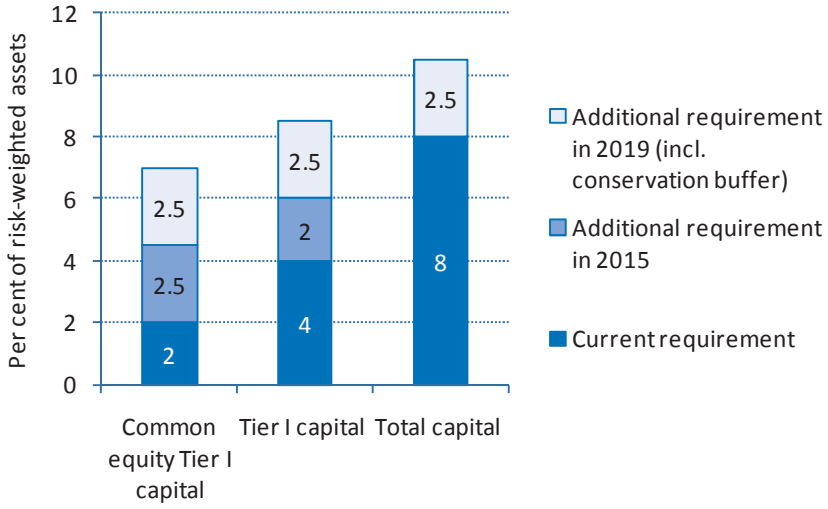
5. *Basel III issues and hybrid bonds (bail-ins)*

The new Basel agreement seems to strike a good balance between financial stability and growth

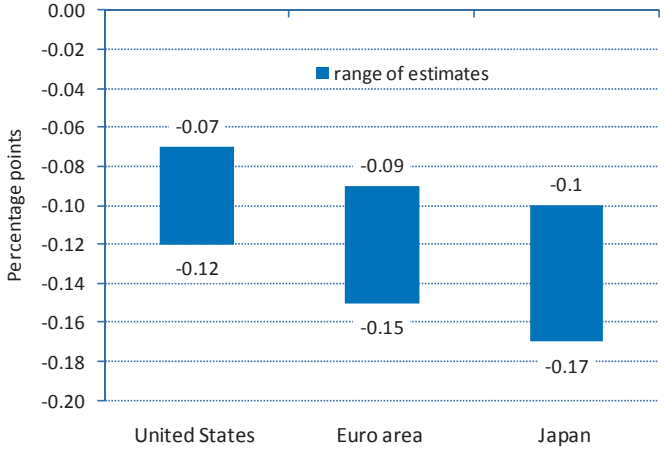
Assessing the newly agreed upon Basel III capital and liquidity rules, the private sector expressed satisfaction that growth was again the focus of policy makers (Figure 7).[12] A few months ago, it seemed that financial stability should be achieved at all cost, regardless of the negative effects on growth, but the recent Basel agreement indicates that the growth factor is being positively taken into account. The new rules seem to strike a good balance between financial stability and growth, and it was felt that specific capital requirements should not go much further.

Figure 7. Basel III: Capital requirements and estimated effects on growth

(a) Capital requirements and phase-in periods



(b) Basel III Impact estimates on average annual GDP growth rates in 2011–2018



Source: BCBS (2010), MAG (2010), OECD (2010).

Resolutions regimes and macro-supervision may obviate the need for further capital requirements

Having a credible bank resolution regime in place would be helpful, as it may preclude the need for further capital requirements for larger, systemically important institutions. Furthermore, more transparency in interbank markets and the bringing of CDS trading onto exchanges would better highlight exposures and improve risk assessment, thus reducing the calls for higher capital requirements. Finally, new initiatives to improve macro-supervision and monitoring are also welcome in this regard.

Basel III creates incentives to improve capital, perhaps via hybrid bonds

It was also pointed out that the new Basel agreement created an incentive for banks to speed up the process of improving their capital structure, as subordinated bank capital (those instruments that bear an economic incentive to call) will now be redeemed earlier than under previously envisaged grandfathering rules. Also discussed was the topping up of certain large financial institutions' capital requirements via the creation of hybrid capital (such as the Swiss proposal for convertible bonds – see below), which would shift losses onto bondholders); however, the incentives for buying these instruments are not yet clear.

Switzerland has proposed a solution for transfering risks back to the private sector

In Switzerland, a Swiss experts panel issued recommendations on how to proceed regarding raising capital requirements (Box 4 and Table 1).[13] If these recommendations are followed, the large, systemically relevant Swiss banks would have to increase their capital buffers sizeably, but they could also fulfil these higher capital requirements by issuing hybrid, contingent convertible ("CoCo") bonds, also called bail-in bonds. This proposal introduces an instrument that supposedly would absorb the risk that apparently no one was able to bear in the recent financial crisis. Looking back at the crisis, there was not enough risk-bearing capital or bonds. The bail-in, risk-bearing bonds would be a supplement to secured bonds and other instruments. And, since they are intended to bear risks, this benefit would of course have a price. The increased funding costs, however, have to be seen as the price tag for resolving a financial crisis, in this case with the risk premium being borne by the private sector. At the moment, there appear to be more risk than reward opportunities, and putting the risk back onto the shoulders of the private sector could be seen as part of the new reality.

However, low incentives for investors to hold hybrid capital may make convertible "bail-in" bonds too costly to issue

It was noted that traditional bond investors are reluctant to invest in bonds that can convert into equity, unless the bonds have much higher expected returns. These instruments need to target the right groups, which are unlikely to be found among bond investors. If the target is capital investors, regulators might just as well increase the standard capital requirement instead of introducing these bonds. The higher risk that these instruments bear would make them very costly for banks. This is especially problematic at a time when banks need not only to shore up their capital but also to rely more on wholesale funding. Furthermore, there may be a shift toward shorter-term funding, which tends to increase rollover risk.

The pricing and rating implications for other types of debt are yet unclear;

It was also pointed out that in case a bank gets into difficulties, funding will be very difficult, and almost impossible, via any type of bail-in instrument where default risk is a pricing element. Such banks would then have to rely on the short-term interbank market for secured instruments. Since under such

standardisation may be helpful in this regard

circumstances investors will prefer secured lending, collateral requirements would rise, which would deplete the bank assets potentially available for the unsecured lenders, with likely consequences on income-to-asset ratios. Effects on the other debt (both senior and junior) are uncertain, too, and so are the rating implications for all these debt tranches in general. The sooner this situation can be clarified, perhaps through some sort of standardisation for the hybrid securities, the better for banks and investors.

Box 3. Swiss proposals to address the "too big to fail" risks posed by banks

A Commission of Experts appointed by the Swiss Federal Council (November 2009) submitted on 30 September 2010 a series of measures for limiting the "too big to fail" (TBTF) risks posed by banks that are systemically important to the Swiss economy. The report proposes specific measures in four core areas:

I. **Capital:** a comprehensive concept for capital is presented and specified. Three capital components form the core of the concept, which should significantly strengthen the liability coverage of systemically important banks (see also Table 1):

- The **minimum requirement** for the maintenance of normal business activities.
- The **buffer**, which allows banks to absorb losses without falling short of the minimum requirement and without having to suspend normal business activities. This takes into account the risk profile and the loss potential of banks.
- The **progressive component**, which on the one hand ensures that systemically important banks have a particularly strong capital base. On the other, this component gives a bank the financial freedom of manoeuvring to deal with a crisis through implementation of a prepared emergency plan. In addition, the progressive component should create an incentive for a bank to limit its systemic importance. To achieve these goals, this component rises progressively in keeping with the degree of systemic importance – as measured by the total balance sheet of the bank and the bank's market share in relevant areas.

New capital instruments (reserve and convertible capital) are used for implementation. Almost half the new requirements for total capital can be met with convertible capital. For banks, convertible capital has the advantage from a tax perspective of receiving preferential treatment as debt capital, since the interest payment can be deducted from taxable profits. This makes convertible capital more attractive than common equity, as far as banks are concerned. If the convertible capital is more expensive than other debt capital because investors perceive a higher risk, such an increase in costs would be desirable. Thus the existing risk costs, which are borne by the taxpayer as a result of the implicit state guarantee, would be redistributed from the general public to the banks, in accordance with the originator principle.

The successful launch of convertible capital should be effectively supported by a Swiss bond market that is competitive and functioning well. This would require an improvement in tax conditions. The new concept applies both to the risk-weighted capital ratio, and to the minimum capital level as a proportion of the balance sheet total (the "leverage ratio").

For the risk-weighted capital ratio, the Commission of Experts set out the following **minimum requirement** specifications that are substantially more rigorous than the current requirements and the Basel III standards:

- Based on their **size and market position** at the time of writing, the total capital requirements for **Credit Suisse** and **UBS** amount to some **19%** of risk-weighted assets,as per Basel III.
- **10%** of the risk-weighted assets must be held in the form of **common equity** (capital of the highest quality in the form of paid-in capital, disclosed reserves and retained earnings following deduction of regulatory adjustments, e.g. goodwill and deferred tax assets).

Box 3 (cont'd). Swiss proposals to address "too big to fail" risks posed by banks

- For **9%** of the risk-weighted assets, the two large banks can issue **contingent convertible bonds** ("CoCos"). These bonds are automatically converted into common equity when a bank's common equity ratio drops below a predefined level (trigger).

II. **Liquidity:** proposals concerning liquidity requirements largely correspond to the reforms that have already been implemented since the publication of the interim report. The liquidity regime that entered into force for the large banks in June 2010 was drawn up in the form of an agreement that referenced the ongoing work on the TBTF issue. It is proposed that the principles agreed there should now be given legal form.

III. **Risk diversification:** Measures to improve the diversification of risks are part of the adjustments also envisaged in other jurisdictions, notably the EU. One of the objectives of these measures is to reduce the degree of interconnectedness within the banking sector and thus to limit the dependence of other banks on systemically important banks.

IV. **Organisation, resolution and other measures:** Guidelines for preparatory organisational measures to guarantee the resolvability (or the resolution) of a systemically important bank in the event of a crisis should ensure the maintenance of systemically important functions in such a case. Measures are intended to be preventive and curative and should be based on a subsidiarity principle. A key role is played by the combined impact of the measures relating to capital and organisation. If a systemically important bank's capital ratio falls below a certain level, the emergency plan is triggered. This means that the systemically important functions are rapidly transferred to a new legal entity. At the same time, the convertible capital that the bank has to hold as part of the progressive component is converted into common equity. This ensures that the emergency plan is carried out with an adequate capital base. If a bank exceeds the minimum organisational requirements and thus improves its resolvability, it will receive a corresponding capital rebate in recognition of its efforts. At the same time, attempts to improve international coordination should be strengthened. In the area of market infrastructure, improvements should be made by introducing central counterparties for over-the-counter derivative transactions (derivatives traded outside an exchange between two market participants).

The Commission of Experts does not propose the creation of a stability fund or "resolution fund" intended to facilitate the orderly resolution of distressed financial institutions. The third capital component contained in the capital concept proposed by the Commission of Experts can be seen as a resolution fund to be set up by the institution itself, which will make a significant contribution towards orderly resolution.

Source: Commission of Experts (2010).

In particular, defining the trigger mechanism for bail-in bonds is crucial

A central question in this regard is when the bail-in of hybrid bonds should be triggered, earlier ("going concern") or later ("gone concern"), when the bank has already failed. These issues (terms, conditions, trigger events) need to be clarified at issuance and standardised, such that uncertainty for senior bondholders in particular is minimised. If this can be achieved, these hybrid instruments could become an interesting complement to existing debt instruments. But currently, standardisation and comparability do not exist. Finally, to improve liquidity when secondary markets for hybrids do develop further, post-trade transparency will also be an issue.

As markets for hybrids grow, innovations that restructure their risk components may create new risks themselves

There was a general view that these instruments are likely to be suitable only for larger financial institutions. At the same time, as these instruments and markets develop, there are likely to be innovations that synthetically strip away the credit component so it could be traded separately. With market confidence restored, for example, the triple-A component of such instruments might be priced and traded. These types of innovations could again create risks similar to those created by structured mortgage products.

Table 1. Comparison of bank capital requirements: BCBS *versus* Swiss proposals

	Previous requirements (definition of RWA and capital categories as per Basel II)		**New requirements** (definition of RWA and capital categories as per Basel III)	
	International standard (Basel II)	**Swiss regime for big banks** (Orders of autumn 2008)	**International standard (Basel III)**	**Commission of Experts' calibration**
		Valid as of 2013[a]	Valid as of 2013, with a transition period up to the end of 2018	
I. Minimum requirement	8% total capital, of which at least: 2% common equity 4% Tier 1	same as Basel II	8% total capital, of which at least: 4.5% common equity 6% Tier 1	same as Basel III, esp. 4.5% common equity[b]
II. Buffer	–	8% total capital of which at least: 2% common equity 4% Tier 1	2.5% common equity	8.5% of which: min. 5.5% com.equity, max. 3% CoCos, trigger at 7% com.equ.
III. Progressive component	–	–	*(Surcharge for systemically important banks not yet defined)*	6% CoCos (for current size and market share of big banks)[c] trigger at 5% com.equ.
		Total:	10.5% total capital of which min. 7% com. equity	19% total capital of which min. 10% com. equity

Notes:

a. The current status quo is shown. Banks are mainly required to meet their capital requirements with Tier 1 capital. Ultimately, *i.e.* after the transition period ends in December 2020, half the Tier 1 minimum capital and the buffer would still have to be held in common equity under the old definition. Hybrid Tier 2 instruments would also be theoretically eligible, as a minority holding. However, these are not very common in the banking system and they are therefore of negligible importance.

b. In addition, the Basel floors for total capital (8%) and Tier 1 (6%) must be satisfied. Here, CoCos in component II and component III are eligible as long as they comply with the relevant criteria of the Basel Committee. All CoCos (in the buffer and in the progressive component) must at least meet the criteria for Tier 2 capital at all times.

c. The size of the progressive component depends on the specific bank's degree of systemic importance. The 6% quoted in the table is an average value that applies for the current status quo of Switzerland's two big banks.

Source: Commission of Experts (2010), p. 59.

Notes

1. McKinsey Global Institute (2010).

2. It is interesting to note that FOMC minutes of a videoconference meeting on October 15, 2010, that was released later in November as part of the minutes of the 2-3 November meeting (FOMC, 2010), revealed that Fed policy makers discussed whether to set a target for interest rates on certain government bonds, even though they did not move forward with that idea. A precedent for the idea is a ceiling of 2.5% on long-term Treasury bonds that the Fed maintained for nearly a decade, from April 1942 to March 1951. The pegging of interest rates was introduced during World War II to support extensive federal government wartime borrowing. It is reported that it was lifted only after a standoff between President Harry S. Truman and his Treasury Department, which wanted to keep the yields low, and the Fed, which was worried about the inflationary results of the peg after the end of the 1948-9 recession and the start of the Korean War. The interest rate peg was lifted by the Treasury-Fed Accord, signed on March 4, 1951 (Chan, 2010; Hetzel and Leach; 2001, who call this date "Federal Reserve Independence Day").

3. Issues of interest rate risks and challenges they pose for the financial industry were the topic of the OECD Financial Roundtable held on 15 April 2010 and are discussed in Wehinger (2010).

4. A lead intervention in this round of discussion was delivered by the Secretariat of the Working Party on Public Debt Management and focused on issues of sovereign risks and on the borrowing outlook from the perspective of sovereign issuers. Details regarding this intervention are published in Blommestein *et al.* (2010) in this issue of *Financial Market Trends*, Vol. 2010/2.

5. Note, however, that the debt and deficit data shown here do not fully correspond to the Maastricht definition of these data as used for determining the limits of the Stability and Growth Pact.

6. See IMF (2010b), Chapter III: The Uses and Abuses of Sovereign Credit Ratings.

7. The data obtained from these two sources are not directly comparable due to differences in reporting populations, deduction of offsetting short positions in CEBS data, immediate borrower basis (CEBS) vs. both immediate borrower basis and an ultimate risk basis (BIS), and levels of consolidation regarding the holdings of various banking units across national jurisdictions; see the box on p. 19 of BIS (2010).

8. See Claessens *et al.* (2009) and the references therein, in particular Calvo (2006).

9. IMF (2010a).

10. IMF (2010b).

11. CEBS (2010).

12. For the new Basel requirements see BCBS (2010); for an assessment of their possible growth effects see MAG (2010) and Box 1.6 "Estimating the macroeconomic impact of Basel III capital requirements" in OECD (2010); for a private sector assessment see IIF (2010).

13. Commission of Experts (2010).

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Systemic Financial Crises: How to Fund Resolution

by

Sebastian Schich and Byoung-Hwan Kim*

Systemic financial crises are a recurrent phenomenon, and despite regulatory efforts they are likely to occur again. This report compares the ex ante *funding of deposit insurance schemes in a selection of countries, highlighting the "funding gap" left by these arrangements in the recent systemic financial crisis. To fill that gap, different approaches have been adopted across countries in the recent crisis. Where support for the financial sector was provided as part of policy response to the crisis, new taxes have been adopted to generate revenues* ex post*, although the specific approaches have differed. While there is no single solution in this regard, this report finds that* ex ante *funded systemic crisis resolution funds, together with strengthened failure resolution powers, are in principle adequate to help fill the gap.*

JEL Classification: E44, G01, G21, G28, E61, H21.

Keywords: systemic financial crisis, systemic crisis resolution fund, deposit insurance, financial activities taxes, ex ante *versus* ex post *funding.*

* Sebastian Schich and Byoung-Hwan Kim are Principal Administrator and Financial Markets Analyst, respectively, in the Financial Affairs Division of the OECD's Directorate for Financial and Enterprise Affairs. This article is part of the Committee on Financial Markets' (CMF) work produced in the context of its Strategic Response to the Financial Crisis. Earlier versions of the article were discussed by the CMF at its meetings in April and October 2010; the present article takes into account these discussions as well as written comments received subsequently. The article was first released in December 2010. 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.

EXECUTIVE SUMMARY

"The financial sector needs to provide a fair contribution to the resolution of the recent systemic crisis, especially where financial institutions have benefitted from government support during the financial crisis". This basic principle was broadly supported by delegates at the CMF discussion on how to raise revenues in order to fund systemic crisis resolution. Views on how to achieve that goal differed, however. Thus, the CMF discussion was illustrative of the broader ongoing debate regarding mechanisms for enhancing financial stability, which has been taking place in international forums, including in particular the FSB and the G20. Several different types of financial-sector taxes or levies have been proposed or implemented, many of which could be interpreted as measures to fund systemic crisis resolution *ex post* (*i.e.* after the crisis occurs). The observation that the different measures adopted have been little coordinated across borders is likely to have resulted in additional costs in terms of potential distortions to competition and incentives.

There is broad agreement that the financial crisis has highlighted the need for effective failure resolution arrangements, especially -- but not necessarily -- exclusively for institutions considered to be systemically relevant. A common component of failure resolution arrangements around the world is deposit insurance, but existing arrangements are not designed to deal with systemic crises of the extent recently witnessed. Even where deposit insurance funding is currently characterised by a significant *ex ante* funding element, a "funding gap" for systemic crisis resolution seems to exist. Deposit insurance schemes are not meant to deal by themselves with systemically significant bank failures or a systemic crisis. Rather, the existence of deposit insurance is meant to limit the spread of problems from troubled institutions to otherwise healthy institutions. Reflecting this principle, actual funding levels of many deposit insurance schemes do not seem to be large enough to easily absorb the effects of widespread bank failures or even the failure of one or more of the largest, and perhaps systemically important, banks. An additional finding of this report is that deposit insurance fund balances have not decreased in many jurisdictions throughout the crisis, even in some countries where banking sectors have experienced significant stress. This observation suggests that deposit insurance arrangements did not bear the brunt of the shock absorption that occurred in these countries. All told, some other mechanism is needed to fill the gap. *Ex ante* funded systemic crisis resolution arrangements are suited in principle to such a task, at least partly.

Consistent with this observation, some countries are undertaking efforts to fill the gap by strengthening existing deposit insurance mechanisms and/or complementing them with other measures to fund systemic crisis resolution (*e.g.*. Sweden and Germany). One central critique of *ex ante* resolution funds, however, is that these arrangements could transform what was an exceptional policy response in this particular crisis into an entitlement. There are merits to this line of reasoning, but the mechanisms that have been adopted or proposed for forward-looking financial sector contributions to systemic crisis resolution recognise this issue, and they foresee a new or improved resolution regime with additional tools intended *precisely* to avoid the need to resort to bail-outs.

In the absence of such additional tools, there is a tendency on the part of governments to provide financial institutions with extensive guarantees for their liabilities and sometimes assets. While such measures can be helpful, they are not costless, even when they do not involve significant upfront fiscal costs. Further to potential distortions to competition and incentives arising from such measures, earlier CMF work already concluded, the capacity of some governments to provide for the government-supported guarantees for financial institutions could be questioned.

I. Motivation and background

The recent financial crisis has revealed shortcomings in some financial safety net arrangements, while highlighting the need for fiscal consolidation

In response to the recent financial crisis, several countries have either introduced or considered the introduction of systemic risk levies or special taxes on financial institutions and activities. These actions and deliberations have to be seen against the backdrop of these two observations:

- First, the recent financial crisis has revealed shortcomings in some financial safety-net arrangements and has highlighted that existing tools in many jurisdictions were inadequate to finance the resolution of a severe systemic crisis.
- Second, at the same time, in part reflecting the expansion of government-provided safety nets and the associated increase in actual fiscal outlays and contingent fiscal liabilities, the financial (and economic) crisis has also highlighted the need for fiscal consolidation in many countries.

To fill the funding gap, countries have resorted to different approaches

To fill the funding gap with regard to systemic crisis resolution, CMF participating jurisdictions (*e.g.*.. Germany, Hungary, Sweden, United Kingdom, and the United States) have taken a number of different policy approaches. They include both i) *ex post levies* charged to make financial sectors contribute more fully than they did up to now to the costs of the financial crisis resolution and ii) *ex ante premiums* to finance systemic crisis resolution in the future.

The present article is based on a report prepared for discussion of that topic by the OECD's Committee on Financial Markets, and it takes into account the results of that discussion.[1] It focuses on aspects of the funding of systemic crises resolution, taking into consideration current efforts to strengthen resolution regimes. In fact, while the stated aim of current efforts to reform financial regulation is to avoid exposing taxpayers to losses, it is recognised that failure resolution involves measures that typically require funding, which could occur either ex ante or ex post. The present article compares the funding of deposit insurance schemes in a selection of countries, highlighting the "funding gap" left by these arrangements in the recent financial crisis. It then attempts to provide an overview of some of the key features of different approaches for filling that gap, which have recently been proposed or adopted. In discussing these approaches, the article raises and addresses the following questions:

- What is the evidence for gaps in *ex ante* funding of systemic crisis resolution under existing deposit insurance arrangements?
- How should revenues be raised for funding systemic crisis resolution (*ex ante*, *ex post*, or a combination of these two approaches)?
- If taxes are used, should the funds be collected from general taxation or through specific corrective taxes, including taxes aimed at reducing systemic risk?

II. Fiscal and Other Costs of Systemic Crises (Resolution)

The incidence and costs of systemic crises

A systemic crisis is associated with breakdowns of significant parts of the financial system, as well as impaired operation of the real economy

A ***systemic crisis*** is *a* materialisation of ***systemic risk***. Thus, a systemic crisis could be defined with reference to systemic risk for which the FSB, IMF, and BIS have developed a working definition, namely *the risk of a disruption to financial services that is (i) caused by an impairment of all or parts of the financial system; and (ii) has the potential to have serious negative consequences for the real economy* (FSB/IMF/BIS, 2009). Fundamental to this definition is the notion that systemic risk is associated not just with breakdowns of significant parts of the financial system but also with negative externalities, and in particular the impaired operation of the real economy.

Not every materialisation of systemic risk results in a systemic crisis, however. The policy response, as well as other developments, may prevent the materialisation of such risk to develop into a full-fledged systemic crisis. Historical experience shows that situations in which financial crises do reach exceptional proportions prompt governments to intervene to help restore financial stability.

Consistent with that observation, Laeven and Valencia (2010) recently proposed a definition for (dating) systemic crises, based on a mix of quantitative and qualitative criteria to determine whether two conditions are met: First, *significant signs of financial distress in the banking sector*, as indicated by significant bank runs, losses in the banking system, and bank liquidations. Second, *significant policy intervention measures in response to significant losses in the banking system*, as measured by the extent of the policy response.[2] When these conditions are met, a financial crisis is considered to be systemic. According to that measure, over the period 1970 to 2009, many CMF member participating jurisdictions and accession countries experienced systemic banking crises (Figure 1).

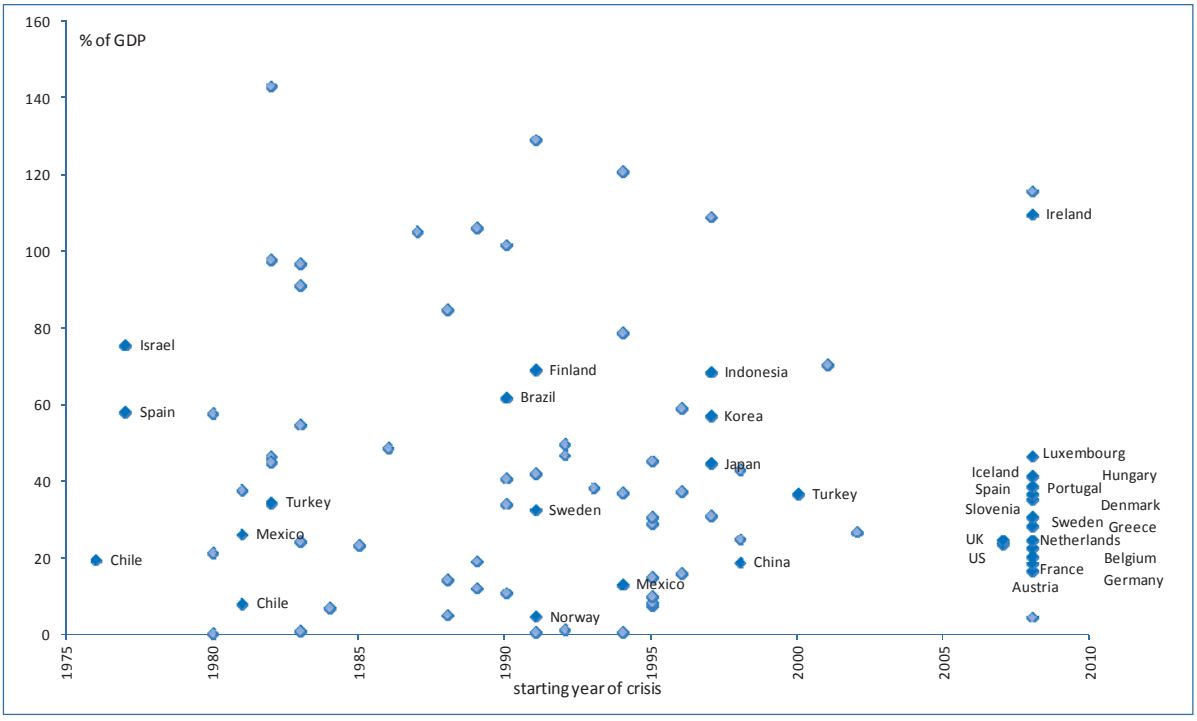
Real output costs can be very significant

Three observations are singled out here for special attention regarding the total economic costs of systemic financial crises, based on the estimates by Laeven and Valencia (2010).[3]

- First, there is wide variation in the (estimated) real output costs, measured as the cumulative difference between actual and trend real GDP (expressed as a percentage of trend real GDP, which is extrapolated from the pre-crisis period). This observation reflects a variety of factors, including the relative size of the banking sector compared to the total economy, the extent of the initial shock, the range of policy instruments available (including resolution powers), and the policy response.
- Second, output losses can be very substantial. As shown in Figure 1, estimated real output losses measured as the cumulative difference between actual and trend real GDP often amounted to 20% to 40% of a country's annual GDP.

- Third, there were numerous systemic crises in CMF-participating jurisdictions during the last three and a half decades, but they tended to be isolated events. In the most recent crisis, there has been a bunching of systemic crisis instances. Focusing on the CMF participating countries that experienced positive real output losses as a result of systemic crises (identified in Figure 1 by dark diamonds), almost half the cases occurred quite recently, starting either in 2007 or 2008.

Figure 1. Systemic crises and estimated losses in real output



Notes: Systemic banking crises as identified by Laeven and Valencia (2010), including cases "that almost met the definition of a systemic crisis" (*i.e.* France, Greece, Hungary, Portugal, Slovenia, Spain, and Sweden in 2008; and Brazil in 1990), where estimated output losses are greater than zero. For expositional purposes, the figure does not show instances in which data on output losses are either zero or not available. Dark diamonds indicate CMF member participating jurisdictions (including accession and enhanced engagement) countries, and light-grey diamonds indicate other countries.

Source: Laeven and Valencia (2010).

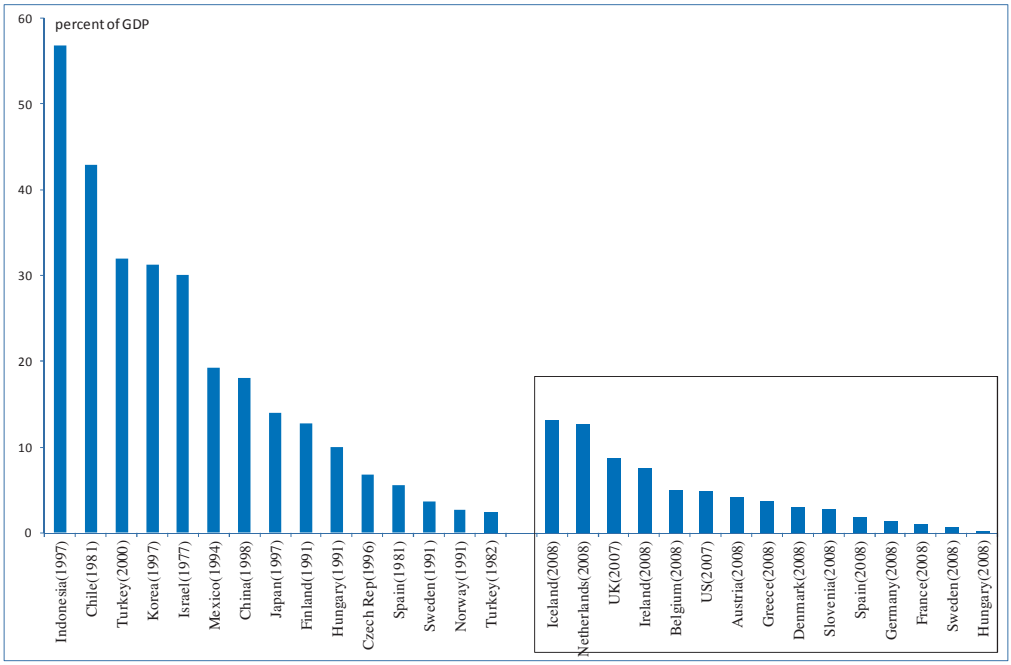
The policy responses to the materialisation of systemic risks have some common elements. In the initial containment phase, liquidity pressures are addressed through liquidity support and expanded guarantees on bank liabilities. Subsequently, during a resolution phase, a wide array of measures is being used, including guarantees, capital injections, and asset purchases or excess-loss arrangements. While policy responses have in these respects been broadly similar across different systemic crises over the last few decades, some nuances do exist, however.

The fiscal costs of systemic crisis resolution also tend to be relatively high

The estimated gross fiscal costs associated with systemic crisis resolution can vary significantly from one episode to another, as illustrated in Figure 2 using the example of CMF participating jurisdictions. On average, during systemic crises occurring from 1970 to 2007, as shown in the figure, gross fiscal costs amounted to more than a sixth of a country's annual GDP, on

average. In the case of the systemic crises during 2008 and 2009, that average is much lower, however, at close to 5%.

Figure 2. Systemic crises and estimated gross fiscal costs during the crisis



Notes: Estimated gross fiscal costs incurred throughout the five years since the beginning of the crisis in the case of previous systemic crises up to and including 2007 (Laeven and Valencia, 2008). Estimated gross fiscal costs between 2007 and 2009 are shown in box. Costs calculated from either 2007 to 2009 in the case of the United Kingdom and the United States, and from 2008 to 2009 in the case of the other countries shown in the context of the recent financial crisis (based on Laeven and Valencia, 2010). Date in parenthesis denote the starting year of the crisis. Gross fiscal costs include recapitalisation outlays and do not include any recoveries; hence, they are different from net fiscal costs. Deposit insurance payouts are not included in the estimates of fiscal costs associated with the crises in 2007 and 2008. In the case of Iceland, obligations to foreign depositors arising from the Icesave crisis are not included.

Source: OECD Secretariat calculations based on Laeven and Valencia (2008, 2010).

Rapid and extensive monetary expansion and the extensive use of government-provided guarantees were particularly prominent in the policy responses to the recent crisis; this aspect explains in part why the estimated *gross fiscal costs* associated with the direct support of banks during the recent financial crisis have so far been more limited when compared to earlier crises. That said, these interventions have nonetheless given rise to other costs resulting from potential distortions to competition and incentives, which tend to be excluded from the type of cost estimates used to produce Figure 2,[4] and it is uncertain what the *net fiscal costs* of the recent crisis will turn out to be.

The direct fiscal costs of the recent crisis do not fully reflect its total fiscal impact

As regards fiscal costs, Laeven and Valencia (2008) estimate that the net fiscal costs of systemic crisis resolution amount to about 13.3% of GDP on average, based on a larger sample than shown in Figure 2, and including 42 banking crises during the period 1970 to 2007. Comparable estimates are not yet available for the 2008-2009 systemic crisis episodes, but the fiscal costs of direct support, net of amounts recovered so far, have been estimated by the IMF to average 2.8% of GDP for advanced G-20 countries (IMF, 2010a).

Be that as it may, the direct fiscal costs of the recent crisis underestimate the total fiscal impact of the crisis, and this situation is being reflected in the total expected increase in public debt. Many types of support measures for financial sectors lead to increases in actual fiscal liabilities, as well as to contingent liabilities (as is the case for government-supported guarantees), and these liabilities in turn influence perceptions of sovereign default risks and risk premiums.

Just as in previous episodes, the most recent crisis has been followed by a rise in public debt

A rise in public debt is indeed a common phenomenon subsequent to many systemic financial crises. The recent episode is no exception in that regard: Government debt of the G20 countries is projected to exceed pre-crisis levels by about 40%, although most of that increase appears to reflect revenue losses associated with the deceleration of real economic activity, rather than the cost of fiscal stimulus measures. Financial market participants have paid considerable attention to these types of costs, as indicated by the recent and ongoing episodes of sovereign debt funding pressures, especially for small economies with large financial sectors.

Avoiding the occurrence of systemic crises

Avoiding the occurrence of a systemic crisis is the first-best solution to limiting the costs of crises

Avoiding the occurrence of a systemic crisis is the first-best solution to limiting the costs of crises, and hence to reducing any need for funding resolution. Guided by this principle, a number of collaborative efforts are currently being undertaken involving national authorities and international supervisory and regulatory bodies. High-level priorities in this regard are: to enhance buffers and limit risk-taking at the level of individual institutions; improve incentives and market functioning; and eliminate moral hazard from systemically important institutions, and to develop a framework for effective macro-prudential supervision. Indeed, one of the key insights provided by this crisis has been that a system is not necessarily stable even when all its parts, when viewed individually and separately, appear stable by some measure. As a result, enhanced efforts are currently being made to identify the implications for risk to the system created by the interaction of the many individual choices being made.

However, residual risk of a systemic crisis will remain despite all regulatory effort

But regulatory measures will never eliminate all risk of systemic financial instability. Early intervention powers on the part of relevant authorities are helpful in further reducing that risk, in particular since such powers (as already available, *e.g.*. in the case of some deposit insurance agencies) enable authorities to address situations of distress before these spread to the wider financial system. But there will always be a *residual* risk that the government will need to intervene beyond the normal operation of the safety net in order to stabilise the financial system, and that inevitably comes at a cost which has to be met by revenue raising measures. Thus, the effective funding of systemic crisis resolution will remain an issue, even if considerable progress is achieved in reducing systemic risks.

III. An assessment of funding "gaps"

Self-insurance

The focus of current regulatory efforts is on strengthening self-insurance

One straightforward means for funding systemic crisis resolution is strengthening self-insurance. Indeed, much of the current regulatory effort focuses on specifying higher capital and liquidity buffers and improving the quality of those buffers at the level of individual institutions, especially those considered to be systemically important. These measures, and the specific efforts to fund systemic crisis resolution discussed here, can complement each other, although the joint impact needs to be carefully assessed.

There are different potential means of financing the resolution of systemic crises

Self-insurance will not be sufficient under all circumstances, thus additional measures to fund systemic crisis resolution can either be integral to general revenue raising or dedicated to a separate systemic risk resolution fund. They can be applied either before a crisis (*ex ante*) or after (*ex post*). And they can be designed either to share the burden widely among taxpayers or to place greater weight on the financial sector itself. Actually, specific arrangements already exist to achieve effective failure resolution, although the scope of these arrangements typically does not include the resolution of systemic crises, thus opening up a funding and/or resolution gap.

The role of deposit insurance arrangements

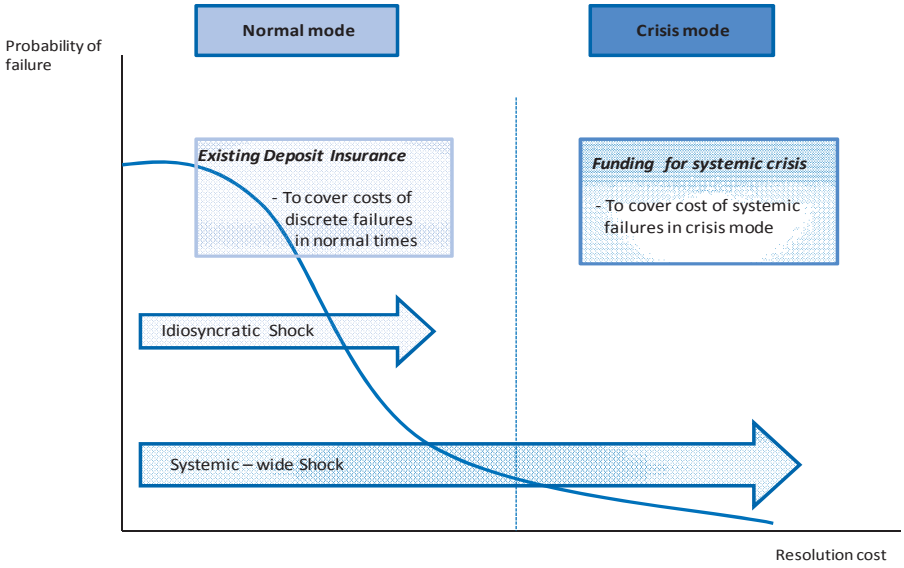
Deposit insurance schemes are arrangements for burden-sharing in case of failure by individual deposit-taking institutions. A key purpose of such arrangements is to limit the potential of problems at one bank to spill over to other healthier banks, thereby reducing the possibility of a chain reaction within the banking system as a whole. Another benefit is that, especially where consistent exit procedures exist, deposit insurance gives policy authorities greater freedom to let troubled banks fail. To facilitate the orderly failure of banks, several deposit insurance schemes possess additional specific failure resolution powers, thereby limiting the potential costs to taxpayers of the failures.

Deposit insurance schemes are not designed to absorb shocks of the magnitude experienced recently

Systemic crises are, however, not meant to be exclusively dealt with by deposit insurance schemes. The core principles for effective deposit insurance systems developed jointly by the BCBS and IADI (2009) suggest the following: "*A deposit insurance system is not intended to deal, by itself, with systemically significant bank failures or a "systemic crisis". In such cases all financial system safety-net participants must work together effectively. In addition, the costs of dealing with systemic failures should not be borne solely by the deposit insurance system but dealt with through other means such as by the state*" (a stylised description is provided in Figure 3).

The observation that the parameters of many deposit insurance arrangements were changed on an ad hoc basis by governments in response to the financial crisis, often on a temporary basis, is clear evidence that these schemes were indeed insufficiently equipped to absorb shocks of the magnitude experienced recently (Thorat, 2010).

Figure 3. Scope of arrangements for financial shock absorption



Source: OECD Secretariat estimate based on Yosuke (2010).

Deposit insurance arrangements were not the main component of the shock absorption in many countries

Also, deposit insurance fund balances have not decreased in many jurisdictions throughout the crisis (Figure 4), even in some countries where banking sectors have experienced significant stress. One might infer from this observation that deposit insurance arrangements were not the main component of the shock absorption in these countries. Thus, one question is how existing deposit insurance arrangements could be strengthened by enhancing funding arrangements and by also expanding the resolution powers of the deposit insurance agency where such powers do already exist, and introducing them where they do not exist.

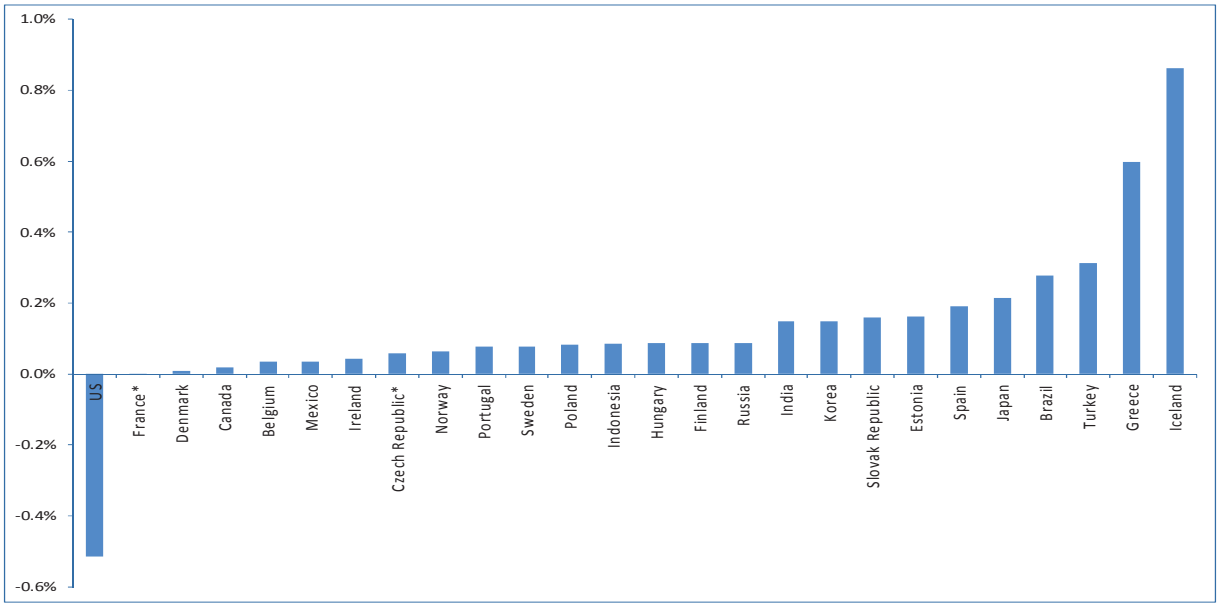
In addition to funding, resolution powers need to be strengthened

Indeed, some deposit insurance arrangements already have specific failure resolution powers, and where they exist, they have been strengthened in response to the recent financial crisis. Where they do not exist, the question whether to introduce such powers has become even more relevant than before the financial crisis (Box 1).

As regards efforts to strengthen deposit insurance funding arrangements, one specific question is to what extent (efficient) deposit insurance may need to involve premiums actually levied on individual banks, which factor in the contribution of these banks' activities to overall systemic risk (Acharya *et al.*, 2009). Measuring marginal risk contributions is difficult, though, and perhaps may prove too complex in practice, for some cases at least. In the United States, however, the FDIC has adjusted its premium assessment so as to charge large, international financial institutions relatively higher fees as compared to smaller and less-complex institutions. This approach attempts to capture elements of "systemicness" of an institution, and it is similar in this sense to some of the proposals for new taxes or levies discussed further below. As a result, more of the funding burden would shift to the bigger, and perhaps more complex, banks and away from the smaller ones.

Figure 4. Change in deposit insurance fund balances during the recent crisis

Selected schemes; change in fund balances between 2007 and 2009; as of 2007 GDP



Notes: Change in deposit insurance fund balance (asset minus liabilities or total equity) between 2007 and 2009 (or between 2007 and 2008 in the countries indicated by *), as 2007 GDP of respective country.

Source: OECD Secretariat estimates based on annual reports of deposit insurers.

Box 1. Strengthening resolution powers

Empirical evidence suggests that the choice of resolution policies affects the fiscal cost of resolving banking crises. In particular, early intervention in undercapitalized banks tends to reduce the fiscal costs of banking crises. By contrast, significant and long-lasting liquidity support, regulatory forbearance and blanket guarantees for depositors and other creditors all tend to increase the fiscal costs. Often, the latter course of action reflects a lack of viable policy instruments for managing the resolution or even for conducting the orderly bankruptcy of financial institutions. As pointed out in earlier CMF-related work, having a wide range of resolution powers available tends to reduce the cost of dealing with the failure of financial institutions (Lumpkin, 2008).

Deposit insurance systems in some jurisdictions have significant bank resolution powers, enabling them to intervene before asset values are fully depleted and to achieve less costly resolution. In some cases, intervention on the part of public authorities is triggered when specific pre-defined specific thresholds are reached, and such mechanisms limit the extent to which regulators can choose forbearance. There is growing recognition that resolution powers need to be introduced and/or strengthened where feasible. Specific challenges arise, however, in the case of large and complex financial institutions, especially to the extent that they conduct activities across different financial sectors and across borders. The crisis has also highlighted the fact that existing deposit insurance systems are primarily nationally focused and that existing domestic-based arrangements do not adequately incorporate the cross-border externalities that may be generated by the failure of internationally operating banks. One proposal to deal with this issue is to set up new regional or international deposit guarantee systems funded *ex ante* by the levying of risk-based fees, and given effective resolution powers for dealing with cross-border entities.

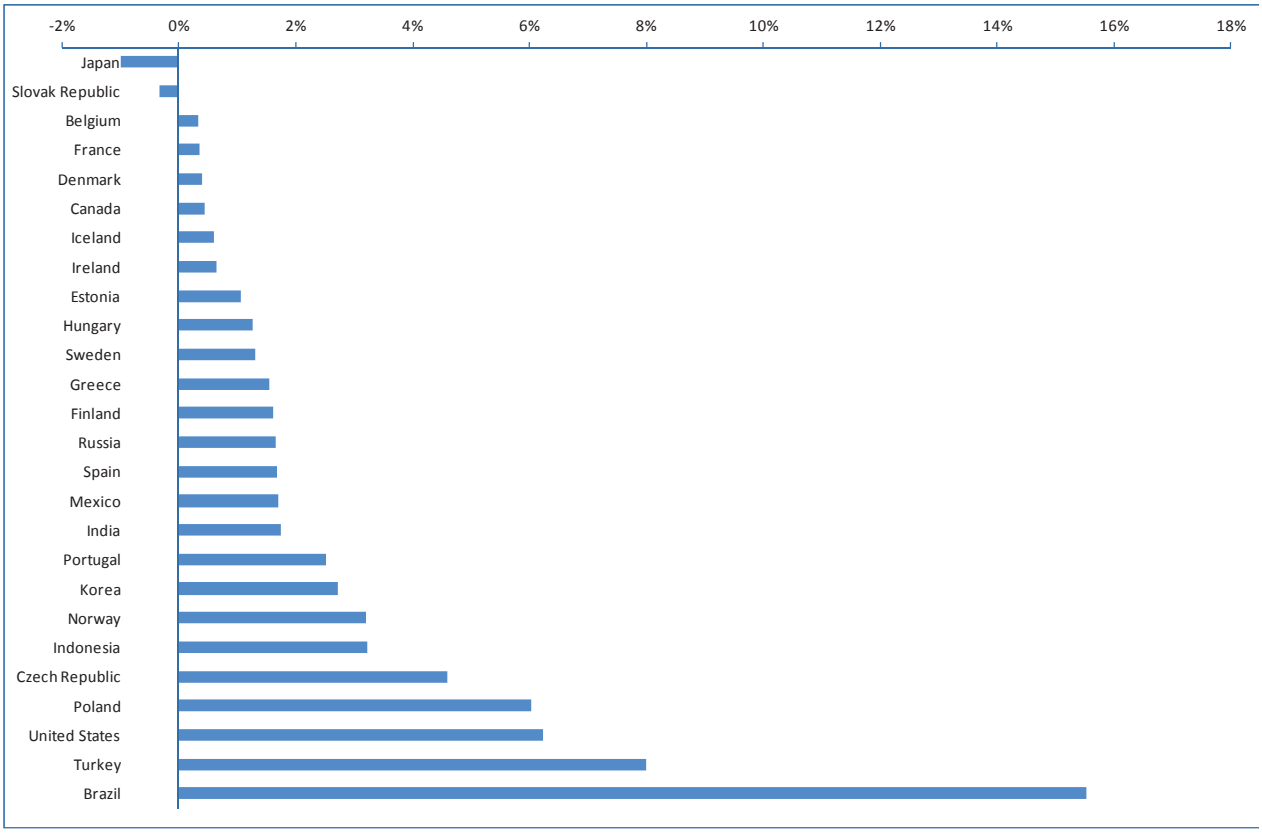
In response to the financial crisis, special bank failure regimes have been refined and/or new resolution tools have been added in a number of countries, including Denmark, France, Germany, the United States, the United Kingdom, and Spain. Also, the perimeter of some of these regimes has now been widened to include financial institutions other than deposit-taking banks, especially those that are considered to be systemically important. For example, in the United States, new regulatory tools strengthen the FDIC's supervisory and potential resolution powers in the case of systemically important financial institutions.

Even where ex ante funding exists, funding levels seem small compared to the deposits at large banks

Even where deposit insurance funding is currently characterised by a significant *ex ante* funding element, a "funding gap" for systemic crisis resolution seems to exist. Actual funding levels for many deposit insurance schemes do not seem to be large enough to easily absorb the effect of widespread bank failures or even the failure of one or more of the largest (and perhaps systemically important) banks, given the size of such entities (Figure 5). For example, *ex ante* funding levels at the end of 2007 -- that is before the financial crisis attained its peak -- vary between a few basis points and close to 4% of all insured deposits, depending on the scheme. In more than half of the schemes considered here, the deposit insurance fund reserve ratio does not exceed 1% (Figure 6).[5] The funding levels of deposit insurance schemes are also not very large compared to the size of total customer deposits at some large individual banks, with deposit insurance fund balances not attaining 10% of customer deposits (used here for convenience instead of insured deposits) at the largest bank for most of the constituencies under consideration here.

Figure 5. Deposit insurance fund balances as % of customer deposits at country's largest bank

Selected schemes, end of fiscal year 2007

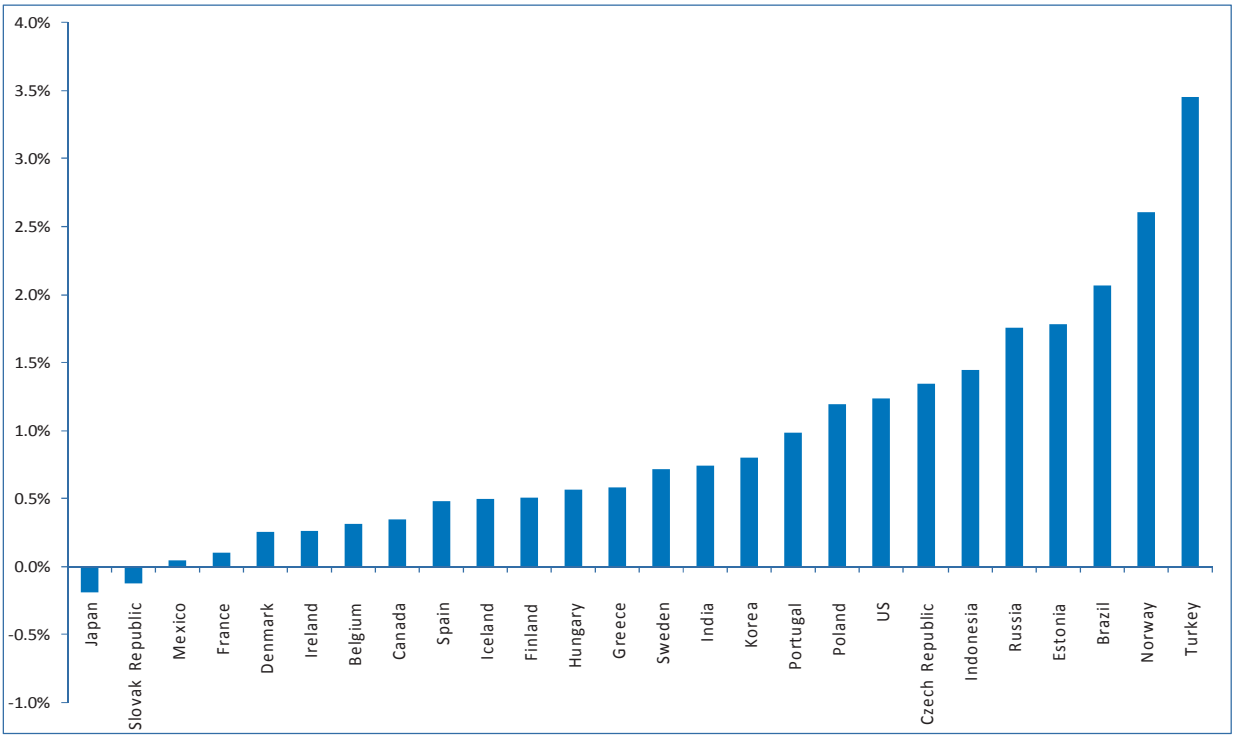


Notes: Deposit insurance fund balances divided by total customer deposits at the largest bank according to *The Banker* ranking. This measure is a simple measure of the relative size of the largest bank in each economy. Note, however, that customer deposits are not identical to insured deposits.

Source: Secretariat estimates based on annual reports of deposit insurers; *The Banker* database.

Figure 6. Deposit insurance fund reserve ratios

Selected schemes, end of fiscal year 2007



Notes: Deposit insurance fund ratios are defined as the deposit insurance fund balance divided by total insured deposits. Total insured deposits are deposits repayable by the guarantee scheme before the level of coverage is applied. Schemes shown are those that have some element of *ex ante* funding and for which data are available from public sources. Accounts for servicing debt accumulated in previous crises are not included. Some schemes are compensation schemes for depositors and investors.

Source: OECD Secretariat estimates based on annual reports of deposit insurers and European Commission (2010a).

Obviously, these ratios do not measure the actual resolution capacity of deposit insurance schemes, since such capacity consists of both *ex ante* and *ex post* funding facilities, including contingent credit lines and the capacity to impose special assessments, etc. The ratios shown here nonetheless provide an empirical reference for assessing the possible "*ex ante* funding gaps" that recent proposals for the *ex ante* funding of systemic crisis resolution may be intended to fill. A different question, beyond the scope of this report, is whether, and how, higher *ex ante* funding levels for deposit insurance schemes should be encouraged.

IV. How to raise revenues?

The funding gap for financing systemic crisis resolution could be filled through taxes or levies in different forms, and two broad types of approaches are distinguished in this section:

i) revenue-raising (from various taxes or levies) with the purpose of financing systemic risk resolution;

ii) revenue-raising through levies designed specifically to reduce systemic risk, as well as to finance systemic risk resolution.

A stylised overview of selected policy measures, based in part on this distinction, is provided in Figure 7. The assessment made is somewhat subjective and intended to facilitate understanding of the discussion in the remainder of this chapter.

Figure 7. Tentative categorization of selected policy measures for funding systemic crisis resolution

		Main thrust of policy measure?	
		Revenue raising	Corrective
Funding systemic crisis resolution	Ex-ante funding for future crisis	**Sweden** : Stability Fund **Germany :** Restructuring Fund **EC** : Bank Resolution Fund **IMF** : Financial Stability Contribution	
	Ex-post revenue generation for general budget	**United States** : Financial Crisis Responsibility Fee **Hungary:** Bank levy **United Kingdom** : Bank levy **Austria:** Bank levy **France :** Bank levy	
			United Kingdom : Bank Payroll Tax **France** : Temporary Bonus Tax **Italy** : Permanent Bonus Tax **IMF** : Financial Activities Tax

Notes: A clear-cut distinction between "revenue-raising" and "corrective" motivations does not exist. One might argue that, on a conceptual level, any corrective effect must by definition be attempted through an "*ex ante*" measure. The distinction made between "*ex ante*" and "*ex post*" in the categorisation made above refers primarily to the revenue raising objective, though that is either to fund resolution of the recent crisis ("ex post") or a potential future crisis ("ex ante").

Source: OECD Secretariat estimates based on press releases.

Revenue raising approaches

Ex post *("Making the financial sector pay for crisis resolution")*

Politically, the idea may be to make the financial sector pay

If the purpose of a levy is purely to raise revenues, then the choice of instrument by which that revenue is raised will clearly be determined primarily by its revenue-raising potential, rather than by either its impact on market efficiency or by equity considerations. Nevertheless, governments may decide to raise this additional revenue as much as possible from the financial sector, on the grounds that this sector is associated with the recent financial (and economic) crisis and has benefitted from government support during it. Politically, the idea may therefore be to "make those entities who have contributed to the occurrence of the crisis pay for its resolution".

Collecting funds after a crisis may (also) penalise banks that survived because of their sound management

A key problem when collecting funds after the fact, that is after the crisis has already happened, is that the survivors are not necessarily the ones that were the cause of the problem. *Ex post* funding measures are problematic if they do not distinguish those entities that most likely precipitated the crisis from those that did not, as such measures tend to penalise soundly managed banks that survived the crisis. For example, relying just on variables such as profits or balance sheet size to determine the tax base does not allow one to distinguish between banks that contributed to the crisis and those that did not. On the contrary, taxing current profits or balance sheet growth might penalise the sound

and well-managed banks that survived the crisis without major casualty, and are now, as a result of the cautious policies they adopted before the crisis, in a better position than their less-cautious competitors to expand their profit and market shares.

A more general problem with introducing new taxes or extending existing taxes on any particular sector is the question of the real incidence of taxation. Although in this case financial sector firms may be the immediate payers of the tax, it is uncertain whether this cost will ultimately be borne by their shareholders (as perhaps intended) or their customers. Unfortunately, there is very little empirical evidence available that can help answer this question.

Taxes could be seen as an "ex post" insurance premium

If the taxes are paid by those banks contributing to the crisis, and which have benefitted from government insurance during the crisis, these taxes can be considered as a form of *ex post* premium paid for that form of support. The proposed Financial Crisis Responsibility Fee in the United States could be interpreted as an example of such a tax. According to that proposal, the tax burden would depend to some extent on the size of the institution, thus making larger entities shoulder a larger part of the burden. The US Administration proposed that the Financial Crisis Responsibility Fee would be left in place until the TARP is fully paid off. According to estimates from early 2010, the total cost of TARP was expected to be around USD 120 billion. Assuming that this amount would be covered by collecting the proposed Financial Crisis Responsibility Fee in equal instalments over 12 years, the annual fee would be equivalent to about 0.07% of 2008 GDP. An updated estimate of the total costs of TARP is USD 50 billion,[6] which might translate to a smaller fee (Figure 8).

Taxes have also been proposed or implemented in other countries (Table A1 in Annex A). There are differences in the structures of the financial sectors and other factors, the type of specific tax chosen, the tax base and rate as well as its coverage, the period over which it will be collected and the specific use of the receipts. Among other things, these differences reflect differences in financial structures, as well as the extent to which domestic financial sectors have received financial support from their governments (and hence the need to collect a "fair" contribution from these sectors).

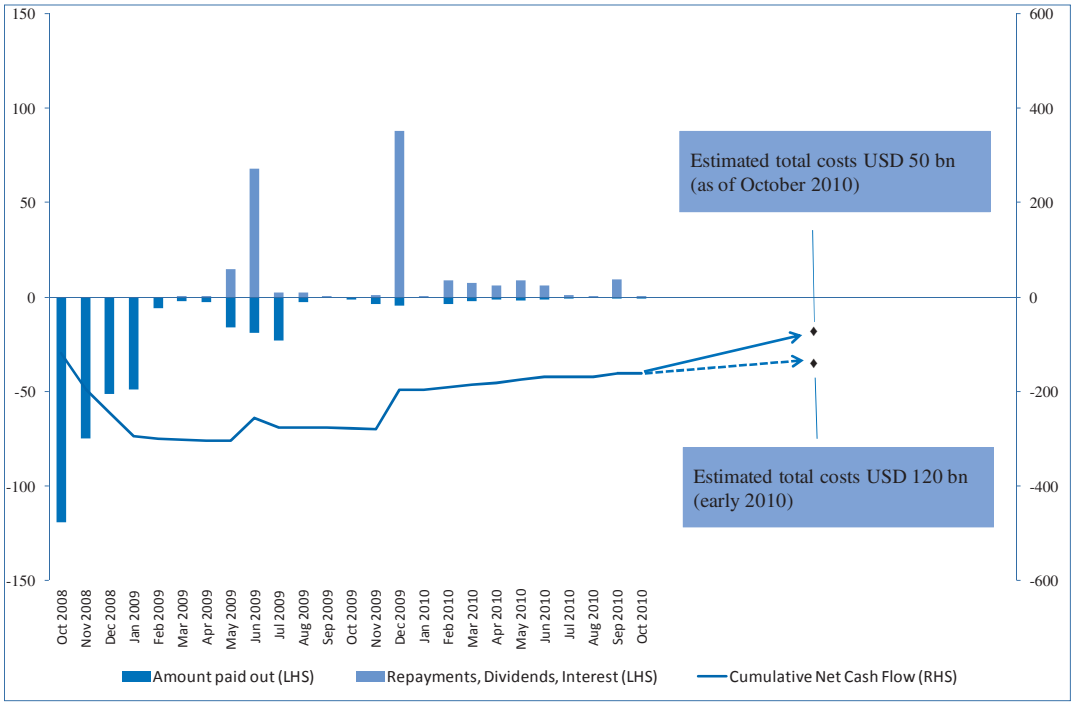
Taxes as ex ante *premiums for financing a resolution fund*

Taxes may also fund future crisis resolution

To the extent that the proceeds of the specific taxes are used for funding a reserve to be available for interventions in future (systemic) crises, they can be conceived of as *ex ante* premiums for future crisis resolution. The frameworks proposed by the IMF and the European Commission, announced in Germany and implemented in Sweden may be examples (Table A2 in Annex A). Some other countries are opposed, however, to the idea of using proceeds to create a separate fund, rather than channelling revenues to the general government budget.

Figure 8. TARP cash flow estimates

In USD billion



Source: OECD Secretariat estimates based on US Treasury's Monthly Congressional Reports, August and November 2010.

In 2009, Sweden introduced a "stability levy" with the proceeds earmarked for a "stability fund" to counteract the effect of systemic disturbance

In 2009, Sweden introduced a "stability levy" consisting of an annual tax of 0.036% on banks' liabilities, excluding equity capital and subordinated debt. The proceeds are earmarked for a "stability fund" envisaged to attain a funding level equivalent to 2.5% of GDP in 15 years (Box 2). Thus, the fund size is considerable if measured in terms of GDP. While the purpose of the *ex ante* fund is to finance measures needed in order to counteract the effect of systemic disturbance (to the financial system in Sweden), it is not meant to eliminate the need to have procedures for *ex post* burden sharing, however, and Swedish authorities are developing related principles.

In 2010, Germany established legislation on bank restructuring, orderly bank resolution, and the establishment of a restructuring fund

In Germany, the Parliament passed legislation on bank restructuring, orderly bank resolution, and the establishment of a restructuring fund in October 2010, with the law envisaged to come into effect at the end of 2010. The objective of the legislation is to ensure the resolvability of any bank, including systemically important ones, while avoiding any significant disruption to the wider financial system and economic activity. It foresees a special reorganisation procedure that systemically important banks could use -- at their own initiative -- to restructure, and it makes available some specific features that are not included in the existing insolvency plan proceedings to facilitate reorganisation. If the reorganisation by the bank is not achieved within a specific timeframe, the supervisory authority is given additional intervention powers. Systemically significant operations could then be transferred to a private buyer or – as a temporary solution – taken over by a public bridge bank. The other, non-

systemic parts could be liquidated in an orderly fashion. The resolution fund should provide the funds necessary for undertaking any such measures. The fund will not merge with deposit insurance programmes, since the focus of the former is on restructuring, while the latter focuses on compensation in case of liquidation.

Box 2. Strengthening existing failure resolution arrangements: The example of Sweden

Systemic resolution funds can be combined with existing deposit insurance funds, or exist separately. In fact, some deposit insurance funds are already characterised by the existence of different accounts, some of which have been designed to either deal with the costs incurred in resolving previous financial crises or to fund efforts resolving future systemic crises. The recently introduced Stability Fund in Sweden is expected to merge with the deposit insurance scheme in 2011, although the purposes of deposit insurance and the Stability Fund continue to be different from another. In this context, it is expected that in a crisis situation, the Stability Fund will be used before the deposit insurance fund, as the latter will be activated only in the final stage of liquidation.

In Sweden, a special Stability Fund was set up in 2009 as a part of the government's stability plan for financial institutions. The purpose of this fund is to finance measures needed in order to counteract the risk of serious disturbance to the Swedish financial system. The Stability Fund is financed ex ante and is consequently forward looking. It is targeted to reach within less than 15 years the equivalent of 2.5 per cent of GDP. The Swedish government has initially allocated funds from the central government budget to the fund (SEK 15 billion corresponding to approximately EUR 1.5 billion), but the aim is that the rest of the financing should be provided by the industry itself. The National Debt Office is responsible for managing the fund. The targeted 2.5 per cent of GDP is an estimate of the net cost of a banking crisis based on experience from earlier domestic and foreign financial crisis. As the short-term need of financing support measures may overshoot the size of the Stability fund, the National Debt Office has the right to grant the stability fund unlimited credit.

All banks and other credit institutions (incorporated in Sweden) are obliged to pay a Stability Fee to finance the fund, which is expected to internalize, at least to some extent, the costs of financial stability and mitigate the problem of moral hazard. The trigger is thus the legal form of the company and not some threshold size. Swedish banks pay for their branches in foreign countries but not for their subsidiaries in those countries. Consequently, foreign banks do not pay for their Swedish branches but their subsidiaries in Sweden will have to pay. The fee, which amounts to 0.036 per cent per year, is levied on certain parts of the institutions' liabilities according to an approved balance sheet. The basis for calculating the fee is all liabilities excluding i) equity capital, ii) junior debt securities that are included in the capital base according to capital adequacy rules, iii) group-internal debt transactions between those companies within the group that pay stability fees, and iv) debt that has been issued under a guarantee program based on the Act. Thus, institutions do not have to pay a fee for risk bearing capital or for liabilities for which they already pay another fee. The Stability Fee can be viewed as being based on a crude measure of systemic risks since the size of the balance sheet, everything else being equal, is positively correlated to the impact and contagion effects.

The National Debt Office is responsible for calculating and deciding the fees for individual institutions. The government intends to make the fee risk-differentiated. The exact design of the risk differentiated fee will be analysed and presented during 2011.

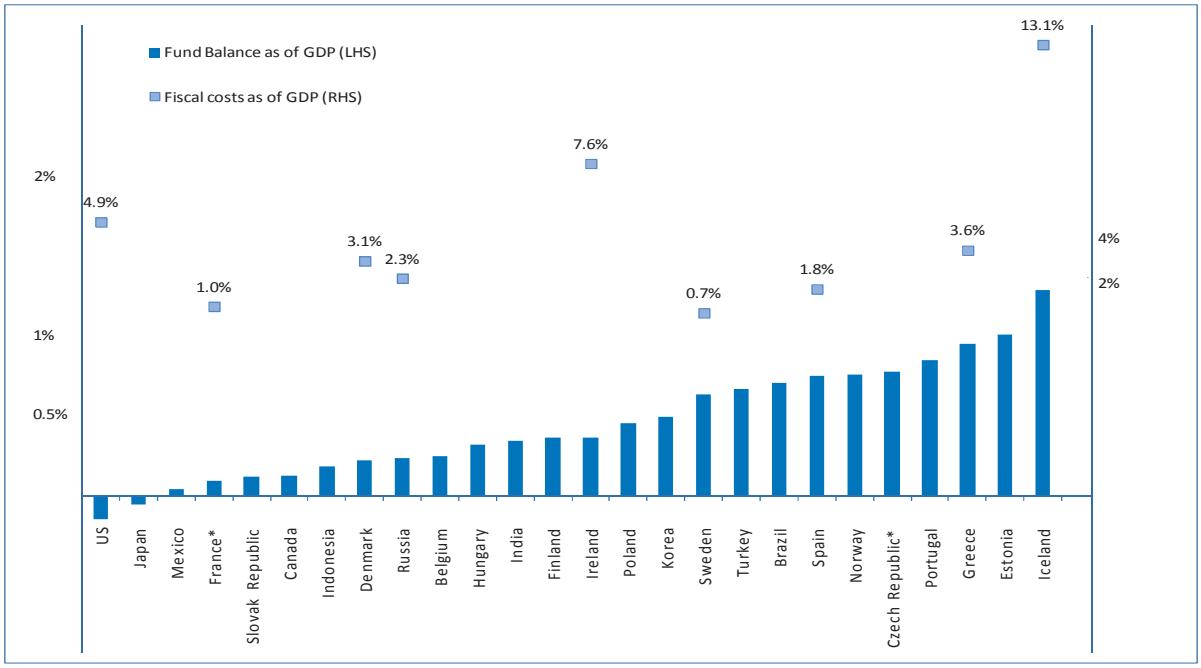
Such approaches are equivalent to capitalising a catastrophic-risk insurance provider

The IMF suggests that systemic crisis resolution funds should aim at a target ratio of 2% to 4% of GDP to be achieved from accumulating taxes over a decade or so. It could be argued that this approach is equivalent to capitalising a catastrophic-risk insurance provider. Prior to the recent systemic crisis, governments had effectively underwritten such catastrophic insurance for the financial system, although they were probably not aware that they were doing so, at least not on that scale. In hindsight, the financial system was not paying enough to the government for the provision of that function.

The target ratios envisaged by the IMF, combined with existing deposit insurance arrangements, would actually be on a level similar to that of the estimated *net* fiscal costs associated with the resolution of the recent financial crises in many countries (Figure 9, albeit showing gross fiscal costs). The funding level envisaged in Sweden is indeed similar to the suggested target ratio, while the level envisaged in Germany is somewhat less "ambitious".[7]

Figure 9. Deposit insurance fund balances and fiscal costs of systemic crisis resolution

Selected schemes, as % of GDP for fiscal year 2009 (crises between 2008 and 2009)



Notes: Deposit insurance fund balances as % of annual GDP. Estimates for jurisdictions marked by * are calculated using 2008 data. Otherwise, 2009 data are used. Estimated (gross) fiscal costs of crisis resolution are similar to those shown in Figure 2; they refer to the period from 2007 to 2009 and are obtained from Laeven and Valencia (2010).

Source: OECD Secretariat estimates based on annual reports of deposit insurers.

Clearly, whether that specific amount ensures that *sufficient* funds are available when the next crisis hits is uncertain, given that the incidence and severity of financial crises are hard to predict. After all, even though systemic crises are a recurrent phenomenon, they occur rather infrequently, which makes it difficult to confidently estimate related probabilities. Moreover, even if many systemic crises share some common features, their costs differ significantly, reflecting among other things the nature and speed of policy responses. Therefore, it is difficult to obtain a reasonable estimate of the "typical" net or gross fiscal costs of crisis resolution. Actually, it is reasonable to assume that *any* specific amount set aside will be insufficient to cover all future crises. But it will *limit* the extent to which the sovereign will incur additional explicit and implicit liabilities from its resolution of a systemic crisis. This advantage should not be underestimated, given that ageing populations and health and social concerns already imply a growing burden on sovereigns arising from the implicit liabilities acquired in this context.

The issue of moral hazard still needs to be carefully considered

The issue of moral hazard still needs to be carefully considered, in particular since the creation of any type of "stability fund" might transform what might still be perceived by some as an exceptional (insurance) response into an entitlement. Also, the mere existence of such a fund, while capable of instilling confidence and hence reducing the risk of small shocks spreading to become systemic issues, might also give rise to a false sense of security, thus increasing risk (HM Treasury, 2009).

Having in place effective resolution mechanisms, public authorities will feel less obliged to provide support for banks

Indeed, recent proposals for forward-looking financial sector contributions typically foresee an improved resolution regime *precisely* to avoid the notion that the funds would be used for bail-outs. Such a regime would enable the resolution of weak financial institutions in a prompt and orderly manner. They would thus expand the tools available to public authorities for dealing with failures among financial institutions and contribute to making bail-outs less likely. By having at their disposal mechanisms for the early and rapid unwinding of financial institutions, public authorities will feel less obliged, for fear of the high cost and the systemic implications of financial-institution failure, to provide fiscal and other support to bank shareholders and unsecured creditors (as arguably was the case in the recent crisis).

Actually, once this principle is established, systemic crisis resolution funds would be similar in principle to deposit insurance schemes. This observation implies that the relationship between any new systemic risk resolution fund and existing deposit insurance arrangements needs to be properly defined. For example, in Sweden, the Stability Fund is expected to merge with the deposit insurance scheme in 2011. In Germany, the two types of systems will not be merged. Despite these institutional differences, there is a view that the functions of these two types of schemes are quite distinct and that the uses of the funds can be clearly separated. According to this latter view, deposit insurance funds would be involved only at the last stage of financial-institution failure, when the entity is being liquidated and depositors are paid off.

The question of how large the coverage of any tax should be is controversial

As in the case of any tax solution, the question of coverage arises in regard to the resolution fund. The views on coverage are quite diverse and perhaps one of the most controversial issues is whether, and to what extent, insurance companies and financial institutions other than banks (commercial and investment) would have to contribute to the funding.

- One view is that the coverage should be wide given the close interconnections among financial institutions and the fact that all financial institutions benefit from effective crisis resolution (IMF, 2010a). Also, singling out a *narrow* group of institutions – such as large commercial banks – could lead to the perception that the entities within that group are less likely to fail than those outside of it, thus perhaps worsening moral hazard. Also, several delegates at the CMF meeting in October 2010 expressed the view that the next systemic financial crisis might not originate in the banking sector, but in the shadow-banking or other financial sector. Thus, wider coverage might be more appropriate.
- Another view, expressed by some delegates at the meeting of the OECD's Insurance and Private Pensions Committee (IPPC), is that it is useful to distinguish between pure insurance and banking

models, and that it is the latter that creates the potential for systemic crises. Given the important conceptual differences between the basic insurance and banking models, this argument seems attractive (Geneva Association, 2010); however, earlier work by the CMF and the IPPC suggests that significant institutional and product convergence, as well as contractual relationships, are blurring the boundaries between *institutions* from the insurance and banking sectors.

Finally, as foreshadowed at the beginning of this section, another controversial issue relates to the allocation of the revenues collected to fund systemic crisis resolution, especially to the extent that revenues are collected *ex ante*. Some policy makers have expressed a clear preference for directing revenues to the general budget as opposed to a specific fund. Directing the proceeds of levies to the general budget provides policy makers with a valuable degree of flexibility regarding the timing and use of funds, but at the same time this carries the risk that those funds may be diverted for other purposes.

Corrective (as well as revenue raising) taxes or levies

Imposing taxes to limit socially undesirable transactions?

Neutrality is rightly the benchmark for tax measures

All taxes and levies distort economic activity to some extent, and whatever type of tax or levy is chosen to finance systemic crisis resolution should be designed to avoid unnecessary distortion. In general, governments should seek to ensure that taxation measures are neutral, in the sense that taxation should not unnecessarily influence financial market decisions. However, there may be cause for taxation measures to depart from neutrality in the case of clearly identified market failures. This raises the question of whether measures that raise revenues in order to finance systemic risk resolution should be designed specifically to address those market failures identified as the cause of systemic risk.

However, a Pigou tax could correct for market failures

A case can be made for imposing taxes in order to limit socially undesirable transactions, especially when more direct means for doing so are unavailable for political or practical reasons. Such a tax is called a Pigou tax after Arthur Cecil Pigou, who proposed correcting market failures, such as negative externalities, by internalising them through taxes. For example, such a tax may be useful in reducing pollution when other means are not readily available.

A systemic risk levy could internalise and thus reduce systemic risks

In this context, a systemic risk levy could be levied on financial firms, which because of their size, interconnectedness or nature of their business are a potential source of instability for the entire financial system. To the extent that regulation alone fails to induce institutions to internalise this risk, a systemic risk levy could help do so, thereby helping to reduce systemic risk (Weder di Mauro, 2010). While the assessment of risk remains an important challenge, the recently revised approach adopted by the FDIC in the United States could be interpreted as an example of such a levy.[8]

Financial transaction taxes

Proposals for financial-transaction taxes may be motivated by attempts to "correct"

Taxes on specific types of financial transactions have existed in a few countries for some time now (Darvas and von Weizsäcker, 2010), and proposals for more widespread uses of such tools have received heightened attention after several financial crises, with the current episode being no exception.[9] Some advocates of financial-transaction taxes argue that such a tax would by definition make frequent, short-term trading more costly compared to long-horizon trading, and thus would help reduce volatility. But the opposite may also occur: Higher transaction taxes (or higher transaction costs, more generally) could reduce liquidity, thus increasing volatility. The empirical literature does not provide unambiguous support for either hypothesis.

However, it would be difficult to target such taxes precisely at "speculative" transactions

A key challenge associated with financial-transaction taxes is that their imposition cannot realistically depend on the motive for particular transactions, and so they would not only affect transactions that might ultimately lead to booms, bubbles and financial crises, but might also affect socially desirable financial transactions, such as the hedging of risk. Distinguishing desirable from undesirable financial transactions is difficult, if not impossible, since identical transactions can involve either hedging or speculative considerations. Another key drawback of financial-transaction taxes is that, to be effective, they would have to be implemented globally, or at least in many countries, but the required international consensus does not seem to exist.

Taxes on remunerations, profits and activities

Further examples of corrective (as well as potentially revenue raising) taxes are taxes levied on bank bonuses

Another example of an intended corrective (as well as revenue-raising) tax is the tax on certain bonus payments in the United Kingdom. The tax, which expired in April 2010, is a one-off tax payable by banks equivalent to 50% of discretionary bonus payments above a specific threshold; it was intended to "encourage banks to consider their capital position and to make appropriate risk adjustments when setting the level of bonus payments above the threshold" (HM Treasury, 2010). It was payable in addition to any income tax, the structure of which was also modified in 2009 for the higher-income brackets. It appears, however, not to have been very successful in changing behaviour. Bonus tax regimes have also been introduced in France and Italy (Table A1 in Annex A).

Several proposals exist, and there is lack of a unified approach across different jurisdictions

In the UK, the Chancellor announced a Bank Levy in the June 2010 Budget. The levy's purpose is to influence bank behaviour and in particular their funding choices, as well as to recover fiscal costs incurred during the crisis. It is to apply to the global consolidated balance sheets of UK banking groups and building societies; the tax base is total liabilities and equity, excluding specific items, such as Tier 1 capital and insured retail deposits, etc. The Government is aware of the possibility of "double-taxation", given the possible existence of similar levies in other jurisdictions and the lack of a unified approach across different jurisdictions. The definition of a "bank" under the current Bank Levy proposal includes the UK branches of banks resident in other countries.

Addressing the tax burden issue

It is too early to determine the effect of recently introduced taxes

The tax incidence, or burden, is uncertain as it does not depend just on who is legally liable for the tax, but on the price elasticity of supply and demand and other conditions, including how widespread the adoption of taxes is among different financial sectors. *Corrective taxes* induce financial firms to internalise the cost of their activities' negative externalities (while collecting revenues). Any such tax necessarily involves a trade-off between revenue raising and the desired shift in behaviour, which – if successful – will reduce the source of revenue. At present, it is too early to determine what mix of behavioural change and revenue raised will ultimately result from these recently introduced bank bonus, liability and profit taxes.

Thus far, judged by the case where a government implemented and subsequently withdrew the tax (United Kingdom), there is little if any evidence suggesting that the new tax succeeded in changing the behaviour of financial institutions. In another case, where a financial activities tax has been introduced at a comparatively high level (Hungary), it remains to be seen to what extent behaviour and competition might change. Concerns have been expressed that financial institutions' behaviour, in Hungary's case that of the subsidiaries of foreign banking groups, might change in unintended ways.

And taxation's potential role has to be seen in the context of the wider issue of taxing the financial sector

The various tax approaches and proposals have to be seen also against the backdrop of an ongoing discussion about whether, and how, to reform taxation of the financial sector. Key issues in this context include the suggestion that taxation generally favours debt over equity financing and that financial sector activities may be under-taxed overall, compared to activities in other corporate sectors, since the application of value-added taxes to the financial sector and its activities is more difficult than for other corporate sectors.

V. New insurance mechanisms inspired by arrangements for catastrophic risks?

Another question is whether, and how, to complement deposit insurance schemes

Yet another suggestion is to complement deposit insurance arrangements with additional insurance-like mechanisms designed to deal with systemic crisis resolution. In the recent crisis, many governments effectively filled the funding gaps of existing deposit insurance arrangements by essentially acting as the insurer-of-last-resort (Schich, 2010). But, since no formal blueprint was available, this function was provided in an *ad hoc* manner. It could be argued that more formal frameworks would help to avoid the additional costs that arise as a result of *ad hoc* policy actions.

Some of the crisis resolution proposals have aspects in common with mechanisms used to fund the resolution of catastrophes

Some of the resolution approaches adopted during the recent crisis have aspects in common with solutions adopted by some countries to fund the resolution of terrorism or other catastrophic risks (Box 3). For example, the asset (loss) protection arrangements adopted by some large financial institutions have parallels with catastrophic risk arrangements. Against the background of these observations, the CMF discussed how relevant and useful the example of catastrophic risk insurance (including nuclear accident risk) might be in providing guidance for designing systemic risk resolution arrangements.

One key premise of policies funding catastrophic risk resolution is that the insurance and reinsurance capacity for natural and man-made catastrophes is ultimately limited. A resulting premise is that the financial management of such risks may be quite difficult for the industry, mainly because of the sheer magnitude of the potential exposure and the inter-temporal mismatch between the size of the annual premiums and the size of the annual expected losses.

Based on that premise, several OECD countries have established specific public-private risk sharing arrangements for catastrophic events at the national level that involve a layered funding structure. This structure typically involves a first layer consisting of deductibles and self-insurance by the private sector, and a top layer provided by the government. Other layers include insurance and reinsurance. Capital markets may also be involved through the issuance of catastrophe bonds.

The latter also attempt to limit, ideally even to fully eliminate, the involvement of taxpayers

Policy objectives in this area expressly include the enhancement of disaster risk mitigation and the reduction of government exposure to catastrophe risk. The long-term goals include minimising the total cost of a catastrophe, consisting of the sum of losses and other costs, such as those of preventive/mitigation measures. Similarly, recent proposals for systemic crisis resolution funds are motivated by the attempt to limit, ideally even to fully eliminate, the involvement of taxpayers in the funding of systemic crisis resolution.

While this basic idea was considered as having value, the relevance in practice was thought to be limited

While the basic idea of complementing existing deposit insurance with new insurance arrangements inspired by existing practises in the area of catastrophic risks was considered to have value, some CMF delegates believed that the idea's relevance in practice would be limited. One difficulty cited was that natural disasters by definition are not caused by institutions, while systemic financial crises result from human actions. Delegates cautioned that any insurance-like solution faces the risk of creating moral hazard and that this issue might be more relevant in the area of financial markets as compared to the area of catastrophic risk.[10]

It should be noted however that the extent of endogeneity in catastrophe insurance situations could easily be underestimated. For example, while natural catastrophes such as hurricanes may be exogenous and beyond the control of the insured, the choice to locate one's home in vulnerable areas is not. Man-made catastrophes and their impact may have even more endogenous influences, including the behavior of the insured.

In any case, the observation that insurance-like mechanisms create moral hazard is non-controversial and widely acknowledged in any insurance context. But there are mechanisms for addressing moral hazard, and its existence is not a fatal flaw. For example, in many insurance products, deductibles and risk-based premium setting are employed to mitigate moral hazard.

Box 3. Financial management policies for large-scale disaster risks

In a number of countries, pursuant to the principle of solidarity - often recognized at the Constitutional level - the mutualisation of losses arising from disaster events is perceived as a fundamental right of the citizens, and the role of the government in the compensation phase is, therefore, considered essential. In other countries, the protection of private property against disaster risks is to a large extent left to the initiative of individuals and the corporations, with a view to emphasizing individual responsibilities, minimising moral hazard, and providing incentives to invest in mitigation measures. Solutions with regard to funding the resolution of realized catastrophic risks differ from one country to another, and from one type of risk to another.

Ex ante solutions include the establishment of dedicated catastrophe funds, market-based or state-sponsored disaster insurance and reinsurance programs, and alternative risk transfers involving securitizations. Once those who are exposed to the catastrophic risks have utilized or been granted access to such tools, in theory, public authorities should refrain from making *ex post* compensation payments to the victims of catastrophes in a way that would undermine those *ex ante* measures. In reality, however, it has turned out to be extremely difficult for public authorities to make a credible commitment that they will not provide compensation once a catastrophe has occurred.

Several OECD countries have established specific public-private risk sharing arrangements for catastrophic events at the national level that involve a layered funding structure, typically with the first layer provided by deductibles and self-insurance by the private sector, and the top layer provided by the government; other layers include insurance and reinsurance. The OECD's Task Force on Terrorism Insurance has promoted the establishment of private-public arrangements at the international level as a complement to the specific public-private risk sharing arrangements for terrorism events that exist already at a national level. But even though the private sector appears to lack the capacity to cover the "mega terrorism risks" identified by that task force, discussions within that Task Force have revealed that *ex ante* international cooperation is not considered equally useful or desirable by all OECD Member countries (OECD, 2005).

International solutions for the financial management of some types of man-made or natural catastrophic risk do exist, however. In the area of nuclear accident risk, a set of international burden-sharing arrangements in the form of several international basic and supplementary Conventions has been established. These arrangements have been refined over recent decades, in part as a response to the occurrence of large-scale disasters. Solutions in the area of nuclear risk reflect the outcome of addressing two policy objectives, which are to protect the public and to limit the liability of the nuclear plant operator. Current arrangements involve a three-tier system in which the (private or public) operator of a nuclear installation covers a specific first layer of total damage, its domestic government the second layer of damage, and all parties to specific international Conventions a third layer of damage. Total coverage is capped at the upper limit of the third layer.

Such solutions at the national and international level, in principle, could provide a reference for current discussions of frameworks for resolving the materialisation of systemic financial risk. As discussed in the main text, however, any insurance-like solution faces the risk of creating moral hazard. Perhaps the issue is even more relevant in the area of financial markets as compared to the area of catastrophic risk, including nuclear accident risk. Hence, the parameters of any insurance-like arrangements need to be designed in a way that they reduce ex ante moral hazard risk, including through appropriately setting premiums and strengthening resolution powers.

VI. Concluding remarks and selected results of discussions

Systemic crisis resolution funds to help ensure more adequate funding

Systemic financial crises are a recurrent phenomenon

Systemic financial crises are a recurrent phenomenon. Despite regulatory efforts, they are likely to occur again. Thus, even if current regulatory efforts were to be successful in reducing the overall costs of any future systemic financial crisis, the question of funding their resolution remains an issue.

The question arises how to fund resolution

The article compares the *ex ante* funding of deposit insurance schemes in a selection of countries, highlighting the "funding gap" left by these arrangements in the recent financial crisis. Systemic crises are, however, not meant to be exclusively dealt with by deposit insurance schemes. Thus, the question arises how to fill that funding gap?

Arrangements such as those introduced in Sweden and Germany are suited in principle to helping ensure more adequate funding

Systemic crisis resolution arrangements that are funded *ex ante*, such as those introduced in Sweden and Germany, are suited in principle to ensure more adequate funding for systemic crisis resolution, at least partly. That said, challenges involved in arrangements with systemic risk levies collected *ex ante* remain and they concern the targeted amounts and destination of revenues (separate fund or general government revenues) and how any funds collected separately would be invested.

But it is difficult to say how much *ex ante* funding is needed to permit effective and credible failure resolution of weak institutions under conditions of generalised stress. Whatever that level is, in a severe systemic crisis,[11] one should not rule out the likelihood that some *ex post* funding will be needed.

The focus of such forward-looking arrangements is on resolution rather than bail-out

Perhaps the biggest challenge for *ex ante* funding arrangements is that, whatever their specific design, they are insurance-like, and this feature may increase moral hazard. In particular, these arrangements could have the effect of transforming what was an exceptional policy response to this crisis into an entitlement. Policy makers are aware of this risk, however, and the approaches adopted or proposed for forward-looking financial sector contributions to systemic crisis resolution typically foresee a new or improved resolution regime precisely to avoid the notion that the funds received would be used for future bail-outs.

Such regimes enrich the arsenal available to public authorities in dealing with failures of financial institutions. They thus reduce the need for bail-outs motivated by the lack of viable policy alternatives, and hence the risk of moral hazard.[12] Previous CMF work has highlighted that, in the absence of tools for the orderly resolution of systemically important financial institutions, policymakers tend to resort to the widespread use of guarantees for financial institutions liabilities and sometimes assets in responding to a systemic crisis. While such measures can be helpful, they are not costless, even when they do not involve significant upfront fiscal costs. Further to potential distortions to competition and incentives, earlier CMF work concluded (Schich, 2008) that the capacity of some governments to provide for the government-supported guarantees for financial institutions could be questioned.

An *ex ante* funded resolution fund has the potential to sever or loosen the relationship between the risk perception of the financial sector and that of the respective sovereign. This feature is attractive especially in situations where stresses from the financial sector adversely affect the credit quality perception of the sovereign, which is what describes the situation in some small countries with relatively large banking sectors in the recent financial crisis.

No one-size-fits-all solution regarding crisis resolution funding

There does not appear to be a one-size-fits-all approach

The results of the discussion of the topic by the CMF was illustrative of the broader ongoing debate on mechanisms to enhance financial stability and deal effectively with financial stability taking place in international forums, including in particular the FSB and the G20. Essentially, the discussion concluded that there is no one-size fits-all solution to funding systemic crisis resolution, with each country choosing a different mix between *ex ante* and *ex post* funding elements.

While representatives from several CMF jurisdictions support the idea of levying a specific tax on banks for funding systemic crisis resolution, that support is not unanimous: Delegates from countries with banking systems that have withstood the recent financial crisis comparatively tend to be more sceptical.[13]

Delegates agree that the financial sector needs to provide a fair contribution toward the resolution costs of the recent crisis

Delegates seem to agree, however, on a broad principle: The financial sector needs to provide a fair contribution to the resolution of the recent systemic crisis, especially where financial institutions have benefitted from government support during the crisis. Thus, in countries where such financial support was provided as part of the policy response to the crisis, special financial sector taxes have been considered. Some countries have imposed or proposed temporary bonus taxes, others levies on profits or on some liabilities, and yet others have adopted more than one of these approaches. Where financial sectors did not rely in a significant way on government support, there has been less support for the idea of introducing specific new taxes.

But even where new taxes have been proposed or adopted to generate revenues *ex post*, the specific approaches have differed. The observation that the different measures adopted have been little coordinated across borders is likely to have resulted in additional costs in terms of potential distortions to competition and incentives. Be that as it may, this observation reflects the fact that there currently exists no blueprint as to how to collect funds (*ex post*) when *ex ante* funding turns out to be insufficient for resolving a systemic financial crisis.

However, views differ regarding forward-looking financial sector contributions intended for crisis resolution

Many current measures can be interpreted as *ex post* funding measures, but the drawbacks of that principle are recognized. In particular, all survivors including the "good" ones are penalized for the behavior of "bad" peers. Moreover, *ex post* funding tends to be more pro-cyclical than *ex ante* funding and could amplify downward pressures.[14] But while policy makers recognise the merits in the principle of *ex ante* funding, not many countries have adopted such an approach (at least not explicitly) by setting up a designated fund. Clearly, to the extent that receipts of financial sector taxes and levies are allocated to the general budget, the fiscal capacity to fund the resolution of a future systemic crisis is also strengthened.

International agreement is most evident as regards the need to

Most policy makers and regulators agree on the need to strengthen self-insurance. In principle, forward-looking financial sector contributions for funding systemic crisis resolution are not substitutes for such efforts, but they could complement them (BCBS, 2010). While neither approach can ensure that

strengthen self-insurance

funds will turn out to be sufficient, a key difference between these approaches is that strengthening self-insurance implies that buffers remain within the financial institution, while the other approach does not provide for this. A majority of regulators seems to believe that the focus of internationally coordinated efforts to limit the risks and costs associated with financial instability should be primarily on requiring larger and better buffers at the level of individual institutions, as opposed to building up separate systemic crisis resolution funds.

The need for global consistency of national choices

Global consistency in the approaches used to fund systemic crisis resolution would be helpful

Global consistency in the approaches used to limit the probability of systemic crises, as well as the funding of their resolution, is needed in order to avoid regulatory arbitrage and other potentially undesired consequences. In particular, distortions to competition and incentives could arise from "double-taxation" or the application of different tax bases and rates across countries and financial sectors. In this context, it was pointed out by one CMF delegate that levying a tax on balance sheets or bonuses at the national level, as compared to a financial-transactions tax, has the advantage that it requires a more limited degree of international coordination in order to be effective.

As regards imposing systemic capital surcharges, international convergence is being achieved within the Basle capital adequacy framework. By contrast, as regards imposing systemic risk taxes or levies, it appears to be more difficult to achieve agreement that has international stature. The various international discussions on this issue, including within the CMF and the G20,[15] suggest that achieving some form of international arrangement in this area is not seen as a high priority. That said, there appears to be some support for developing general principles that would guide specific national choices in the area of systemic crisis resolution.

Notes

1. The document discussed by the Committee on Financial Markets drew on two previous works. The first is an issues note prepared by the first author for the CMF meeting in April 2010 and presented at the CMF meeting in April 2010 and the Insurance and Private Pensions Committee (IPPC) meeting in July 2010. The second one is a presentation given by that author at the Warwick Banking Law Symposium in 2010, which will be included as an article in a forthcoming Conference volume.

2. In particular, the use of at least three out of six specific policy measures qualifies the second criterion. The measures consist of i) deposit freezes and bank holidays ii) extensive liquidity support iii) significant bank restructuring costs (exceeding 3% of GDP) iv) bank nationalisations v) guarantees and vi) asset purchases (exceeding 5% of GDP).

3. Different estimation approaches lead to different systemic crises dating, and there is no widely accepted method. Some alternative approaches are reviewed by the Basel Committee on Banking Supervision (2010).

4. Even where no significant upfront fiscal costs are involved, the extensive use of government-supported guarantees to support financial institutions is not without cost (Schich, 2009).

5. In some cases, this ratio was even negative, meaning that the fund had negative equity. For example, in Japan, reflecting the effects of the country's banking crisis, the deposit insurance fund has been characterised by a negative reserve ratio since fiscal year 1996, although the ratio has improved since fiscal year 2004. In some other countries that experienced very significant banking crises in recent decades, such as Korea and Mexico, separate accounts have been established for dealing with the legacy burden resulting from those crises and for funding ongoing resolution activities. The data shown in Figure 5 refer to the accounts that are funding ongoing resolution activities.

6. United States Department of the Treasury, Office of Financial Stability, Troubled Asset Relief program: Two Year Retrospective, October 2010.

7. The first author of this paper had acted as an expert witness in the hearing by the Finance Committee of the German Parliament of the new German bank restructuring law and has drawn attention to the differences in funding levels between Sweden and Germany. The example is also developed in the related written statement to the proposed law, which is available (in German language) at http://www.bundestag.de/bundestag/ausschuesse17/a07/anhoerungen/2010/029/Stellungnahmen/27_Schich__Dr__Sebastian.pdf . In particular, based on the current projected annual revenues of somewhat more than one billion Euro for the German restructuring fund, simple back-of-the-envelope calculations suggest that a funding level of 2.5% (envisaged after 15 years in Sweden) would not be reached before 50 years in Germany. And it would take Germany almost two decades to achieve a level equivalent to the capital injection actually provided in this financial crisis to one major bank in Germany, provided of course that no other outlays occur in the meantime.

8. The FDIC proposed two rules that would amend the FDIC's deposit insurance assessment regulations. The first proposed rule (the "Asset Based Proposal") would implement a provision in the Dodd-Frank Wall Street Reform and Consumer Protection Act (the "Dodd‑Frank Act") that changes the assessment base for insured depository institutions ("IDIs") from domestic deposits to assets. The second proposed rule (the "Large Bank Proposal") would re-propose changes for the deposit insurance assessment system for large institutions given the Dodd-Frank Act's changes to the assessment base. See "FDIC proposes amendments to deposit insurance assessment regulations", Goodwin Procter LLP, 16 November 2010.

9. For recent surveys of such proposals see *e.g.*. Darvas and von Weizsäcker, 2010; TUAC, 2010; IMF, 2010a. The IMF, tasked by the G-20 to explore a wide range of options as to how the financial sector could make a fair and substantial contribution, considered the possible use of financial-transaction taxes; its report, however, favoured a tax on financial activities as levied on financial institutions' profits and wages. That said, the report did not rule out the use of financial-transaction taxes for other purposes (Matheson, 2010).

10. As regards potential lessons to be learned from existing insurance arrangements in other areas, a specific suggestion from one CMF delegation was to focus on arrangements in the area of animal disease as an alternative to catastrophic risk arrangements.

11. One view expressed at the CMF meeting was that to the extent that current regulatory changes imply that more significant buffers will be available at the level of individual institutions, the next financial crisis could be expected to be less costly.

12. Earlier work by the CMF on the policy response to the financial crisis, consisting of the government providing the guarantor of last resort function (Schich, 2009), emphasised the relevance of the moral hazard risk associated with that response.

13. The Committee on Financial Markets (CMF) held a first discussion on this issue at its meeting in April 2010 and agreed to continue its discussion of these issues in the future, in particular, after the IMF report for the G20 was issued, which occurred as expected in June 2010. It held a second discussion on this issue in October 2010.

14. Another relevant parameter influencing considerations regarding any tax or levy in the current context is the expected strength of real economic activity over the near term. In particular, continuing concerns about the strength of activity in some major countries have implied that policy makers have been carefully considering the possible effects of any additional surcharges that might have adverse near-term effects on the profitability, and, perhaps the capacity, of banking sectors to perform essential financial intermediation functions.

15. Based on a report that was delivered by the IMF to the G20 in June 2010, the G20 "*agreed the financial sector should make a fair and substantial contribution towards paying for any burdens associated with government interventions, where they occur, to repair the financial system or fund resolution, and reduce risks from the financial system. We recognized that there are a range of policy approaches to this end. Some countries are pursuing a financial levy. Other countries are pursuing different approaches"* (G-20 TORONTO SUMMIT DECLARATION, 27 June 2010). The specific choice of wording adopted suggests that the G20 will not strongly pursue efforts to achieve some form of *international* arrangement in this area, although it leaves open the possibility for each country to adopt whatever approach it considers most suitable given its specific circumstances. The G20 Seoul Summit Leaders' Declaration of November 2010 does not include a specific reference to levies, although the Seoul Summit Document, in its section on "financial sector reforms" sets out a "multi-pronged framework" for addressing the issues arising from systemically important financial institutions, which includes "*other supplementary prudential and other requirements as determined by national authorities which may include, in some circumstances, liquidity surcharges, tighter large exposure restrictions, levies and structural measures*".

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Annex A

Table A.1. Examples of proposals or approaches for *ex post* revenue generation, including corrective taxes or levies

	United States	Hungary	Austria	United Kingdom		France		Italy	IMF
Name (status)	Financial Crisis Responsibility Fee (proposal; 14 Jan 2010)	Bank levy (adopted in the parliament; 22 July 2010)	Bank levy (proposal; 22 Feb 2010; details 23 Oct 2010)	Bank levy (proposal; 22 June 2010; details 13 July 2010)[1]	Bank Payroll Tax (active; 9 Dec 2009)	Temporary Bonus Tax (active; 10 Mar 2010)	Bank levy[3] (proposal; 29 Sep 2010)	Permanent Bonus Tax (active; 1 Jan. 2010)	Financial Activities Tax (proposal, June 2010)
Coverage	Large banks, thrifts, brokers, securities dealers, insurance companies and holding companies of those entities (with assets exceeding USD 50 billion)	Banks, insurance companies and other financial institutions	Banks	Banks and building societies, UK branches and subsidiaries of non-UK banks, with liabilities exceeding GBP 20 billion	Banks, investment companies, building societies	Banks, credit institutions, investment firms except asset management firms	Banks, credit institutions, investment companies, other financial companies with equity of more than EUR 500 million	Banks and other financial institutions	All financial institutions
Rate	0.15% of liabilities	0.5% of assets over HUF 50 billion and 0.15% on the part below the threshold	0.04% to 0.08% of assets depending on size	0.04% in 2011 and rising to 0.07% in 2012 and thereafter of liabilities.[2]	50% of bonus payments	50% of bonus payments	0.25% of minimum equity	10% of bonus payments	Not specified
Base	Assets minus Tier1 capital minus insured deposits	Assets	Assets	Total liabilities minus Tier 1 capital minus insured deposits minus repos secured against sovereign debt	Excess bonus payments over GBP 25,000	Excess bonus payments over EUR 27,500	Minimum equity required as set out by the supervisor to meet reserve ratio requirements	All bonuses and stock option gains exceeding 3times managers' fixed remuneration	(Excess) profits and (high) remuneration

	United States	Hungary	Austria	United Kingdom		France		Italy	IMF
Estimated size per year (as of 2008 GDP)	Assuming total losses to be compensated to be USD 117 billion over 12 years implies a levy of about 0.07% of GDP per year	HUF 200 billion per year (0.7%)	EUR 500 million per year (0.2%)	GBP 2.5 billion per year (0.2%)	GBP 2 billion (0.1%)	EUR 360 million (0.02%)	EUR 504 million in 2011(0.03%)	EUR 10 million per year (0.006%)	Not specified
Period effective	Around 10-12 years (until estimated losses from TARP are fully paid off)	3 years	Not specified	Not specified	One year (bonuses paid from 9 Dec 2009 to 5 April 2010)	One year (accounting year 2009)	Not specified	Not specified	Not specified
Use	General government revenue (to recoup the costs of TARP)	General government revenue	General government revenue	General government revenue	General government revenue	Earmarked for public agency supporting innovation and SMEs	General government revenue	General government revenue	General government revenue

1. On 13 July 2010, the UK Treasury published a Consultation Document on the proposed UK bank levy setting out details of the UK Government's proposed approach to the Levy, and on 9 December 2010 a draft legislation based on the consultations.
2. The draft legislation published on 9 December foresees a bank levy with revised rates, that is a rate of 0.05% for 2011and 0.075% from 2012 onwards, respectively.
3. The French government announced the plan to introduce bank levy together with UK and Germany on June 2010, and details were presented in the Finance Bill 2011

Sources : IMF(2010a); EC (2010c); The White House, Financial Responsibility Fee Fact Sheet at *http://www.whitehouse.g.ov/sites/default/files/financial_responsibility_fee_fact_sheet.pdf* ; FT.com, "Bank tax voted through'", 28 July 2010; Budapest Times, "Austria Agrees to Bank Levy", 3 November 2010; Tax-News.com; HM Treasury (2010) "Bank levy", HM Revenue & Customs "Bank Payroll Tax; Clifford Change "French Tax on Bank Bonus" (11 March 2010); "French Bank Tax", Pricewaterhousecoopers Oct 2010, http://www.pwc.com/en_MT/mt/publications/France_Bank_Tax.pdf

Table A.2. Examples of proposals or approaches for the *ex ante* funding for future crisis resolution

	Germany	Sweden	European Commission	IMF
Name (status)	Restructuring Fund (proposal; cabinet approval 25 Aug 2010, details 30 June 2010)	Stability Fund (active, 1 Aug 2009)	Bank Resolution Fund (proposal; 26 May 2010)	Financial Stability Contribution (proposal, June 2010)
Coverage	Banks	Banks	Banks and investment firms	All financial institutions
Rate	0.02 – 0.04% (increasing with size of bank). Plus 0.00015% on the value of derivatives held off balance sheet.	0.036%	Not specified	Less than 0.2%
Risk-weighted	Yes. Estimated contribution to systemic risk.	Not initially. Yes, in the future.	In principle, but details not discussed.	Not necessarily initially. Yes, in the future.
Base	Total liabilities minus liabilities owed to customers and "liable" equity.	Uninsured liabilities	Preferably based on liabilities but Commission is still considering alternatives.	Uninsured liabilities including off-balance sheet items.
Size	Collecting about EUR1.2 billion per year (less than 0.05% of GDP annually)	2.5% of GDP after 15 years	Not specified	2-4%of GDP target level
Period for building up funds	Not specified	15 years	Not specified.	About 10 years
Use	Resolution	Financing government measures such as capital injection, loans and guarantees to support financial system. Expected to be merged with deposit insurance in the future	To facilitate orderly resolution (where feasible, co-ordinating with local deposit guarantee fund), covering i) the financing of a bridge bank, ii) the financing of total or partial asset and/or liability transfers, iii) the financing of a good bank/bad bank split and iv) administrative costs, legal and advisory fees.	Provision for the net fiscal cost of direct support to the financial sector

	Germany	Sweden	European Commission	IMF
Investments	Not specified	Remunerated government account	Geographically well diversified portfolio in highly liquid non-bank assets with low credit risk in support of real economy.	Not specified. But it is assumed to invest in government securities
Government backstop	Not specified	Unlimited	Not specified	Contingent credit line by the government will be needed. In this case, a separate additional fee is required to be paid by the industry

Sources : Bundesfinanzministerium, *Entwurf eines Gesetzes zur Restrukturierung und geordneten Abwicklung von Kreditinstituten, zur Errichtung eines Restrukturierungsfonds für Kreditinstitute und zur Verlängerung der Verjährungsfrist der aktienrechtlichen Organhaftung (Restrukturierungsgesetz)*, available at *http://www.bundesfinanzministerium.de/nn_82/DE/BMF__Startseite/Aktuelles/Aktuelle__Gesetze/Gesetzentwuerfe__Arbeitsfassungen/20100825-Gesetzentwurf-Restrukturierungsgesetz__anl,templateId=raw,property=publicationFile.pdf;*
IMF(2010a); European Commission (2010b)

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Risks in Financial Group Structures

by

Stephen A. Lumpkin*

This article looks at the types of risks that may be associated with complex financial groups and then sifts through the weight of the evidence in favour of, and against, the various alternatives used to address those risks. The conclusion drawn is that there is no magic bullet among the available policy options that is sufficient on its own to satisfy the three core policy objectives (i.e. safety and soundness, systemic stability, and conduct of business). Rather, this article argues that the greater financial and economic impacts associated with problems at larger institutions requires a holistic approach that combines transparency, governance, regulation and supervision.

JEL Classification: G01, G18, G02, G03, G28, G32.

Keywords: financial groups, safety and soundness, systemic stability, contagion, governance, supervision and regulation, market discipline.

* Stephen Lumpkin is Principal Administrator in the Financial Affairs Division of the OECD's Directorate for Financial and Enterprise Affairs. This article is a revised version of a paper discussed at the October 2010 meeting of the OECD Committee on Financial Markets (CMF), taking into account these discussions as well as written comments received subsequently. All remaining errors are those of the author. This work is published on the responsibility of the Secretary-General of the OECD.

I. Background

As the market upheavals of the past few years confirm anew, the business of financial intermediation entails risk. Intermediaries exist to manage and transform credit, interest rate, maturity, and various other types of financial risks. Inevitably, some institutions will err in the process. A common goal of public policy in regard to finance is to ensure that such errors are not commonplace, and that the consequences are appropriately contained and do not spill over to innocent third parties or to the broader economy.

Financial crises are a critique of the success of the regulatory framework

Financial crises are obviously problematic in this regard, as they provide costly evidence that one of the core objectives of policy -- to prevent problems at individual institutions and markets from propagating -- has not been met. In cases of widespread distress, problems that might otherwise be attributed to poor management on the part of institutions themselves also tend to reflect poorly on supervision and enforcement, as deficiencies at many different institutions have been allowed to worsen under common external conditions.

Not surprisingly, crisis events prompt in-depth reviews of the existing framework in order to identify weaknesses and suggest necessary reforms. In fact, at any given time, many of the measures in place to address problems of instability and contagion will themselves be by-products of past crises. Inasmuch as all crises have their idiosyncratic elements, forward-looking measures to avoid such disruptions have not been readily forthcoming. And as the incidence and severity of past crises have varied across jurisdictions, no standard approach exists as yet.

Measures for containing risks in large financial groups can be grouped into three major types

In reaction to the recent crisis, which featured problems of contagion that spread from special-purpose entities to the affiliated institutions, and from entities engaged in securities activities to their parent or other members of their group, much attention has been directed at containing the risks posed by large integrated financial services groups. There are many mechanisms for regulating risks in large complex financial institutions. They may be preventive or corrective. Some are market-based, either in design or in implementation; others are imposed directly by regulation. Some measures focus on regulating group structures, while others focus on regulating group behaviour. Each approach has its prerequisites, as well as its strengths and weaknesses in meeting the perceived objective(s). This article looks at how the alternative approaches fit within the broader scope of the governance framework for financial services. And it places into this context some of the measures that have recently been adopted by jurisdictions participating in the OECD Committee on Financial Markets (CMF).

This article looks at the types of risks that may be associated with complex groups; it then sifts through the weight of the evidence in favour, or against, various alternatives used to address those risks. If a general conclusion emerges from the analysis, it is that there is no magic bullet among the common approaches. That being the case, this article argues that various

mixes and matches of policy options would be needed to meet core policy objectives (*i.e.* safety and soundness, systemic stability, and business conduct). There are, however, certain minimum requirements.

There is widespread agreement internationally on the need for a system-wide perspective on risks, as reflected in the various proposals for better macro-prudential oversight. And it is clear that something must be done to address the too-big-to-fail problems of large, complex institutions. But as to what specific measures should be adopted, policy makers have struggled to reach consensus. The debate surrounding systemic-risk levies is a case in point.

Some of the differences in recent positions can be traced back to differences in the intensity of oversight before the onset of problems, whereby authorities in some jurisdictions had maintained fairly strict rules in relation to the types of market-based activities that were implicated in the crisis. Where that is the case, the need for major structural changes in response to the crisis is apparently seen as less compelling. But even where the need for change is acknowledged, views diverge as to what types of measures are needed.

This article looks at the potential costs and benefits of various financial group structures and the policy measures used for addressing risk

The balance of the article is as follows: the next section looks at the general types of financial group structures, and at the potential costs and benefits of integration. It notes the need to look beyond structure to an institution's behaviour in order to gain a clear idea of the issue. This discussion is followed by consideration of the types of problems that have typically beset financial groups. The idea given is that the problems that arise in financial group structures reflect the same core weaknesses that arise more generally in finance: risks to safety and the soundness of individual institutions (prudential concerns); risks to the system as a whole (systemic risk concerns); and risks to clients (conduct of business concerns). But these risks can be magnified given a cross-sector, cross-border context. Taking these added complications into account, the succeeding section looks at alternative policy approaches for addressing these risks and notes the limitations that may be encountered. The next major section concludes.

II. Types of financial groups

The debate about financial groups has a long history, touching on numerous aspects of their operations, including concerns about their market power and other business-conduct considerations, prudential concerns pertaining to safety and soundness at the institution level, as well as broader, system-wide issues. [1] The existence of risks associated with integrated financial service groups is especially well-known in the financial supervisory community. A broad but incomplete list of risks is laid out in Box 1.

Box 1. Risks associated with financial groups

A non-exhaustive list of risks associated with financial groups may include:

- *Transaction risks*: all the risks involved in intra-group transactions, which may not be transparent, may result in inappropriate transfers, especially between regulated and unregulated entities, and may affect the soundness of regulated entities, etc.
- *Moral hazard risks*: when an entity of a group engages in excessive risk-taking under the assumption that the group as a whole, or another group entity, will assist it in the event problems occur.
- The *risk of double gearing*: the risk that funds will be committed several times, that is, for both the parent company and the subsidiaries. This could mean that their "net" or "consolidated" solvency is much lower than the sum of the funds owned by the members of the group.
- *Risk of contagion*: the reference here is to the risk that the financial problems, especially insolvency, of one member of a group will bring about deterioration in the condition of all other members.
- Risk of *reputation*: even in the case of strict legal separation, the danger of contagion could still exist in cases where the reputation and market-access of the financial group as one entity is harmed by the financial distress of one member.
- The *risk of decreasing competition and abuse of power*: the danger that institutions will take unfair advantage of their superior market power to the disadvantage of consumers or investors, or abuse a dominant market position vis-à-vis other market participants.
- The *risk of conflicts of interest*: with financial institutions operating on both sides of the savings-investment relationship, often using other people's funds, the risk of potential conflicts of interest is more or less always present. Research indicates that the risk of such conflicts of interest increases with the number of activities or products offered.

Structure versus conduct

Numerous factors account for the large number of potential risks in various financial group structures

The large number of potential risks for financial groups derives from the multi-faceted nature of the issue. Relevant factors to be considered in the analysis include: the size of an institution; the types of constituent entities (*i.e.* banks, insurance companies, securities firms, asset managers, etc.); the degree of integration along various steps in the value chain; and the structure (holding company, universal bank, parent-subsidiary, etc.) But these same factors can prove to be financially beneficial. It all depends on how well they are managed.

Economies of scale and scope

Economically speaking, the market value of a publicly traded financial institution at a given point in time is at least in part a function of the present discounted value of its expected future profits, the same as for any other type of firm. Increases in expected future profits are derived from either reducing expected costs and/or increasing expected revenues.

Group structures can bring about potential economies of scale or scope, and more effective diversification

Integration in financial services (see Box 2), along the scale and scope dimensions (*i.e.* in-sector consolidation and cross-sector convergence) has often been justified on these grounds, namely that the proposed combination would be value-maximising. In the presence of economies of scale (costs decline with increases in the scale of operations) or economies of scope (costs decline owing to synergies associated with producing multiple products within a single firm), a greater degree of integration is beneficial. Integration could also be beneficial to the extent greater geographic or product diversification leads to lower costs stemming from the implied reduction in risk.[2]

Box 2. Terminology related to financial group structures

In most OECD economies, the financial services industry generally features a wide range of products and services, various types of service providers, and many different types of customers. Some financial institutions operate in niche areas or specialise in the provision of specific products and services, but many others offer multiple products, including some on a cross-border basis; a handful of large, integrated institutions have established a global reach.

The label *financial group* is used in this report to refer to financial institutions that provide a range of financial services through multiple legal entities. The term *homogeneous group* refers to groups that confine their activities to a given sector (*e.g.* banking, insurance, or securities activities). Financial groups with activities that span service sectors are called *mixed* or *hybrid* groups.

As used in this report, the term *integration* refers to the various ways in which constituent entities may be added to a group. In this context, integration can occur within a sector (*i.e.* consolidation) or across sectors (*i.e.* convergence), domestically or internationally (cross-border).

Studies confirm the existence of economies of scale, but not everywhere and not without limit

The arguments in favour of a beneficial relationship between cost and size or scope for financial firms have been the subject of much empirical research, especially in reference to the banking sector. If a general conclusion is to be drawn from this literature it is that economies of scale exist in some segments of financial services, but not everywhere and not without limit.

As for economies of scope, many studies have failed to confirm the existence of such economies in the banking, insurance, or securities segments of financial services. Rather, a number of studies have concluded that some diseconomies of scope may be encountered when a financial service institution adds new types of products to its product mix. The results are derived from comparison of the costs of joint production versus the combined costs of specialist producers operating under the same environmental conditions.

On the revenue side, the existence of profitable cross-selling potential (revenue economies of scope) has broad intuitive appeal for many practitioners. The classic reference is to a bank's potential to use its branch network to cross-sell to its existing bank-product customers various other types of products, such as insurance or asset management. But by the same token, an insurance organisation might have similar potential to cross-sell

products using a network of captive agents/brokers. Scope economies could exist in these arrangements if, for example, consumers perceived the all-in costs of purchasing them from one provider to be lower than the costs of obtaining them from multiple sellers.[3]

In summary, scale and scope economies do seem to exist in financial services, but they are not found in all service categories and are not unlimited. Therefore, an increase in a given institution's size and scope may or may not yield net benefits as regards to its financial performance, although admittedly size can convey other advantages, such as in the too-big-to-fail sense. For individual institutions, the implications of integration depend in part on the institutional setting in which the institutions operate and partly on their own conduct.

The institutional setting

The institutional structure considered most efficient for conducting financial activities generally changes over time and may differ across jurisdictions, as institutions respond both to competitive impulses and to changes in the policy environment. Public policy can play a fundamental role in the determination of group structures: for example, by mandating the separation of the production of certain types of financial products and services from the marketing and distribution; and public policy may set limitations on the form and scope of ownership linkages.

The regulatory principle of "separation" is one factor influencing financial group structures

The principle of "*separation*" is typically embedded in financial sector regulation at various levels. For instance, sector regulation (*e.g.* banking acts, acts on insurance, etc.) are often distinct pieces of legislation that act to prohibit the production of given products and services by entities other than appropriately licensed institutions and may limit their distribution (see Tables 1 and 2 in the addendum).[4]

In many OECD jurisdictions, rules of entry into financial services allow for cross-sector competition in the provision of certain products and services, either directly or via separately capitalised subsidiaries.[5] But other jurisdictions preserve a higher degree of segmentation among market segments via legal restrictions on ownership linkages among the different types of service providers, or other line-of-business restrictions. These differences across jurisdictions are reflected in the types of institutional structures used for providing integrated financial services.

The different legal arrangements for financial groups include universal banks, holding companies, and parent-subsidiary structures

In some jurisdictions, financial products and services are provided mainly by *universal banks*, which typically combine commercial banking and investment banking activities in one corporate entity, with other financial services, especially insurance, carried out in wholly owned but separately capitalised subsidiaries. In other national markets, a *single bank or insurance parent* conducts core activities directly, with other financial service activities carried out through separately capitalised subsidiaries. In the *financial holding company* structure, a single holding company is created to hold most, or all, of the shares in separately incorporated and capitalised subsidiaries.

There may be single or multiple types of financial-service providers in the group, including perhaps some non-regulated entities.

Holding company structures typically embody complete legal separation between the parent and the subsidiaries. In the case of a non-operating parent, there is operational separateness as well, in the sense that the holding company operates solely as an investment company. In addition to these corporate business structures, some financial-services activities are carried out by limited partnerships and others by mutuals.

Varying degrees of specialisation vs. integration are possible

Varying degrees of *specialisation* versus *integration* are possible in theory, subject to the limits allowed by law or regulation, where integration can occur across products, across sectors, or across borders. At one end of this spectrum would be complete specialisation, as reflected, for example, in a single-sector, single-product institution, such as a mortgage broker that confines its activities to linking potential customers to lenders in a given jurisdiction. At the opposite end of the spectrum in terms of the degree of integration would be a *fully integrated* financial-services provider, which would combine the production and distribution of various financial products and services into a single corporate entity, with all activities supported by a single pool of capital.[6] Of course, a wide spectrum exists between a financial services industry, consisting predominantly of financial conglomerates or other types of multi-purpose intermediaries, and an industry composed of more specialised entities; in practice, polar cases are rarely observed.

Institutional conduct: the business model

In general, the basic questions involved with legal structure concern: whether there is a single entity or multiple entities. If multiple entities are involved, is the parent an operating company or non-operating? Are the constituent members a part of the same sector (as in homogeneous groups) or cross-sector (as with hybrid or mixed groups)? If cross-border entities are included, are they branches or subsidiaries? In short, the legal structure has much to do with establishing what the constituent parts of the institution are.

Legal structure alone says little about how the various parts are actually managed

But legal structure says little about how the various parts and the group as a whole are managed. For example, branches in one group could conceivably be allowed to operate more or less autonomously, while separately capitalised subsidiaries in another could operate under the tight control of the parent, as part of a highly integrated business model (with for example common products and a single treasury operation). In practice, the choice is a function of the overall corporate strategy.

Institutional conduct refers to what an institution actually does within its legal structure. Conduct is to be sure a function of the types and combinations of activities in which institutions engage, so it relates to legal structure. But it also is a function of the strategic principles management applies in conducting activities. Two key aspects of strategy are: the *degree of integration of business activities;* and the *degree of centralisation versus decentralisation of control*.

It is possible, in principle at least, for financial groups to be formed in which there is very little true economic integration; that is, the constituent members of the holding structure are not bound by a common business strategy, although they may, for example, share back-office facilities or information and telecommunications infrastructures, accounting services, premises, etc. By contrast, if a group structure is to be value-maximising in a strategic sense, there need to be some complementary aspects in the activities conducted by the different parts of the organisation. The aim of the group structure is, thus, to exploit the synergies that are perceived to exist between the constituent entities.

The value-maximising approach is the most common in financial group formation

The so-called *value-maximising approach* is by far the most common in financial group formation. But there are many ways to do this, and there does not to appear to be an "ideal" or optimal way.

For purposes of illustration, consider a mixed financial group with business activities encompassing retail banking, insurance, and securities activities, stretched across numerous entities. There are two polar strategies for integrating the activities. For example, retail banking can be treated as a single line of business (full integration), with each individual bank unit following a common strategy with common products. The opposite approach would entail allowing the individual banks to pursue separate strategies (full specialisation). The same approach would apply to the other product categories in which the group participates.

Corporate control functions can be centralised or left at local level

Along the other decision axis, corporate control functions, and hence the determination of business strategy, can either be centralised in a given unit or in the head office, or devolved to the individual local operating units. Viewing both decisions from the same plane results in four basic groupings.

For instance, with centralised control and integration, business strategies are determined centrally, along sector or even product lines, rather than by each legal entity on an autonomous basis. The legal entities are responsible for implementing the chosen strategy, but subject to close monitoring and oversight of the parent or central decision-making unit. The whole structure is in effect managed as one entity, with potential intra-group transactions or transfers as needed to achieve the overall corporate objectives. By contrast, for groups with strategies that fall on the frontier of the diagonally opposite quadrant, characterised by decentralisation and specialisation, local units operate more or less autonomously from the parent entity, with each having its own strategy and internal controls.

These descriptions represent broad stylised categories of financial group operating structures, but of course fail to capture fully the types of strategies that institutions adopt in practice. Examples of real-world strategies are provided in Table 3 in the addendum. They are taken from the descriptions institutions place in their annual reports. The list is drawn from some of the larger financial groups based in OECD economies.

One finds among the companies listed financial groups with a predominantly banking character, groups with a predominantly insurance

character, and groups with a fairly heterogeneous mix of activities. They operate out of holding-company or universal-bank structures, or with bank or insurance parents. Most feature a wide geographic dispersion of activities, through global local, global wholesale, or global operating services strategies.

Structure itself, however, does not tell how a particular strategy is implemented

What is missing in the information the institutions provide are the *micro-structure* considerations of strategy – the details of how a particular strategy is implemented. The micro-structure aspects of strategy explain why otherwise similar broad product and customer categories can give rise to vastly different revenue streams and performance outcomes. In effect, the balance sheets associated with the same general types of activities can differ considerably because the risks at the micro level are not the same. For example, some institutions operate with much higher levels of leverage. Tables 1 shows recent outcomes for selected large groups with categories of activities that overlap to some extent, although there are important differences, such as in the share of investment banking activities.

Table 1. Selected balance sheet components for large financial groups (2008)

Financial Group	Assets ($ tn)		Tier 1 capital ($ bn)		Leverage		Pre-tax profit ($ bn)	
Year	*2008*	*2009*	*2008*	*2009*	*2008*	*2009*	*2008*	*2009*
Bank of America	1.82	2.22	120.81	160.39	15.06	13.84	4.43	4.36
Barclays	2.99	2.23	54.30	80.45	55.06	27.72	8.85	18.87
Citigroup	1.94	1.86	118.76	127.03	16.34	14.64	-53.06	8.45
BNP Paribas	2.89	2.96	58.18	90.65	49.67	32.65	5.46	12.22
Banco Santander	1.46	1.6	65.27	81.58	22.37	19.61	15.,83	16.95
Deutsche Bank	3.07	2.16	43.28	49.58	70.93	43.57	-7.99	7.50
HSBC	2.53	2.36	95.34	122.16	26.54	19.32	9.31	7.08
JPM Chase	2.18	2.03	136.10	132.97	16.02	15.27	4.68	16.14
Royal Bank of Scotland	3.50	2.75	101.82	123.86	34.37	22.20	-53.15	-4.37
Mitsubishi UFJ	1.82	2.03	82.86	77.22	21.96	26.29	10.20	1.17

Source: The Banker database, Secretariat calculations.

It is necessary to look at the micro details of how categories of activities are conducted

To understand what distinguishes strategies, one needs to look through the categories of activities to the micro details of how they are conducted. Consumer mortgage lending provides a general example of how performance differences arise. For all lenders, such activities pose the same general types of risks, including the risks that borrowers will become delinquent, or worse, default on their obligations. But a given lender can engage in retail mortgage lending without taking on exposure to the subprime segment of the market. Such choices are at the core of the micro aspects of strategy.

In short, while institutions' participation in the same types of broad activities implies similar product categories and customers, at least in the broad sense, at the micro level there can be considerable differences. And these differences in the actual behaviour of institutions obviously matter for performance and for prudential concerns.

What can go wrong: strengths and weaknesses of alternative business models

The micro details matter a great deal in both risk-management and performance

For reasons implied above, large size and integrated business models may or may not prove to be profitable in all circumstances. The details matter, which relate in part to risk-management. On the plus side, a larger size may enable a financial institution to exploit operating economies of scale and attain high profits, which can provide an extra buffer to help increase its resilience to shocks. Similarly, the broader scope of an integrated institution may lead to lower variability in profits on account of enhanced diversification opportunities.[7]

But regardless of the size or scope of an institution, mistakes and accidents do happen. For example, the benefits expected to accrue from diversification might tempt institutions to take on levels of risk that can prove to be insupportable if actual gains disappoint. Also, there appear to be limits to managerial capacity, as institutions grow in size and complexity and stray from core competencies. Thus, an institution's size or scope can result in either a lower or higher probability of financial difficulty, depending on the extent to which its risk-taking is counterbalanced by improved diversification or simply by its having a larger capital base to absorb losses.

Risks to safety and soundness

Banks take on mainly credit risk, but also liquidity and market risk

Financial institutions operating in the banking, insurance, and securities areas are not passively managed asset pools. Their *raison d'être* is to take on various risk exposures and manage and transform them for an appropriate reward. For example, traditional retail banking involves collecting small denomination deposits and transforming them into larger denomination, longer-term loans. Credit risk is at the core of the process, but liquidity risk and market risk are also important.

Liquidity and market risks are also predominant for securities firms, but less important for insurance companies

These latter two risk types are the dominant exposures for securities firms, which typically mark their positions to market on a daily basis and fund themselves in overnight or other short-term markets. In contrast, liquidity risk is generally far less relevant for many insurance undertakings. Instead, technical and underwriting risks (whether the insurer's calculations of technical provisions prove accurate) dominate. For all groups, there are operational risks involved in managing different product areas.

The success of a group strategy depends importantly on the inter-relation among these risk factors. Factors that lead to increased cross-sector, cross-border, or cross-risk type correlations obviously limit diversification benefits. And such shifts can precipitate more severe problems if core risks have not been properly managed.

Common shocks can negatively affect all revenue sources to some extent, including perhaps some cross-border streams. Sudden (*i.e.* unexpected) changes in policy or macroeconomic shocks are examples of phenomena that can catch all institutions off-guard and might not reflect badly on particular business models.

Episodes of financial instability have, in fact, sometimes occurred in this way. But more often, episodes of instability have been linked to practices in institutions themselves. Problems have included: weak management of core risks; perverse links between institutions and clients that resulted in poorly defined and weakly enforced lending limits; inadequate control of operational risks; inadequate disclosure and lack of transparency; and poor governance and internal management.

The recent crisis featured weaknesses in a wide range of areas, including poor underwriting standards

In the recent crisis, all of the weaknesses were present in some form. As in many other crisis episodes, deficiencies in internal controls and risk management at lending institutions were a major contributory factor. In the lending business, banks have periodically relaxed their underwriting standards to gain or preserve market share. But too-lax underwriting standards tend to induce otherwise creditworthy borrowers to take on too much debt or enable borrowers of less-favourable credit quality to gain access to credit they subsequently have difficulty servicing or repaying..

In the case of serious asset-quality problems, banks typically begin to extend fewer new credits and cut their balance sheets by refusing to roll-over maturing loans. These steps can touch off another round of problems and a vicious deleveraging cycle can develop with substantial macroeconomic consequences. Similar cycles have emerged periodically in market-based finance.

Risks to the system

It is not at all obvious that large, integrated institutions should have a greater risk of failure than smaller institutions in such scenarios.[8] In fact, larger institutions might fare better either because of the diversity of their activities or the diversity of their funding sources. However, it is clear that once serious problems do occur, the systemic consequences of failures grow as institutions become larger and more inter-connected.

Complexity and inter-dependencies raise the potential for problems to spread

Increased complexity and inter-dependencies raise the potential for problems at individual institutions to spread. The risk is inherent in the nature and scale of the funding and the trading inter-relationships among major market players, but it also reflects the large numbers of players in global financial markets and the high degree of complexity and lack of transparency associated with some of this activity.

With multiple inter-linkages and active trading strategies, it can be difficult for a given institution to track exposures with other institutions across currencies and market segments. In times of general market stress, which has often followed in the wake of the failure of a large institution, this lack of knowledge can generate considerable anxiety and may lead lenders and other counterparties to demand additional collateral (at a time when the market value of that collateral may be declining), or to withdraw credit lines entirely. Institutions facing funding problems in such circumstances may be left with little alternative but to liquidate assets, which only adds to the downward pressure on prices in the market and may well worsen, rather than alleviate, their condition. In worst-case circumstances, insolvency may ensue.

Isolated failures need not trigger other defaults, but there can be contagion in some circumstances

It is unlikely that an isolated failure would trigger other defaults, but depending on the size of the troubled firm's exposures, the probability is perhaps not zero. History provides numerous examples of the spillover of concerns to otherwise healthy entities. In some cases, contagion can result from the mere perception that institutions are in some respects similar to a troubled institution, even if there are limited or no direct linkages.

For integrated institutions, intra-group exposures can pose the same risks of contamination (guilt by association) and contagion, which relates in this case to the potential for problems, and certainly insolvency, in one member of a group to lead to deterioration in the financial condition of the other members. In times of trouble, the market may fail to draw a distinction between solvent subsidiaries and the impaired parts of a financial group. Even entities relatively insulated from the other activities of a group may have trouble financing themselves and continuing their operations under such conditions.

Risks to clients

Failures of institutions pose significant problems for customers and clients, especially individuals and SMEs

Failures of institutions obviously pose problems for the institutions' clients and customers, who must deal with all the attendant difficulties of business interruption, including reduced or no access to credit, and losses necessitating the pursuit of claims against the institutions' remaining assets. The difficulties may be compounded for smaller customers, such as individuals and SMEs, who may have been dependent on a long-term relationship with the failed service provider and must face the difficult prospects of establishing a new relationship with a new provider.

Apart from the potential for larger numbers of clients to be involved, failures of large integrated institutions again may not be unique in this respect. But there is one area where integrated structures and business models do stand out. In addition to safety and soundness issues, integrated structures and models can give rise to various *conflicts of interest*.[9]

Conflict-of-interest situations are a fundamental aspect of intermediated finance and arise in numerous circumstances

Financial intermediaries almost by definition operate on both sides of the savings-investment relationship, most of the time using other people's funds. The potential for conflicts of interest is more or less inherent in the process. A financial intermediary faces a potential conflict of interest when dealing with a client whenever it has a choice between two options: one of the options is preferable from its own perspective (or that of an affiliated party), while the other option is preferable from the client's perspective. A potential conflict of interest also arises for a service provider that has simultaneous dealings with two different customers whose respective interests cannot be jointly satisfied.

As these examples suggest, conflict-of-interest situations can be very basic in nature. They can arise easily for most institutions engaged in a wide range of different financial businesses. Consequently, for the typical large integrated institution, potential conflicts of interest are numerous, so much so that is not feasible to attempt a full accounting in this short space. Most combinations of different financial business activities in the same institution

will have potential conflicts associated with them, and conflicts of interest can also arise when different types of activities within the same class of business are combined, such as: trading securities on one's own account while engaging in the underwriting business or acting as a broker; trading on one's own account and providing investment research; or underwriting securities and engaging in the trust business or managing securities on behalf of clients.

The costs of realised conflicts can be substantial and need not be limited to retail clients

The costs of realised conflicts can include loss of funds, collateral, or securities holdings for individual clients, but can also entail more generalised problems. Financial transactions are based in part on a complex system of rules of conduct and relationships. At the core of this process is "trust". Consumers and investors are willing to commit their funds to financial markets only when they are confident that financial markets and institutions operate according to rules and procedures that are fair, transparent, and non-exploitive (*i.e.* free from fraud, manipulation, and other market misconduct).

And losses of confidence are not always confined to the retail market segment. Another potential conflict occurs when an institution is tempted to take on excessive amounts of leverage in an attempt to boost its return on equity, the benefits of which would accrue to shareholders or to managers (depending on the type of compensation arrangements), while the costs would pass on to creditors or other counterparties. Even professional market participants can suffer from a loss of confidence in their counterparties or markets at large, if potential conflicts of interest are realised. All told, the consequences of a loss of confidence often take the form of runs: on deposits, on collective investment vehicles, on repos and on market liquidity, etc.

III. Alternative policy approaches to risks in integrated structures and models

In short, there can be potential synergies from group structures, but also potential risks

The discussion up to this point suggests that there are potential synergies and complementarities among different product and service categories for individual institutions, and through efficiency gains, for the system as a whole. But the gains from integrated structures and business models do not accrue automatically. There can be errors of judgment and other shortcomings associated with the management of some integrated structures, and some business models may have inherent flaws. It is not often stressed in discussions about group structures and business models that the challenge to risk-management is ongoing. It's a contest with multiple rounds. The fact that an institution survives a particular manifestation of systemic risk (one round) does not necessarily mean it would survive others, or even a similar shock that propagates differently across counterparties, market segments, or the system as a whole, or one that meets with a different response from authorities. Imagine, for example, what might have transpired had US authorities not paid claims against AIG.

An institution's business model is flawed if its survival

It can be the case that the business model may have indeed been flawed; the institution may have simply been lucky in the particular event. If the success of an institution's business model depends in part on the expectation

depends on luck or on government intervention

of government support, as for example in a too-big-to-fail scenario (either for the institution in question or for its counterparties), the model is flawed.

The three broad areas of potential risks that can arise in such circumstances relate to: the safety and soundness of institutions (or prudential concerns); conflicts of interest (conduct of business concerns); and concerns about systemic stability. This section looks at the trade-offs involved in the choice of a regulatory strategy for addressing these risks.

Categorising the policy approach

Prudential concerns have both micro- and macro aspects, while conduct of business relates to both market and client interfaces

In a sense, financial groups raise two major types of concerns: *(1)* prudential concerns, which have micro and macro aspects; and *(2)* concerns about conduct-of-business, which also have two aspects, one related to institutions' interaction with one another and the market at large, and another related to their interface with clients. All of the risks identified in Box 1, for example, relate to one of these concerns, bearing in mind that micro-prudential concerns can have macro-prudential implications, if institutions are large enough, sufficiently interconnected, or systemically important in some other way.[10]

In practice, these distinctions are important because they are typically used to determine which policy approach should be followed. The choice of approach generally hinges on the perceived severity of the problems that would ensue were the potential risk actually to materialise. Combined, the policy choices consist of the following linked pairs:

- *ex ante* prevention or *ex post* correction;
- regulating structure or regulating behaviour; and
- market-based measures or government imposed measures.

Ex ante prevention – ex post correction

One policy dimension concerns whether an* ex ante*, "preventive" or an* ex post *"corrective" approach is required

One dimension to be considered is the degree to which the perceived risks require *ex ante* preventive measures versus *ex post* corrective measures. Risk-averse policy makers abiding by the precautionary motive would be expected to opt for preventive measures when the consequences of the event in question (*e.g.* institution insolvency, contagion, etc.) are considered to be prohibitively expensive or otherwise politically or socially unacceptable. In other cases, an *ex post* corrective approach may suffice.

The choice arises in numerous circumstances. Should, for example, monetary policy authorities act pre-emptively to prevent episodes of asset price inflation from developing into more costly bubbles, or wait to handle the fallout after any bubble that does develop bursts? Should policy makers step in to prevent the spread of innovations perceived as potentially harmful, or allow them to diffuse through the system and then respond to any subsequent problems? In the context at hand (the risks posed by financial

groups), which is the better approach for promoting financial system stability?

For systemic stability, up-front preventive measures are preferable

For most authorities, the high fiscal and social costs of widespread financial distress favour the adoption of up-front preventive measures. Operationally, if the goal is to preserve system stability, then failures of individual institutions must not result in contagion or become systemic in another way.

Inasmuch as contagion reflects a loss of confidence, preventive measures are often designed to preserve confidence in the integrity of the system. Deposit insurance is one such mechanism.[11] It is intended to eliminate the incentives for one type of contagion – a bank run, through provision of a guarantee.

Widespread losses of confidence have often followed in the wake of failure of a large institution. This tendency helps to explain why regulators in most OECD jurisdictions have been reluctant to allow large, globally active institutions to fail, which is precisely because of the potential for systemic problems to follow in the wake. Instead, they opt for prevention. A corrective approach would allow the failure to occur and attempt to deal with the fallout.

As an added complication, there may be a cross-country mismatch between the distribution of the failing institution's losses and the sources or causes, and there can be a mismatch as well between the distribution of losses and the location of liquid or marketable assets. Then, too, a failing institution may be systemically important by some definition in some jurisdictions, but not in others. All of these factors can result in differences across jurisdictions in the incentives to save an institution versus allowing it to fail.

If failure is not tolerable, institutions should not become too large relative to their capital

To ensure that these situations do not arise, failing institutions must not be too large relative to their capital, which means they should not be too highly leveraged or take on outsized risks, and they should not be too highly inter-connected. Otherwise, the option becomes to avoid failure, as the choice of an *ex post* corrective approach (to allow failures), is not feasible.

Financial risks can be magnified in the case of groups engaged in high levels of proprietary trading, market-making, and active portfolio management. If used properly, such activities have the potential to reduce an institution's risk exposure and increase its profitability. But if mistakes occur, institutions may be exposed to sudden, possibly significant losses, which raise the likelihood of failure.

The option for policy is to address the risks or devise acceptable exit arrangements

Policy makers have two options: either they address the risks to minimise the chances for systemic failures; or they come to some agreement regarding an exit for troubled institutions that avoids systemic repercussions.

Among OECD jurisdictions, there is no single common approach for doing so. Options are drawn from: the structure/behaviour nexus; and the policy nexus, either market-based or government-imposed.

The structure – behaviour nexus

There are two opposing views regarding the risks posed by financial group structures

At a fundamental level, the debate over the policy approach to financial groups raises the classic "form versus substance" discussion; that is, should policy focus on the structure of financial groups, or should it focus on their behaviour. A *per se* view holds that unacceptable forms or levels of risk are inherent in certain financial corporate structures. Certain types of financial business activities are not compatible from a direct risk or moral hazard standpoint and should not be combined. Where that is the case, the obvious policy option is to *regulate structure*.

An alternative view holds that the issue with respect to financial groups is not the formal corporate structure *per se*, but rather the implications of the corporate structure for proper risk-management. The real question then becomes whether the internal controls and risk management systems for the group are adequate for the task. Where such a view holds, policy measures may be directed at *regulating behaviour*.

Market-based measures or government-imposed measures

Policy measures are either market-based or rely on direct government intervention

Regardless of whether the emphasis of policy is on structure or on behaviour, there are two broad sets of policy measures from which to choose: market-based measures or direct government intervention. The latter may take the form of prescriptive rules, which require the adoption of specific behaviours or actions, or impose prohibitions on specific behaviours or actions. Market-based measures, in contrast, may entail the reliance on competition and market forces, or may reflect general, high-level expectations of behaviour on the part of the government, but where market participants are left to decide on the means by which they are to achieve these standards of behaviour, as through industry codes of conduct or best-practice guidelines.

Mapping the options to risks

The policy template consists of three linked pairs of options

The discussion in the preceding sections outlines a policy template consisting of choices from three linked-pairs of options:

1. whether to be *preventive* or *corrective*;
2. whether to look at *structure* or *behaviour*; and
3. whether to do so through *market-based measures* or *government imposed measures*.

These design questions have been the subject of considerable discussion over the years. In financial policy, there are multiple objectives, which taken to their logical end may not always be consistent; and there are multiple policy instruments, whose effects may cause them to work at cross-purposes, and which may require some level of international coordination to work optimally. And in practice, one size typically does not fit all.

In fact, changes in regulation have often been implemented in response to particular incidences of failure, rather than as part of a comprehensive and predetermined long-run plan. And as the incidence and severity of failures have varied across countries, so, too, have the specific modalities of policy design and implementation.

Structural controls as embodied in the "safety first" doctrine were widespread in the wake of the Great Depression

For instance, the doctrine of "safety first" was in vogue for a considerable period in many jurisdictions in the wake of the Great Depression, by which prudential policies, especially as applied to the banking sector, focused on the prevention of failures and the protection of retail customers. Structural controls were widespread as regulatory authorities directly monitored and controlled a wide range of financial activities to allay concerns that "excessive competition" was at odds with stability and raised consumer-protection issues. In addition, rules in some jurisdictions sought to prevent excessive concentration of market power by separating the banking and insurance businesses, while in other jurisdictions, traditional banking was separated from the securities business.

While most rigid controls have been removed, some form of the separation principle remains in most jurisdictions

While subsequent reforms removed most of the more stringent controls, some form of "separation" remains in place in all jurisdictions. For example, while rules in continental Europe generally permit the mixing of banking and securities activities, rules in all EU countries prohibit banking and insurance activities from being supported by the same pool of capital and also prohibit the simultaneous pursuit of life and non-life insurance business by a single legal entity. In fact, with few exceptions, separate licences are typically required for each sub-sector of the insurance business, or for multiple categories of insurance grouped under a common corporate umbrella. These restrictions are designed to ensure that the funds reserved for paying insurance claims, especially in the life segment, are not endangered by risks unrelated to the insurance business.

But tight limits on ownership and control also existed before in other financial-services sectors, as embodied for example in the Glass-Steagall Act in the US, which prior to its repeal in 1999 prohibited commercial banking and investment banking from being parts of the same corporate group (Box 3).

Box 3. The Glass-Steagall Act: Strict legal and operational separation

The Depression era Glass-Steagall Act in the United States is perhaps the prototypical example of strict legal separation. It imposed a fairly strict institutional separation (largely on grounds of avoidance of conflicts of interest) between traditional commercial banking and investment banking and a large number of other securities-related activities. The strict separation embodied in the 1933 Act sought among other goals to protect the interests of retail depositors.

To prevent contagion from the "riskier" securities-related activities to banks, the Act prohibited these two types of institutions from being parts of the same corporate group. Strict legal separation limited the types of risk exposure institutions could assume (either directly or indirectly) via contagion from other group members.

Chile, by contrast, allows group affiliation in various sectors, but prohibits control or direct mixing between the various subsidiaries (Box 4).

Box 4. Financial groups in Chile

In Chile, the regulatory framework imposes strict regulations on ownership-linkages among financial institutions. For example, the regulatory framework defined in the Banking Law clearly establishes the activities that banks can conduct. Any activity that is not included in said article may not be conducted.

Banks may conduct insurance brokerage through affiliate companies and may establish affiliate firms that provide social security advice. A corporate group may establish a bank, but the banking entity may only become involved in lines of business established in the Banking Law, and/or through its affiliate societies in businesses as defined by the Banking Law and related rules. Banking entities cannot invest in equities.

Securities brokers, commodities brokers, investment fund managers, insurance companies, etc. may only carry out their main lines of business and complementary lines of business as authorised by the Securities and Insurance Regulator. Hence, they cannot control other corporations or companies that are not necessary for their main business, nor carry out other non-authorised lines of business.

The legislation allows strategic alliances to be formed, and in a given financial group it is possible to find a bank and an insurance company, but those alliances must be between institutions with separate capital.

Based on the previously described template, these types of strict legal-separation arrangements typically exhibit the following qualities: **preventive; structure-oriented; government-imposed**.

Various organisational structures accommodate some measure of separation

There are, in fact, various structures that can accommodate the separation principle, at least to some extent (see Table 4 in the addendum). One structure is the parent-subsidiary model, whereby a financial institution (the parent) engages in other activities through separately capitalised subsidiaries. Another common structure is the holding company model, whereby a parent company owns (or controls) a number of separate, often cross-sector and cross-border subsidiaries.

Concerns have been raised about the status of the holding company itself, which can be "operating" (*i.e.* itself involved in one of the main financial activities of the group), or non-operating, and thus restricting its activities to some centralised activities, with its own revenues derived from dividends it receives from the subsidiaries.

The non-operating holding company approach enables group members to benefit from synergies, but should prevent the cross-subsidisation of risks

A structure that addresses concerns about the status of the parent is the non-operating holding company (NOHC) structure. The NOHC is similar to a traditional holding company structure in the sense that there may be single entities (*e.g.*, as in a one-bank holding company) or various types of subsidiaries in the group. In a strict form, each constituent entity could have its own shares listed, and its own separate board of directors. But even when the constituent entities are not separately listed, in a strict-form NOHC the holding company would not be able to exercise any control over the group members that would allow for an improper mixing of capital. The holding company structure enables group members to benefit from cost synergies associated, for example, with sharing back-office operations, accounting services, or

technology infrastructure. The structure also enables the parent to benefit from any revenue economies of scope or cross-sector diversification benefits. But it should not, in theory at least, allow for cross-subsidisation of risks.

The parent and subsidiaries deal with one another through "arms-length" transactions

Instead, the guiding principles for a NOHC are: 1) for the parent and affiliates to deal with each other through balance sheet-based transactions, on the same arms-length basis as they might use for outside entities; and 2) increased transparency, which should facilitate monitoring, regulatory compliance, and resolving problems with failing subsidiaries, given the presumed absence of complex inter-connections and risks.

If the terms under which group capital can be transferred are clearly specified under company law or regulation, the cost of capital for any given subsidiary should better reflect the risks it undertakes, as opposed to being clouded by perceived intra-group cross-subsidisation. In practice, however, the potential for matching a subsidiary's own risks with own capital is less clear-cut.

Third parties may still expect subsidiaries to have the full support of the group, and this assumption may have legal backing

A subsidiary of a large group may enter into agreements presumably under its own name, but counterparties and clients may nonetheless have the implicit understanding that the activity has the group's financial strength behind it. This idea is in fact sometimes enshrined in law. In the US, for example, banking regulation specifically enforces the "source of strength" concept by authorising regulators to force a NOHC to support its banking subsidiaries with all its available capital.

The Australian Prudential Regulatory Authority (APRA) has proposed a similar requirement as part of its efforts to extend its supervisory framework to conglomerate groups and to deal with the challenges posed by any non-regulated entities they contain. Among other requirements, APRA has proposed that groups containing material non-regulated entities would be subject to more stringent supervision, called "Level 3" supervision. Level 3 supervision would enable APRA to require additional capital if it determines that the total capital in a group is not commensurate with the group's risk profile. It would also allow APRA to require that a sufficient portion of a group's surplus of eligible capital be readily transferable among group entities, through a transferability assessment.

An alternative to control over ownership linkages is to limit particular activities

The "preventive – structure – government-imposed" option includes "softer" approaches to achieving a measure of separation that do not rely on strict control of ownership linkages. Instead, attention is focused on particular activities, which may be proscribed when certain conditions apply.

The so-called "Volcker rule", named for former Federal Reserve chairman Paul Volcker, as incorporated in the US Dodd-Frank Act (Box 5), is a recent example of regulatory limits on permissible activities. The rule prohibits institutions that take retail deposits, which are guaranteed by the government, from engaging in proprietary trading. The ban serves to prevent deposit funds from being used to cross-subsidise risk-taking activities that could pose a threat to the safety and soundness of the institution itself, and in

the case of systemically important institutions, the broader financial system and thereby the financial safety nets. In principle, removing the element of cross-subsidisation should result in risk-taking activities being priced at a more appropriate (*i.e.* higher) market price.

In the Dodd-Frank Act (US), banks can only invest 3% of capital in hedge funds and private equity

In addition to the ban on proprietary trading, the rule limits to 3% of capital the amount of funds that banks can invest in hedge funds and private equity funds. And, in contrast to the requirements discussed above for banking subsidiaries, banks are barred from bailing out any funds in which they are invested, which again should address the cross-subsidy from the financial safety net.

Note that limits on permissible activities can be imposed by regulation, but could instead be implemented through industry codes of conduct or "best practice" guidelines, as part of a **preventive** – **structure** – ***market-based*** approach.

Strict legal separation limits risks, but at the expense of potential cost or revenue synergies

As noted above, of particular interest in the case of financial groups is whether the risks that arise in different lines of business are offsetting, as desired for diversification purposes, or reinforcing. Strict legal and institutional separation has the core objective of limiting the types of risk exposure institutions can assume, either directly through their own activities, or indirectly via contagion from other group members. But strict separation achieves this objective at the expense of any cost or revenue synergies that might exist among the different types of activities.

As a consequence, the question arises as to whether any division of function and activities should be legally imposed or whether the choice of specialisation versus integration should be left entirely to the managerial decisions of the financial institutions themselves. The real issue, however, may be: what measures can be introduced to minimise the attendant risks of integration of activities in the same corporate structure, without eliminating all potential synergies.

An alternative to the focus on separation is to target behaviour

Regulating behaviour has an entirely different focus from regulating structure. The rationale behind the approach is that it is not the structure *per se* that matters, but how the structure is used. Presumably, the asset-liability mix of an institution is constructed and managed in such a way as to generate an adequate return for investors without taking on undue risks. At issue is the extent to which management can be trusted to accomplish this by the shareholders, clients, counterparties, and the authorities. There are various inter-related considerations relevant to such a determination.

For conduct-of-business concerns, a corrective approach is often used

In a "corrective – behaviour – market-based approach", for example, greater reliance is placed on internal controls and market discipline in lieu of structural limits. A corrective approach is often used for conduct-of-business concerns (*e.g.* conflicts of interest). For such concerns, attempting to prevent any abuse whatsoever from occurring would be exceedingly difficult if not impossible, given the ubiquitous nature of potential conflict-of-interest situations. And such an approach would no doubt be prohibitively expensive.

Box 5. The U.S. Dodd-Frank Act

In July, the **United States** enacted the new *US Dodd–Frank Wall Street Reform and Consumer Protection Act*, known in its short form as the *Dodd-Frank Act*. The Act addresses many of the perceived shortcomings with the existing regulatory and supervisory framework in the country, affecting the following main areas:

Consumer protection: The Act gives authority to an **independent consumer protection agency**, the Consumer Financial Protection Bureau, which will be housed within the Federal Reserve Board, with separate budgets and rulemaking authority. The agency will have authority to examine and enforce regulations for all mortgage-related businesses: banks and credit unions with more than $10 billion in assets; payroll lenders; check cashers and other non-bank firms.

Addressing systemic risk: The Act introduces a new **Financial Stability Oversight Council (FSOC),** which is to be chaired by the Treasury Secretary. The FSOC will include: the Federal Reserve Board; the Securities and Exchange Commission (SEC), the Commodity Futures Trading Commission (CFTC); the Office of the Comptroller of the Currency (OCC); the Federal Depository Insurance Corporation (FDIC); the Federal Housing Finance Agency (FHFA); the National Credit Union Administration (NCUA); the new Consumer Financial Protection Bureau; and an independent appointee with insurance expertise.

Resolution authority: The Act requires regulators to seize and break up troubled financial firms that might cause systemic damage. Regulators would recoup losses via fees on firms with at least $50 billion in assets.

OTC derivatives markets: Plain vanilla derivatives are to be traded on exchanges and routed through clearing houses. Customised swaps are to be reported to central repositories. Imposes capital requirements, margining, reporting, record keeping and business conduct rules on firms that deal in derivatives.

Credit rating agencies: The Act introduces a new **Office of Credit Ratings** to supervise credit rating agencies. The supervisor, which would fall under the SEC, will require Nationally Recognised Statistical Rating Organisations (NRSROs) to disclose their ratings methodologies. It aims to reduce conflicts of interests. In addition, investors have a right of action against rating agencies in the event of reckless failure.

Securitisation: The Act requires securitisation sponsors and originators to retain at least 5% of the credit risk. In addition, the originators will have to disclose the details and the quality of the underlying assets. The Act exempts low-risk mortgages that meet certain minimum standards.

Proprietary trading: Known as "the Volcker rule", this section limits to 3% the amount of its own capital that a bank can invest in hedge funds and private equity firms. Banks are barred from trading with their own funds.

Greater reliance has been placed on market-based measures, such as disclosure and codes of conduct

In lieu of specifically imposed *ex ante* controls for such conduct-of-business concerns, market-based measures tend to be of primary importance. There are two main areas to be addressed: financial institutions' behaviour in the market (including their relationship with one another) and their client interface. Various mechanisms can be used to ensure institutions have sufficient incentives to adopt administrative procedures that ensure consumers are competently and honestly served.

Common mechanisms include:

- Disclosure of relevant information for a proper identification of potential conflict-of-interest situations;
- Codes of conduct or rules of best practice that specify how potential conflicts should be handled.

Group-wide supervision is the primary instrument for overseeing behaviour

In contrast to the treatment for conflicts of interest, for prudential concerns the application of behavioural remedies typically shifts toward preventive measures and government-imposed measures. Group-wide supervision is the primary instrument. To be effective, the supervision of financial groups should seek to ensure the full capture and treatment of all risks and entities within the groups.

The larger the conglomerate is, and the more constituent entities that are involved in complex relationships, the more difficult it becomes for supervisors to have a clear understanding of the cost calculations, the localisation of business risks and the lines of control. Supervisors accept the fact that as financial groups centralise their internal controls and risk-assessment and management practises, it becomes more difficult to oversee these on a purely sectoral basis due to the increased complexity of the corporate structure and the inter-linkages therein. Conglomeration increases the need for information sharing, co-ordination and co-operation among the supervisory authorities with responsibility for the different institutional components of a financial group, and to ensure that group-wide assessment and management of risks is achieved.

The risks involved are magnified in the case of cross-border operations

These risks are magnified in the case of international groups, in the sense that the legal jurisdiction of national authorities is smaller in scope than the geographic area spanned by the institutions' business activities. Two key questions for supervisors are: (1) whether constituent entities of internationally active financial groups are managed centrally or locally; and (2) whether risk-management and other corporate control functions are centralised in the parent or another specific entity, or exercised locally.

Trade-offs in mapping options to risks

The various combinations of policy measures can differ markedly in terms of their costs and effects

These various combinations of policy measures, preventive or corrective, structural or behavioural, and market-based or government imposed can differ markedly in terms of their costs and effects. For example, the implementation of some policy instruments may give rise to negative incentive effects, if the activities of participants are not fully monitored. Guarantees and other insurance mechanisms are the classic examples. They may have moral hazard effects that offset the overall benefits of policy.

In this context, some officials have noted that it is necessary to avoid confusing regulatory or government failures with market failures when devising policy options. Doing so would help facilitate a proper identification of what it is that needs to be addressed when problems occur. There may indeed be market failures or broader economic and social needs that warrant intervention. But the form of intervention needs to be carefully considered to avoid introducing unexpected costs or complications that have unintended consequences, including the possibility that certain policies or approaches could lead to a build-up of risks rather than to a reduction.

Limits to separation (alone)

The premise behind the principle of separation is not invalid. The culture involved in retail banking (*i.e.* taking deposits and making loans) differs considerably from that involved in originating structured products and proprietary trading. And some forms of separation are deemed to be necessary in order to address concerns about safety and soundness and consumer protection; examples include the requirement for separate capital to conduct both banking and insurance, and the separation of the life segment of insurance from the non-life segment. One can perhaps make a valid case for other forms of separation, at least on specific grounds such as increased transparency. But the fact remains that separation alone is not sufficient to address all concerns.

Where source-of-strength rules apply, group members are forced to take into account risk-taking activity on the part of other members

Where source-of-strength rules apply, the fact that subsidiaries are separate legal entities does not mean that the other entities in the holding company can completely ignore a given subsidiary's risk-taking behaviour. And the market has not always recognised the separation either. The failure of systemically important subsidiaries has often resulted in cross-group contamination. In short, structure alone, imposed or not, may not be sufficient on its own to completely eliminate contagion risk, as group members could still become "tainted" by virtue of a shared brand name and the damage to the group's reputation from the failure of a subsidiary within the group. Even where no formal obligation to make good on claims against the failed subsidiary exists, group members could nonetheless suffer from a loss of reputational capital, which might affect their ability to fund themselves as before and may result in more serious financial difficulties.

Limits to market discipline (alone)

Any weaknesses in governance associated with misaligned or improper incentives will limit the effectiveness of voluntary measures

Measures that rely on market discipline are only as effective as the broader governance framework of which they are a part. Any weaknesses in the framework -- such as misaligned or improper incentives, weak management-information systems, and ineffective or incompetent Boards -- will mean that firewalls and related control mechanisms cannot be relied upon solely to control or mitigate conflicts of interest or other risks. Rather, as a general rule, internal controls and voluntary mechanisms should be subject to monitoring: authorities should be able to trust these controls and mechanisms, subject to verification, especially when the consequences of a failure could be severe.

Financial difficulties can result either from errors of execution or from inherent flaws in the business model

In hindsight, the flaws inherent in failed business models or errors of execution are always evident. But in many cases, the signs were evident long before problems emerged (*e.g.* credit underwriting standards becoming looser for borrowers of increasingly dubious credit quality, connected lending, high loan concentrations, over-reliance on wholesale funding sources, etc.). Who bears responsibility for performance problems? If institutions encounter difficulties through no direct actions of their own (for example under the influence of exogenous forces such as a natural disaster), blame is difficult to assign. But errors of commission are obviously different.

Managers have direct responsibility for ensuring a proper mix and the management of their institution's assets and liabilities. But the duty is not theirs alone. Inadequate internal risk controls are a sign that the corporate governance of the institution has failed. The failure exists regardless of whether crucial information ever reached the board of directors, whether Board members understood the true nature of the activities, or thought they did but went along with a given course of action anyway.[12] Auditors or other monitors may have been complicit in the problems. Shareholders, especially institutions and other professional investors do not completely escape blame, either.

Effective market discipline should provide an external constraint on managerial discretion

What happens if the internal governance apparatus of individual institutions fails to avert episodes of financial difficulty? Creditors and counterparties should have incentives to ensure that their own interests are not threatened by a troubled institution's problems, which means they should take protective steps to prevent the institution from taking on excessive exposures, or they should exit the contract long before the time when the institution's failure becomes imminent or a foregone conclusion. Effective market discipline should function in this way, as an external constraint on managerial discretion. If policy is to take a *laissez-faire* approach, both internal and external governance mechanisms must function properly.

Both mechanisms rely on the availability of relevant information and an ability to properly interpret it. Of course, such information is not always readily forthcoming. And the larger an institution is, the greater the number of constituent entities it embodies, and the more complex their relationships, the more difficult it becomes to obtain a clear understanding of risk exposures, owing in part to the potential for complex intra-group exposures to develop.

In complex structures, external mechanisms are at a disadvantage, which limits the ability of market forces to function correctly

It is extremely unlikely that external parties can readily sift through all the potential exposures.[13] Authorities can help the process by imposing greater simplicity for corporate structures or mandating increased transparency (*e.g.* reporting requirements, centralised trading or clearing and settlement). Otherwise, greater reliance must be placed on regulatory measures, since during the normal functioning of a competitive system the chance always exists that some institution's asset-liability mix, risk-management techniques, or entire business model will prove to be deficient and result in losses, or in a severe case, to its failure. The question then becomes whether the problem is idiosyncratic, affecting just the one institution, or is it likely to spread to other institutions having a similar structure or business model, or to spread further still.

The recurrence of boom-and-bust cycles suggests that market discipline tends not to operate as needed

In any event, the fact that boom-and-bust cycles are recurrent phenomena suggests that the necessary degree of market discipline is typically not forthcoming or arrives too late in the cycle. If internal governance does not limit leverage or excessive risk-taking, and market discipline cannot be relied upon to do so, then supervisors must. Either way, a more heavy-handed approach is needed and the question really becomes how heavy it should be. Different jurisdictions may have different views in this regard. But in the aftermath of a crisis, the pendulum typically swings in the

direction of tighter controls, or at least towards addressing obvious gaps or weaknesses in the regulatory and supervisory framework.

Limits to supervision (alone)

The recent financial crisis has called into question the success of many existing arrangements for supervising financial groups. This has led to calls (in some circles) to limit the size and/or complexity of institutions in order to avoid having them perceived as being "too big to fail", along with all the moral-hazard issues that perception entails. The efforts of a few supervisors have also been favourably viewed, but these are few and far between (quite literally in some respects).

Better supervision is obviously needed, but is not sufficient on its own to address all problems

To argue that supervision alone is sufficient to control the behaviour of participants ignores a considerable amount of history. It can be extremely difficult, in practice, to directly control behaviour without sacrificing some measure of efficiency and innovation or creating adverse incentive effects, which then need to be addressed.

Looking back, one observes that severe disruptions in the banking sector were widespread among OECD countries in the 1980s and 1990s and again in this decade, sparked in many cases by apparent price "bubbles" in the real estate or equity markets. Bank lending played a contributory role in the development of these episodes of high asset-price inflation, and banks may have added some impetus to the "bust" phases as well. The regulatory framework does not remain blameless through these problem episodes, which is why most such episodes have prompted a re-think about how to improve oversight. The recent crisis is no exception, and various reforms have been introduced (Table 2).

An important starting point to reform is to ensure all participants have correct incentives

The regulatory framework needs to impose limits on the behaviour of market participants, but it must also seek to align the *incentives* of the market participants with policy objectives, through a balance of compulsion, supervision, and market discipline. In particular, incentives must be appropriate for the full range of participants, from service providers to end-users. This condition is a necessary requirement if the financial system is to function as intended. Governance is based on inter-linkages, and system-wide governance is only as strong as the weakest link.

Management information systems are a critical component

Management information systems are critical in this respect, both at the level of individual participants and in the aggregate. At the time of the recent crisis, crucial information about risk exposures in the system was lacking, which proved to be a critical flaw once the chain of events resulting in crisis conditions had been triggered. Many institutions had centralised risk-management functions, but few if any had the ability to quickly obtain a consolidated view of the risk exposures across products, business lines, legal entities, and borders. And, of course, no one had an aggregate view. No one knew who bore which risks, and in that environment of shaken confidence many types of financial transactions basically ground to a halt.

Table 2. Template of recent policy measures to address risks in financial groups

MARKET-BASED MEASURES					REGULATORY MEASURES				
					Prudential Oversight		Structural Controls		Bonding Mechanisms
Contract Law	Market Forces	Disclosure	Codes of Conduct	Governance	Micro-Prudential	Macro-Prudential	Limits on Activities	Structural Controls	Guarantees
			USA[1]	USA[1]	FRA[2]	EU[3]	USA[1]	USA[1]	
					BCBS[4]	(DNK, FIN, ISL,NOR SWE,)[5]	BCBS[4]		
					USA[1]	GBR[6]			
						USA[1]			

1. See Box 5, the Dodd-Frank Act.
2. Merger of authorities responsible for oversight of banking and insurance entities.
3. Proposal for: 1) a European System of Financial Supervisors, consisting of a network of national financial supervisors to work in tandem with the new community supervisory authorities (the European Banking Authority, the European Securities and Markets Authority, the European Insurance and Occupational Pensions Authority); and 2) Community wide macro-prudential oversight via establishment of a European Systemic Risk Board charged with maintaining oversight of the financial system to prevent or mitigate systemic risks and to avoid episodes of widespread financial distress.
4. Revised capital standards (Basel III): higher minimum requirement plus a higher buffer for a total minimum common equity of 7%; limits on minority investments.
5. Memorandum of understanding related to establishment of supervisory college for the Nordea Group: requirements to share information between home and host supervisor; joint on-site examinations; but no specific rules *ex ante* as to how, or by whom, a crisis will be handled.
6. Proposed reform of the regulatory framework to include a revised tripartite model with three supervisory authorities: the Macro Prudential Regulation Authority; the Prudential Regulation Authority; and the Consumer Protection and Markets Authority. A Financial Policy Committee under the authority of the Bank of England would operate under the MPRA to monitor and address systemic or aggregate risks and vulnerabilities. The Independent Commission on Banking, headed by John Vickers, is examining a wide range of measures, which include: the separation of retail and investment banking; narrow banking and limited purpose banking; limits on proprietary trading and investing; structural separability (living wills); contingent capital; and surcharges for individual institutions. And for markets: limits on concentration in trading and other infrastructure, among other reform initiatives.

The threat of failure has to be a possibility if market discipline is to play its role in constraining risks

Clearly, a powerful mechanism to promote desired behaviour is to ensure that managers of financial institutions and their counterparties are aware of the possibility of their failure, and therefore the need to be concerned about risks. The threat of failure is a core component of market discipline; it keeps all participants honest.

This fact has received some attention in the measures that have been adopted. All three major risk categories are addressed by at least one reform measure, although admittedly not in all jurisdictions. By count, the majority of jurisdictions have focused their attention on the systemic stability concerns arising out of the crisis. The measures adopted have taken various forms, most often involving the establishment of clear responsibility for systemic stability in some entity or group. Steps in some jurisdictions also involve oversight structures for cross-border operations of financial groups, via integrated agencies, lead supervisor arrangements, colleges of supervisors, home-country control, host-country control, or memoranda of understanding.

The US has made greater use of structural controls, such as limits on permissible activities

The US stands out in the sense of making use of more stringent control measures, such as limits on permissible activities. Such limits are intended to adapt regulatory structures to the economic, technical and operational specificities of particular sectors and the risks they entail for the system as a whole, as well as to ensure adequate safeguards for consumers. In particular, the limitation on proprietary trading should serve to prevent deposit funds from being used to cross-subsidise risk-taking activities that could pose a threat to the stability of the institution itself, the broader financial system, and thereby the financial safety net. Presumably, institutions that wanted to risk their own capital in trading for their own account would be forced to give up access to retail deposits and the associated guarantees.

In other jurisdictions, proposed measures are geared more towards providing a means to pay for the resolution of failed institutions, and therefore they reflect an *ex post* corrective approach. Such measures take the form of fees or taxes on the industry, with a view toward amassing funds that can be used to fund crisis resolutions, in lieu of tax-payer money being used to do so.[14]

If a conclusion is to be drawn from the above discussion, it is that no single approach will suffice on its own

The discussion in this report has touched on the philosophy of regulation as regards, for example, the role of government versus the role of markets in achieving desired outcomes. Among the issues covered are the benefits of a proactive policy approach (*ex ante* preventive) versus a reactive approach (*ex post* corrective), and whether the appropriate policy response should entail *behavioural* versus *structural* remedies. If a conclusion is to be drawn from the arguments presented in this section, it is that no one approach will suffice on its own. There are overlapping prerequisites, which means that the effectiveness of any given approach will typically depend, in part, on aspects of another approach being in place. They should be viewed as complements and not as substitutes.

Complexity is a major problem,

Good information systems are critical in this respect, which means that complexity is a major problem. The obvious antidote for complexity is

which may need to be addressed through regulatory intervention

simplicity or transparency. If market discipline were functioning properly, there would be a penalty assessed for institutions with complex structures and business models. To the extent the required behaviour does not occur, it becomes necessary to impose it in some way. But that means moving beyond reliance on market forces. One approach is to impose restrictions on ownership and control; for example, by requiring the legal separation of certain activities, which would entail structural controls.

In short, there are no magic bullets among policy options to address the risks posed by financial groups

To conclude this section, we note that there are numerous trade-offs to be made in the policy options for limiting the risks of integrated structures and business models. As a consequence, there are no magic bullets among common measures for addressing any of the three risk categories (*i.e.* safety and soundness, systemic stability, and conduct of business). Depending on the risk -- and the perceived need for *ex ante* preventive versus *ex post* corrective measures -- a holistic approach is required that encompasses structure, governance, and supervision (Table 3).

Table 3. Mapping alternative policy measures to risks in financial groups

Policy Measures	Category of Risk		
	Prudential concerns	*Conflicts of interest*	*Systemic instability*
Market-based measures			
• Contract law (*e.g.* basic anti-fraud)		x	
• Market forces (*e.g.* competition, market discipline)	x	x	x
• Disclosure		x	x
• Codes of conduct (*e.g.* rules of best practice, conditions for doing business, Chinese walls)		x	x
• Governance (*e.g.* internal controls, risk management)	x	x	x
Prudential oversight			
• Micro-prudential (*e.g.* stricter capital requirements, leverage ratios)	x	x	x
• Macro-prudential (*e.g.* systemic risk boards, supervisory colleges)	x		x
Structural controls			
• Limits on activities	x	x	x
• Separation	x	x	x
Bonding mechanisms			
• Guarantees	x		x
• Govt. ownership or control	x		x

Source: OECD Secretariat.

VI. Conclusions

The recent crisis is not unique, in the sense that the financial services industry has been prone to periodic episodes of marked illiquidity, widespread insolvency, fraud and other misconduct to the detriment of clients and counterparties and the economy at large. Public policy generally aims to prevent problems at individual institutions and the markets from propagating and to preserve public confidence in the integrity of the financial system. To do so, authorities must find ways to protect the system against systemic risk and must ensure proper market conduct on the part of financial service providers, including adequate protection for financial consumers and investors.

Large integrated institutions present a number of challenges to the attainment of these objectives, posing risks to safety and the soundness of individual institutions, to systemic stability, and to consumers. As stated above, financial risks can be magnified in the case of large financial groups. And given the cross-sector and cross-border inter-linkages that have developed, once problems do erupt they tend to be transferred from one market segment or region to another. Thus, to be effective, the supervision of financial groups needs to ensure the full capture and treatment of all risks and entities in the group, including any unregulated companies.

The goal of public policy is not to make institutions completely failsafe and reduce the incidence of failure to zero. The threat of failure is a core component of market discipline. It serves to keep risk in the system to manageable levels. Participants have incentives to protect their own interests in situations in which they are not fully protected and to bear some risk of loss. It is not possible to eliminate the risk without eliminating the incentives that accompany it.

For service providers, the governance framework for each must be appropriate for its risk profile and business model. A necessary aspect of governance concerns the incentives given to managers, traders, loan officers, etc. to ensure their behaviour is consistent with the longer-term view of the institution as a going concern. More generally, the accountability of executives must be strengthened. The actual threat of punishment is sometimes one of the best and most robust tools to make sure that the rules of best practice are observed. And finally, the same governance framework that guides deposit-taking and consumer lending may not be appropriate for proprietary trading and other such riskier activities.

Internal governance needs to be supported by the external discipline of market forces. But market discipline can only function properly if clients and counterparties bear some risk of loss. It is important to clarify the contractual nature of promises in the system. There should be greater transparency as to whether clients are protected (or not) by the fiduciary duty of loyalty or care, in order to remove the potential for moral hazard.

And it must be noted that it is likely that policies adopted across jurisdictions will not be the same. As Ugo Mattei has observed, “every single institutional arrangement is generated within the limits of a precise historical context through

an evolutionary path, which is not necessarily linear and foreseeable. It responds to specific country needs and traditions". There is no unique, universally agreed upon solution to address risks inherent in the structures and activities of financial groups. Jaime Caruana captured this notion specifically when noting that "we have to accept that there will never be total agreement across borders on what banks should and should not be allowed to do. There have always been differences in the business lines permitted to banks in different countries and there probably always will be. Hence, there can be a wide range of approaches, depending on the particular circumstances. But all measures should be consistent with internationally agreed standards to ensure that the playing field is level and that systemic risk is reduced."[15]

Summing up, this article argues that policy makers should seek to ensure that the incentives that guide behaviour throughout the system, from supervisors to service providers to end-users, are not misaligned or inconsistent with the attainment of desired outcomes. The policy choices consist of three linked pairs: *ex ante* prevention; *ex post* correction, regulating either structure or behaviour; and policy measures, either market-based or government-imposed. The following observations are noted:

- Financial groups face risks that arise generally in finance, but also face additional risks related to the multiplicity of their components and the complexity of their structure. These risks can also be inter-related within or across sectors and across borders.

- Scale and scope economies may exist in some areas of financial services, but not everywhere and not without limit. Thus, reductions in the size of institutions need not conflict with economic considerations. The risk of failure may in fact not be greater for financial groups than for smaller institutions, but the consequences of failure have much greater impact.

- Various institutional structures and strategies may be used to exploit potential synergies. The degree of integration and the degree of centralization of control have important implications regarding the risks posed.

- That said, it is not structure *per se* that matters most, but how the structure is managed. Behaviour is key. It is important to look through the structure proactively to gain a clear idea of what risks exist and how adequate are the internal controls and risk-management systems to control them. Incentives must be properly aligned and consistent with policy objectives. There may be a need for clear responsibilities and fiduciary obligations, as well as the prospect of appropriate sanctions for misbehavior.

- That greater impacts associated with problems at larger institutions requires a holistic approach that combines transparency, governance, regulation and supervision. More work remains to be done on the resolution framework for internationally active institutions.

Notes

1. The OECD highlighted a number of such risks back in 1992 under the aegis of the Insurance Committee, now the Insurance and Private Pensions Committee. Among the potential risks discussed in that study were risks related to intra-group transfers of loans, etc. and risks associated with conflicts of interest.

2. Increased international integration can be beneficial as well, in the sense of contributing to risk-sharing and a more efficient allocation of capital.

3. Lower search costs could be a factor motivating such one-stop shopping. There could be a positive reputation effect as well, if customers associated an additional range of products and services with a proven brand name. The empirical research on revenue scope economies is mixed, but many studies support the existence of potential diversification benefits arising from combining different types of financial services in the same corporate entity.

4. In the particular case of insurance, rules have the effect of ensuring that only specially licensed entities can engage in insurance underwriting. But they also make sure that insurers do not engage in other activities, at least not via the same legal entity, and usually prohibit the combination of life and non-life activities in the same entity.

5. Cross-distribution has often been allowed, but not cross-production, prime examples being restrictions on deposit-taking and insurance underwriting.

6. The greater the degree of integration, the greater is the potential for exploiting scope economies.

7. See the discussion in Schich and Kikuchi (2004).

8. The assets of larger groups do tend to contain more risky elements, but at the same time, the degree of diversification also tends to be higher.

9. Research by the European Commission indicates that the risk of conflicts of interest increases with the number of activities or products offered.

10. The FSB and IMF are tasked by the G20 with specifying relevant criteria for identifying systemically important financial institutions.

11. Note that one can distinguish the instrument, which is offered *ex ante*, from how it is funded, which can be *ex ante* or *ex post*.

12. See the report by the OECD Corporate Governance Committee entitled "Corporate Governance and the Financial Crisis: Conclusions and emerging good practices to enhance implementation of the Principles" DAF/CA/CG(2009)3/FINAL.

13. And some assets may be difficult to value. Some bank loans, for example, are based on the banks' internal ratings criteria and derived over the course of long-term relationships with the borrowers. Third parties cannot readily assess the market value of such non-traded assets.

14. See the discussion in Schich and Kim (2010) in this issue of *Financial Market Trends.*

15. Caruana (2010).

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Challenges and Developments in the Financial Systems of the Southeast Asian Economies

by

Toshiyuki Shimada and Ting Yang*

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This paper discusses the economies and financial systems of Southeast Asia (SEA) and focuses on challenges and developments in the region. Despite the diversity of SEA economies and some important exceptions, most of them are relatively small but growing strongly. Financial deepening differs among SEA economies. Yet in general, equity markets have grown rapidly and bond markets slowly. The main vulnerabilities of the SEA economies stem from volatile capital flows as well as from decreases in export demand. As a result of national and regional policy responses to the Asian Crisis of 1997/98, the soundness of banking systems has improved, and frameworks to deal with foreign currency liquidity problems and to develop bond markets have been established. Due to these efforts, SEA economies have shown considerable resilience during the current global financial and economic crisis. In some economies, macro-prudential measures may have contributed to this resilience. Capital flows during the current crisis have reminded regional authorities of the risks inherent in these flows. Remaining issues for policy makers to consider are the risks presented by the expanding business activities of banks in the capital and real estate markets, and increasing the participation of SMEs and households in the financial system.

JEL Classification: F30, F32, F55, G01, G15, G18, G28, N45

Keywords: Southeast Asia, capital flows, financial crises, financial development, international bond markets

* Toshiyuki Shimada is a Senior Policy Analyst and Ting Yang is a Consultant, both in the Financial Affairs Division of the Directorate for Financial and Enterprise Affairs. This paper is a revised version of a background note prepared for a Policy Dialogue on Southeast Asian Financial Markets that the OECD Committee on Financial Markets held with financial policy makers from Southeast Asian countries. The Policy Dialogue was sponsored by the Government of Japan, whose grant for this project is gratefully acknowledged. This paper has benefitted from comments by participants at the Policy Dialogue and by the OECD staff, especially by Gert Wehinger. 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 do not necessarily reflect the official views of the Organisation or of the governments of its member countries.

I. Background

SEA economies have so far shown considerable resilience in response to the current global financial and economic crisis

Unlike during the Asian crisis of 1997-98, the SEA economies have so far shown considerable resilience in response to the current global financial and economic crisis. Most of the SEA economies are also recovering from the effects of the crisis faster than many OECD countries, as reflected in the development of their financial markets and economies. Against this background, two topics will be discussed in this article:

- Current financial market issues, including an assessment of the SEA economies' performance throughout the financial crisis. The current risks will also be considered (in particular those relating to capital flows), and strategies for coping with them, including capital controls and macro-prudential measures.
- Structural issues and financial market reforms in SEA economies, in particular those proposed and/or implemented in response to the crisis at the national and regional levels. These responses include current regional co-operation initiatives for the financial markets, as well as increasingly far-reaching reforms that are likely to shape a new financial landscape.

This article highlights challenges and developments in the region

This article focuses on the challenges and developments in the financial systems of the SEA region, rather than providing a comprehensive survey of each financial system. The paper will first discuss the basic characteristics of SEA economies and financial systems, followed by a discussion of the policy efforts made by SEA economies after the Asian crisis. The second section will deal with the economic performance and policy responses of SEA economies during the current global crisis. Finally, some of the remaining challenges will be briefly highlighted.

II. Basic characteristics of the economies and the financial systems in Southeast Asia

Common characteristics of SEA economies and financial systems

Despite the diversity of the economies in the region, and some important exceptions, SEA economies share several common characteristics in regard to their economic and financial systems. Some of these characteristics have existed since the Asian crisis and others emerged later. Concerning the probable causes of the Asian financial crisis, several pre-conditions have been mentioned:. Their attributes are: (i) vulnerable macroeconomic fundamentals, including the rigidity of the foreign exchange regime and massive current account deficits; (ii) inflows of foreign capital; and (iii) bank-dominated financial systems and weaknesses in their risk management. The problems of a double mismatch (in terms of currency as well as maturity) and the sudden massive capital outflows from the region were a result of the above attributes.[1]

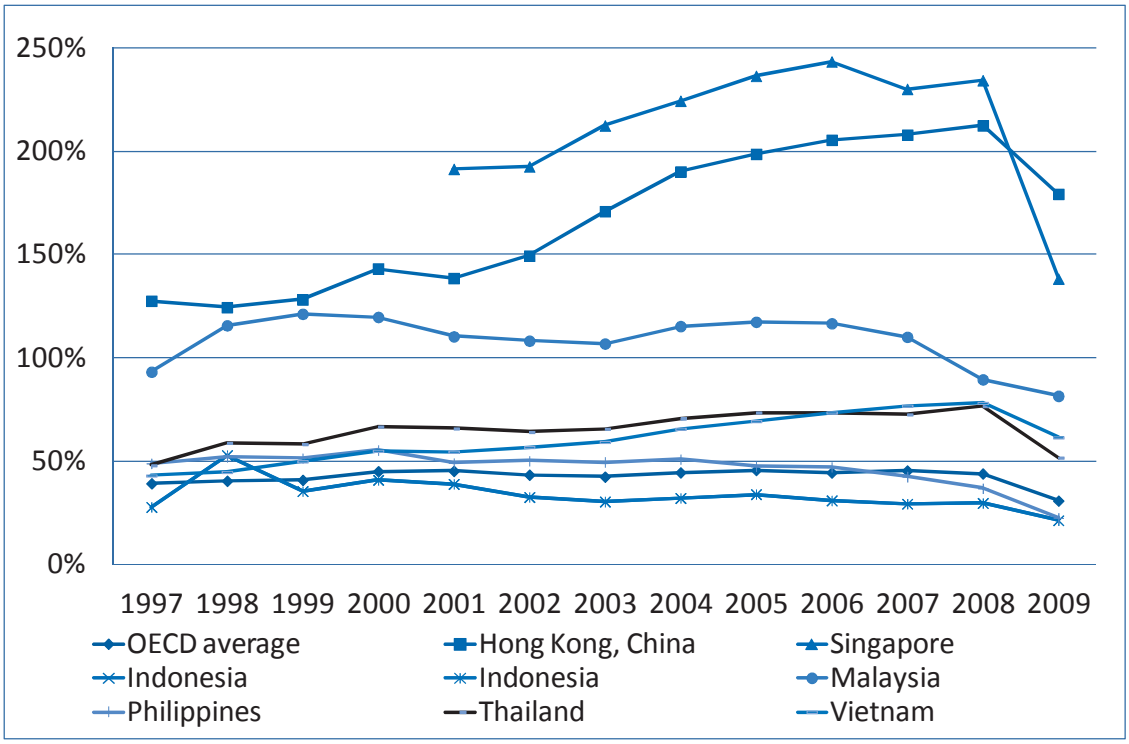
This section provides an overview of the current basic characteristics of the economies and financial systems of SEA countries and how they have evolved since the Asian financial crisis. The following dimensions are considered: *(1)* basic macroeconomic developments; *(2)* financial system deepening and broadening; *(3)* stability and the prudential soundness of financial systems; and *(4)* SEA economies' performance during the recent global financial and economic crisis.

1. *Basic macroeconomic developments*

Small but growing, export-oriented economies

Most of the SEA economies are relatively small, but they have had relatively high economic growth, which has greatly depended on export-oriented industries and the limited flexibility of these countries' exchange-rate regimes. These basic conditions are the same today as they were during the Asian crisis.

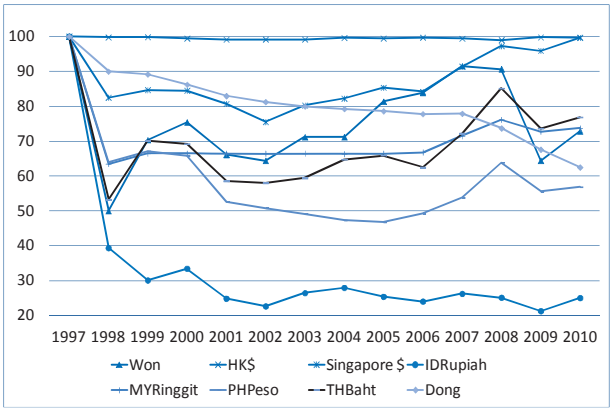
Figure 1. Gross exports / GDP



Sources: World Bank; U.S. Census Bureau.

Figure 2-1. Nominal exchange rates

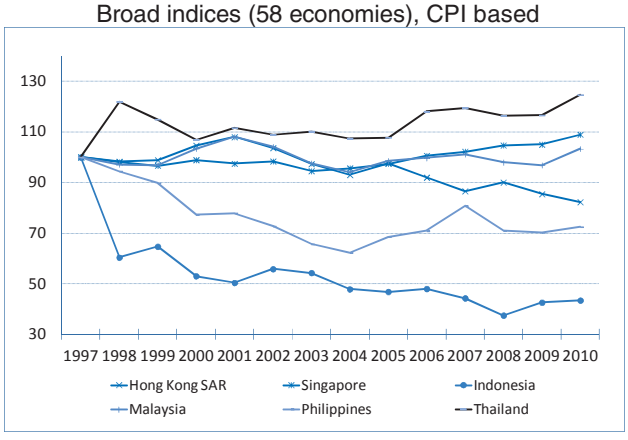
Indices of USD/local currencies



Source: Thomson Reuters Datastream.

Figure 2-2. Real effective exchange rates

Broad indices (58 economies), CPI based

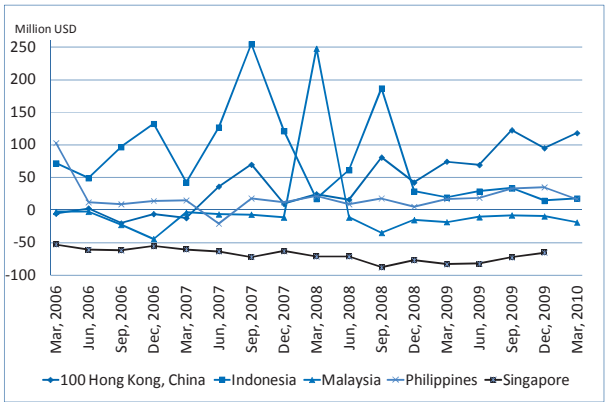


Source: BIS.

Main vulnerabilities stem from decreases in export demand and volatile capital flows

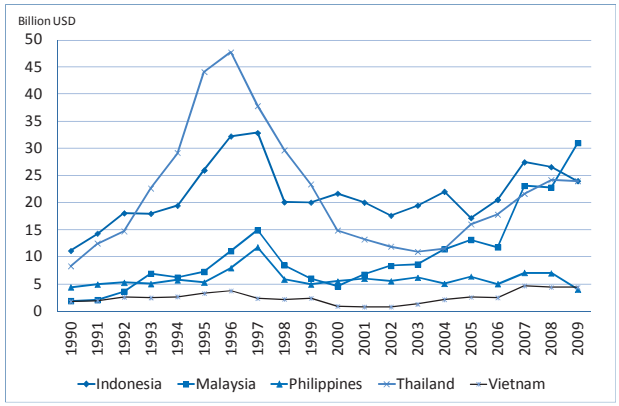
In this context, the fluctuations of the global economy have made SEA economies vulnerable in two ways. One vulnerability affects the real economy, and stems from global decreases in export demand. The other one affects financial markets. The relatively high growth of SEA economies along with their relatively high interest rates have been attracting foreign investors. This has resulted in huge capital inflows, leading to excess liquidity and increasing the risk of asset bubbles building up. A sudden reversal of these inflows would render the impact of any bubble-bursting more severe (Figure 3).

Figure 3-1. Net capital inflows, quarterly, since 2007



Source: CEIC.

Figure 3-2. External short-term debt, since 1990



Sources: World Bank, BSP, SINGSTAT, BNM, JEDH.

Accumulation of foreign reserves and healthy fiscal conditions have mitigated the negative effects of capital flows

Yet in general, due to their current account surpluses over the past year, SEA economies have accumulated solid foreign reserves. The accumulation of foreign currency reserves after the Asian crisis has so far mitigated the risk of foreign currency liquidity drying up. In addition to this, the relatively healthy fiscal conditions of the SEA countries after the Asian crisis have increased their capacity to take fiscal measures in case of an economic downturn (Figures 4 and 5).

Figure 4. Current account balances/GDP

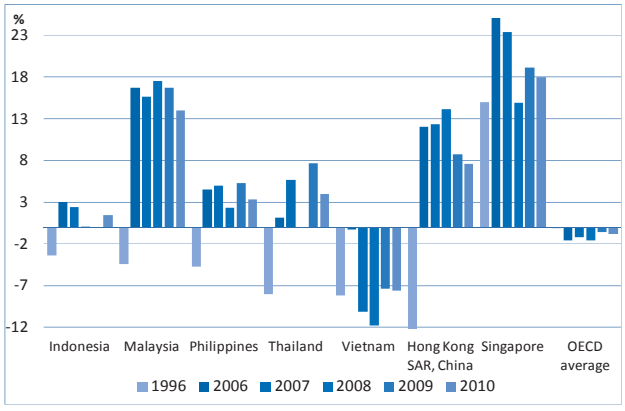
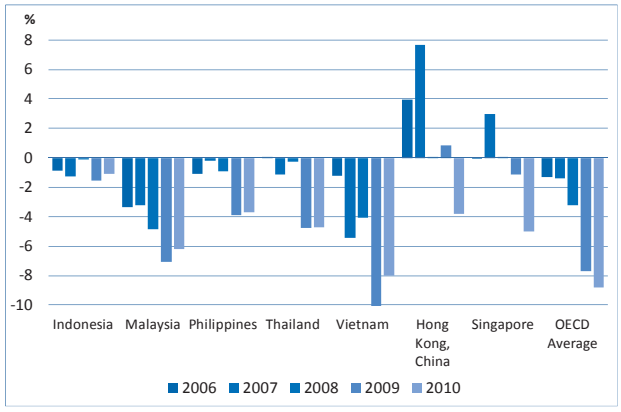


Figure 5. SEA's fiscal balances/GDP (2006-2010)



Sources for Figure 4: World Bank, World Development Indicators, and Global Development Finance.

Sources for Figure 5: Asian Development Outlook, 2010, 2005, 2000; OECD Economic Outlook database; Deutsche Bank Research.

2. *Financial system deepening and broadening*

Financial deepening differs among SEA economies

Financial deepening differs vastly among SEA economies. As Table 1 shows, the ratio of total financial assets (bank assets and capital market assets) to GDP suggests that financial deepening of the regional financial centres - Singapore and Hong Kong, China – approximates or even surpasses the financial deepening of OECD countries. But in other SEA countries, financial deepening seems not to be as advanced as in the OECD countries. This indicator also shows that the development of financial deepening in these economies is not very steady.

Deepening in terms of the banking sector has been sluggish

Before the Asian crisis, financial systems in SEA economies, especially in the countries where the Asian crisis was the most serious, had been characterised as bank-dominated. But after the crisis, the growth in banking-sector assets has been below that of GDP growth for most of the SEA countries. This is the main reason why the financial deepening has been sluggish in these economies, compared to the OECD countries.

Equity markets have grown but secondary markets are still not very liquid

The indicator of equity market capitalisation-to-GDP shows that equity markets in SEA countries have increased relative to GDP, after a decline during the Asian crisis; as a result, this ratio for Singapore, Hong Kong, China and Malaysia was recently higher than those of the OECD countries. But even in these four economies, turnover ratios are lower than those of the OECD countries, and this suggests a lack of liquidity in the secondary markets. Relative to the OECD countries, SEA economies have higher volatility in foreign portfolio investment and relatively illiquid domestic markets, indicating that SEA economies are vulnerable to the effects of foreign capital flows.

Bond markets have developed only slowly

The ratio of total bond market capitalisation-to-GDP in SEA economies has increased only slowly; thus compared to OECD countries, the SEA bond markets (especially the private ones) are quite shallow.

High exposure to economic developments outside the region and the risks of double-mismatch remain problematic

These indicators of financial deepening and broadening suggest a lack of diversity among the domestic intermediaries. Small and medium-sized enterprises cannot access the capital markets, and they are faced with a relatively less-developed banking sector. In the domestic bond markets, even relatively large private companies are not able to issue bonds with maturities that are in line with their needs.. The large private companies and the public sector must raise funds through international markets or local banking systems. This also means that in the domestic market there are limited options to invest savings. This leaves the Southeast Asian economies highly exposed to the economic performance of countries outside the region and to the risks caused by a double-mismatch (mismatches of currency and maturity) – issues that need to be considered and analysed.

Table 1. Financial deepening and broadening[2]

	Indicators	Countries	1997	1998	2000	2005	2006	2007	2008	2009
a	Total financial assets / GDP(%)	Indonesia	86.9	87.8	103.0	82.1	81.3	91.1	105.5	
		Malaysia	413.0	380.2	355.8	336.4	333.7	353.2	376.4	
		Philippines	156.4	141.0	124.7	118.8	123.7	130.7	140.9	
		Thailand	210.0	215.0	193.3	214.9	210.3	213.3	218.4	
		Vietnam	-	-	-	65.9	80.2	105.3	-	
		Hong Kong, China	432.2	440.1	557.0	574.1	604.7	673.2	767.1	
		Singapore	267.8	278.7	350.5	422.8	386.1	361.8	337.3	
		OECD average	291.8	305.3	343.2	325.6	337.2	347.6	363.4	
b	Deposit money bank assets / GDP(%)	Indonesia	56.3	55.3	43.7	34.7	32.7	31.5	30.2	
		Malaysia	146.0	164.2	131.0	113.8	111.6	106.8	102.6	
		Philippines	60.7	61.5	50.3	44.4	40.1	36.3	32.4	
		Thailand	159.2	173.5	131.6	104.3	99.2	93.6	88.4	
		Vietnam	18.9	20.1	32.0	65.2	72.4	85.2	102.5	
		Hong Kong, China	165.3	187.9	164.2	160.8	155.6	147.7	140.4	
		Singapore	108.0	124.3	117.0	116.3	111.1	110.8	110.6	
		OECD average	107.3	103.1	108.9	102.0	104.8	109.3	114.1	
c	Private bond market capitalisation / GDP(%)	Indonesia	1.7	2.7	1.4	2.4	2.0	2.0	2.0	
		Malaysia	40.4	53.4	48.9	49.7	51.4	54.5	57.5	
		Philippines	0.2	0.3	0.2	0.7	1.0	1.1	1.1	
		Thailand	8.3	9.3	11.9	13.6	15.2	16.0	17.0	
		Vietnam	-	-	-	-	-	-	-	
		Hong Kong, China	14.1	16.6	17.4	17.9	17.3	16.1	14.9	
		Singapore	10.7	13.8	17.3	18.3	17.2	16.1	14.9	
		OECD average	54.6	57.6	63.3	65.5	66.6	69.1	73.7	
d	Public bond market capitalisation / GDP (%)	Indonesia	0.8	2.9	29.9	17.8	16.1	17.0	18.0	
		Malaysia	24.9	29.2	29.5	36.3	35.9	35.9	35.9	
		Philippines	27.0	28.0	28.8	38.4	36.0	33.5	31.2	
		Thailand	1.2	6.0	13.6	27.9	30.9	34.7	39.7	
		Vietnam	-	-	-	-	-	-	-	
		Hong Kong, China	7.1	8.2	8.8	9.9	9.5	8.9	8.3	
		Singapore	14.5	18.4	25.2	38.3	38.0	38.7	39.3	
		OECD average	49.2	49.6	49.3	58.3	56.9	56.2	57.4	
e	Total bond market capitalisation / GDP(%)	Indonesia	2.6	5.6	31.3	20.2	18.1	18.9	19.9	
		Malaysia	65.3	82.6	78.4	86.0	87.3	90.4	93.5	
		Philippines	27.2	28.3	29.1	39.2	37.0	34.6	32.3	
		Thailand	9.6	15.3	25.5	41.5	46.1	50.7	56.7	
		Vietnam	-	-	-	-	-	-	-	
		Hong Kong, China	21.3	24.7	26.2	27.8	26.8	25.0	23.2	
		Singapore	25.3	32.2	42.4	56.7	55.2	54.7	54.2	
		OECD average	103.7	107.2	112.6	123.8	123.5	125.4	131.1	
f	Stock market capitalisation / GDP(%)	Indonesia	28.1	26.9	27.9	27.2	30.5	40.7	55.3	
		Malaysia	201.7	133.4	146.4	136.6	134.8	156.0	180.3	
		Philippines	68.5	51.3	45.3	35.2	46.5	59.8	76.3	
		Thailand	41.2	26.1	36.2	69.1	65.0	68.9	73.3	
		Vietnam	-	-	-	0.7	7.8	20.1	-	
		Hong Kong, China	245.6	227.4	366.6	385.6	422.3	500.5	603.5	
		Singapore	134.5	122.2	191.0	249.8	219.8	196.3	172.5	
		OECD average	80.7	95.0	121.6	99.8	108.9	112.9	118.1	
g	Portfolio investment (equity) to GDP (%)	Indonesia	-2.3	-4.6	-0.6	-0.1	0.5	0.8	0.1	
		Malaysia	-	-	-	-0.9	1.5	-0.4	-4.8	
		Philippines	-0.5	0.4	-0.3	1.5	2.1	2.2	-0.8	
		Thailand	2.6	0.3	0.7	2.9	2.5	1.7	-1.7	
		Vietnam	-	-	-	0.2	2.2	9.1	-0.6	
		Hong Kong, China	-	-1.3	27.8	5.6	7.6	21.1	9.0	
		Singapore	-0.5	1.2	-1.3	4.0	7.3	11.0	-1.2	
		OECD average	0.9	1.6	2.6	2.4	2.1	1.7	-0.4	
h	Stocks traded, turnover ratio (%)	Hong Kong, China	113.4	54.4	61.3	49.3	60.0	89.1	81.8	-
		Indonesia	145.9	59.4	32.9	54.2	44.3	64.4	71.3	78.1
		Malaysia	72.6	30.9	44.6	26.9	32.1	53.5	33.2	54.7
		Philippines	67.6	31.1	15.8	20.1	20.7	34.1	22.2	24.9
		Singapore	49.9	50.5	52.1	63.1	62.2	122.0	101.3	-
		Thailand	60.7	71.2	53.2	74.7	70.7	64.2	78.2	110.2
		Vietnam	-	-	-	-	22.4	87.9	28.8	42.7
		OECD average	84.4	90.0	128.4	119.1	145.0	175.7	182.3	-

Sources: World Bank, Financial Development and Structure New Database, updated April 2010; International Monetary Fund, World Economic Outlook Database, April 2010.

Table 2. Key prudential ratios[3]

	Indicators	Countries	1997	1998	1999	2000	2005	2006	2007	2008	2009
a	Nonperforming loans to Total loans (in %)	Indonesia	-	48.6	32.9	18.8	7.6	6.1	4.1	3.2	3.8
		Malaysia	4.1	18.6	16.6	15.4	9.6	8.5	6.5	4.8	3.8
		Philippines	4.7	11.0	12.7	14.9	10.0	7.5	5.8	4.5	4.6
		Thailand	-	42.9	38.6	17.7	9.1	8.4	7.9	5.7	-
		Vietnam	-	-	-	-	-	-	-	-	-
		Hong Kong, China	-	5.3	7.2	6.1	1.4	1.1	0.8	1.2	1.5
		Singapore	-	-	5.3	3.4	3.8	2.8	1.5	1.7	2.3
		OECD average	3.6	3.7	3.6	3.4	1.8	1.6	1.7	2.6	4.2
b	Regulatory Capital to Risk-Weighted Assets (in %)	Indonesia	-	–13.0	–2.4	–18.2	19.3	21.3	19.3	16.8	17.5
		Malaysia	10.5	11.8	12.5	12.5	13.7	13.5	13.2	12.7	14.6
		Philippines	16.0	17.7	17.5	16.2	17.7	17.6	15.7	15.5	15.8
		Thailand	9.4	10.9	12.4	12.0	13.2	13.6	14.8	13.8	-
		Vietnam	-	-	-	-	-	-	-	-	-
		Hong Kong, China	-	18.5	18.7	17.8	14.8	14.9	13.4	14.8	16.6
		Singapore	-	18.3	21.3	19.9	15.8	15.4	13.5	14.7	16.5
		OECD average	11.1	11.5	11.8	11.6	12.6	12.7	12.3	12.6	13.3
c	Provisons to non performing loans (in %)	Indonesia	-	28.6	77.7	59.4	60.6	84.7	104.5	118.6	127.4
		Malaysia	21.6	42.4	50.2	54.5	59.1	64.6	77.3	89.0	93.3
		Philippines	47.3	36.4	45.2	43.7	72.9	75.0	81.5	86.0	91.4
		Thailand	-	29.2	37.9	47.2	83.7	82.7	86.5	97.9	-
		Vietnam	-	-	-	-	-	-	-	-	-
		Hong Kong, China	-	-	-	-	64.8	67.6	78.4	71.5	68.3
		Singapore	-	-	86.2	87.2	78.7	89.5	115.6	109.1	91.0
		OECD average	72.6	62.7	65.5	73.5	114.6	112.5	97.6	77.5	66.2
d	Capital to assets (in %)	Indonesia	8.8	–12.9	–4.1	5.2	9.8	10.8	10.6	10.3	11.0
		Malaysia	8.4	8.9	8.9	8.5	7.7	7.6	7.4	8.0	9.0
		Philippines	12.9	14.8	16.0	15.3	11.8	11.7	11.7	10.6	11.4
		Thailand	14.7	4.8	5.5	4.5	8.9	8.9	9.5	-	-
		Vietnam	-	-	-	-	-	-	-	-	-
		Hong Kong, China	-	7.7	8.1	9.0	13.3	13.0	10.4	11.0	12.7
		Singapore	-	7.5	7.8	7.1	9.6	9.6	9.2	8.3	10.5
		OECD average	6.1	6.2	6.5	6.6	7.4	7.5	7.3	6.6	8.3

Sources: IMF, Global Financial Stability Report, 2004 and 2010.

3. *Stability and prudential soundness of financial systems*

The soundness of SEA banking systems has improved significantly

The financial soundness indicators in Table 2 point to great improvements in the soundness of banking systems in the SEA region since the Asian crisis. Notably, the decrease of NPL ratios among the economies implies that the asset quality of the banking systems has significantly improved since the Asian crisis (by 2000 in the most affected economies, and by 2005 in other countries). The provisioning ratio had also greatly improved by 2005. With improvements in asset quality and provisioning, returns on assets and equity have risen strongly in most cases (Table 3). On the other hand, improvements in these ratios, while the increase of bank assets-to-GDP has remained sluggish, suggest that banks have remained cautious in providing financing to high-risk sectors and continue their focus on improving asset quality.[4]

The liquidity risks of banking systems seem to be decreasing

Foreign currency liquidity risks, caused by double mismatches (exchange rate and maturity), played a major role in the Asian financial crisis. But as Figure 6 shows, these risks seem to have decreased, because most of the countries have accumulated foreign currency reserves at a higher rate than short-

term external debt. In 2009, these economies – except for Hong Kong, China; and Singapore – have foreign currency reserves that were more than double their short-term external debt outstanding. For example, the Philippines have foreign exchange reserves more than ten times their short-term debt outstanding; Thailand more than five times. Domestic liquidity risks have also been reduced. For example, the loan-to-deposit ratio in most of these economies was far beyond 100% before the Asian crisis, but this has since fallen and is now below 100% in all cases except, Vietnam (Table 4).

Table 3. Bank profitability indicators

	Indicators	Countries	1997	1998	2000	2005	2006	2007	2008
a	NET INTEREST MARGIN(%)	Indonesia	4.8	11.4	4.1	5.2	5.0	5.0	5.1
		Malaysia	3.2	3.5	3.1	3.0	2.0	2.0	1.9
		Philippines	5.3	5.6	4.8	4.1	4.1	4.1	4.0
		Thailand	2.8	1.2	2.0	2.6	3.3	3.3	3.2
		Vietnam	3.3	3.0	2.8	2.8	2.7	2.3	1.9
		Hong Kong, China	2.8	3.9	3.7	1.9	2.2	2.4	2.6
		Singapore	2.2	2.5	2.7	4.0	2.3	1.4	0.8
		OECD average	3.3	3.5	3.4	3.2	3.1	2.9	2.7
b	BANK ROA(%)	Indonesia	0.8	-13.7	1.2	1.8	1.7	2.0	2.2
		Malaysia	1.0	0.0	1.5	1.3	1.3	1.4	1.5
		Philippines	2.3	0.9	0.3	1.5	0.2	0.7	2.7
		Thailand	-3.2	-10.2	-1.2	0.7	-0.1	-0.3	-1.1
		Vietnam	1.2	1.0	0.9	1.3	1.5	1.7	2.0
		Hong Kong, China	-4.7	-1.1	2.3	1.1	1.4	1.4	1.4
		Singapore	0.8	-0.1	1.7	2.3	2.2	1.7	1.3
		OECD average	0.7	1.0	0.7	1.0	1.0	0.8	-0.2
c	BANK ROE (%)	Indonesia	19.3	57.7	19.7	14.3	12.6	12.7	12.9
		Malaysia	8.5	-7.5	14.6	12.9	12.3	13.3	14.2
		Philippines	11.2	3.1	2.5	-13.4	1.2	4.1	13.6
		Thailand	-91.9	-144.5	-65.6	8.7	-2.1	-	-
		Vietnam	-0.8	3.7	-1.1	13.7	14.5	16.7	19.5
		Hong Kong, China	5.7	1.5	10.3	13.1	13.5	16.3	19.5
		Singapore	3.9	-5.6	19.2	10.5	16.2	15.5	14.8
		OECD average	8.8	6.1	6.8	10.5	10.0	9.1	10.4

Notes: The OECD averages in panels a, b and c do not include Greece 2000, 2001; Iceland 1997-1999, 2002-2008; New Zealand 1997-2002.[5]

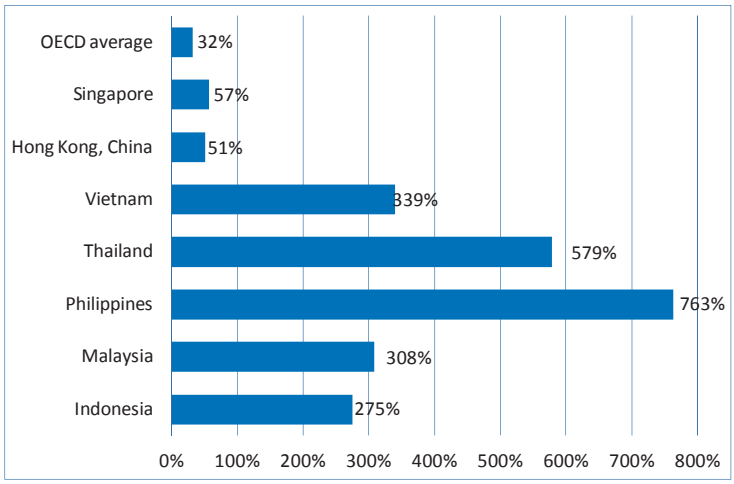
Source: World Bank, Financial Development and Structure New Database, updated April 2010.

Table 4. Bank loans-to-deposits ratio (percent)

		1997	1998	1999	2000	2005	2006	2007	2008
BANK CREDIT / BANK DEPOSITS in %	Indonesia	118	96	39	40	66	65	68	71
	Malaysia	140	134	116	112	97	93	91	89
	Philippines	102	87	75	73	55	50	51	52
	Thailand	179	148	125	102	94	91	94	97
	Vietnam	208	190	178	181	149	135	132	128
	Hong Kong, China	106	89	74	69	59	52	47	43
	Singapore	127	103	92	100	92	81	83	85
	OECD average	70	61	64	74	83	87	89	92

Source: World Bank, Financial Development and Structure New Database, updated April 2010.

Figure 6. Ratio of foreign currency reserves to short-term debt (in %, 2009)



Source: World Bank.

Banks are expanding their activities

With regard to the formation of complex financial groups, the SEA economies – especially those of Singapore, Hong Kong, China; and Malaysia – have relatively liberal legal frameworks (Table 5). Based on such frameworks, the banking sectors in these economies seem to have expanded their securities businesses recently.[6] Even in countries where securities operations by banks are prohibited, financial deepening and broadening has increased banks' securities holdings, as Figure 7 shows. Banks in several SEA economies have also increased lending to the real estate sector and have developed their mortgage loan business (Figure 8).

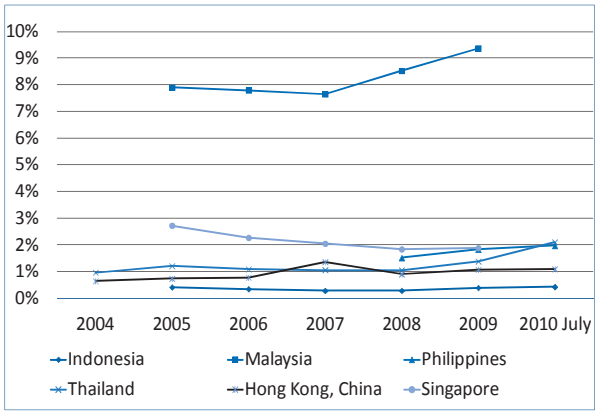
Table 5. Regulations governing financial services

a	Can banks engage in securities activities	Hong Kong, China	Unrestricted
		Indonesia	Prohibited
		Malaysia	Permitted
		Philippines	Unrestricted
		Singapore	Unrestricted
		Thailand	Prohibited
		Viet Nam	Prohibited
b	Can banks engage in insurance activities	Hong Kong, China	Unrestricted
		Indonesia	Prohibited
		Malaysia	Restricted
		Philippines	Permitted
		Singapore	Restricted
		Thailand	Restricted
		Viet Nam	Permitted
c	Can banks engage in real estate activities	Hong Kong, China	Unrestricted
		Indonesia	Prohibited
		Malaysia	Restricted
		Philippines	Permitted
		Singapore	Restricted
		Thailand	Restricted
		Viet Nam	Restricted

Definitions: Unrestricted: A full range of these activities can be conducted directly in banks. Permitted: A full range of these activities are offered but all or some of these activities must be conducted in subsidiaries or in another part of a common holding company.

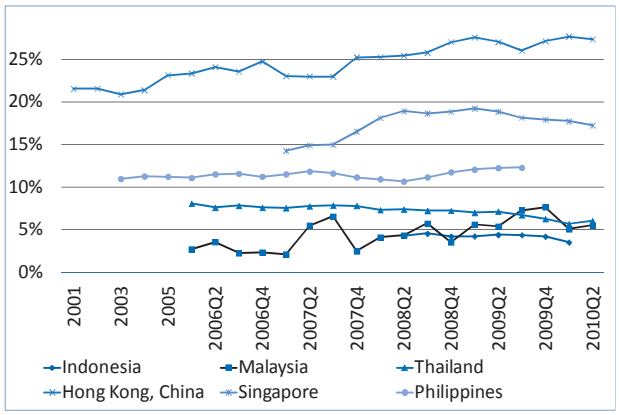
Sources: World Bank, Bank Regulation and Supervision Database; State Securities Commission of Viet Nam.

Figure 7. Equities as % of total assets



Sources: Central banks,CEIC.

Figure 8. Loans to real estate sector as % of total loans



Note: Hong Kong, China; and Singapore include construction.
Sources: Central banks, CEIC

Market risk might be increasing

Along with expansion into these activities, risks related to the capital and real estate markets may emerge or re-emerge. These markets are exposed to large foreign capital in- and outflows, which also make the regional banking systems vulnerable. Therefore, the necessity of integrated risk management at the financial company level and appropriate supervision by authorities is heightened.

Privatisation and liberalisation enhance efficiency, but globalisation also poses challenges to the soundness of SEA financial systems

At the same time, the financial structures in most of the Southeast Asian countries are becoming more similar to those of the OECD countries in the following two ways: *(1)* the degree of government ownership of financial institutions has reached a level similar to that found in the OECD countries; *(2)* foreign-controlled institutions have shares in the domestic banking system that are comparable to those in OECD countries (Table 6). The ratio of loans from non-resident banks-to-GDP shows that cross-border lending to Hong Kong, China; Malaysia; Singapore and Thailand is vibrant, even in comparison with the OECD countries, but not so in Indonesia, the Philippines and Vietnam. On the other hand, Hong Kong, China; Indonesia; Malaysia and the Philippines have increased their international debt issuance since the Asian crisis (Table 7). The opening up of the financial systems to the domestic private sector and to foreign firms may have enhanced their efficiency and innovative capacity. Yet this liberalisation has also exposed SEA economies to the vagaries of the international capital markets.

Table 6. Banking sector ownership

Country	50% or more government owned as of year end 2005?	50% or more foreign owned as of year end 2005?
Indonesia	38.5%	39.7%
Malaysia	0.0%	21.4%
Philippines	12.1%	13.4%
Thailand	14.5%	4.3%
Vietnam	-	-
Hong Kong, China	0.0%	-
Singapore	0.0%	>50%

Source: World Bank, Bank Regulation and Supervision Database.

Table 7. Internationalisation (loans from foreign banks and international debt issues)

			1997	1998	1999	2000	2005	2006	2007	2008
a	LOANS FROM NON-RESIDENT BANKS (NET) / GDP in %	Indonesia	46	49	51	45	36	35	34	34
		Malaysia	102	113	115	108	110	110	110	109
		Philippines	52	56	55	54	50	51	51	51
		Thailand	84	102	105	103	97	94	89	84
		Vietnam	8	10	13	17	39	46	58	74
		Hong Kong, China	155	183	202	210	242	250	268	285
		Singapore	104	116	123	110	103	107	111	116
		OECD average	72	76	77	75	84	87	90	92
b	INTERNATIONAL DEBT ISSUES / GDP in %	Indonesia	4	6	9	12	32	31	30	29
		Malaysia	11	17	17	17	21	20	18	17
		Philippines	15	22	22	24	30	27	23	19
		Thailand	9	13	12	12	6	6	5	4
		Vietnam	-	-	-	-	-	-	-	-
		Hong Kong, China	11	13	15	17	32	33	33	32
		Singapore	7	18	11	7	4	4	4	4
		OECD average	19	21	23	27	48	56	62	69

Source: World Bank, Financial Development and Structure New Database, updated April 2010.

Institutional structures for financial supervision vary across the region

The institutional structures for financial supervision should be designed to reflect the realities of SEA financial markets. Supervisory authorities need to know what happens in all areas under their purview. They need to maintain a level playing field, discourage regulatory arbitrage, and minimise the risk of contagion in an effective and efficient manner. The institutional structures vary throughout the region.

- Singapore has a single entity – the Monetary Authority of Singapore – to supervise financial activities which include banking, securities and insurance activities.

- Indonesia has two authorities. One is Bank Indonesia, the central bank which supervises the banking sector, and the other is BAPEPAM & LK which is responsible for capital markets and insurance. According to its legal framework, all financial supervisory authorities were scheduled to be consolidated into a new supervisory entity, the Financial Service Authority (OJK), in 2010. On the other hand, given that financial stability closely relates to monetary policy objectives, and seems to require the ability to be a lender of last resort, another alternative could involve assigning Bank Indonesia the supervision of all systemic financial institutions, while leaving capital markets and other non-systemic financial institutions under the supervision of OJK.

- In Malaysia, Bank Negara Malaysia, the central bank, supervises the banking sector, including investment banks, and the insurance sector. The securities committee supervises securities activities.

- Hong Kong, China, Thailand, the Philippines and Vietnam have different authorities in each field.

III. Policy responses after the Asian crisis

National and regional policy responses after the Asian Crisis

Since the Asian crisis, most SEA economies have developed new policy frameworks to strengthen their financial stability and to facilitate the development of their capital markets. In particular, ASEAN member countries have also enhanced their co-operation in order to maintain regional macroeconomic and financial stability and to develop capital markets.

1. National policy responses

In response to the Asian crisis, SEA economies have undertaken financial reforms

After completing their crisis response efforts, such as closing insolvent banks, capital injections into undercapitalised banks and the disposal of nonperforming loans, the SEA economies promoted financial reforms, particularly those targeting areas that were most affected by the crisis. They launched financial reform packages, which generally included: *(i)* maintaining the stability of the financial system; *(ii)* enhancing the competitiveness of financial sectors and capital markets; *(iii)* making regulation and supervision more effective; and *(iv)* improving consumer protection. For example, Malaysia launched "the Financial Sector Masterplan" and "the Capital Market Masterplan" in 2001; Indonesia published "Indonesian Banking Architecture" and the "Indonesian Capital Market Masterplan" in 2004; and Thailand revealed the "Financial Sector Masterplan" in 2004.

Improvement in prudential policy frameworks

Through implementation of financial reforms, these countries had improved their prudential policy frameworks by 2005. The prudential measures in most countries included *(i)* appropriate loan classifications; *(ii)* minimum capital ratios; *(iii)* prompt corrective actions; *(iv)* annual on-site inspections; *(v)* bank resolution schemes; *(vi)* deposit insurance (except for Thailand), and more. Other countries such as Vietnam have been following these developments. For example, Vietnam is now on its way to adopting risk-based supervision and is endeavouring to produce inspection manuals.

Stock market infrastructure also has developed

Financial reforms have also promoted capital market development, through the restructuring of market-related institutions, deregulation, harmonisation with international standards, etc. Concerning stock markets, for example, there have been waves of mergers among stock exchanges and the establishment of clearing and settlement systems to enhance liquidity on the secondary markets and to increase competitiveness after the Asian crisis.

- Hong Kong, China had gone further by allowing in 2000 for a venture capital market, and the establishment of a holding company, the Hong Kong Exchanges and Clearing Limited; this was created by merging the Stock Exchange of Hong Kong Limited, the Hong Kong Futures Exchange Limited and the Hong Kong Securities Clearing Company Limited, to prepare for global competition.

- In Indonesia, the Indonesia Stock Exchange was established by the merger of the exchanges in Jakarta and Surabaya. Its infrastructure, including automated stock-trading systems, custody and clearing and settlement has developed well.

- In Malaysia, the Kuala Lumpur Stock Exchange merged several equity markets in 2001 and 2002, and before the current crisis, its total market capitalisation had increased steadily.

- In the Philippines, the Securities Clearing Corporation was established in 2004 as part of the Philippine Stock Exchange, and an online daily disclosure system was adopted to improve transparency.

Due to efforts to develop stock markets, the primary and secondary markets in several economies – notably in Hong Kong, China – have improved since the Asian crisis.

Development of SEA bond markets is still on-going

Concerning debt markets, SEA policy makers also sought to enhance the scale and increase the liquidity of these markets by introducing benchmark bonds, upgrading market infrastructure and targeting the development of specific sub-sectors, such as the Islamic bond markets.

- Hong Kong, China issued public bonds in 2004 for the first time and developed a web-based platform, the "Central Money Markets Unit Bond Price Bulletin", to provide retail investors with convenient on-line access to indicative bond prices, in order to develop the retail bond market in 2006. Recently, Hong Kong, China has also focused on introducing a yuan-denominated bond market.

- Indonesia developed a settlement system and a repo-market to enhance the liquidity of its bond market after 2004.

- Malaysia issued Islamic government bonds and devised tax arrangements to develop the Islamic bond (Sukuk) market.

- Singapore began to issue 15-year-government bonds in 2001 in addition to 7-year and 10-year government bonds in order to develop benchmark yield curves. Singapore also improved its legal arrangements, including a taxation system for the issuance of Islamic bonds.

- In Thailand, the Bond Electronic Exchange was established in the Stock Exchange of Thailand in 2003, to enhance the retail market and the secondary market. The Exchange acquired another trading platform from Thai Bond Dealing Centre in 2005 and began to deal in government bonds, as well as corporate bonds.

These efforts produced positive outcomes in several fields. For example, the Islamic bond market in Malaysia has grown outstandingly. But in general, the deepening of debt markets in the region is still under way. Limited liquidity, limited diversity in the investor base, and limited access to debt markets by the lower-rated issuers remain as obstacles.

To mitigate the negative effects of capital flows, some

In addition to these structural reforms, SEA economies introduced several measures to mitigate the negative effects of capital flows. Some countries have adopted outright capital control measures.

SEA countries adopted outright capital control measures

- During the Asian crisis, Malaysia adopted capital control measures in September 1998, intended to restrict short-term capital outflows, but it withdrew them gradually by May 2001. These measures included *(i)* imposing a 12-month holding period restriction on repatriation of proceeds from the sale of Malaysian securities; and *(ii)* the prohibition of the international use of the ringgit. These measures gave Malaysia room to pursue economic adjustment and to accelerate necessary structural reforms.
- In 2006, Thailand adopted a unremunerated reserve requirement for two years, which mandated that 30% of inflows had to be deposited with the central bank for one year, in order to subdue short-term capital inflows.

2. *Regional policy responses*

Regional co-operation has been increased

Since the Asian crisis, Southeast Asian countries have increased their regional co-operation in order to deal with foreign currency liquidity problems, and to foster the development of regional bond markets and information exchanges.

The "Chiang Mai Initiative" was established and enhanced to deal with short-term foreign currency liquidity problems

Under the ASEAN+3 (plus China, Japan and South Korea) framework, the currency swap arrangement among East Asian countries, which is known as the "Chiang Mai Initiative" was established in 2000 to deal with short-term foreign currency liquidity problems, and to supplement the existing international facilities. Initially, this initiative consisted of a swap arrangement among the ASEAN countries, and a network of bilateral swap and repurchase agreement facilities among ASEAN countries, China, Japan and Korea. These swaps have grown in terms of nominal value, and in May 2009 (effective 24 March 2010), this arrangement was upgraded to the "Chiang Mai Initiative Multilateralized (CMIM)", through which the swap arrangements have been multilateralised, and the total value has risen to US$ 120 billion.

The Asian Bond Market Initiative has been established to develop efficient and liquid bond markets in Asia, which would enable better channeling of Asian savings into Asian investments

Under the framework of the ASEAN+3, the Asian Bond Market Initiative was launched to develop efficient and liquid bond markets in Asia, which would enable better channeling of Asian savings into Asian investments. Under this initiative, the Asian Development Bank, along with government financial bodies and other institutions, issued local currency denominated bonds after the August 2003 ASEAN+3 Finance Ministers Meeting in Manila. At about the same time, at the Executives' Meeting of the East Asia and Pacific Central Banks (EMEAP), which is a forum of regional central banks, two Asian Bond Funds were established for the same purpose. One is the Asian Bond Fund 1 (ABF-1), which comprises US$ 1 billion and started in June 2003 to invest in US dollar denominated sovereign and quasi-sovereign bonds issued in eight EMEAP economies (excluding Australia, Japan and New Zealand). The other is the Asian Bond Fund 2 (ABF-2), which comprises US$ 2 billion and started in March 2005 to invest in domestic currency denominated sovereign and quasi-sovereign bonds issued in eight EMEAP economies. In 2008, the ASEAN+3 Finance Ministers Meeting published a new ABMI Roadmap, which focuses on four key areas: *(1)* promoting the issuance of local currency-denominated bonds; *(2)* facilitating the demand of local currency-denominated bonds; *(3)* improving the regulatory framework; and *(4)* improving the infrastructure of the bond markets.

ASEAN member countries have strongly promoted research and information exchanges

ASEAN member countries have strongly promoted research and exchange of information regarding macroeconomic and financial developments.

- The ASEAN+3 Finance Ministers agreed in May 2001 to exchange data on capital flows bilaterally among ASEAN+3 on a voluntary basis in order to facilitate effective policy dialogue.
- To help prevent financial crises through early detection of irregularities and the swift implementation of remedial policy actions, ASEAN+3 countries have been holding an annual Economic Review and Policy Dialogue (ERPD) at the Ministerial level.
- Research Groups were established by the ASEAN+3 countries in August 2003. The goal here is to explore ways to further strengthen financial cooperation and to promote financial stability in the region by soliciting academic input from the researchers and research institutes within ASEAN+3 countries.

ASEAN countries launched the "Roadmap for Monetary and Financial Integration of ASEAN" and the ASEAN Economic Community (AEC) Blueprint

Aside from these specific measures, in 2003 the ASEAN Financial Ministers Meeting (AFMM) endorsed the "Roadmap for Monetary and Financial Integration of ASEAN" (or RIA-Fin), which consists of procedures, timelines and indicators for activities in four areas: *(1)* capital market development; *(2)* the liberalisation of financial services; *(3)* capital account liberalisation; and *(4)* ASEAN currency co-operation, with the ultimate goal of the greater economic integration of ASEAN by 2015. In 2007, ASEAN countries launched the ASEAN Economic Community (AEC) Blueprint to establish AEC. The AEC Blueprint focuses on four major areas: creation of a single market and production base; a competitive economic region; equitable economic development; and enhanced integration into the global economy. The AEC is scheduled to be completed by 2015. Regarding capital markets, the AEC Blueprint proposes a "freer flow of capital" to realise a "single market production base" in order to develop the regional financial markets and liberalise capital flows in a cautious manner. The AEC Blueprint includes the following measures:

- Strengthening ASEAN capital market development and integration by *(i)* achieving greater harmonisation in capital market standards in the region; *(ii)* facilitating mutual recognition arrangements or agreements for the cross-recognition of qualifications, education and experience of market professionals; *(iii)* achieving greater flexibility in language and governing law requirements for securities issuance; *(iv)* enhancing the withholding tax structure to promote the broadening of the investor base for ASEAN debt issuance; and *(v)* facilitating market driven efforts to establish exchange and debt-market linkages, including cross-border capital raising activities.
- Allowing greater capital mobility to be guided by certain basic principles, such as *(i)* ensuring that capital account liberalisation is orderly and consistent with member countries' national agendas and the readiness of their economies; *(ii)* allowing for adequate safeguards against potential macroeconomic instability and systemic risk that may arise from the liberalisation process; and *(iii)* ensuring that the benefits of liberalisation are shared by all ASEAN countries through the following measures: removing or relaxing restrictions to facilitate the flow of payments and transfers for current

account transactions; and removing or relaxing restrictions on foreign direct investment, as well as implementing other initiatives that promote capital market development.

IV. Economic performance and policy responses during the recent financial and economic crisis

Recovery from the current crisis was supported by macro-prudential measures and further regional co-operation

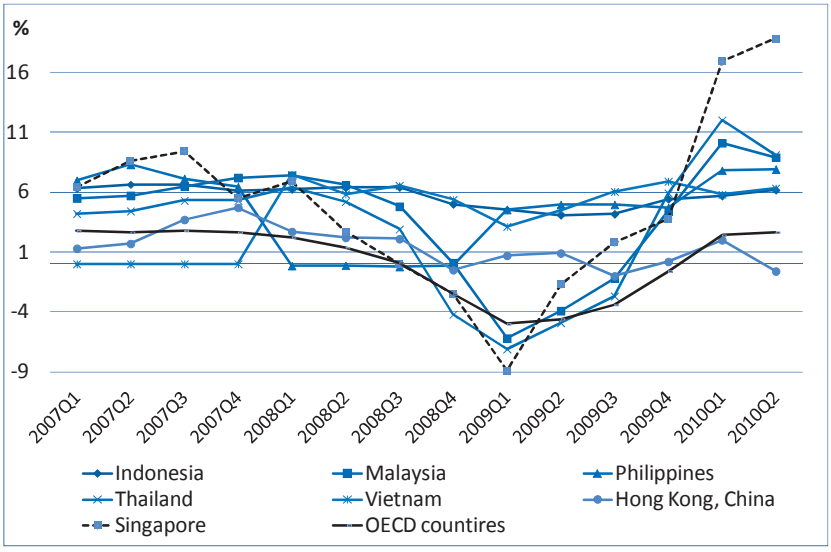
The SEA economies suffered from the current global crisis in two ways: first from the external demand shock affecting the real economy directly; and second from capital outflows, affecting the financial system (and, via feedback effects, the real economy). But SEA economies have recovered from these shocks relatively fast, due to their sound banking systems and huge fiscal stimuli. In addition, macro-prudential measures have been adopted in several economies, and regional co-operation has been strengthened to foster an increase in private bond issuance.

1. SEA economies' performance during the global crisis

Domestic private consumption has been contributing to the recovery

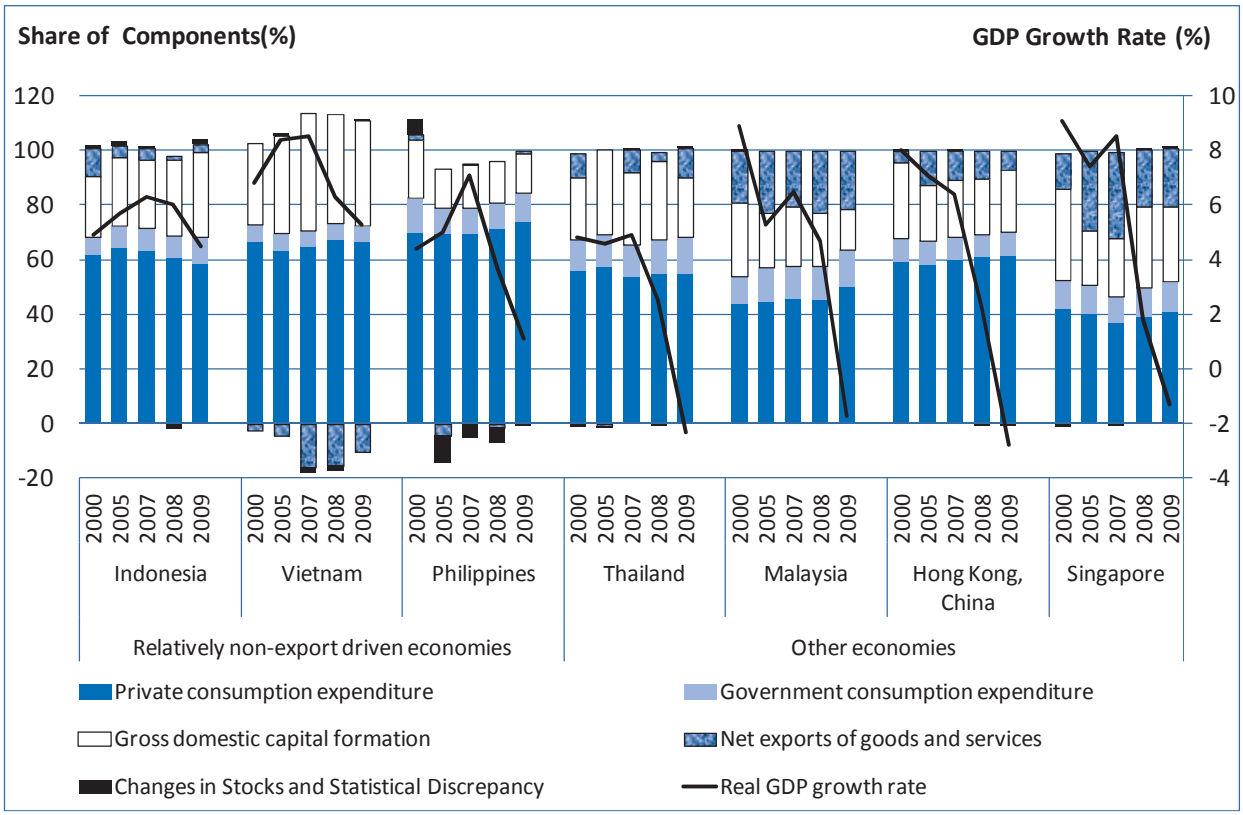
As Figure 9 shows, during the global crisis, the export-oriented emerging Asian economies experienced a heavy downturn in early 2009 and then had a V-shaped turnaround from the sharp decline in economic activity. Meanwhile, the countries that have larger domestic markets, such as Indonesia, the Philippines and Vietnam, experienced smaller downturns and are now recovering. As for the recovery, it is noteworthy that domestic private consumption, especially in the relatively non-export oriented SEA countries (Indonesia, the Philippines and Vietnam), provided a buffer against external demand shocks, and it was a driving factor for the recovery[7] in most of the SEA economies (Figure 10).

Figure 9. Quarterly GDP growth



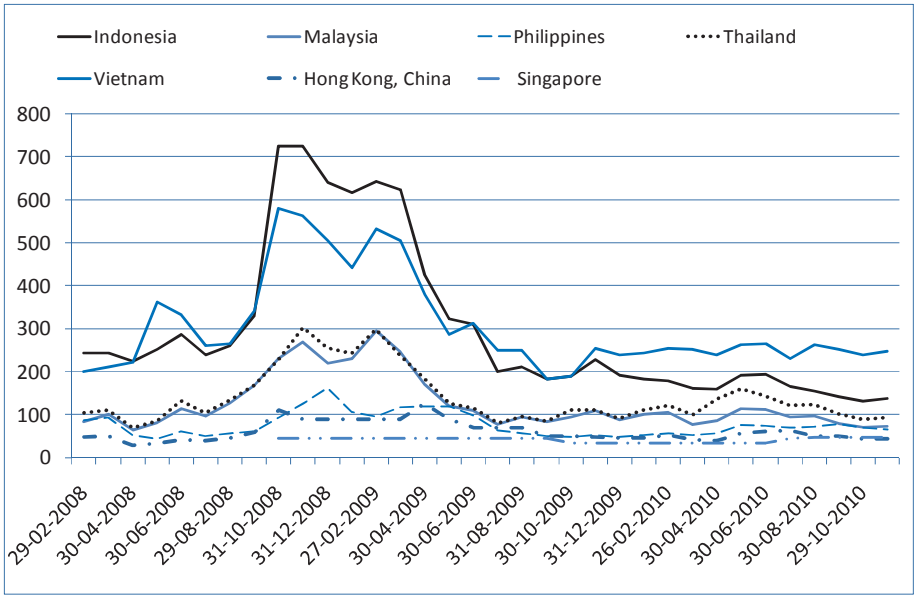
Sources: OECD, Asian Development Bank, World Bank, and national statistical offices.

Figure 10. Contribution analysis of GDP growth



Source: Asian Development Bank, Key Indicators for Asia and the Pacific 2010.

Figure 11. Sovereign CDS spreads of SEAs (since 2008)

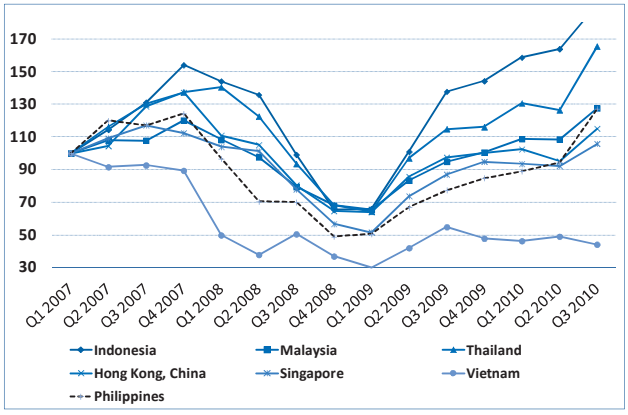


Source: Thomson Reuters Datastream.

Despite large fiscal stimulus packages, SEA sovereign CDS spreads have stayed rather low despite the recent sovereign debt crisis

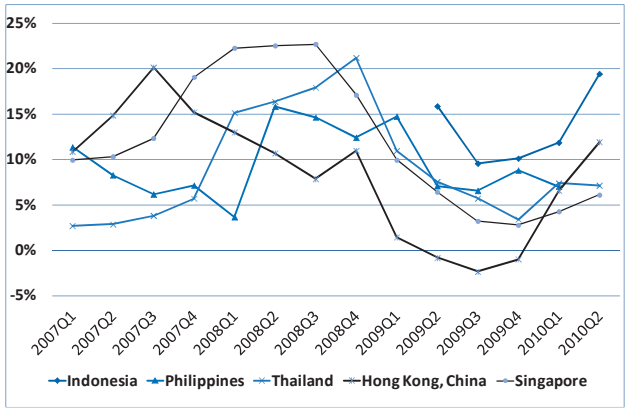
The recent recovery in the region was also supported by the unprecedented fiscal stimulus packages of these economies. The sizes of the fiscal stimulus packages are huge. For example, the size of fiscal stimulus in relation to GDP for Thailand is 18.5%, Vietnam 10.8%, Malaysia 9.9%, and Singapore 8%. These countries' relatively sound fiscal management before the crisis made it possible for them to implement these extensive stimulus packages. After the fiscal stimulus, several countries' budget balances worsened more than those of OECD countries. Nevertheless, the credit default swap rates for these economies have since settled and seem to have remained unaffected by the sovereign debt crisis in Europe (Figure 11).

Figure 12. Stock price indices



Source: Thomson Reuters Datastream

Figure 13. Bank loan growth, quarterly y/y since 2007



Source: Central banks, CEIC.

Financial markets have also improved

Recently, financial markets have also improved. After sharp declines, stock price indexes have been recovering since mid-2009, and bank loans are also rebounding (Figures 12 and 13). Back in September 2008 there was massive capital flight out of the region, putting downward pressure on asset prices; by mid-2009, however, given relatively healthy fundamentals and a bright economic outlook, capital inflows returned. These capital inflows, along with the recovery in the real economies, have eased the downward pressure on asset prices. Recently, several authorities in the region have begun to suspect that asset prices may have risen too fast, and they are addressing the potential problems.

Banking systems have remained sound

One of the crucial factors that contributed to the good performances is the soundness of the SEA banking systems. Even during the global financial crisis, the countries' key prudential ratios reflected the soundness of their financial systems, and several ratios actually continued to improve.

2. National policy responses

Macro-prudential measures have been used recently to reduce market turbulence, which often stems from capital inflows

To reduce market turbulence, which often stems from capital inflows from outside the region, several SEA economies have also adopted specific macro-prudential or capital-control measures. Especially in the regional financial centres, these measures have been adopted as forward looking measures.

- Bank Indonesia introduced policy packages in June 2010 to manage liquidity, as well as to encourage banks to conduct more transactions in the secondary market. This includes the implementation of a one-month minimum holding period for buyers of Bank Indonesia certificates in the primary and secondary markets.

- Since the 1990s, Hong Kong, China has adopted a 70% loan-to-value ratio cap for residential mortgages as part of its banking industry oversight. Hong Kong, China has also had a 60% loan-to-value ratio cap for luxury properties since 2009.

- Singapore also has a loan-to-value limit for residential loans; in February 2010, it strengthened this measure by lowering the cap from 80% to 70% and by prohibiting "interest-only" mortgages.

- In October 2010, Thailand introduced a 15% withholding tax on interest payments and capital gains on bonds held by foreign investors.

3. Regional policy responses

CGIF is to provide local currency-denominated bonds with guarantees in order to promote local bond issuance

At the ASEAN+3 Finance Ministers' Meeting in May 2009, the Ministers agreed to establish the Credit Guarantee and Investment Facility (CGIF), which would provide local currency-denominated bonds with a guarantee in order to promote bond issuance by addressing the following issues: *(i)* Even quality companies, such as those rated single A by the local credit rating agencies, have difficulty in obtaining financing through bond issuance, especially of longer-term debt; *(ii)* financing for SMEs and infrastructure development is vulnerable to a credit crunch since it largely depends on indirect funding sources, such as bank loans.

An independent regional surveillance unit

In April 2010, the ASEAN Finance Ministers also agreed to establish the ASEAN+3 Macroeconomic Surveillance Office (AMRO), an independent regional surveillance unit to support the successful implementation of CMIM.

ASEAN Regulatory Reform Dialogue

There is also a proposal to establish an ASEAN Regulatory Reform Dialogue (ARRD), which would serve as a high-level channel for exchanging views on regulatory reform issues toward enhancing intra-ASEAN trade and investment flows.

V. Remaining challenges

Several challenges remain

This overview highlights several remaining challenges with regard to the financial markets in the SEA region, apart from the challenges stemming from relatively rigid exchange regimes and other issues.

Recovering capital inflows after the sudden outflows remind regional authorities of the risks that accompany these capital flows

In general, capital flows to and from the region enable the diversification of investment risk, promote innovation and contribute to the growth in financial markets. But the difficulty of re-establishing capital inflows, after sudden capital outflows, reminds regional authorities of the problems related to large swings in capital movement. They also recognise the need to manage large and volatile capital flows by strengthening the monitoring systems in place. Recently, SEA economies have been struggling to mitigate the influences of volatile capital flows by introducing specific macro-prudential measures.

Expansion in the business activities of banks needs to be accompanied by enhancements in risk management

Supervisory authorities also need to maintain sufficient capacities to detect and react to emerging risks

Expanding business activities by banks in the capital markets and in the real estate sector need to be accompanied by an enhancement capacity for risk-management at financial firms. Supervisory authorities also need to maintain sufficient capacities and tools to measure, detect and react to these emerging risks. As capital flows have an impact on these markets, it is all the more important to develop these capacities. It is also necessary for the authorities to review existing regulatory frameworks to ensure efficient supervision of the evolving business activities of financial firms. Especially for SEA economies, which have separate supervisors for financial activities, it is also beneficial to review whether their institutional setups and the co-ordination framework among the authorities work effectively and efficiently. As such, it would be useful to consult the "Policy Framework for Effective and Efficient Financial Regulation" and "General Guidance and High-Level Checklist", which was published by the OECD in 2009.

To enable market access for SMEs and to enhance it for larger-sized firms, debt markets should be developed in the region

To enable better market access for SMEs, and to enhance it for larger-sized firms, debt markets should be developed in the region. But limited access to debt markets by lower-rated issuers, limited liquidity, and limited diversity in the investor base remain as obstacles. To clear these obstacles, activating and steadily developing the CGIF is important toward the issuance of local bonds with longer maturities. Implementation of the ABMI roadmap is also indispensable, since it includes the development of bond related-markets, such as repo-markets, fine-tuning the taxation systems to enhance cross-border transactions, development and maintenance of a benchmark yield curve, etc.

Further financial inclusion of households can support domestic private consumption

During the recent global crisis, domestic private consumption in the region played an important role in cushioning the negative effects of external demand shocks and acted as catalyst for the recovery. On the other hand, as Table 8 shows, the household sector's access to financial markets in the region is limited in comparison with the OECD countries. Therefore, further financial inclusion of the household sector could raise domestic private consumption in the region through more efficient savings and investment vehicles.. Financial inclusion could be improved by promoting financial education at the household level. As the complexity and risks of household finances grow, strengthening financial consumer protection will also be necessary.

Table 8. Access to financial services[8]

Indonesia	40
Malaysia	60
Philippines	26
Thailand	59
Vietnam	29
Hong Kong, China	-
Singapore	98
OECD average	88

Notes: OECD average data does not include: Australia, Iceland, Japan, and New Zealand.

Source: World Bank.

Notes

1. Ministry of Finance, Japan (1998), Bert (1999).

2. Panel b does not include France, Luxembourg and the Netherlands 1998-1999; Iceland 2008 and Norway 2007, 2008. Panel c dose not include Turkey 2000-2005, 2008; Luxembourg, New Zealand, Poland, Slovak Republic, Slovenia. Panel d dose not include Luxembourg and Slovenia. Panel g dose not include Denmark 1997, 1998, Greece 1998, Luxembourg 1997-2001; New Zealand 1997-1999; Slovak Republic 2001. Panel h dose not include Denmark 1998; Iceland 1997, 1998; the Netherlands 2004 and Slovenia 2002.

3. Panel a does not include: Australia, Austria, Belgium, Ireland, Norway, Poland, Portugal, Sweden, Indonesia, Hong Kong1997; Denmark, Iceland 1997, 2008, 2009; Finland 1997, 2009; France 2009; Germany, Switzerland, Thailand 1997, 2009; Iceland 1997, 2008, 2009; Luxembourg 1997, 2008; Netherlands 1997, 2008, 2009; New Zealand, Vietnam 1997-2009; Singapore 1997, 1998. Panel b does not include Australia, Austria, Belgium, Greece, Ireland, Norway, Korea, Luxembourg, Netherlands, Norway, Sweden, Switzerland, Hong Kong, Singapore 1997; Denmark, Iceland 1997, 2008, 2009; Finland 1997, 2009; France 2008, 2009; Germany 2009; Italy 2009; New Zealand, Vietnam 1997-2009; Thailand 2009. Panel c dose not include Australia, Belgium, Canada, Greece, Hungary, Ireland, Japan, Korea, Norway, Spain, Sweden 1997; Austria 1997-2000; Denmark Finland 1997-2000, 2006-2009; France 2009; Germany 2008-2009; Italy 2005, 2009; Luxembourg, New Zealand, Vietnam 1997-2009; Netherlands 1997, 1998, 2007-2009; Poland 2007; Portugal 1997-1999; Slovak Republic 1997-1998; Slovenia 1998; Switzerland 1997-2000, 2009; UK 2008; Indonesia 1997; Thailand 1997, 2009; Hong Kong1997-2000; Singapore 1997-1998. Panel d does not include Australia, Austria, Belgium, Ireland, Netherlands, Luxembourg, Norway, Portugal, Sweden, Switzerland, Turkey, Hong Kong and Singapore 1997; Denmark 1997, 2008-2009; Finland, France 1997,2009; Germany 2009; Greece 1997-1998; Iceland 1997, 2008, 2009; Spain 1997, 2009; New Zealand, Vietnam 1997-2009.

4. In Thailand, the Financial Sector Master Plan Phase II which will be implemented during 2010-2014 includes reduce of legacy NPL and NPA as one of the targets.

5. The ROE for the banking system in Thailand in 2007 is -17.1% and in 2008 -148.3%, as reported by the World Bank. On the other hand, according to Bank of Thailand data, net profits of the banking sector in both years were positive and the IMF reports its ROE in 2007 as 7.3%. As the differences between the

data for 2007 and 2008 from the World Bank and other resources are relatively large, the ROEs of Thailand for 2007 and 2008 are not shown.

6. Adams (2008).

7. By the last quarter of 2009, even the countries that experienced a sharp decline in domestic consumption, Malaysia, Singapore and Thailand, saw their consumption recover strongly.

8. The composite indicator measures the percentage of the adult population with access to an account with a financial intermediary.

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PART II

Debt Management and Bond Markets

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OECD Sovereign Borrowing Outlook No.3

by

Hans J. Blommestein, Eylem Vayvada Derya and Perla Ibarlucea Flores*

OECD governments are facing ongoing challenges in the markets for government securities as a result of continued strong borrowing amid concerns about the pace of recovery and sovereign risk.

The third **OECD Sovereign Borrowing Outlook**† *provides revised estimates for 2010 and projections for 2011. Gross borrowing needs of OECD governments are expected to reach almost USD 17.5 trillion in 2010, up from an earlier estimate of almost USD 16 trillion. In 2011, the borrowing needs of OECD sovereigns are projected to reach almost USD 19 trillion, nearly twice that of 2007. Against this backdro,p government debt ratios are expected to further deteriorate.*

Raising large volumes of funds at lowest cost, with acceptable roll-over risk, remains a great challenge for several countries, with most OECD debt managers continuing to rebalance the profile of debt portfolios by issuing more long-term instruments and moderating bill issuance.

An additional challenge for government issuers is how to deal with the complications generated by the pressures of a rapid increase in sovereign risk, whereby "the market" suddenly perceives the debt of some sovereigns as "risky".

JEL Classification: G14, G15, G18, H6, H60, H62, H63, H68

Keywords: sovereign borrowing, public deficits and debt, roll-over risk, sovereign risk.

* Hans Blommestein is Head of the Bond Market and Public Debt Management Unit at the OECD; Eylem Vayvada Derya is on secondment from the Turkish Treasury; and Perla Ibarlucea Flores is a research assistant in the Bond Market and Public Debt Management Unit. The views expressed herein are those of the authors and do not necessarily reflect those of the OECD or its members. Questions on the Borrowing Outlook can be addressed to: Hans J. Blommestein (hans.blommestein@oecd.org).

† The first OECD Sovereign Borrowing Outlook was published under the title "OECD Sovereign Borrowing Outlook 2009" in the OECD's Financial Market Trends 2009/1, and the second OECD Sovereign Borrowing Outlook under the title "The Surge in Borrowing Needs of OECD Governments: Revised Estimates for 2009 and 2010 Outlook" in the OECD's Financial Market Trends 2009/2.

I. A challenging issuance environment: A slow recovery and concerns about sovereign risk

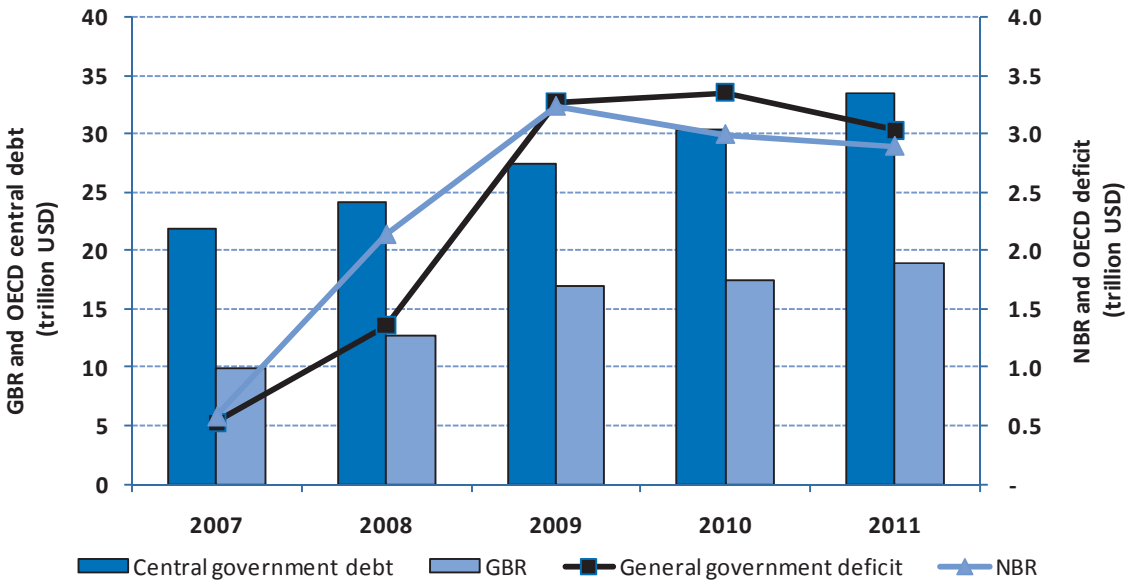
Gross marketable borrowing by governments is expected to reach USD 17.5 trillion in 2010 and USD 19 trillion in 2011

Borrowing needs versus funding strategy

Amid a still highly unsettled economic outlook, the third OECD Sovereign Borrowing Outlook expects the gross borrowing needs of OECD governments to reach USD 17.5 trillion this year,[1] up from an earlier estimate of just under USD 16 trillion. In 2011, the borrowing needs of OECD sovereigns are projected to hit almost USD 19 trillion,[2] nearly twice that of 2007 (Figure 1 and Table 1). In the Outlook, we are making a policy distinction between funding strategy and borrowing requirements. Gross borrowing needs, or requirements, are calculated on the basis of budget deficits and redemptions.[3] The funding strategy entails decisions on how borrowing needs are going to be financed using different instruments (*e.g.* long-term, short-term, nominal, indexed, etc.) and distribution channels.[4]

Information on methods and sources of the Sovereign Borrowing Outlook can be found in the Annex.

Figure 1. Fiscal and borrowing outlook in OECD countries for the period 2007-2011



Source: See Annex.

Uncertainty increased due to slowdown and concerns about sovereign risk

Uncertainty increased due to both the slowdown in the pace of recovery of the world economy, which is somewhat more pronounced than previously anticipated,[5] and concerns about an increase in sovereign risk in some countries. An interim OECD assessment shows that economic growth in the G7 economies could slow to an annualised rate of about 1.5% in the second half of 2010.[6] Some issuers had to deal with complications generated by the pressures of a rapid increase in sovereign risk, whereby "the market" suddenly perceives the debt of some sovereigns as "risky". Bond market pressures have the potential to generate self-fulfilling debt problems by triggering higher

interest rates by way of demanding compensation for higher sovereign risk that, in turn, may affect the growth prospects of countries.[7]

II. Evolution of budget deficits, sovereign borrowing and debt

Budget deficits peaked at around 7.5% of GDP in 2010

Net borrowing is estimated to fall to USD 2.9 tn in 2011

The budget deficit for the OECD area as a whole is estimated to have peaked at around 7.5% of GDP in 2010 (the equivalent of approximately USD 3.3 trillion), with a projected decrease to nearly 6.5% of GDP in 2011 (the equivalent of around USD 3.0 trillion) – see Figure 1 and Table 1. However, in spite of these (projected) improvements, deficits are still standing at near historical record levels.[8] In the wake of these developments, net borrowing requirements are estimated to fall from nearly USD 3 trillion in 2010 to around USD 2.9 trillion in 2011 (Figure 1), a decrease from an estimated 6.7% of GDP in 2010 to little more than 6.2% in 2011 (Table 1).

Government debt ratios are expected to increase further

Government liabilities are being driven largely by the recessionary impact of the unprecedented 2007-2008 global liquidity and credit crisis, including government expenditures due to fiscal stimulus programmes but also the influence of recession-induced negative growth dynamics. Because of this, and despite falling interest rates during 2008-2010, the ratio of government debt-to-gross domestic product is expected to continue to increase.

Central government debt is expected to reach 72% of GDP in 2011 and general government debt nearly 100%

For the OECD area as a whole, the outstanding central government debt is expected to increase from USD 30.4 trillion (the equivalent of EUR 20.1 trillion, or 67.8% of GDP) in 2010, to around USD 33.4 trillion at the end of 2011 in OECD countries (EUR 22.2 trillion or 71.7% of GDP). General government debt-to-GDP is projected to reach nearly 100% in 2011 (Figure 1 and Table 1).

Table 1. Deficits, borrowing and government debt in the OECD area

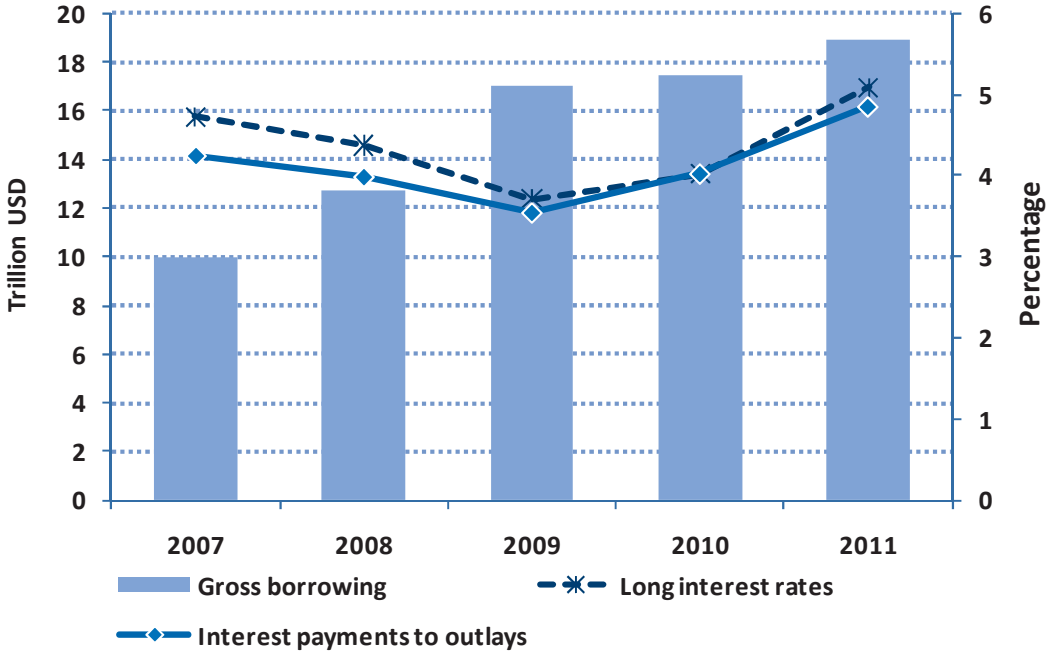
As a percentage of GDP	2007	2008	2009	2010	2011
Deficit	1.2	3.1	7.5	7.5	6.5
Net borrowing requirement	1.3	4.8	7.5	6.7	6.2
Gross borrowing requirement	23.0	28.6	39.2	38.9	40.7
Central government debt	50.6	54.4	63.2	67.8	71.7
General government debt	74.9	79.9	90.9	96.0	99.8

Source: See Annex.

The average long-term interest rate is expected to rise to 5.1% in 2011

Of great importance for government funding operations and the projection of future borrowing needs, is the anticipated change in the direction of longer-term interest rates (Figure 2). After the peak of the financial crisis in 2008, long rates dropped. The average long-term interest rate is expected to rise to around 5.1% in 2011, up from 3.7% in 2009. The projections assume that when government indebtedness passes a threshold of 75% of GDP, long-term interest rates increase by 4 basis points for every additional percentage point increase in the debt-to-GDP ratio[9].

Figure 2. Gross borrowing, interest payments and long-term interest rates



Note: Interest payments as a percentage of total government outlays.

Source: See Annex.

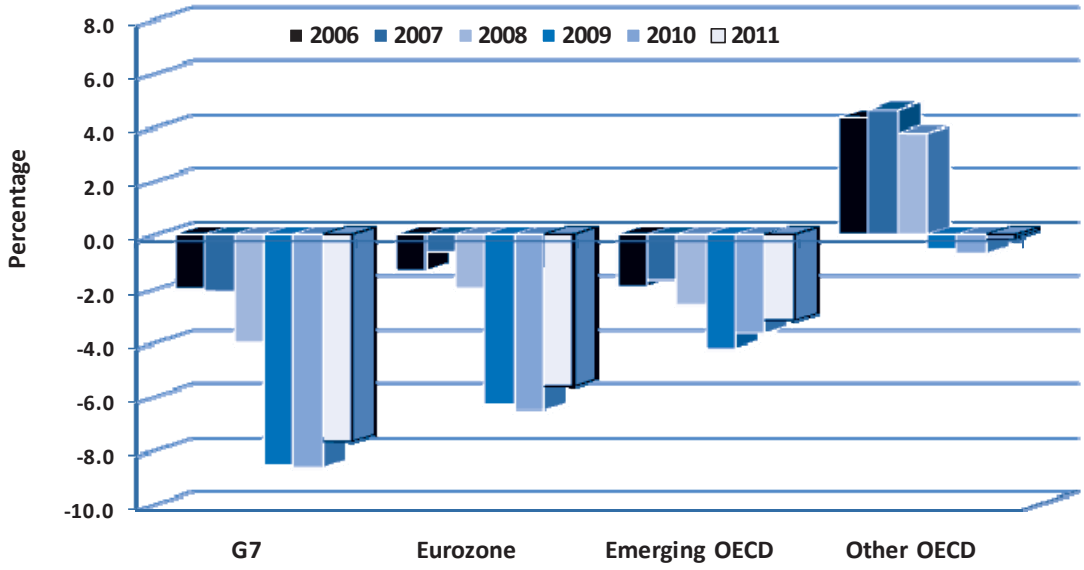
III. Summary overview of the borrowing outlook for OECD country groupings

All OECD country groupings show a deterioration in government balances

The unprecedented global liquidity and credit crisis was at first associated with dysfunctional and collapsing financial institutions. This then set the stage for the second phase: the surge in government deficits and government (contingent) liabilities, driven largely by the strong recessionary impact of the global financial crisis. In all OECD country groupings considered here, government balances deteriorated. For the OECD as a whole (Figure 1 and Table 1) and the various groupings (Figure 3a), deficits peaked in 2009-2010. Furthermore, it can be seen that *Other OECD* included countries with a fiscal surplus in the period 2006-2008. Since 2009, the government balance of this group of countries also turned into a deficit. In comparison with total OECD, G7 and the OECD countries of the eurozone, the performance of *Emerging OECD* was (and is) relatively good.

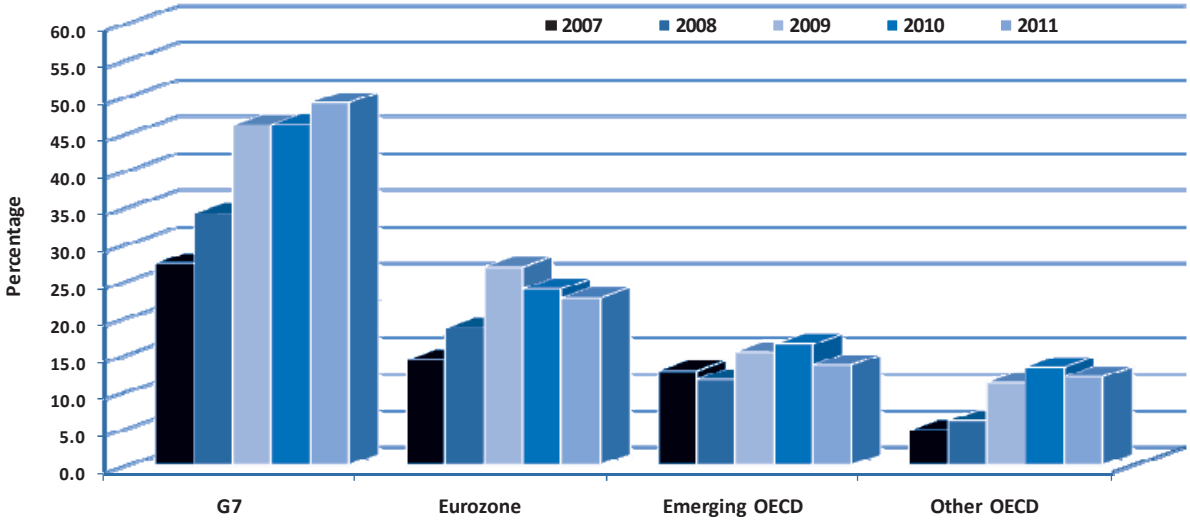
Performance of "Emerging OECD" is relatively good

Figure 3a. Deficit-to-GDP ratios in total OECD and selected regions



Source: See Annex.

Figure 3b. Gross borrowing ratios as a percentage of GDP in OECD countries



Source: See Annex.

Gross borrowing ratios of the G7 are projected to continue to increase in 2011

The mirror image of the development of budget deficits is the rapid increase in net and gross borrowing requirements. Figure 3b presents estimates and projections of gross borrowing requirements as a percentage of GDP for the various country groupings. For the G7 economies, gross borrowing requirements as a percentage of GDP are increasing in the period 2007-2011 (Figure 3b), with the 2011 borrowing ratio representing a near doubling vis-à-

But ratios of other country groupings have begun to decline

vis 2007. The same is true for the OECD as a whole (Table 1). But for the other country groupings, gross borrowing ratios are declining. The borrowing ratios for *Emerging OECD* and *Other OECD* are estimated to peak in 2010, although *Other OECD* more than tripled between 2007 and 2010. Of particular interest is that the borrowing ratio of the OECD countries in the *eurozone* already peaked in 2009 (representing a near doubling vis-à-vis 2007).

IV. The challenge of raising large volumes of new funds with acceptable roll-over risk

Rising debt and deficits increased the challenges faced by sovereign issuers, compounded by concerns about sovereign risk

For countries facing historically high spreads, issuance conditions were quite challenging this year. More generally, the backdrop of increasing debt levels and deficits added significantly to the difficulties faced by some countries in raising fresh funds. As noted, these difficulties were sometimes compounded by rapid increases in sovereign risk, whereby "the market" suddenly perceives the debt of some sovereigns as "risky". Financial markets are at times seen as reacting in a non-linear fashion to delayed or postponed fiscal adjustments, thereby creating the risk of cliff effects where markets suddenly lose confidence in *yesterday's* safe sovereign asset. Clearly, this is a major complicating factor for sovereign issuers as bond market pressures have the potential to trigger higher funding costs by demanding compensation for higher sovereign risks.

Raising large volumes of funds at lowest cost with acceptable roll-over risk remains a challenge

Recent financial market events have highlighted the importance of managing debt maturities and debt rollover risk. The results of a recent OECD questionnaire on debt portfolio management also confirmed that the financial crisis did render the funding task of most debt managers more difficult.[10] Overall, about a third of countries indicated that the crisis impact on funding activities did affect their ability to achieve their various risk metric targets.[11] In general, raising large volumes of funds at the lowest cost with acceptable roll-over risk remains a great challenge for several countries.

Primary markets have continued to function reasonably well

However, primary markets for government paper (largely auctions) continued to function reasonably well in most countries. The OECD questionnaire on debt portfolio management revealed that quite a few countries mentioned that they did not have to introduce *new* techniques or instruments since their strategies were flexible enough to absorb the shocks. Other debt managers indicated that changes to their auction types, increased frequency of auctions, and the introduction of new bond types (*e.g.* inflation-linked bonds) were required.[12]

Risk-averse investors forced debt managers to modify their fund-raising strategies

Table 2 provides an overview of the major changes made in issuance procedures and/or the conditions for using existing systems and techniques, in order to respond to liquidity pressures, rising borrowing requirements and tougher issuance conditions. The risk-averse behaviour of investors forced debt managers to modify their fund raising strategies.

Table 2. Changes in OECD issuing procedures and instruments in response to the crisis[13]

Australia	More flexible auction calendars. Issuance of inflation indexed bonds recommenced in H2 of 2009 in order to broaden investor base. First issuance of inflation-indexed bonds via a syndicated offering. Subsequent issuance of inflation indexed bonds is planned to be via single-price auctions. Auctions for all nominal debt are via the multiple-price format.
Austria	More emphasis on investor relations.
Belgium	Tap for long-term debt. Increased placement of EMTN.
Canada	Re-introduction of three-year maturity. Reductions in the regular buy-back programme but maintained switch operations in the long-end to support market liquidity. Introduction of additional benchmarks for two-year and five-year sectors.
Denmark	Use of private placement in foreign markets in 2008. T-bill programme terminated in 2008. Greater use of auctions instead of tap sales.
Finland	Diversification of funding sources. More emphasis on investor relations. More coordination with PDs. Higher syndication fees. Active use of demand-supply windows.
France	Increased flexibility to better match demand. On several occasions, off-the-run bonds have been issued since the 2nd half of 2007.
Germany	Tap for long-term debt. More frequent auctions.
Greece	Beginning 2009, auctions of T-bills changed to a single price format. Syndication used for all types of bonds and re-openings.
Hungary	More flexible auction calendar (bi-weekly bond auctions with dates but without tenors in calendars). More flexibility in the amounts offered. Introduction of top-up auctions (non-competitive subscription) and auction fees. More frequent use of re-openings of off-the-run bonds and buy-back auctions. Planned introduction of exchange auctions. Introduction of direct, regular meetings with institutional investors.
Iceland	Single price auctions (for long-term bonds) are used together with multiple price auctions.
Ireland	Syndication has been added as funding tool. Auctions also in use for short-term debt.
Italy	More flexible procedures. The range of offered amounts for on-the-run bonds increased. Possibility to offer additional off-the-run bonds as response to highly volatile market conditions. Adjustment of auction pricing mechanism for nominal bonds, linkers and floaters (issuer sets discretionally the total allocated volume within the previously announced range). In BOT auctions participants are required to send their bids in terms of yield. Modification of method for calculating share in auctions. The range of the maturity of bonds sold to PDs at non-competitive prices is also extended. Introduction of re-openings of old bonds.
Korea	Since September 2009, a single-price format for auctions has been changed to a multiple price format. Introduction of conversion offers.
Mexico	Tap issues of both short- and long-term bonds.

Netherlands	Increased frequency of bond auctions (of off-the-run bonds). Extended repo - and commercial paper facilities (longer maturity, extra foreign currency issuance). Extended T-bill programmes.
New Zealand	Introduction of new long-term bond. Tap issues for short-term debt. Monitoring foreign markets for finding attractive foreign-borrowing opportunities. Introduction of a new facility of "reverse tap tender".
Norway	Instead of both auction types, only single price auctions are now being used.
Slovak Republic	Contemplation of following (future) operations: (a) Direct selling and buy backs in secondary market; (b) Underwriting auctions (single price based on price discovery via syndication); (c) Buy backs and exchange auctions.
Turkey	"Revenue indexed bonds" have been introduced in order to broaden the investor base.
United Kingdom	Mini tenders were introduced in October 2008 as a more flexible supplementary distribution method alongside the core auctions programme. In 2009-10, the DMO is using syndicated offerings to supplement its auction programme. Introduction of a post-auction option facility.

Source: Responses to the 2009 Survey of the OECD Working Party on Public Debt Management.

More frequent auctions, with auction schedules being more flexible and opportunistic

Transparency and predictability remain key for minimising borrowing costs

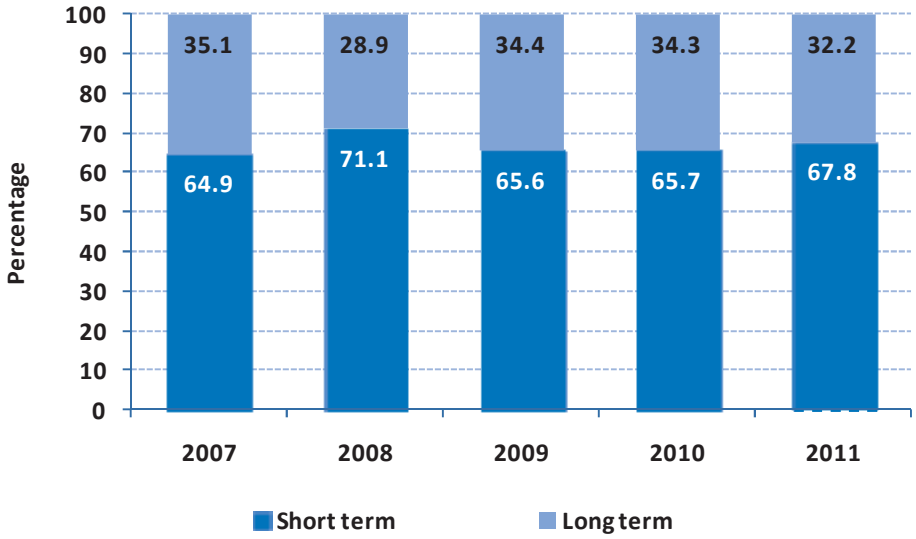
Table 2 shows that many DMOs are operating more frequent auctions, with auction schedules having become more flexible and opportunistic. The maturity of debt became shorter in 2008 and 2009 (Figure 6), while there is a growing use of foreign-currency liabilities (Table 3). These changes, while understandable, create some risks. As debt managers become more opportunistic, issuance programmes are becoming less predictable. That may not be desirable in the long term. DMOs emphasise, therefore, that they will continue to operate a transparent debt-management framework supported by a strong communication policy. Transparency and predictability remain instrumental in reducing the type of market noise that can unnecessarily increase borrowing costs.

Debt managers rebalance towards long-term instruments

Share of short-term issuance expected to drop to around 68% in 2011

Almost all OECD debt managers continue to rebalance the profile of their debt portfolios by issuing more long-term instruments and moderating bill issuance. For the OECD area as whole, the share of short-term issuance to total gross issuance peaked at 71% during the height of the financial crisis in 2008 (Figure 4). The following two years, the share of short-term instruments dropped back to the same share as in 2007, *i.e.* around 65%, while for 2011 a small increase to nearly 68% is projected.

Figure 4. Maturity structure of funding gross-borrowing needs (total OECD)



Source: See Annex.

Issuance of long-term instruments dominated by fixed rate, local currency bonds but with a slight decrease in 2010-2011

Table 3 reflects the funding structure in terms of types of instruments and maturity.[14] Issuance of long-term instruments is dominated by fixed rate, local currency bonds. Of interest also is that, in 2009 (that is in the wake of the 2008 peak of the financial crisis) somewhat more foreign currency debt was issued, while the issuance of variable rate and indexed-linked instruments declined. It is estimated very tentatively that the issuance of long-term, fixed-rate instruments will slightly decrease in 2010-11, while the use of indexed-linked may increase (perhaps returning to pre-crisis levels).

Table 3. Funding strategy based on gross borrowing needs (total OECD)

Percentage	2007	2008	2009	2010	2011
TOTAL OECD	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Short Term	**64.9**	**71.1**	**65.6**	**65.7**	**67.8**
T-bills	100.0	100.0	100.0	100.0	100.0
Other	0.0	0.0	0.0	0.0	0.0
Long Term	**35.1**	**28.9**	**34.4**	**34.3**	**32.2**
Local currency	99.3	99.0	98.6	99.1	99.0
Foreign currency	0.7	1.0	1.4	0.9	1.0
Fixed rate	82.4	89.9	92.8	90.2	89.8
Index linked	6.7	5.5	3.0	4.6	5.1
Variable rate	3.8	2.5	2.2	2.6	2.3
Other	7.1	2.1	2.0	2.6	2.8

Source: See Annex.

V. Central government debt and debt-service profile

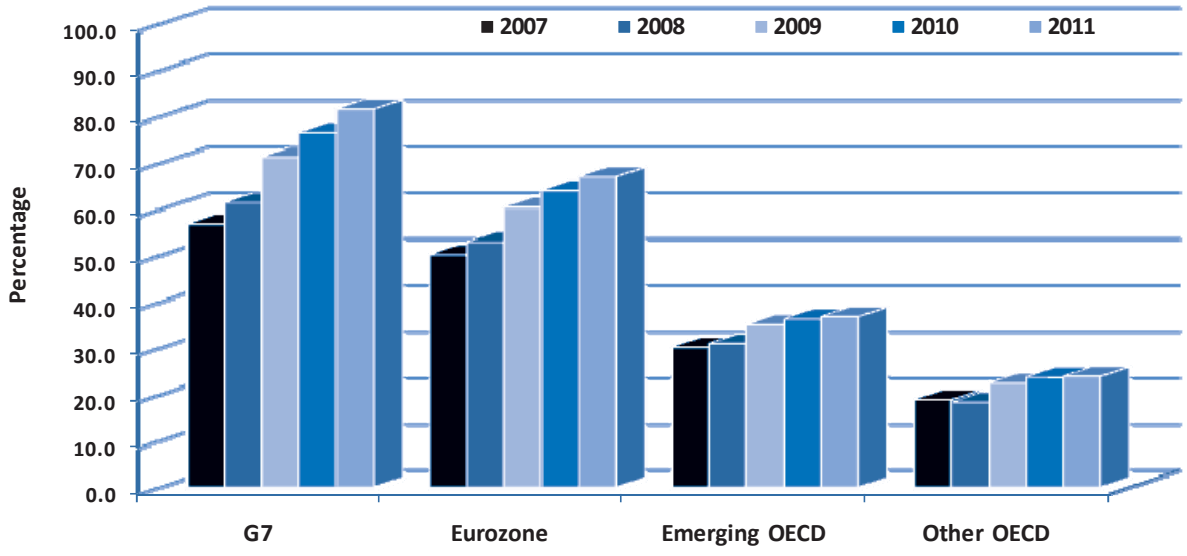
Further increases in central government debt ratios are expected in 2011

In 2011, the G7 debt ratio is expected to reach 82% and 67% for the eurozone

"Emerging OECD" debt ratios are below those of the G7 and the eurozone

As noted, government debt is being driven largely by the recessionary impact of the global liquidity and credit crisis. Ratios of government debt-to-gross domestic product are expected to increase further in 2011. Figure 5 shows that the ratios of central government debt-to-gross domestic product of all country groupings considered here have increased since 2007. The G7 central government debt-to-GDP ratio is projected to reach nearly 82% in 2011. By comparison, the debt ratio of total OECD is expected to reach nearly 72% in 2011 (Table 1). For eurozone countries, this ratio is estimated to be slightly less than 67%. For *Other OECD* (includes a number of OECD countries with a fiscal surplus), this ratio is expected to reach nearly 24% in 2011, while for *Emerging OECD* this is expected to be around 37%. It is of interest to observe that *Emerging OECD* has far lower central government debt ratios than both the G7 and the OECD countries of the eurozone.

Figure 5. Central government marketable debt as percentage of GDP in OECD countries

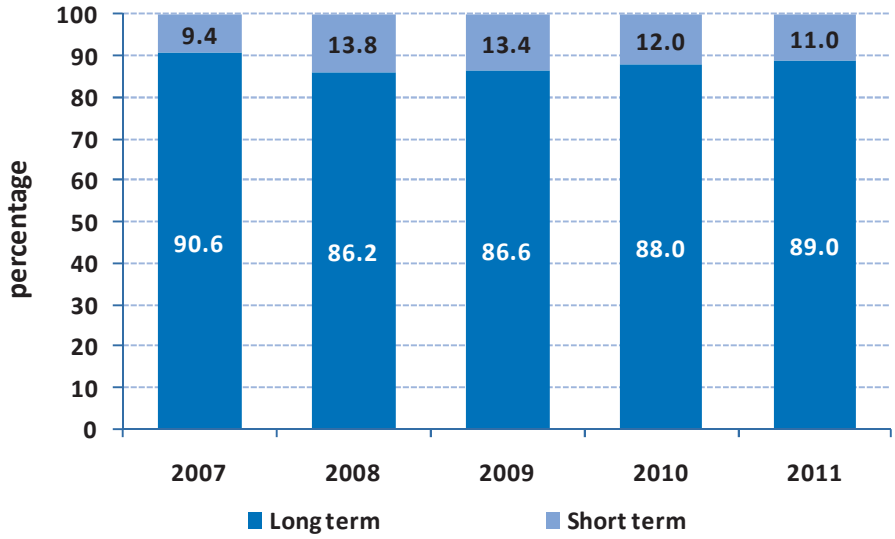


Source: See Annex.

The share of long-term debt to total government debt is estimated to reach around 88% in 2010 and 89% in 2011

Figure 6 provides information about the maturity structure of the outstanding stock of central government debt. At the height of the financial crisis in 2008, there was a sharp drop of almost 5% in the share of long-term liabilities in total marketable central government debt. The share of long-term debt is estimated to reach around 88% in 2010. For 2011, the long-term share is projected to reach approximately 89% in 2011, almost the same share as before the crisis.

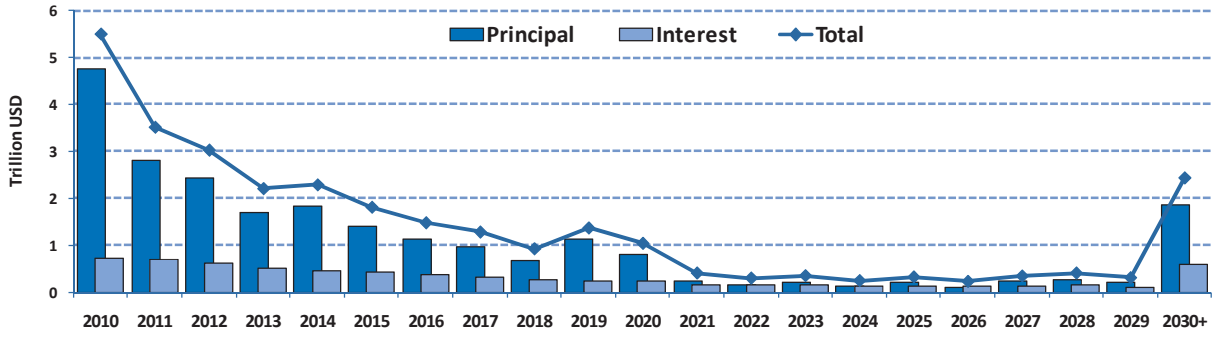
Figure 6. Maturity structure of central government marketable debt (total OECD)



Source: See Annex.

The OECD Survey among the members of the Working Party on Debt Management also included a question on the debt-service profile of the stock of central government debt outstanding at mid-2010, for total OECD (amounting to a little over USD 23 trillion). **Figure 7** shows the profile of principal and interest payments associated with this stock of debt in the period 2010-2030 (no details are given beyond 2030). The volume of the debt service is generally decreasing, with large payment flows during the first couple of years, reflecting that part of the debt portfolio (as of June 2010) that needs to be repaid in the shorter-term. **Figure 7** also shows that there are small peaks in 2014 and 2019.

Figure 7. Debt service of outstanding central government debt: 2010-2030



Source: See Annex.

Annex

Methods & Sources of the OECD Borrowing Outlook

1. Regional aggregates

- *Total OECD* denotes in this Outlook the following 30 countries: Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. Earlier this year, three new members joined the organisation: Chile, Israel and Slovenia. However, these are not included in the 2010 Borrowing Survey by the OECD Working Party on Debt Management.

- The *G7* includes 7 countries: Canada, France, Germany, Italy, Japan, United Kingdom and the United states.

- The *OECD eurozone* includes 13 countries: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, the Slovak Republic (included after 2008), and Spain.

- The *Emerging OECD* grouping covers 6 countries: the Czech Republic, Hungary, Mexico, Poland, the Slovak Republic and Turkey.

- The *Other OECD* countries aggregation includes 8 countries: Australia, Denmark, Iceland, Korea, New Zealand, Norway, Sweden and Switzerland.

2. Background on OECD Surveys used in the Outlook

- The Secretariat circulated a Borrowing Questionnaire to 30 OECD debt-management offices (DMOs) to obtain information on borrowing activities in 2009, 2010 and 2011. The Questionnaire consists of two parts:

  1. Survey on central government marketable debt and borrowing operations, covering central government marketable debt, gross borrowing needs and redemptions for the period 2007-2011.
  2. Survey on the central government marketable debt service profile.

- Part 1 was answered by all 30 DMOs. Part 2 was answered by 26 countries (out of 30). The Secretariat inserted its own estimates/projections in cases of missing information, using publicly available official information.

3. Calculations, definitions and data sources

- GDP volume for total OECD and country groupings are aggregated using information from the OECD Economic Outlook 87 Database, June 2010.

- General Government Financial Balance volumes for total OECD and country groupings are aggregated using information from the OECD Economic Outlook 87 Database, June 2010.

- Gross borrowing requirements (GBR), net borrowing requirements (NBR), central government marketable debt and debt-service profile are compiled from the answers to the Borrowing Survey. The Secretariat inserted its own estimates/projections in cases of missing information for 2010 and/or 2011, using publicly available official information on redemptions and central government budget balances.

- To facilitate comparisons with previous Outlooks, figures are converted into US dollars using exchange rates from December 1, 2009. *Source:* Thomson Reuters Datastream.

- Long-term interest rates are averages of daily figures, with the exception of: Canada (averages of last-Wednesday-of-the-month rates); Japan, Australia, Denmark and Iceland (end-of-month rates); and France and Ireland (last Friday of the month). These rates measure the yield on long-term government bonds on the secondary market with residual maturities of about ten years. The total rate for overall OECD is the average of the mentioned rates, weighted with individual country GDP figures. (*Source:* OECD, Main Economic Indicators)

- Short-term interest rates are averages of daily figures except for: Canada (averages of Wednesday rates); Denmark, Iceland, Ireland and Poland (yearly averages of end-of-month rates). For the Euro area, and individual Euro area countries from 1999 onwards, and from 2001 onwards for Greece, rates are three-month EURIBOR. (*Sources:* OECD, Main Economic Indicators and European Central Bank)

- Government net debt is defined as total financial liabilities minus all financial assets of general government. Financial assets of the general government sector have a corresponding liability existing outside that sector. The exceptions are monetary gold and Special Drawing Rights, financial assets for which there is no counterpart liability. Monetary gold and Special Drawing Rights may be included as assets of the general government sector, or they may be classified as assets of the central bank, at the discretion of the government. Data refer to the general government sector, which is a consolidation of accounts for the central, state and local governments plus social security. Total outlays are defined as current outlays plus capital outlays. For more details, see OECD Economic Outlook Sources and Methods (www.oecd.org/eco/sources-and-methods). For the US, the data include outlays net of operating surpluses of public enterprises.

- Government gross debt consists of all financial liabilities of general government (typically mainly in the form of government bills and bonds). *Source:* OECD Economic Outlook 87, June 2010.

Notes

1. The equivalent of EUR 11.6 trillion or 38.9% of GDP.

2. This is the equivalent of EUR 12.5 trillion or 40.7% of GDP.

3. Using the correct methodology is important because of complications in providing meaningful estimates of gross short-term borrowing requirements that may yield quite different (usually inflated) outcomes that cannot easily be compared across different OECD markets. For example, cash management operations need to be excluded. See for details: Olofsson *et al* (2010).

4. See, for example, Blommestein (2009*a*).

5. Gurria (2010).

6. Padoan (2010).

7. Intervention by H. J. Blommestein at the OECD Financial Roundtable: *"Sovereign debt challenges for banking systems and bond markets"*, 7 October 2010. Background to this intervention can be found in Blommestein *et al.* (2010).

8. For example, the US federal budget deficit (accounting for roughly one third of total OECD deficits) fell to nearly USD 1.3 trillion at the end of this fiscal year (September 30), slightly lower than last year's record of USD 1.4 trillion. The CBO (Congessional Budget Office) estimates that this budget gap is nearly 9% of GDP, the second largest US deficit on record since 1945. See *Joint Statement* of Treasury Secretary, Timothy Geithner, and Acting Director of the Office of Management and Budget, Jeffrey Zients, on Budget results for fiscal year 2010. See also *The Washington Post* (2010).

9. Japan is an exception in the sense that significant increases in indebtedness did not have much impact on interest rates. For that reason, it is assumed that the responsiveness of rates to debt is only one quarter that for other countries. See OECD (2010) for more background information.

10. This OECD questionnaire on debt-portfolio management was discussed at the last annual meeting of the OECD Working Party on Public Debt Management on 4-5 October 2010.

11. The results of the OECD questionnaire on debt-portfolio management will be published in Volume 2010, Issue 2 of the *OECD Journal: Financial Market Trends.*

12. For details see Blommestein (2009*b*).

13. Blommestein (2009*b*).

14. As noted, the *funding strategy* entails decisions on how gross-borrowing needs are going to be financed using different instruments (*e.g.* long-term, short-term, nominal, indexed, etc.).

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A Public Debt Management Perspective on Proposals for Restrictions on Short Selling of Sovereign Debt

by

Hans J. Blommestein [*]

New restrictions on short-selling sovereign debt need to be supported by concrete evidence that links systematically unrestricted short-selling activities to fraud, abuse or market manipulation.

OECD debt managers noted that there is plenty of empirical evidence on the benefits of short selling, including more liquidity, pricing efficiency and better allocated risk.

However, solid evidence in the form of empirical data on market instability unambiguously caused by unrestricted short-selling activities (to be counted as 'costs') seems to be lacking. Debt managers also noted that the reporting requirements will be costly from a purely administrative point of view.

A ban on uncovered short selling transactions of sovereign debt would make risk management more difficult and expensive, with detrimental effects on market efficiency, liquidity and funding costs for sovereigns. Moreover, it is unlikely that such bans would have a stabilising effect in government securities markets during a crisis. Rather than containing the crisis, a ban on short selling of government debt is likely to worsen the situation.

The paper concludes that OECD debt managers have a range of tested tools at their disposal for dealing with temporary or chronic dysfunctional measures in sovereign debt markets, ranging from 'quantity measures', such as openings, to 'pricing measures' such as dynamic fails charges.

JEL Classification: E44, G01, G21, G28, E61, H21.

Keywords: financial regulation, short-selling, restrictions on short-selling, debt management, risk management, sovereign debt.

[*] This contribution is based on a non-paper by the OECD Working Party on Public Debt Management, dated 14 December 2010. Hans J. Blommestein, Co-ordinator of the OECD Working Party on Public Debt Management, can be contacted for questions and comments (Hans.Blommestein@oecd.org).

I. Background

Some financial regulations might have possible unintended side-effects

Governments, international organisations and international or regional bodies have responded to the recent global crisis and its recessionary fall-out by suggesting or proposing the adoption of new financial regulations. Clearly, regulators expect that their implementation will have a beneficial effect on the stability and functioning of financial markets. However, several analysts, market participants and, indeed, several financial policy makers such as debt managers, have raised concerns that some financial regulations might have possible unintended side-effects. More specifically, it has been noted that some of these proposals might have a (potential) adverse impact on public debt management (PDM) operations and/or the functioning of government bond markets.

This non-paper focuses on the (potential) adverse impact of proposals for regulating the short selling of sovereign debt

During the annual meeting of the OECD Working Party on Government Debt Management (WPDM), held on 4-5 October 2010 in Paris, several debt managers expressed their unease about the (potentially) adverse impact of new financial market regulations for PDM and the functioning of government securities markets. Accordingly, this non-paper, representing these concerns, focuses on the (potential) adverse impact of proposals for regulating the short selling of sovereign debt from a public debt management perspective. The paper benefitted from comments on a previous draft by delegates to the OECD WPDM.

II. General framework: benefits and costs of new restrictions on short-selling sovereign debt

In the literature, *short selling* (also known as *shorting* or *going short*) is described as the practice of selling assets, usually securities, that have been borrowed from a third party (usually a broker) with the intention of buying identical assets back at a later date to return to the lender.

Short selling provides the market with important benefits

Short selling provides the market with important benefits, including supporting market liquidity, pricing efficiency and enabling more effective risk management. The latter benefit is quite crucial for the better functioning of both primary markets (such as auctions) and secondary markets (such as trading and market making in sovereign paper) by providing an important tool to hedge the risk of a long position in the same security or in a related security.

Proposals have been submitted or adopted by regulators in various jurisdictions to place restrictions on short-selling operations, in particular 'abusive' or 'illegitimate' forms of short-selling. For example, The US SEC adopted recently a so-called 'alternative uptick rule' …"to address situations when a particular security is most vulnerable to manipulative short selling…"[1]. Please note, though, that this new short sale rule (Regulation SHO) does *not* apply to Treasury securities.

New restrictions need to be subjected to cost-benefit analysis

All new restrictions, including possible short-selling restrictions on government securities, need to be subjected to the discipline of a rigorous cost-benefit analysis (CBA). The consistent use of CBAs would identify in principle the range of consequences of new regulations — both good and bad.

OECD jurisdictions already have general regulations in place that target abuse and manipulation

Benefits of new financial regulations are usually presented as possible actions that would eliminate existing or potential threats to the integrity of markets such as fraud or manipulation or abuse situations where selling pressures spurred by fear and uncertainty may, in turn, contribute to mispricing and destabilise markets. Unfortunately, by themselves, these considerations are of a general nature and cannot be used for singling out short selling as being 'the' cause of market abuse or manipulations; fraud and market manipulation are not concerns peculiar to short selling. Moreover, OECD jurisdictions already have general regulations in place that target abuse and manipulation.

Plenty of empirical evidence on the benefits of short selling

Working Party delegates noted that there is plenty of empirical evidence on the benefits of short selling. Short-selling can improve the functioning of markets by creating more liquidity, pricing efficiency and better allocated risk. Short selling can bolster buying by allowing investors that go long to hedge their positions, while it can also promote market participation by leading to improved price discovery. Moreover, short selling can foster investor confidence, as investors can be confident that securities prices reflect both optimistic and contrarian views. Indeed, short-selling can limit upward market manipulations.

Reporting, implementation and compliance will be costly

However, solid evidence in the form of empirical data on market instability unambiguously caused by unrestricted short-selling activities (to be counted as 'costs') seems to be lacking. Debt managers also noted that the reporting requirements will be costly from a purely administrative point of view. Implementation costs and compliance costs of primary dealers, other broker-dealers and trading centres are likely to be significant and need to be incorporated in a CBA.

Restrictions on uncovered short selling will be detrimental to market functioning, in particular market liquidity

Ability to short a security is important for a smooth auction process

Restrictions on uncovered short selling will be detrimental to market functioning, in particular market liquidity. The diversity and depth of liquidity would fall when (some) investors would start to withdraw from the sovereign debt market in the face of actual or potential restrictions or regulations, including public disclosure of short positions. They will also increase the costs of risk management by preventing investors and primary dealers from using modern and efficient hedging techniques in both primary and secondary markets. Short selling is important to maintain liquidity in secondary markets. In addition, the ability to short a security ahead of upcoming issuance of government bonds is important for the well-functioning of the auction process[2]. Reducing access to these tools for risk management will make markets less stable, not more, while borrowing costs are likely to increase.

We are faced with a situation in which the tangible costs of new restrictions need be weighed against the uncertain and largely unsubstantiated benefits of their implementation and enforcement. In terms of the economic/financial criteria, many debt managers consider the case against

Tangible costs of new restrictions need be weighed against the uncertain benefits of their implementation and enforcement

short selling as not proven. Although proof may not be easy to obtain, it is indispensible as a reasonable basis for concluding that the claimed benefits of new legislation justify the costs of their introduction. The absence of hard evidence makes restrictions on short-selling sovereign debt unacceptable as a basis for new legislation because they may lead to higher borrowing costs for sovereigns.

In sum, these considerations support the notion that new restrictions on short-selling sovereign debt need to be supported by concrete evidence that links systematically unrestricted short-selling activities to fraud, abuse or market manipulation. Moreover, solid empirical evidence needs to be put on the table that these costs of short-selling outweigh the above, widely acknowledged, benefits of short-selling.

III. Are there compelling reasons for treating sovereign debt differently from equity instruments or fixed-income instruments issued by financial institutions?

Much discussion on short-selling restrictions has been focused on equity instruments

Much discussion on short-selling restrictions has been focused on equity instruments. Indeed, during the global financial crisis, restrictions on short selling focused on the shares of financial institutions. A widely expressed concern was that share prices are relatively easy to manipulate through short selling operations, in particular in the case of smaller companies with limited amounts of equity outstanding and where, as a consequence, turnover (liquidity) is low.

But governments bonds are very different from equities, making concerns about manipulative short selling of public debt appear to be much less relevant or compelling

It is difficult to see how a similar concern can be linked to the short-selling of sovereign debt. On the contrary, governments bonds are very different from equities in the sense that bonds[3] do not represent a single instrument but a set of different instruments[4]. Given the sheer size and diversity of the sovereign bond markets, OECD debt managers are unlikely to face a situation where acute concerns over the possible adverse impact of short selling arise[5]. This implies that, as a *prima facie* conclusion, concerns about manipulative short selling of public debt appear to be much less relevant or compelling than in the case of shares. Concerns have also been expressed that short selling of sovereign debts can create systemic risks and that, therefore, restrictions are urgently called for. For the sake of argument, we will assume that this reasoning represents a legitimate concern and that, indeed, a short-selling ban is effective in addressing this concern. But in that case a similar type of argument is even more compelling for fixed-income instruments issued by financial institutions. After all, as noted, regulators imposed restrictions on the short selling of shares of financial institutions during the global financial crisis. Indeed, an important feature of the propagation of financial market pressures during the crisis was in the form of a *de facto* run on the market for funding instruments of financial institutions. Against this backdrop (and assuming, again for the sake of argument, that bans on short selling are effective in achieving their stated objectives), it would seem more compelling to focus on debt instruments issued by financial institutions, while the case for restrictions on short-selling sovereign debt is much less obvious.

IV. The adverse impact on the use of legitimate tools for risk management

Concerns about a negative impact of a ban on uncovered short selling on legitimate risk management

Concerns have been raised about the impact of a ban on uncovered short selling on legitimate risk management practices since routine hedging operations would become impossible or much less straightforward to execute. Clearly, this would have a detrimental impact on sovereign debt markets as it would reduce the ability to short bonds (or futures) for risk management purposes. For example, a short-selling ban would reduce the attractiveness (or perhaps make it impossible) of using bond futures to hedge long positions in sovereign bonds[6].

In general, any restriction on the use of bond futures would impair the liquidity of bond markets and increase sovereign borrowing costs

A ban on uncovered short selling transactions would make risk management for the primary and trader community more difficult and expensive, with detrimental effects on market efficiency and funding costs for sovereigns. Similarly, it would constrain investors from using futures contracts to take a position on the basis of a particular view on the future development of interest rates. Eliminating such investors from the market will be harmful to the liquidity of the futures markets. Also this market impact will raise funding costs for borrowers as investors will require higher risk premiums. More in general, any restriction on the use of bond futures would impair the liquidity of bond markets and increase sovereign borrowing costs.

V. Are bans on short selling of government debt effective in exceptional situations?

Rather than containing a crisis, a ban on short selling of government debt is likely to worsen the situation

Regulators have at times also considered bans on short selling of government debt as a response to major threats to financial stability or market confidence. Debt managers have noted that it is unlikely that such measures would have a stabilising effect in government securities markets during a crisis. On the contrary, such a signal would trigger massive sell-offs (or similar hedging actions) from investors that initially have long positions in the instrument covered by the ban. Rather than containing the crisis, a ban on short selling of government debt is likely to worsen the situation.

A focus on short sellers as agents of financial market turmoil seems not appropriate

Bans on short selling seem to be based on the notion that short sellers are the primary agents moving market prices at a time of crisis. However, this is normally *not* the case. The key feature of crises is usually that investors that hold instruments have lost confidence and want out. To arrest downward price swings in such a highly volatile environment would necessitate halting trading altogether, analogous to the circuit breakers that are used in stock markets. A circuit breaker approach may be effective in the case of equity markets but it is often not feasible in fixed-income markets where trading typically is much more fragmented. In any case, a focus on short sellers as agents of financial market turmoil seems not appropriate, making it unlikely that short selling bans in government securities markets will be effective.

VI. The interest of DMOs in well-functioning public debt markets

Debt managers often play a key role in securing liquid markets

DMOs have a great interest in continuous, well-functioning public debt markets as this feature is an important contributing factor in minimising sovereign borrowing costs. Debt managers often play a key role in securing liquid markets, characterised by a high degree of market integrity and trust[7]. For example, a recent survey by the OECD WPDM shows that several DMOs were involved in addressing the malfunctioning (of some segments) of the government securities markets during the 2008-09 global financial crisis[8].

DMOs have different, tested tools at their disposal for alleviating market stress or reducing market dysfunction

In this context, it is important to note that DMOs have different tools at their disposal for alleviating market stress or reducing market dysfunction. On various occasions the WPDM has discussed policy measures to address situations where the good-functioning and integrity of markets are being threatened. For example, in 2003 the WPDM discussed experiences with anti-squeeze[9] measures[10]. Re-openings are the most frequently used tool to alleviate squeezes[11], followed by the use of a securities lending facility. Policies for lending securities to alleviate shortages were discussed in 2006[12]. The major reasons for developing a lending securities facility are to provide liquidity (44 %) and to reduce/cover squeezes or prevent settlement failures (20 %). Other reasons are to smooth settlements, to enable Primary Dealers to meet their market-making commitments and to lend for reasons other than for the sake of addressing market liquidity.

A recent measure concerns the mitigation of the extraordinary volume of chronic settlement fails in the market for U.S. Treasury securities

A recent measure to deal with market dysfunctions concerns the mitigation of the extraordinary volume of chronic settlement fails in the market for U.S. Treasury securities. In order to deal with 'uncovered' short sales of US Treasuries, which presumably would result in fails to deliver, in May 2009 market participants (in co-operation with the U.S. authorities) adopted a 300 basis point "fails charge" which penalises delivery failures. This 'dynamic fails charge' has cleaned up the chronic fails situation that the U.S. Treasury was witnessing in 4Q08 (in the wake of the insolvency of Lehman[13]).

In sum, OECD debt managers (and other financial authorities) have a range of tested tools at their disposal for dealing with temporary or chronic dysfunctions in sovereign debt markets, ranging from 'quantity measures', such as re-openings, to 'pricing measures' such as dynamic fails charges.

Notes

1. Opening Remarks Regarding Short Sale Price Restrictions by Commissioner Elissa B. Walter of the U.S. Securities and Exchange Commission, 24 February 2010.

2. DMOs often observe dealers in a short position ahead of a security being auctioned.

3. Including corporate bonds.

4. Differentiated by maturity, coupon and indexation characteristics.

5. Moreover, DMOs have tools at their disposal for alleviating market stress or reducing market dysfunctions (see section VI).

6. For example, within the EU, the German Bund futures market is very popular for risk management operations because of its depth and liquidity. Its use in hedging operations is driven by the notion that its attractive transaction costs (and risks) more than offset the fact that rates from German and other markets are imperfectly correlated. However, a short-selling ban would make it harder (or impossible) to use this market for risk management purposes.

7. Integrity is an essential condition for market trust. Market integrity is a key feature of well-functioning sovereign debt markets and, therefore, the minimisation of borrowing costs.

8 . See OECD Survey on Objectives of Government Debt (and Cash) Management, 2010.

9. Squeezes are market manipulation strategies implemented by traders to generate high profits. In essence, individuals and financial companies attempt to generate high returns from acquiring and exercising market power as part of trading strategies in government securities. Squeezes severely distort prices and hamper price discovery.

10. Anti-squeeze measures were discussed during the annual meeting of the OECD WPDM, held on 23-24 October 2003. The discussion was supported by a WPDM Survey among OECD countries. The responses showed that in the period 2000-2003, out of 24 countries, 3 had experienced more than five squeezes, 11 between one and five squeezes, while 8 had not experienced any squeeze. Two countries had to address market dislocations but it was unclear whether this was due to a squeeze.

11. The most widespread way to address illiquidity in the secondary market is by using re-openings. However, some DMOs are reluctant to institutionalise re-openings as these operations are uncertain by nature which would make them run counter to the objective of 'regular and predictable issuance'.

12. Responses to the WPDM Survey (discussed on 30-31 October 2006) showed that around 80% of the respondents have a securities lending facility. Ninety per cent of respondents limit participation to Primary Dealers.

13. In the wake of Lehman's insolvency, there was a rising tide of settlement fails, involving U.S. Treasury securities across the entire yield curve. The U.S. authorities' response was, first, to relax the terms of the Federal Reserve securities lending programme, followed by re-openings by the U.S. DMO. However, in spite of these measures, market participants noted that the Treasury market remained impaired and the repo market was not functioning. For these reasons, the Treasury Market Practices Group introduced a 'dynamic fails charge' for Treasury securities in May 2009.

PART III

Private Pensions and Corporate Governance

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Assessing the Labour, Financial and Demographic Risks to Retirement Income from Defined-Contribution Pensions

by

Pablo Antolin and Stéphanie Payet*

This article examines the impact of labour, financial and demographic risks on retirement income from DC pension plans, with a special emphasis on labour-market risk. It uses a stochastic model that incorporates uncertainty about returns on investment, inflation, discount rates, life expectancy, employment prospects and real wages. The analysis herein highlights that labour-market risk, as well as uncertainty about returns on investment and inflation, have the largest impact on retirement income. The results suggest that default life-cycle investment strategies that reduce exposure to risky assets in the last decade before retirement are quite helpful in reducing the risk of sharp reductions in retirement income, in particular when a negative shock to equity markets occurs in the years before retiring. However, life-cycle strategies fail to address issues of retirement income adequacy or smooth out the volatility in retirement income from DC pension plans.

* Mr. Antolin and Ms. Payet are principal economist and statistical assistant, respectively, in the OECD Directorate for Financial and Enterprise Affairs. The authors gratefully acknowledge the financial contributions of BBVA. Comments from Monika Queisser, Ana d'Aggio, André Laboul, Juan Yermo and delegates to the OECD Working Party on Private Pensions are gratefully acknowledged. 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 do not necessarily reflect the official views of the Organisation or of the governments of its member countries.

EXECUTIVE SUMMARY

This article examines the impact of labour market, financial market and demographic risks on retirement income derived from defined contribution (DC) pension plans. The amount of retirement income that people investing in DC plans will get after retirement depends on several parameters that are not known with certainty. Indeed, labour market outcomes, such as employment prospects and real wage career paths, are uncertain. Moreover, future realisations of returns on different asset classes, portfolio returns, interest rates and inflation are also uncertain, as well as future life expectancy. These labour, financial and demographic risks make the amount of retirement income that is derived from DC plans inherently uncertain.

This article relies on a stochastic model that takes into account the uncertainty inherent in returns on investment, inflation, discount rates, life expectancy, employment prospects and real wages, coupled with their correlations, in order to examine the extent of uncertainty of retirement income from DC plans. The main conclusions drawn from examining these risks when assessing retirement income can be summarised as follows:

- The impact on retirement income of varying employment and real-wage career paths, as well as uncertainty about investment returns, inflation, discount rates, and life expectancy is far from negligible. The risk of a shortfall in retirement income is well above 50%, with replacement rates quite dispersed based on any target or median replacement rate considered. Moreover, replacement rates can be quite low when considering worst-case scenarios.

- Labour-market risk, as well as uncertainty about returns on investment and inflation, have the largest impact on retirement income from DC pension plans.

- When assessing the impact of labour-market risk, there is a need to use an absolute standard for the amount of retirement income workers are entitled to receive, in addition to the replacement rate. The replacement rate may be misleading, since individuals who suffer spells of unemployment may have higher replacement rates than those with uninterrupted careers, even though the absolute pension benefits of the former may be lower. The same may happen when there is a shift to different real-wage career paths.

- Regulators and policy makers should seriously consider implementing life-cycle strategies, at least as defaults. Life-cycle investment strategies that reduce exposure to risky assets in the decade before retirement are quite helpful in reducing the risk of sharp reductions in retirement income, in particular when a negative shock to equity markets occurs in the years just prior to retirement.

- The length of the contribution period also matters. The shorter the contribution period, the stronger is the positive effect of life-cycle strategies on retirement income in the event of negative shocks.

- Employment policies may need to focus on younger workers, as workers who suffer spells of unemployment early in their careers will have lower pension benefits than those who suffer otherwise similar bouts of unemployment late in their careers.

- If stagflation or deflation were to occur, policies may also need to focus on older workers as either scenario will have a bigger impact on people reaching retirement age within the next decade than on people who are just beginning their careers. Both scenarios are characterised by lower growth, which leads to higher unemployment and lower returns on equities, but the portfolio-size effect dominates.

Based on the analysis, the main recommendation for regulators and policy makers is:

- First establish a target replacement rate for DC pension plans taking into account the overall structure of the pension system;

- Then, set contributions and the length of the contribution period accordingly, keeping in mind that to achieve adequate retirement income people need to "contribute and contribute for long periods", and that it is preferable to increase contribution periods by postponing retirement;

- And, afterwards, focus on asset-allocation strategies, and establish default life-cycle investment strategies that reduce exposure to equities in the last decade before retirement. This is particularly important if contribution periods are short or intermittent, or when a main policy issue is how to address sharply lower replacement rates for those near retirement due to a negative shock to equity markets.

I. Introduction

Retirement income derived from DC pension plans is uncertain

The amount of retirement income to be derived from defined contribution (DC) pension plans is uncertain. Indeed, in addition to the risk posed by life expectancy (how long one can expect to live after retiring), the current economic and financial crisis has highlighted two additional risk factors: (1) financial market conditions and their impact on the savings accumulated in DC pension plans; and (2) labour market conditions, in particular employment prospects. All of these risks have shaken public confidence in DC pension plans, making it necessary to examine the factors that contribute to the lack of certainty regarding retirement income. The ultimate goal of this examination is to foster polices that reassure people about saving for retirement through DC pension plans.

It depends on several factors whose future outcomes are unknown

Retirement income derived from DC pension plans depends on several factors, some of which are uncertain. The factors affecting retirement income include: the amount saved during the time worked; the length of the contribution period; the pension investment policy; the returns on different assets classes, inflation, wages; periods of employment; and life expectancy. Individuals, regulators and policy makers have some control over certain factors, such as the amount saved periodically during the working life (*i.e.*, the contribution rate) or the length of time people will save for retirement.[1] However, other factors are inherently beyond policy makers' control, such as: the returns on different asset classes; returns and yields on government bonds; and the rate of inflation. Similarly, career wage-growth paths vary for individual workers, as well as whether they will suffer unemployment spells during their careers. Additionally, how long people may expect to live is also undetermined. As a result of these labour, financial, and demographic risks, saving for retirement entails a variety of risks. One of the main implications of such risks is that pension benefits derived from DC pension plans are uncertain and can be highly volatile.

This article assesses the impact of labour, financial and demographic risks on retirement income of DC plans

The purpose of this article is to assess the impact of labour, financial and demographic risk to retirement income derived from DC plans. Specifically, the three major risk factors are: (1) the time employed and real wages (*labour-market risk*); (2) uncertainty about returns on investment, inflation and interest rates (*financial-market risk*); and (3) life expectancy (*demographic risk*). The article comprises four sections.

It uses a stochastic model of the determination of retirement income

Section II presents a stochastic model for introducing uncertainty into the determination of retirement income from DC plans. This model incorporates financial market and demographic risk, as well as labour-market risk, including periods of unemployment and the possibility of having different real-wage career paths. The main outcome of this model is probability distributions for assets accumulated, wages and retirement income. Consideration of these probability distributions permits the authors to assess the level of resulting uncertainty.

That incorporates these risks

Section III assesses the impact of uncertainty on retirement income from DC pension plans. Firstly, it assesses the impact of full uncertainty, *i.e.* uncertainty about returns on investment, inflation, discount rates, life expectancy, employment and real-wage career paths. The analysis concludes that, as a result of all this uncertainty, both the risk of a shortfall in retirement income and the volatility of retirement income from DC plans are quite high.

It focuses on the role of labour market risk on retirement income

Secondly, section III examines the role of labour-market risk on retirement income. To disentangle the impact of unemployment and real wages on retirement income requires using other indicators, in addition to the replacement rate. The replacement rate is the standard measure used by regulators and policy makers to assess retirement income, expressed as the ratio of retirement income to final wages. Unfortunately, in certain cases, the replacement rate may be misleading. For example, individuals who suffer spells of unemployment may actually have higher measured replacement rates than those without spells of unemployment, despite having lower absolute pension benefits. Spells of unemployment reduce the amount of assets accumulated and thus retirement income, but they may also reduce final wages. Depending on the magnitude of these effects, the replacement rate could be higher than for an otherwise comparable individual without periods of unemployment. The same effect may occur when comparing individuals with different real-wage career paths. As a consequence of these effects, to assess the impact on retirement income of uncertainty about employment and wages, there is a need to use a standard measure for the total amount of retirement income one is entitled to receive.

But it also assesses these risks combined, and separately

Section III also examines the relative importance of each risk, and whether it matters when during one's career episodes of unemployment occur. Labour market risk, uncertainty about returns on investment, and uncertainty about inflation have the largest impact on the adequacy of retirement income. Moreover, workers who suffer spells of unemployment early in their careers will have lower income at retirement than those who suffer comparable spells of unemployment late in their careers, other things being equal. That is because contributions during the early stages benefit from the compound-interest effect. Consequently, if the goal of policy is to ensure adequate income at retirement, it might be more effective to focus employment policies on younger workers.

It also examines the effect of using default life-cycle investment strategies

Sections IV and V look at the interaction between labour, financial and longevity risks, and life-cycle investment strategies, and at the impact of alternative economic scenarios, namely deflation and stagflation. The main finding is that life-cycle investment strategies may attenuate the drop in retirement income that would result from a negative shock to equity markets just before retirement (as compared to fixed portfolios with the same average exposure to equities). Introducing labour-market risk adds an interesting degree of detail to the importance of default life-cycle strategies. The positive effect of life-cycle strategies is even more important in the case of workers who have relatively flat real-wage growth paths and suffer spells of unemployment during their careers. Finally, the report assesses the impact on retirement income of alternative economic scenarios, such as high inflation

and low growth (*stagflation)*, and low inflation and low growth (*deflation),* in a world of uncertainty in which people may experience unemployment and different real-wage career paths. The impact on retirement income of both scenarios is worse for people in the final stages of their careers than for people just beginning their careers. Finally, section VI concludes.

II. Measuring Retirement Income in a World of Uncertainty

This section discusses how the model presented incorporates uncertainty

This section presents a model for incorporating the uncertainty prevalent in several pension parameters that affect retirement income from DC pension plans. This article relies on a stochastic model for the determination of retirement income in DC plans, where future realisations of several pension parameters are unknown or uncertain. This section first discusses financial-market risk (uncertainty about future investment returns, inflation and interest, or discount, rates), as well as demographic risk (the uncertainty surrounding mortality and life expectancy). Secondly, it focuses on the importance of considering labour-market risk (the uncertainty surrounding employment and wage prospects. After explaining why labour-market risk must be taken into account during the accumulation phase of DC pension plans, the section ends by presenting an approach for introducing labour-market risk (and its correlation with other risks) into the stochastic model for determining retirement income from a DC plan.

Introducing financial market and demographic risk

The crisis has highlighted the uncertainty of market conditions and their impact on retirement income

The recent financial and economic crisis has highlighted the effect of market conditions on retirement savings accumulated through DC pension plans, and the uncertainty as to whether those retirement savings will prove adequate to finance retirement – particularly for those close to retirement. Antolin (2010), using a deterministic approach, highlighted the sensitivity of retirement income to investment returns, inflation, interest rates and life expectancy.[1] That analysis did not, however, take into account that the future outcomes of these pension variables are highly uncertain, which makes retirement income from DC pension plans also highly uncertain.

The analysis herein assesses this uncertainty with the help of a stochastic model

Consequently, the analysis in this article assesses this uncertainty with the help of stochastic modelling. In this stochastic model, uncertainty about returns on investment, discount rates, inflation and life expectancy was derived by assuming random-generating processes for each of the variables (or risks) in question.[2] The model produced 10 000 simulations for savings accumulated at retirement based on stochastic simulations of investment returns in equities and bonds, and of inflation. The value of the assets accumulated at retirement are the result of workers contributing 5% of wages to their DC plan during each year they are employed, starting from age 25 until retirement at age 65. Contributions to DC plans are invested in a portfolio that is 60% equities and 40% government bonds.[3] At retirement, people would have accumulated a certain amount of assets to finance retirement. Assets accumulated are transformed into a pension stream based on the assumption that the individual buys a life annuity priced using the annuity-premium formula (using stochastic life expectancy and

discount rates). The main outcome is a probability distribution of assets accumulated at retirement, final salary and pension benefits.[4]

The stochastic model includes labour- market risk

The model needs to consider also the uncertainty surrounding labour-market outcomes. Labour market outcomes, in particular employment and wages, determine the amount of contributions, and thus of assets accumulated and retirement income. In fact, contributions to DC plans depend on individuals being employed, as well as on their wage-growth career paths.

Why is there a need to introduce labour-market risk?

This risk originates from the possibility of suffering unemployment or inactivity during people's careers …

Labour-market risk originates from the possibility of spells of unemployment or inactivity during people's careers. During such episodes of unemployment or inactivity, contributions set aside to finance retirement may be discontinued. Consequently, the amount of assets accumulated to finance retirement at the end of one's career would tend to be lower than in the absence of such episodes. Additionally, spells of unemployment or inactivity may also affect wages. People that suffer spells of unemployment may re-enter the labour market at lower wages than they enjoyed at their previous job.[5] This would tend, other things being equal, to reduce their total amount of contributions and the amount of assets accumulated relative to an uninterrupted career path (without spells of unemployment).

… and from the uncertainty surrounding the trajectory of real wages during one's career.

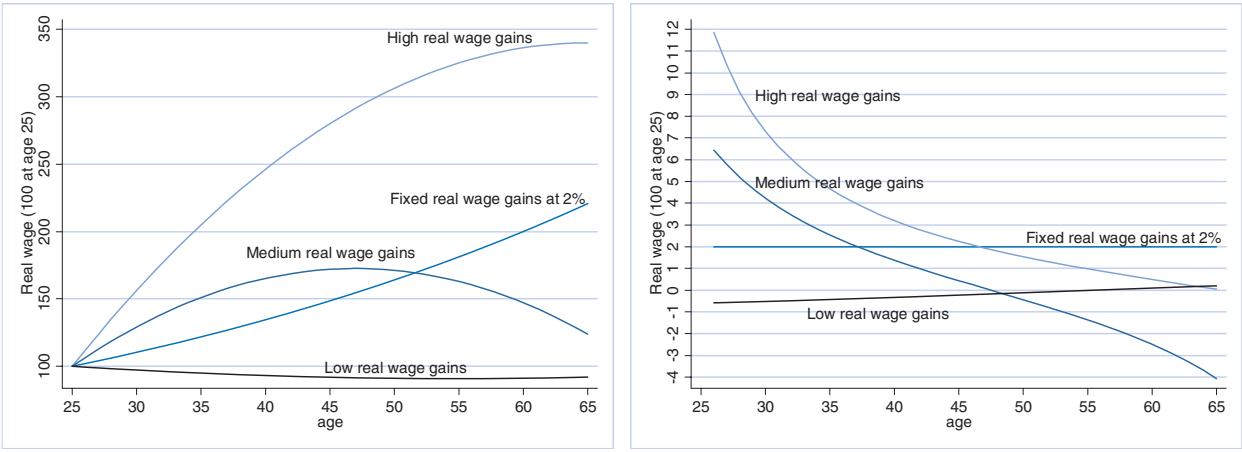
Additionally, labour-market risk may also originate from the uncertainty surrounding the trajectory of real wages during one's career. Real-wage gains during a career vary across individuals, according to their socio-economic situation (*e.g.* occupation, educational level and income).[6] Labour market studies document that there are three main career paths for real wages.[7] In general, real wages experience the largest gains during the early part of a person's career, with lower gains, even negative gains, in the latter part. This pattern results in real-wage paths that for some people reach a plateau at the end of their careers (high real-wage gains), while for others, real wages plateau earlier, around ages 45 to 55 (medium real-wage gains) and fall thereafter. A minority experience flat real wages throughout their working lives. Figure 1 shows the three types of career real-wage paths used in the model for assessing the impact of labour-market risk on retirement income from DC pension plans.

Assessments of the adequacy of retirement income are incomplete if labour market risk is not taken into account

Assessments of the adequacy of retirement income are incomplete if the likelihood of unemployment, or the existence of different real-wage paths, are not taken into account. Labour-market data show that with unemployment rates at around 10%, segments of the working age population are without a job at any given point in time. In addition, OECD data indicate that different people experience different real-wage patterns during their working lives (OECD, 1998).[6] In particular, high-income people or people with high levels of education (university or higher), which may represent around 42% of the population aged 30 to 40, seem to experience real-wage paths that keep rising during their entire career. However, mid-income people and those with medium educational levels, which may represent around 55% of the population, experience real wages that fall in the final

years before retirement. More importantly, low-income people or people with low levels of education, around 3% of the population, seem to experience flat real wages during their career.

Figure 1. Different real-wage levels and real-wage gains during individual careers



Source: OECD Secretariat calculations.

Which could lead to overstatements regarding the savings accumulated for retirement

Failing to take these results into account and assuming instead the same real-wage career path for all individuals, as well as uninterrupted employment, may lead to overstatements regarding the savings accumulated for retirement, as well as the adequacy of retirement income for important sub-groups of the population. This in turn could undermine confidence in DC pensions, as people reaching retirement realise that their retirement income is lower than expected.

How is labour market risk modelled?

Labour market data can be used to provide estimates of unemployment and different real-wage paths

Labour-market data can be used to provide estimates of unemployment and whether individuals experience different real-wage career paths. The chances of having different real-wage paths is based on the average probability across OECD countries of having high, medium and low income. It is also determined by the average probability across OECD countries of attaining high, medium or low educational levels.[8] Individuals tend to have one type of real-wage path for their entire career. In this context, the model assumes away volatility on inter-annual real wages around the career path.[9] Real-wage career paths also depend on whether people experience unemployment. The model assumes, for simplicity, that people who re-enter the labour market do so at the same wage level as in their previous employment.[10]

The unemployment rate is best proxy of the probability of suffering unemployment

Regarding unemployment, the unemployment rate is the best proxy of the probability of suffering unemployment. Although economy-wide unemployment provides a proxy for the chances of suffering unemployment, the model also takes into account the fact that, on average, only around 40% of individuals in any given cohort suffer spells of unemployment.[11] Therefore,

the chances of suffering spells of unemployment are modelled taking into account both the cohort's probability of suffering spells of unemployment and the economy-wide unemployment rate. The economy-wide unemployment rate, according to labour market studies, shows a large degree of persistence, especially in Europe.[12] Moreover, unemployment is highly dependent on age, with young people experiencing higher rates of unemployment than other age groups. Finally, the unemployment rate is affected by shocks to the economy, so that unemployment increases when the economy underperforms.[13] Table 1 shows the percentage of individuals in our sample who do not suffer any unemployment (61%) and those who suffer spells of unemployment (39%), categorised by the number of years unemployed .[14]

Table 1. Percentage of the population experiencing spells of unemployment during their career

Full career (no unemployment)	Number of years in unemployment							
	1 or 2	3 or 4	5 or 6	7 or 8	9 or 10	11 to 15	16 to 20	21 or more
61.4	3.6	5.7	6.8	6.5	5.3	8.1	2.1	0.5

Source: OECD Secretariat calculations

Our stochastic model of uncertainty also assumes correlations between the various risk variables

The model also assumes that labour-market risk is correlated with the performance of equity markets. The chances of suffering unemployment or inactivity tend to be lower when the economy is booming, and they tend to increase when the economy slows down or enters into recession, generally with a lag. Real wages may also be positively correlated with a lag in economic growth. Moreover, improvements in the economy or higher economic growth may push up returns on investment. In this context, when the economy is doing well, returns on investments rise, the chances of suffering spells of unemployment fall, and real wages may go up, always with a lag, each reinforcing the positive feedback cycle regarding the accumulation of income for retirement. However, the opposite occurs when the economy tanks. When economic growth turns negative, investment returns fall, spells of unemployment increase and real wages suffer, compounding the negative cycle or impact on the accumulation of retirement income. To take these patterns into account, the model links unemployment rates to the performance of equity markets, with a lag.[15] The main link is through the state of the economy, in particular GDP growth. In addition, the model also assumes that there is a positive correlation between yields on long-term government bonds and inflation.

The resulting uncertainty can be assessed by looking into the probability distribution of retirement income outcomes

The uncertainty resulting from labour, financial and demographic risks can be assessed by looking into the probability distribution of retirement income outcomes. The main outcome of the stochastic modelling exercise that incorporates labour, financial and demographic risk as described above is this: a probability distribution of retirement income, and the replacement rate an individual could expect to achieve at retirement, if contributing to a DC pension plan for the years employed. The results assume random wage-growth paths and rely on stochastic simulations to derive returns on equities and bonds, inflation, interest rates (*i.e.* the discount rate or time preference), and the expected life span after retirement (*i.e.* life expectancy).

III. The Impact of Uncertainty on Retirement Income

This section assesses the impact on retirement income of labour-market, financial-market, and demographic risks

This section assesses the impact on retirement income of labour market, financial market and demographic risks. It first assesses the risk of a shortfall in retirement income resulting from spells of unemployment and different real-wage career paths, given uncertainty about investment returns, interest rates and inflation, and life expectancy. Secondly, this section proposes the use of complementary measures of retirement income when assessing labour-market risk. Thirdly, it assesses the relative importance of each of the risks. This section concludes by examining whether the timing of unemployment is significant; that is, does it matter when in their careers people suffer spells of unemployment?

Measuring the risk of a shortfall in retirement income

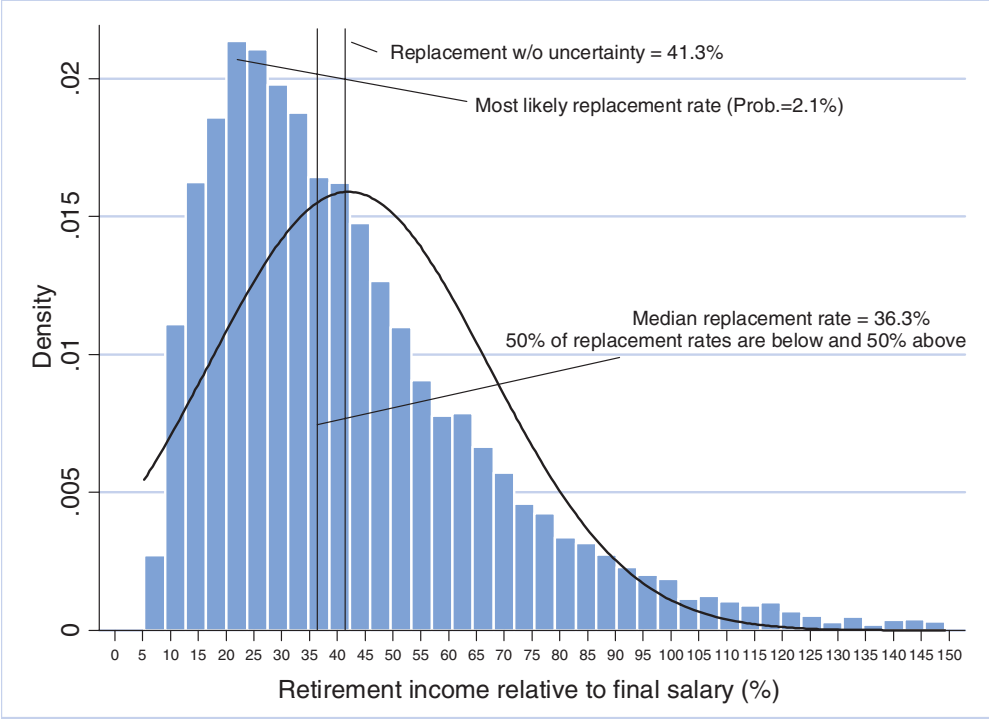
The risk of a shortfall in retirement income can be quite large,

The likelihood of a shortfall in retirement income can be quite large given all the risk factors involved (labour-market risk, financial-market risk and demographic risk). The analysis herein uses three measures to assess the impact of uncertainty on retirement income. The first measure, the *benefit-shortfall risk*, is based on the likelihood that the level of retirement income will fall short of the target replacement rate, which is set to equal the replacement rate that would prevail in a world without uncertainty.[16] The second measure provides the shortfall in replacement rates given worst-case scenarios, those that occur only 1% or 5% of the time.[17] The resulting level of retirement income or replacement rates are both so low (*i.e.* in the *1st and 5th percentiles)* such that 95% to 99% of all other replacement rates will be higher. These two measures are complemented by a third, which shows the degree of concentration of replacement rates. This concentration can be measured in two ways: (1) the difference between the replacement rates at the 3rd and 1st quartiles, *i.e.* the inter-quartile range; and (2) by the probability that replacement rates are no more than 5 percentage points below the replacement rate that would prevail in a world without uncertainty. Taken together, these measures help us to arrive at some important conclusions.

… as much as 58%

First, the shortfall risk could be as much as 58%. Due to uncertainty about investment returns, inflation, interest rates (the discount rate), life expectancy and labour market, the probability that the replacement rate will fall below a target replacement rate is around 58% (Table 2). This target replacement rate is the replacement rate – 41.3% – that would be achieved in a situation of certainty as regards the rate of return on investment, inflation, discount rates, life expectancy and labour market risk.[18] Table 2 shows the percentile distribution of replacement rates resulting from 10 000 Monte Carlo simulations in a world of uncertainty coupled with labour market risk. The target replacement rate falls above the median replacement rate. Figure 2 shows the probability histogram of replacement rates for those same 10,000 simulations of replacement rates.[19] Looking at Figure 1 and Table 1, the probability that replacement rates will fall below 41.3% is around 58%.

Figure 2. Histogram of retirement income relative to final salary[1]



Note: Based on 10 000 Monte Carlo simulations for the rate of return on investment, inflation, discount rate, life expectancy at 65, the probability of suffering spells of unemployment, and of having one of the three career wage-growth paths.

Source: OECD Secretariat calculations.

Estimated replacement rates are far from concentrated

Second, estimated replacement rates are far from highly concentrated. Focusing on replacement rates below the replacement rate that would prevail in a situation of certainty (*i.e.* a situation without risks), their concentration is 14.1% (see Table 2 below). That is, only 14.1% of the replacement rates below 41.3% are within 5 percentage points; the rest are below 36.3%. Additionally, the inter-quartile range shows that the variability of replacement rates around the median can be as much 31 percentage points between the 25th and the 75th percentile.

Replacement rates in worst-case scenarios are quite low

Third, replacement rates can be quite low in worst-case situations. For example, replacement rates can be lower than 12.8% in 5% of the cases, or lower than 8.8% in 1% of the cases. An example of a plausible worst-case situation could be an individual experiencing six years of unemployment or inactivity between ages 25 and 30, a flat real-wage career path, average returns on investment of only 2% and inflation of 5%. Risk-averse individuals and pension regulators may find these rates, and their related probabilities, quite worrisome.

Table 2. Distribution of retirement income relative to final wages

	Percentile of distribution (%)									Benefit shortfall risk (%)[1]	Concen-tration[2]	IQR[3]
	1	5	10	25	50	75	90	95	99			
Replacement rate	8.8	12.8	16.0	23.5	36.3	54.5	77.5	95.6	143.9	58.1	14.1	31.0

Notes: These calculations result from assuming uncertain investment returns, inflation, discount rates, life expectancy and labour market conditions. People contributes 5% over a 40-year period, and assets are invested in a portfolio comprised of 60% equities, 40% government bonds.

(1) The benefits-shortfall risk is the percentage of replacement rates that are below the replacement rate prevalent in a world of certainty (41.3%). (2) Concentration is the probability that the replacement rates are within 5 percentage points below the replacement rate prevalent in a world of certainty. (3) IQR the inter-quartile range: the difference between the replacement rate at the 75th and the 25th percentiles.

Source: OECD Secretariat calculations.

The impact of full uncertainty on retirement income is the result of labour-market risk combined with uncertainty regarding investment returns, inflation, discount rates and life expectancy. What follows is an assessment of the relative impact of labour-market risk, based on distinctions regarding the different real-wage paths, the likelihood of suffering spells of unemployment, as well as the timing of that unemployment. This analysis also provides an estimate for the relative impact of the other risks (financial and demographic).

The need for additional measures of retirement income when assessing labour-market risk

The analysis of the impact of different real-wage paths and the possibility of unemployment requires the use of absolute measures of retirement income

In order to assess the impact of different real-wage paths, and the possibility of suffering unemployment, the use of absolute measures of retirement income is required. The standard measure used to assess the adequacy of retirement income is the ratio of retirement income-to-final salary, known as the replacement rate. This measure is the one that has been used so far. However, when considering the possibility of different real-wage career paths and spells of unemployment and/or inactivity, the replacement rate may be misleading in the absence of total or absolute pension benefits relative to a common benchmark. For example, individuals who suffer spells of unemployment may have higher replacement rates than those with uninterrupted careers, despite the fact that their absolute retirement income may be lower. The same can happen when considering individuals with different real-wage career paths (see Box 1). Therefore, this analysis uses a measure that accounts for the amount of retirement income received relative to a benchmark final salary. This benchmark final salary is the median salary for the economy.[20] The resulting relative measure allows one to compare and determine the likely shortfall in retirement income of a person having higher spells of unemployment or a worse real-wage career path (see table in Box 1). In the following section, we use this measure to assess the impact on retirement income of labour-market risk, as well as financial and demographic risk (that is, uncertain investment returns, inflation, discount rates and life expectancy).

Box 1. The replacement rate fails to provide a full picture of the impact of labour-market risk

The replacement rate fails to provide a full picture of the impact of different real-wage career paths on retirement income. The possibility of having different real-wage career paths means that real-wage growth over time will differ across individuals. This will result in some individuals having higher final wages than others. For example, the table below shows that an individual with low annual average real-wage growth, such as 0%, will have a final wage that may be only 27% of that of an individual with a high annual average real-wage growth (of 3%).[21] Not surprisingly, the total amount of each of these two individual's contributions will be different, resulting in different quantities of assets accumulated at retirement. For example, an individual with low real-wage growth during his/her career may accumulate less than half, 42%, of the total accumulated by an individual with high real-wage growth. As a result of these two factors, the replacement rate (the ratio of retirement income to final wage) can be higher for an individual with a low real-wage growth than for an individual with a high real-wage growth: 42% as compared to 27%, in the Table below. The fact that low real-wage growth over a career may lead to higher replacement rates illustrates the importance of taking into account the level of retirement income. For example, retirement income resulting from low real-wage growth may be only 11.5% (fourth row, right column) of the final salary of an individual, as opposed to 27% (second row, right column) for someone with high real wage-growth.[22]

Additionally, the replacement rate does not accurately reflect the impact of unemployment. Due to unemployment, people lose wages and stop contributing to their pension plans. Consequently, their final salary and the amount of assets accumulated at retirement will be lower than for those with an uninterrupted earnings path. Yet, the replacement rate may remain unchanged, even though retirement income will be lower. The table below shows that for an individual with high real-wage growth during his/her career (row 2), the replacement rates are the same in case of a full career, and in case of a partial career with spells of unemployment (bottom row). However, the amount of retirement income is much lower, dropping from 27% to 19% of the final salary, relative to a person with a full career (bottom row, right column).[23] Therefore, use of the replacement rate to assess the impact of spells of unemployment is in need of additional measures that incorporate the absolute amount of retirement income received.

Finally, one would have thought that calculating retirement income relative to average wage (throughout the career) would address the problem presented by standard replacement rates. Column 2 in the table below provides these calculations. Note that the retirement income-to-average wage ratio can also be misleading. For example, an individual with low real-wage growth during his/her career seems to have higher retirement income relative to his/her average wage than someone with high or medium real-wage growth. Obviously, moving from high to low real-wage growth entails a fall in absolute retirement income, from 27% to 11.5% (rows 2 and 4, right column) relative to the final salary of an individual with high real-wage growth.

Retirement income outcomes given different wage profiles and spells of unemployment

	Replacement rate	Retirement income over average wage[1]	Total accumulated Assets[2]	Final salary[2]	Relative retirement income[3]
	no unemployment spells				
Fixed real wage growth[4]	25.8	57.9	60.8	63.7	16.4
High real wage growth[4]	27.0	55.2	100.0	100.0	27.0
Medium real wage growth[4]	46.6	65.9	65.4	38.0	17.7
Low real wage growth[4]	42.4	70.7	42.3	27.0	11.5
	unemployment spells				
High real wage growth[4]	27.0	52.0	74.9	70.1	18.9

Notes: Calculations assuming a contribution rate of 5% over a 40-year period. Assets are invested in a portfolio comprised of 60% equities, 40% government bonds. (1) Retirement income relative to the career average wage. (2) Total assets accumulated, and the final salary of an individual with high real-wage growth over his/her career is taken as a reference and set to 100. (3) Consequently, relative retirement income measures retirement income of the other cases relative to the final salary of an individual with high real-wage growth during his/her career. (4) Average annual growth of 2%, 3%, 1% and 0%, respectively.

Source: OECD Secretariat calculations.

Comparing the impact on retirement income of labour-market risk as well as other risks

Incorporating different real-wage career paths and the possibility of unemployment increases the uncertainty in retirement income

The uncertainty in retirement income from DC pension plans increases when we incorporate different real-wage career paths, and the possibility of spells of unemployment. Table 3 provides retirement income relative to the benchmark final salary, defined as the median final salary for the economy. For example, the median retirement income that an individual with high real-wage growth would receive is 56.3% of the median final wage for the economy. Similarly, the median retirement income of an individual with low real-wage growth is only 23.9% (Table 3). Comparing rows 1 and 3 in Table 3, one can see that relative retirement income falls when moving from individuals with high real-wage growth to individuals with low real-wage growth, in all percentiles. Row 4 provides relative retirement income for the weighted average, real-wage growth of the economy,[24] whose results fall somewhere in between. Row 5 ("All risks") provides retirement income based on weighted average real-wage growth, including average spells of unemployment for the economy, relative to the median final wage. Comparing row 5 with row 4 indicates the end-result of including spells of unemployment: a drop in relative retirement income.

Table 3. Distribution of retirement income given different wage profiles and spells of unemployment relative the final wages of a "representative" individual in a world of uncertainty

	Percentile of distribution (%)									Benefit shortfall risk (%)[1]	IQR
	1	5	10	25	50	75	90	95	99		
Impact of different wage profiles (full career)											
High real wage growth	8.3	11.4	14.3	22.8	56.3	122.7	186.7	237.9	360.8	47.2	99.8
Medium real wage growth	5.2	7.3	9.3	15.3	36.8	79.2	121.8	157.1	245.7	58.2	64.0
Low real wage growth	3.4	4.8	6.1	10.1	23.9	50.2	78.0	101.0	161.6	74.1	40.1
Weighted average real wage growth	5.6	8.4	10.9	17.9	42.7	94.1	152.2	196.2	317.8	53.9	76.2
Spells of unemployment											
All risks	4.0	6.4	8.6	15.0	33.0	77.3	133.0	176.2	294.7	61.3	62.3

Notes: The table shows retirement income for different wage profiles and spells of unemployment as a percentage of the final wage of a "representative" individual. The representative, or "average" individual is one with weighted average real wage growth and average spells of unemployment. Calculations assume a contribution rate of 5% over a 40-year period, assets are invested in a portfolio comprised of 60% equities and 40% government bonds, and there is uncertainty as to rates of return on investment, inflation, discount rates, life expectancy and labour market conditions.

Source: OECD Secretariat calculations.

Switching to different real wage career paths have also a strong impact on retirement income

Moreover, switches to different real-wage career paths also have a strong impact on retirement income. Such switches can occur, for example, when an individual with a high real-wage career path suffers unemployment for a period long enough that his/her skills become partially obsolete and may therefore need to re-enter the labour market in a lower real-wage career path. Alternatively, an individual with a low real-wage career path could upgrade his/her skills to switch to a higher real-wage career path. Table 4 shows that retirement income relative to final salary for the representative individual modelled in this report could fall

by more than 10 percentage points when he/she switches to a low real-wage career path (from a high real-wage career path) in the middle of his/her career. On the other hand, when that individual upgrades skills and switches to a high real-wage career (from a low real-wage career path), his/her retirement income could increase by more than 10 percentage points. Consequently, it does pay to upgrade one's skills.

Table 4. Retirement income as % of final salary for a representative individual switching to various new real-wage career paths

	Retirement income
High real wage growth career path	41.5
From high to low real wage growth career path	30.6
From low to high real wage growth career path	30.5
Low real wage growth career path	19.8

Note: Calculations assume a contribution rate of 5% over a 40-year period. Assets are invested in a portfolio comprised of 60% equities, 40% government bonds. The representative individual is the one with the weighted average in real wage growth and average spells of unemployment. The switch to a new real-wage career path occurs in the middle of the career, at age 45.

Source: OECD Secretariat calculations.

Table 5. Distribution of retirement income relative to the final wages of a representative individual given various types of risks

	Percentile of distribution (%)									Benefit shortfall risk (%)[1]	IQR[3]
	1	5	10	25	50	75	90	95	99		
	Weighted average real wage growth										
Investment risk	13.1	18.3	21.6	28.5	38.9	52.8	70.1	83.6	114.8	68.6	24.3
Discount rate risk	27.8	33.3	36.5	42.4	49.4	57.0	64.0	68.5	77.1	49.5	14.6
Inflation risk	14.6	19.0	22.4	31.1	49.1	83.7	150.4	218.0	429.6	50.2	52.7
Longevity risk	37.7	40.1	41.6	44.7	49.2	55.6	64.2	71.6	94.6	50.1	10.9
Unemployment risk	25.4	28.5	33.0	40.8	42.3	63.5	63.5	63.5	63.5	58.2	22.7
Wage profile risk	27.8	28.9	30.1	33.6	39.5	45.8	51.9	55.3	60.1	81.5	12.2
All human capital risks	24.7	27.2	28.4	31.3	36.6	43.4	49.9	53.6	59.0	88.1	12.1
All risks	4.0	6.4	8.6	15.0	33.0	77.3	133.0	176.2	294.7	59.2	62.3

Notes: Calculations assume a contribution rate of 5% over a 40-year period. Assets are invested in a portfolio comprised of 60% equities and 40% government bonds. The representative individual's real-wage growth career path equals the weighted average. and he/she has average spells of unemployment.

Source: OECD Secretariat calculations.

Labour market conditions, inflation, and investment returns are the factors that have the biggest impact on retirement income

Labour market conditions, inflation, and investment returns are the factors that have the biggest impact on retirement income. Following up on the argument in the previous section that replacement rates by themselves can provide a misleading picture, Table 5 provides retirement income relative to the median final wage of the economy. Focusing on the shortfall-risk measure, the difference in real-wage career paths (either by itself or when combined with spells of unemployment) provides the highest shortfall in retirement income relative to a situation with no uncertainty. In terms of relative impact, labour risk is followed

by investment risk and unemployment risk. Focusing on worst-case scenarios, such as those in the 1st and 5th percentiles, the risk of very low retirement income indicates that investment risk, followed by inflation and unemployment, are the main causes for concern. Finally, looking at the volatility around the median, *i.e.* the inter-quartile range, inflation shows the higher volatility.

The importance of the timing of unemployment

Workers who suffer spells of unemployment earlier rather than later in their careers will experience worse retirement income outcomes

Workers who suffer spells of unemployment earlier in their careers will experience worse retirement-income outcomes. Retirement income outcomes are very sensitive to the timing of unemployment spells. The impact is different depending on whether unemployment spells occur at the beginning, the middle or the end of one's career. Interest-rate compounding means that spells of unemployment at the beginning of a career lead to lower accumulation of assets to finance retirement, than when unemployment occurs at the end of one's career, other things being equal. Yet, final wages are instead relatively less-affected when unemployment spells occur early in one's career versus later in the career. Table 6 provides retirement income relative to the median final wage of the economy, assuming that spells of unemployment occur at different periods in a person's career.[25] Relative retirement income is lower for individuals who suffer spells of unemployment early in their career (at ages 28 and 29) than for individuals who suffer the same amount of unemployment, but later in their career (at ages 59 and 60). The median relative retirement income of an individual who suffers unemployment early in his/her career is just below 33%, as opposed to 40% for an otherwise comparable individual suffering who is unemployed late in his/her career. Contributions made early during the career benefit from longer investment periods plus the positive effect of compound interest. Also, when unemployed early in his/her career, the individual fails to contribute, thus lowering the amount of assets accumulated for retirement.

Table 6. Distribution of retirement income relative to final wages of a representative individual, given periods of unemployment at different times in one's career

	Percentile of distribution (%)									
	1	5	10	25	50	75	90	95	99	IQR
No spells of unemployment	5.5	8.2	10.6	18.0	42.5	93.6	154.1	197.3	317.1	75.60
Spells of unemployment[1]										
Early in their career	4.5	6.9	8.8	14.3	32.6	70.6	114.4	143.8	225.7	56.29
In the middle of their career	5.0	7.6	9.8	16.5	38.2	83.6	136.8	176.7	287.9	67.14
At the end of their career	5.2	7.8	10.1	17.2	39.9	89.6	145.6	186.7	301.3	72.42

Notes: Calculations assume a contribution rate of 5% over a 40-year period. Assets are invested in a portfolio comprised of 60% equities and 40% government bonds. The representative individual has weighted average real-wage growth and average spells of unemployment.

1. Spells of unemployment occur for two consecutive years at the beginning of a worker's career (ages 28 and 29), in the middle (ages 45 and 46) and close to the end (ages 59 and 60).

Source: OECD Secretariat calculations.

Such periods of unemployment leads to a loss of relative retirement income

Periods of unemployment lead to a loss of relative retirement income. Table 6, by comparing row 1 with rows 2 to 4, shows that spells of unemployment lead to a loss of relative retirement income. This loss is higher the earlier in the career that the unemployment occurs. For example, the relative loss of retirement income could be as much as 10 percentage points when comparing a person with an uninterrupted career to one suffering two consecutive spells of unemployment at ages 28 and 29.

There remain other important questions to be addressed

There remain some important questions to be addressed. The analysis so far has examined the impact on retirement income of labour-market risk given uncertain rates of return on investment, discount rates, inflation and life expectancy, and where savings for retirement are invested in a portfolio with a fixed asset allocation during the accumulation period. However, there is a rich literature on asset allocation and pensions (*e.g.*, Hinz *et al*, 2010; Maurer *et al.*, 2009; Viceira, 2008). The literature suggests that life-cycle investment strategies in which the allocation to risky assets depends on the age of the individual may provide welfare gains over fixed-portfolio strategies. This seems to be more the case when labour-market risk is part of the picture.

IV. Retirement Income and Life-Cycle Strategies in a World of Uncertainty[26]

The impact of labour market, financial market and demographic risk when using life-cycle investment strategies

This section assesses the impact of labour market, financial market and demographic risk when using life-cycle investment strategies. The analysis so far has looked at the impact of labour market, financial market and demographic risk assuming that assets are allocated 60% to equities and 40% to bonds (in fixed proportion) throughout the accumulation period. This section relaxes this assumption and introduces life-cycle strategies whereby the proportion of assets invested in risky assets (*e.g.*, equities) declines as the individual ages.

The analysis considers two types of life-cycle investment strategies. In the first one, the allocation to equities falls linearly with age, from an initially high allocation. The second life-cycle strategy assumes that the allocation to equities remains constant during the first three decades of the accumulation period but falls sharply during the last decade before retirement. The analysis compares the impact of labour-market, financial-market and demographic risk for investment strategies that have the same age-weighted average exposure to equities (Box 2).

Life-cycle investment strategies can have a positive impact on retirement income in a world of uncertainty

Life-cycle investment strategies can have a positive impact on retirement income in a world of uncertainty. Table 7 shows the percentage of cases in which retirement income is higher when using life-cycle strategies compared to relying on fixed-portfolio strategies, given the same age-weighted average equity exposure and assuming a negative shock to equity markets during three different periods just before retirement. Specifically, the table compares two life-cycle investment strategies with fixed-portfolios that have the same exposure to equities when the shock to equity markets occurs (respectively, in the final year before retirement, two years before retirement, and within five years of retirement). The first life-cycle strategy calls for equity exposure to decline linearly with age (linear decrease). The second life-cycle strategy assumes constant equity exposure during the first three decades of the accumulation

period, but calls for equity exposure to fall sharply in the last decade before retirement (sharp decrease). Table 7 also presents two different age-weighted average-equity exposures, 44% and 60%.[27]

Box 2. Investment strategies with the same average exposure to risky assets

To assess the impact of a change in investment strategies on retirement income, it is necessary to compare strategies that have the same average exposure to risky assets over the accumulation period. There are alternative approaches to assess whether different investment strategies have the same average exposure to risky assets (or equities) over the accumulation period. One straightforward approach is to calculate the simple average of the percentage of equities in the portfolio over the accumulation period -- the *time-weighted average*. However, as this measure gives the same weight for each year during the accumulation period, it fails to take into account the impact of portfolio size. As the size of the portfolio increases over the accumulation period, later years should be given a higher weight than earlier years, as the amount of assets at risk is rising. Obviously, one way of accounting for this portfolio-size effect is to take the amount of assets accumulated in each period and weight the equity exposure by the amount of assets accumulated (portfolio-weighted average). Unfortunately, this amount is random, and thus is only known *a posteriori*. However, in order to assess the likely impact of different investment strategies on retirement income risks, the investment strategies compared need to be selected in advance, *a priori*.

The analysis herein considers investment strategies with the same age-weighted exposure to equities. One approach, which takes into account the portfolio-size effect but does not require advance knowledge of the actual amount of assets accumulated in each period, is to weight the exposure to equities in each year by the age of the individual. In this way, equity exposures at later ages get a higher weight, replicating the effect of higher assets accumulated as individuals near retirement. The table below compares the different approaches discussed so far in order to calculate the average equity exposure for alternative investment strategies.[28] When using the time-weighted approach, the table below shows that a linear-decrease, life-cycle strategy starting with 100% invested in equities seems to have a higher average equity exposure than a fixed-portfolio strategy with 44% invested in equities; however, these two strategies have equal average-equity exposures when using the age-weighted approach. When considering the portfolio-weighted approach,[29] it appears that the linear-decrease strategy has a lower average-equity exposure than the fixed portfolio with 44% invested in equities; this result underscores the importance of the portfolio-size effect.[30] The remainder of this section focuses on the age-weighted approach.

Comparison of averaging methods used to calculate equity exposure

	Fixed portfolio	Linear decrease	Steep decrease	Fixed portfolio	Steep decrease
Initial equity exposure	44	100	52	60	71
Average equity exposure					
Time-weighted	44	51	46	60	63
Age-weighted	44	44	44	60	60
Portfolio-weighted[1]	44	30	39	60	53

Notes:
1. The portfolio-weighted average has been calculated by assuming 2% productivity, 2% inflation, 5% contribution rate, and 6% return.

Source: OECD Secretariat calculations.

Life-cycle investment strategies provide higher replacement rates than fixed portfolios

Finally, Table 7 presents estimates for the probability that life-cycle strategies provide higher retirement income than fixed portfolios (given the same age-weighted equity exposure) for different real-wage growth career paths and for people with uninterrupted working lives, as compared to people who suffer spells of unemployment. Looking at each row in Table 7 separately, it is clear that:

(1) Life-cycle strategies may provide higher replacement rates than fixed portfolios with the same age-weighted equity exposure; and

(2) Among the life-cycle strategies, the one with a sharp decrease in equities in the last decade just before retirement performs best, at least when the shock occurs within one or two years before retirement.

Negative shocks to equity markets in the last year or two before retirement are frequent enough that people could experience them with a 15% or 26% likelihood, respectively.[31] In addition, comparing the results across rows in the table, one can examine the impact of labour market risk in more detail.

This positive impact is enhanced in the case of individuals who suffer unemployment and have flat real-wage growth career paths

The positive impact of life-cycle strategies is enhanced in the case of individuals who suffer spells of unemployment and who also have flat real-wage growth career paths. Comparing rows 2 to 4 (in Table 7) indicates that: independent of the period in which the shock to equities occurs and independent of the average age-weighted equity exposure, the probability that life-cycle strategies provide higher retirement income than fixed portfolios is greater for individuals who have a flat real-wage growth career path. Moreover, comparing rows 2 and 5, one sees that this estimated probability is also higher for people who suffer spells of unemployment.

The positive impact of life-cycle strategies dwindles when shocks to equity markets occur further away from retirement age

The positive impact of life-cycle strategies dwindles as shocks to equity markets occur further from retirement age. Comparing panels 1 to 3 in Table 7 allows for an assessment of the likelihood that life-cycle strategies provide higher retirement income than fixed-portfolio strategies when a negative shock to equity markets (of 10% or more) occurs just before retirement, within two years, or within five years of retirement.[32] Indeed, Table 7 shows that this probability is lower as shocks to equity markets occur further from retirement age. Moreover, when negative shocks to equity markets occur at some point in the five years before retirement, life-cycle strategies start to lose their attractiveness in addressing the impact of negative shocks to equity markets. For example, if the negative shock were to happen at age 60, people with a fixed portfolio could have an opportunity to recover should returns to equities become positive in the remaining four years before retirement; with a life-cycle strategy, the automatic reduction in equity exposure reduces the chances for recovery.

A higher initial exposure to equities increases the likelihood that life-cycle strategies will provide higher retirement income relative to fixed-portfolio strategies

With life-cycle strategies, an increase in initial equity exposure increases the likelihood of providing higher retirement income relative to fixed-portfolio strategies, given the same average-equity exposure. We can examine the impact of higher initial-equity exposures in life-cycle strategies by comparing the columns in Table 7 that show 44% average age-weighted exposure to equities with those that show 60% exposure. For instance, let us compare the columns in the first panel of Table 7 (when the shock to equity markets occurs in the final year before retirement): when the average equity exposure is 60%, rather than 44%, there is an increase in the percentage of cases in which retirement income from a life-cycle strategy (with a sharp decrease in equity exposure after age 55) is higher than from a fixed portfolio; and these results are independent of labour-market risk (for example, see 77% as opposed to 75%, in the last row). This result may arise from the fact that higher average-equity exposure may lead to higher accumulated assets just before retirement; therefore, if the investment strategy fails to reduce the exposure to equities just before retirement, the impact of a negative shock in the equity markets is also higher.

Table 7. Estimated probability that pension benefits based on various life-cycle strategies will be higher than those based on a fixed-portfolio strategy (assuming negative shocks to the stock market[1])

	Shock within the last year			Shock within the last 2 years			Shock within the last 5 years		
Average exposure to equity[2]	44%		60%	44%		60%	44%		60%
	Linear decrease	Sharp decrease	Sharp decrease	Linear decrease	Sharp decrease	Sharp decrease	Linear decrease	Sharp decrease	Sharp decrease
	No human capital risk								
Fixed real wage growth	48.1	76.1	77.6	44.3	67.4	69.0	31.4	51.0	52.6
	Full career								
High real wage growth	41.1	74.4	75.8	38.0	65.5	67.0	26.5	48.7	50.4
Medium real wage growth	48.5	77.8	78.8	45.0	69.2	70.3	31.9	52.8	54.4
Low real wage growth	55.6	80.9	81.6	51.6	72.0	72.8	37.0	56.0	57.4
	Spells of unemployment								
High real wage growth	42.5	75.4	77.0	39.3	66.5	68.0	27.3	49.8	51.5

Notes: Calculations assume a contribution rate of 5% over a 40-year period.

1. The negative shock to equity markets is defined as an annual fall in the return to equities of 10% or more in the year just before retirement, in any of the two years before retirement, or in any of the five years before retirement.

2. Life-cycle portfolios are designed such that the age-weighted average exposure to equities during the accumulation period is equal to that of the fixed-portfolio exposure to equity. We consider two different average exposures to equities: 44% and 60%. In the first case, the fixed portfolio has 44% invested in equities and 56% in government bonds, while the linear decrease starts with 100% allocated in equities, and the steep decrease starts with an equity allocation of 52% which is kept constant until the age of 55, decreasing linearly to zero from there. In the second case, the fixed portfolio has 60% invested in equities and 40% in government bonds, while the steep decrease starts with an equity allocation of 71% that it is kept constant until the age of 55.

Source: OECD Secretariat calculations.

The length of the contribution period reinforces the positive impact of life-cycle investment strategies

Finally, the length of the contribution period reinforces the positive impact of relatively straightforward life-cycle strategies. Table 8 shows the likelihood that retirement income will be higher with life-cycle strategies than with a fixed portfolio of equal average-equity exposure, for different contribution periods (20 and 40 years).[33] The table indicates that the shorter the contribution period, the more likely that replacement rates will be higher using a life-cycle strategy than a fixed-portfolio. Longer investment periods allow for losses in some years to be offset by gains in other years. Moreover, historically there have been more years with positive returns to equity than negative returns; the mean for the distribution of returns from equity investment has been positive -- the longer the investment period, the higher the likelihood of having positive accumulated returns from equities.

Table 8. Estimated probability that pension benefits based on various life-cycle strategies will be higher than those based on a fixed-portfolio strategy for two different contribution periods (assuming a negative shock to the stock market[1])

	Entire random sample (10,000 obs)		Negative stock market shock (15%)[1]	
	Contribution period		Contribution period	
	20 years	40 years	20 years	40 years
Life-cycle investment strategies				
Linear decrease with age[2]	28.6	24.1	67.0	48.1
Sharp decrease after age 55[3]	34.7	35.2	77.9	76.1

Notes: Calculations assume a contribution rate of 5% over a 20- and a 40-year period. Life cycle portfolios are designed such that the average exposure to equities during the accumulation period (20 or 40 years) is equal to the fixed-portfolio average exposure to equities (44%). (1) The negative shock to the stock market is defined as an annual fall in equity markets of 10% or more in the year just before retirement. (2) The initial allocation is 100% to equities if 40 years, or 95% if 20 years of contribution. The allocation to equities falls inversely with age to equal 100% in bonds at the time of retirement. (3) The initial allocation of 52% or 60% to equities (depending on contributing for 40 or 20 years, respectively), is kept constant during the most of the accumulation period and decreases to zero only in the last 10 years before retirement.

Source: OECD Secretariat calculations.

V. Retirement Income in a World of Uncertainty under Different Macroeconomic Scenarios

This section examines the impact on retirement income of deflation and stagflation, which cause returns on equities and unemployment to worsen

This section examines the impact on retirement income of deflation or stagflation, as returns on equities and unemployment worsen. The discussion in this section is split between a scenario with low inflation and low growth (*deflation*), and another one with high inflation and low growth (*stagflation*). This section assesses the impact on retirement income derived from DC pension plans in a world of uncertainty, under these two scenarios. The starting assumption is that employment and wages are uncertain, as are returns on investment, inflation, discount rates and life expectancy. However, if the economy moves into deflation or stagflation, some aspect of uncertainty actually is reduced. That is, as the growth of the economy slows in both scenarios, the chances that an individual will suffer unemployment are much higher than assumed in the previous sections of this report. In addition, average return on equities also becomes lower under both scenarios. Finally, the analysis covers a 40-year accumulation period, but the duration of deflation or stagflation episodes is assumed to be no more than a decade.

Deflation and stagflation have a strong impact on the adequacy of retirement income

Deflation and stagflation have a strong impact on the adequacy of retirement income in a world of uncertainty. Table 9 shows median accumulated assets, median retirement income, and median replacement rates for each scenario. The impact of each scenario depends on whether stagflation or deflation occurs during the first decade of entry into the labour market (age 25 to 34), during the middle decade of the career (age 40 to 49), or during the last decade before retirement (age 55 to 64). A comparison of the data across rows shows that nominal retirement income, and the nominal value of assets accumulated, are both higher under stagflation than under the other two scenarios. Yet, this result reflects a type of monetary illusion, as inflation is much higher given a scenario of stagflation. Therefore, the replacement rate may provide a more accurate picture in this case. Focusing on the replacement rate, both deflation and stagflation lead to lower replacement rates.

The impact on retirement income of a decade of stagflation is higher than the impact of a decade of deflation

But the impact on retirement income of a decade of stagflation is higher than the impact of a decade of deflation. Looking again at median replacement rates across the rows, suggests that replacement rates fall further with stagflation than with deflation, independently of whether these scenarios occur early, in the middle, or at the end of one's career. Higher unemployment and lower returns to equities, which characterise both scenarios, explain the fall in median replacement rates. However, the high inflation scenario has a higher negative impact on relative retirement income because high inflation has a proportionately higher impact on final wages than on assets accumulated.

The impact of either deflation or stagflation is worse when they occur at the end of someone's career

Moreover, the impact of either deflation or stagflation is worse when they occur at the end of someone's career. A comparison of the three panels in Table 9 shows the impact of deflation or stagflation when they occur early, in the middle or late in an individual's career. When deflation or stagflation episodes occur early in an individual's career, median replacement rates can be 4 to 7 percentage points lower, respectively, than in the absence of such episodes. When deflation or stagflation occurs in the middle of one's career, replacement rates fall 8 to 17 percentage points, and as much as 9 to 22 percentage points when either scenario occurs in the last decade before retirement.

Table 9. The impact of different macroeconomic scenarios on retirement assets and income (with deflation or stagflation occurring at different periods prior to retirement)

	Early in their career			Middle of their career			End career		
	Assets accumu-lated	Retire-ment income	Replace-ment Rate	Assets accumu-lated	Retire-ment income	Replace-ment Rate	Assets accumu-lated	Retire-ment income	Replace-ment Rate
Full uncertainty[1]	2 401.1	174.6	36.3	2 401.1	174.6	36.3	2 401.1	174.6	36.3
Deflation	1 428.4	103.9	32.5	1 351.7	97.0	28.7	1 260.3	97.6	27.7
Stagflation	2 844.2	205.2	29.6	1 990.9	143.7	19.2	1 356.7	104.0	14.2

Notes: Calculations assume a contribution rate of 5% over a 40-year period. Assets are invested in a portfolio comprised of 60% equities and 40% government bonds. (1) This corresponds to the results presented in Table 2 above.

Source: OECD Secretariat calculations.

Policy should focus on individuals close to retirement if deflation or stagflation were likely to occur

Therefore, policy should focus on individuals close to retirement, if some of these negative economic scenarios were to occur. Earlier in this article, the results of the analysis supported the conclusion that employment policies should be concerned about the employment prospects of younger workers. The rationale is that unemployment spells early in an individual's career will result in a higher drop in retirement income than if unemployment were to occur later in the career, owing to the effects of compounded interest.

In this section, however, the analysis suggests instead that policy should focus on older workers, if either deflation or high inflation were to set in coupled with stagnant growth. Both scenarios would tend to increase unemployment, which again calls for employment policies that focus on younger workers. However, inasmuch as either scenario will also reduce the return on equities, the impact on unemployment is overshadowed by the portfolio-size effect (assets accumulated are higher the closer one is to retirement), suggesting that policy needs to focus on older workers as well.

The main policy recommendation for attenuating the impact of both deflation and stagflation would be to use life-cycle investment strategies as a default

The main policy recommendation for attenuating the impact of either deflation or stagflation is to use life-cycle investment strategies as a default. Implementing life-cycle strategies partially offsets the impact of deflation and stagflation, and the most effective life-cycle strategies maintain a high exposure to equities during the first decades of the accumulation period and reduce this sharply the decade just before retirement. Indeed, Table 10 below confirms this, in particular if the individual were to suffer deflation or stagflation in the decade before retirement, which is when his/her exposure to equities would be reduced. The last column of Table 10 shows that the life-cycle strategy would result in higher replacement rates than a fixed-portfolio strategy with the same age-weighted average equity exposure, in the case of deflation (33% against 28%), and of stagflation (17% against 14%).

Table 10. Replacement rates for fixed vs. life-cycle investment strategies under different economic scenarios (deflation and stagflation)

	Early in their career	Middle of their career	End career
Deflation			
Fixed portfolio	32.5	28.7	27.7
Life cycle	30.1	25.6	33.1
Stagflation			
Fixed portfolio	29.6	19.2	14.2
Life cycle	27.5	16.9	16.8

Notes: Calculations are based on a life-cycle strategy with 71% allocation to equities during the first three decades, falling sharply to 0% in the last decade before retirement, and a fixed-portfolio with 60% allocated to equities and 40% to government bonds. Both investment strategies have the same age-weighted average equity exposure (see box 2).

Source: OECD Secretariat calculations.

VI. Main Conclusions and Policy Recommendations

This article has assessed the impact of labour, financial and demographic risks on retirement income with the help of a stochastic model

This article has examined the impact of uncertainty on retirement income from DC pension plans -- uncertainty about employment and real-wage growth during one's career, as well as uncertainty about returns on investment, inflation, interest rates and life expectancy. To assess this, the article has modelled the probability of experiencing spells of unemployment and the probability of having different real-wage career paths, based on labour market data from OECD countries. This article has also modelled uncertainty about investment returns, inflation, interest rate, and life expectancy through stochastic processes using historical data since 1900. Moreover, the model has included positive correlations between economic conditions, employment prospects, and returns in the equity markets, as well as between inflation and government bond yields. As a result of 10 000 Monte Carlo simulations for each of those risks, the model provided probability distributions of pension assets accumulated, retirement income, and replacement rates. These distributions have permitted an assessment of the role of labour-market, financial-market and demographic risk, examining their interaction with different investment strategies, and determining the impact of both deflation and stagflation in a context of low growth.

Findings: the impact of these risks is far from negligible. Moreover, life-cycle strategies help attenuate the risk of sharp falls in retirement income when a negative shock occurs just before retirement.

The main conclusions reached through this analysis can be summarised as follows:

- The impact of uncertainty on retirement income is quite large. The uncertainty stems from these risk factors: employment conditions and real-wage career paths, as well as uncertainty about investment returns, inflation, discount rates, and life expectancy. The benefit-shortfall risk between a situation of certainty and one of uncertainty is well above 50%. That is, there is close to a 60% probability that replacement rates in a world of uncertainty will be below the replacement rates given no uncertainty. Moreover, replacement rates are not highly concentrated around the replacement rate that results from conditions with no uncertainty. Furthermore, replacement rates for worst-case situations, which occur with only a 1% or 5% probability, are extremely low. Finally, the dispersion of replacement rates around the median replacement rate is relatively high.

- When assessing the impact of labour-market risk, there is a need to complement the replacement rate with a standard measure, based on the total amount of retirement income an individual is entitled to receive. Use of the replacement rate alone can give misleading signals. For example, individuals who suffer spells of unemployment may wind up with higher replacement rates than those with uninterrupted earnings streams, despite having lower absolute retirement income. The same can happen when individuals switch to different real-wage career paths.

- The examination of the relative impact of each of the risks considered shows that labour-market risk (either regarding employment prospects or real-wage growth career paths), as well financial-market risk (uncertainty about returns on investment and inflation) have the largest impact on the adequacy of retirement income.

- The timing at which unemployment occurs in one's career affects retirement income. Those who suffer unemployment earlier in their careers will have lower retirement income than those who endure it at the end of their careers.

- It is unclear whether a fixed-portfolio or relatively straightforward life-cycle strategies perform better in terms of the probability distribution of replacement rates.

- Yet, regulators and policy makers should seriously consider implementing life-cycle strategies, at least as defaults. Life-cycle investment strategies have a positive impact on retirement income from DC pension plans when a negative shock to equity markets happens just before retirement (as occurred in 2008). In these same conditions, life-cycle strategies also provide higher replacement rates than fixed-portfolio strategies. Most effective are life-cycle strategies with constant exposure to equities during most of the accumulation period, but which reduce this exposure to zero during the last 10 years before retirement. This is due to the *portfolio-size effect*: the biggest impact of negative-market outcomes occurs at the end of the accumulation period because this is when accumulated balances are at their highest level.

- The length of the contribution period also matters when the main concern is replacement rates for people close to retirement should a negative shock to the stock market occur. The positive impact of life-cycle strategies on replacement rates for people close to retirement when a negative stock-market shock occurs is higher for shorter contribution periods than for longer contribution and accumulation periods.

- Additionally, for individuals who suffer spells of unemployment and/or flat real-wage career paths, default life-cycle strategies are particularly beneficial in attenuating the drop in retirement income that would result from a negative shock to equity markets just before retirement.

- The impact of stagflation or deflation is worse for people in the final stages of their careers than for people who are just beginning to work. The implementation of life-cycle investment strategies does help to attenuate the impact of both deflation and stagflation.

- Examining the timing of unemployment suggests that employment

policies may need to concentrate on younger workers, as unemployment early in a career has the largest impact on retirement income. However, if either deflation or stagflation were to occur, policy may need to be concerned about older workers as well, because the portfolio-size effect and low investment returns in both of these scenarios overcome the impact of higher unemployment. Consequently, policies should focus on all age groups as their retirement income is at risk, although for different reasons. Again, implementing default life-cycle investment strategies would help to attenuate the impact of uncertainty on retirement income.

- To conclude, in order to protect and ensure adequate replacement rates from DC pension plans in a world of uncertainty, policy recommendations need to focus primarily on the amount of contributions and the length of the contribution period. Life-cycle investment strategies address the problem of lower replacement rates for people close to retirement when a negative stock market shock occurs, but whether they address the problem of volatility is less clear-cut, and they definitively do not address the problem of adequate replacement rates.

Finally, the main policy recommendation for policy makers and regulators is:

- First, establish a target replacement rate for DC pension plans, based on the overall structure of the existing pension system in the country.

- Then, set contributions and the length of the contribution period accordingly, keeping in mind that to reach adequate replacement rates people need to "contribute and contribute for long periods".

- And, afterwards, focus on asset-allocation strategies. In particular, if contribution periods are short or intermittent, or if there are concerns about replacement rates falling sharply for people close to retirement should a negative stock market occur, establish default life-cycle investment strategies that reduce exposure to equities in the last decade before retirement.

Notes

1. Antolin, P. (2010): "Private Pensions and the Financial Crisis: How to ensure adequate retirement income from defined contribution pension plans?" *Financial Market Trends,* Vol. 2009, No. 2, assessed the impact of these parameters on retirement income derived from DC pension plans, highlighting as well the volatility of retirement income from these pension plans.

2. Each of those random-generating processes has as first moments those of their historical distribution. Therefore, the basic statistical properties of each asset class, inflation, interest rates and life expectancy (mean, median and standard deviation) are based on historical data for 17 countries from 1900 until 2008, as provided by Credit Suisse [*Credit Suisse Global Investment Returns Yearbook* 2009].

3. Later on, this article relaxes this assumption by introducing life-cycle investment strategies.

4. Future work could include assessing the shortfall risk when using different payout arrangements. For example, an inflation-indexed life annuity where payments are indexed to inflation and are thus constant in real terms; a fixed programmed withdrawal where the assets accumulated at retirement are divided by the life expectancy at retirement; a variable programmed withdrawal, where payments vary according to capital gains of the remaining annual assets and life expectancy at each year in retirement; and, a combined arrangement mixing a variable programmed withdrawal and a deferred, inflation-indexed life annuity that starts paying at age 80.

5. The literature on displaced workers (Fallick, 1996; Chan, Sewin and Stevens, 2001*a*, *b*) finds that displaced workers are most likely to re-enter the labour market at lower wages than those they had previous to the displacement.

6. Economic theory suggests that nominal wages grow according to productivity gains and inflation. In practice, there are other factors to consider, for example, wage bargaining structures, market power and the level of unionization. The model used in this report assumes, in line with economic theory, that real-wage growth is determined only by productivity growth. And consequently, nominal wage growth results from real-wage or productivity growth and inflation growth.

7. Bosworth, B., G. Burtless, and C. E. Steuerle, (2000): "Lifetime Earnings Patterns, the Distribution of Future Social Security Benefits, and the Impact of Pension Reform", *Social Security Bulletin* 63(4): 74-98; Mitchell and Turner (2010), Chapter 5 in Antolin *et al.* (2010), *Evaluating the Financial Performance of Pension Funds*; and OECD (1998): *Employment Outlook*.

8. The model assumes low, medium, and high real-wage career paths (see Figure 1 above). It also uses the weighted average for the population (42% high, 55% medium and 3% low), as well as different probability ranges for each real-wage path determined by the variability of educational attainments and income levels across OECD countries.

9. The difference between assuming random inter-annual real-wage volatility, or not, lies in the shape of the distribution of retirement income. Assuming random inter-annual wages generates a distribution that is more flat (higher kurtosis), and that has shifted to the right (higher skewness). As a result, replacement rates at both ends of the distribution are more extreme. However, the main results in this article would remain unchanged.

10. When inflation and real-wage growth are positive during the time individuals' experience unemployment, nominal wages when re-entering employment are assumed to be the same as the last time the individuals were employed. However, when inflation and real-wage growth are negative, nominal wages when re-entering employment are adjusted downward, as well. Otherwise, being unemployed would be a positive wage factor when re-entering the workforce.

11. Taylor, M. and A. Booth (1996), "The changing picture of male unemployment in Britain", ESRC Research Centre on Micro-social Change, University of Essex; Dex, S. and A. McCulloch (1998), "The Reliability of Retrospective Unemployment History Data", *Work, Employment & Society*, Vol. 12, No. 3; and Schmillen, A. and J. Möller (2010), "Determinants of lifetime unemployment", IAB Discussion Paper 3/2010.

12. Bean, C. and J. Dreze (1990), *Europe's Unemployment Problem*, MIT Press, Cambridge, MAl Blanchard, O. (2005), "European unemployment: The evolution of facts and ideas", NBER 11750; Blanchard, O. and L. Summers (1986), "Hysteresis and the European Unemployment Problem", NBER Macroeconomics Annual 1, Stanley Fisher (editor), MIT Press, 15–78.

13. The unemployment rate is then modelled as a function of yesterday's unemployment, the age of the worker and a financial-market shock. This shock is assumed normally distributed, with mean zero and variance one. It is also correlated with the state of the economy, and as a result, with equity returns. The coefficients of the model on unemployment rates are the result of estimating this equation using OECD data based on unemployment rates and age groups for all OECD countries since 1960.

14. For individuals who suffer spells of unemployment just before reaching retirement age, the last wage is the one corresponding to the wage earned the last time they were employed.

15. The shock used to introduce random inter-annual real-wage volatility around the career path is also correlated with the economy, so that real wages grow more in good times than in bad times. Consequently, real wage growth and unemployment are inversely correlated, while real-wage growth and equity returns are positively correlated. The results herein are from a model without random inter-annual real wage volatility around the career real-wage path. The main conclusions remain valid regardless of whether one introduces random inter-annual real wage volatility.

16. The retirement income or replacement rate in a world of certainty is the one resulting from using the median values for each of the risk variables.

17. An example of a worst-case scenario could be an individual with six years of unemployment at the beginning of his/her career, flat real-wage growth, average returns on investment of only 2%, and inflation at 5%.

18. This target replacement rate is calculated using the median rate of return on investment, discount rate, inflation and life expectancy of the data-generating process in our model, without spells of unemployment and the weighted average of the three different real-wage growth paths.

19. The density given in Figure 1 multiplied by 100 provides the probability.

20. Our model of the economy assumes that around 55% of all individuals have a medium real-wage growth career path, 42% high and 3% low. Moreover, only 40% of all individuals within a cohort may ever suffer a spell of unemployment; the chance of being unemployed is equal to the economy-wide average unemployment rate.

21. These two annual average real-wage growth rates correspond to the real-wage growth paths defined in Figure 1 above.

22. The representative individual in the table is the individual with a high real-wage growth career path.

23. The replacement rates, total assets accumulated and final salary are the result of our stochastic model, based on 10,000 simulations using aggregate economy-wide unemployment rates and the cohort probability of suffering spells of unemployment, in order to determine who is unemployed and when.

24. The weights are 55% for medium real-wage growth, 42% for high and 3% for low.

25. The exercise in Table 6 assumes that spells of unemployment occur in two consecutive years at the beginning of a worker's career (ages 28 and 29), in the middle (ages 45 and 46) and close to the end (ages 59 and 60). Hence, the amount of unemployment is the same in all cases examined.

26. A world of uncertainty is defined as: when labour, financial and demographic risks are all taken into account in the determination of retirement income.

27. Assuming that equity allocation decreases linearly with age, the maximum age-weighted equity exposure possible when starting with an equity allocation of 100% at age 25, is 44% (see Table in Box 2).

28. The age-weighted average equity exposure is provided as the reference point; consequently, all investment strategies in the table have the same age-weighted average equity exposure. The first panel is based on an average equity exposure of 44% in order to be able to include the linear-decrease life-cycle approach, while the second panel has a higher age-weighted average equity exposure of 60%.

29. This is done hypothetically by assuming fixed productivity growth of 2%, fixed inflation of 2%, a 5% contribution rate and a fixed portfolio return of 6%.

30. If the average equity exposure of different investment strategies were to be calculated by weighting according to the amount of assets accumulated in each period of the accumulation process, which is possible only with hindsight, the equity exposure of the life-cycle strategy in the early years would have to be higher in order to equal the average equity exposure of a fixed portfolio.

31. The model in this report suggests that around 15% of people could suffer a negative shock to equity markets of 10% or more in the year before their retirement, 26% in the two-year period before retirement, and 55% in the five-year period before retirement. Actual US and UK data on equity returns show that between 16% (UK) and 17% (US) of the last 109 years, there has been a negative shock to equity markets of 10% or more; among five-year periods, 57% of the time in the UK and 64% in the US there has been at least one year with a negative shock to equity markets of 10% or more.

32. It is important to stress that the likelihood of someone experiencing such a negative shock to equity markets is 15%, 26%, and 55%, corresponding to one, two or within five years before retirement, respectively.

33. Setting fixed contribution periods means that the results in Table 8 are based on full employment over one's career. The results in the table are also based on assuming a constant real-wage growth during one's career (in this case 2%). Therefore, Table 8 does not include labour-market risk -- only financial and demographic risks.

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The Second Corporate Governance Wave in the Middle East and North Africa

by

Alissa Koldertsova*

Ten years ago, corporate governance was a nascent concept in the Middle East and North Africa (MENA). This article charts the evolution of corporate governance across the MENA region over the past decade – as a concept and in practice – and proposes potential avenues for future work in this area.

Initial interest in corporate governance in the region was propelled by the drive to attract foreign investment and the increasing development of local capital markets. A second wave now appears to be forming and its results will depend largely on the capacity of national regulators to enforce existing corporate governance provisions.

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Keywords: corporate governance, Middle East and North Africa (MENA), corporate governance code, security regulators, hawkamah

* Alissa Koldertsova is a Policy Analyst in the Corporate Affairs Division of the OECD Directorate for Financial and Enterprise Affairs, where she is primarily responsible for managing the Organisation's work on corporate governance in the Middle East and North Africa region. 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 author and do not necessarily reflect the official views of the Organisation or of the governments of its member countries.

I. Introduction

The first corporate governance wave was propelled by the drive to attract foreign investment

The first wave of corporate governance awareness occurred in the Middle East and North Africa (MENA) about a decade ago. It was propelled by a few specific trends. One of them was the drive to attract foreign investment, particularly by countries with no petrochemical resources, which required substantial funds to develop their infrastructure. Another was the development of the financial sector in the region, increasingly expected to provide efficient intermediation between corporates on the one hand, and investors or banks on the other. The shift towards market-based economic organisation in some countries of the region, such as Egypt or Syria, has only accentuated this trend.

Box 1. OECD work on Corporate Governance in the Middle East and North Africa

In 2005, the OECD established a **Working Group on Improving Corporate Governance in the Middle East and North Africa** within the framework of the MENA-OECD Initiative on Governance and Investment for Development. The Working Group is comprised of representatives of capital market regulators, stock exchanges, relevant government ministries, and the private sector from the 18 participating MENA jurisdictions.

It serves as a platform for dialogue and exchange of experiences among regional policymakers, their OECD counterparts and the private sector on priority corporate governance issues. The Working Group meets annually to discuss progress achieved in reforming corporate governance frameworks and practices and to agree on future priorities. It also supports individual countries in their efforts to develop or revise relevant corporate governance standards. To date, the OECD and its partners have supported the development of corporate governance codes, based on the **OECD Principles of Corporate Governance** and the **OECD Guidelines on Corporate Governance of State-Owned Enterprises,** in Morocco and Egypt.

At the outset, the Working Group decided to focus on corporate governance of banks and state-owned enterprises (SOEs). Two regional taskforces were established to examine the frameworks and practices in these sectors and to develop consensus-based policy recommendations. The Taskforce on Corporate Governance of Banks published a **Policy Brief on Improving Corporate Governance of Banks** in the MENA region in November 2009. The Taskforce on Corporate Governance of SOEs will publish the results of its work in 2012. A new Taskforce of MENA Stock Exchanges for Corporate Governance, to be launched in 2011, will examine the mechanisms at the disposal of exchanges to promote better governance practices in listed companies.

For more information about the activities of Working Group on Improving Corporate Governance in the Middle East and North Africa, please consult: www.oecd.org/daf/corporateaffairs/mena.

This wave was also enabled by increasing development of the capital markets

In the context of developing capital markets, banking sectors in MENA countries have traditionally acted as a principal source of corporate financing (Table 1). However, the banks' ability to satisfy the demand for corporate borrowing was hampered by their relatively risk-averse profile and the general opaqueness of corporate borrowers. The disclosure-averse culture in the region, where controlling shareholders have often been reluctant to divulge operational or financial details of their business, has contributed to the general lack of transparency in the corporate sector. The ongoing development of capital markets created a requirement for greater transparency, hence slowly, but surely, pushing disclosure and broader governance issues onto the policy agenda.

Table 1. Domestic credit provided by the banking sector

As of 2008, in per cent of GDP

Country	Credit
Bahrain	115
Lebanon	169
Morocco	96
Egypt	77
Jordan	114
UAE	89

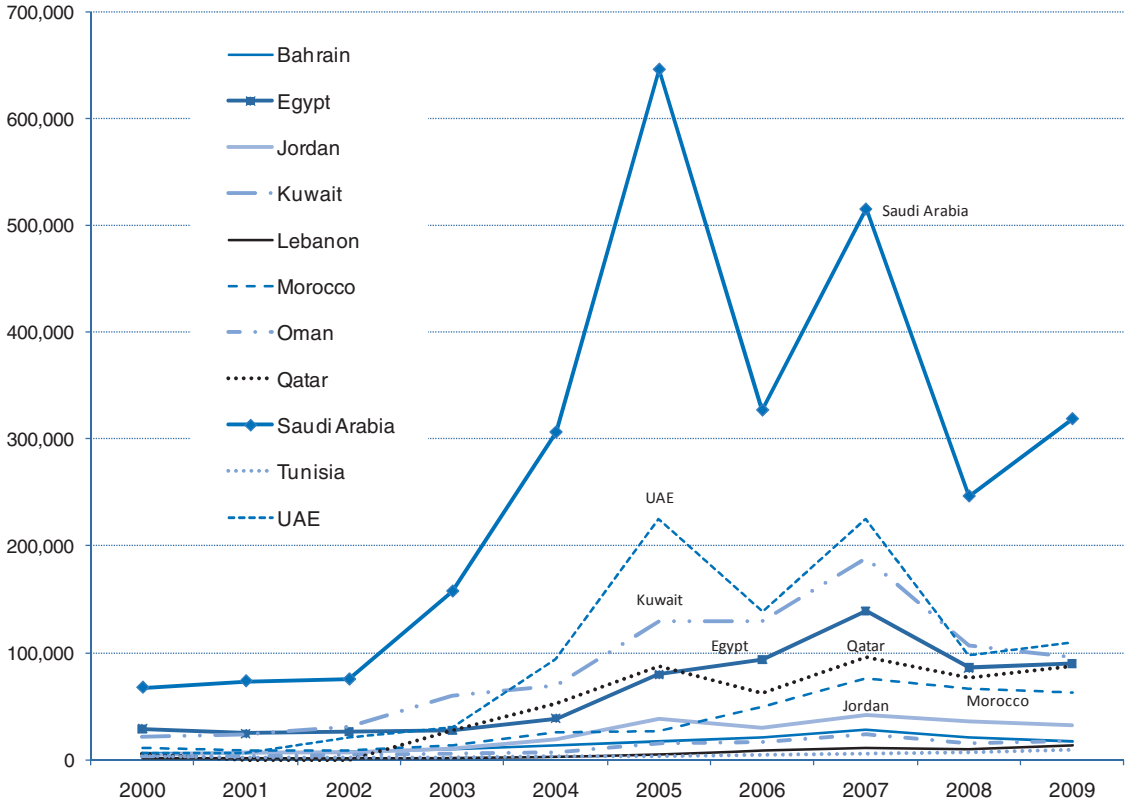
Source: World Bank development indicators.

The 2006 stock market crash played a role in bringing the corporate governance agenda to the forefront

Beginning in early 2000, the importance of good corporate governance practices began to percolate into the consciousness of regional regulators and the private sector. Then came the 2006 stock market crash – particularly pronounced in the Gulf Cooperation Council countries – which sent the local stock markets tumbling dramatically (Figure 1). While this stock market crash was not triggered by any particular corporate scandal (as with the cases of Enron or Lehman Brothers), it led regional regulators to reflect on how to make capital markets less prone to jitters and less rumour-driven.

Figure 1. Market capitalisation

2000-2009, in USD million



Source: World Bank development indicators.

Strengthening corporate governance of listed companies was a logical starting point. Although no specific corporate governance weakness was responsible for the 2006 crash, it became evident that a substantial number of investors were not sufficiently informed about their holdings, and that information provided by listed companies was inadequate and not subject to analyst coverage. Therefore, increasing the financial literacy of investors, while improving the information flow to the investing public, quickly became key priorities of the regional authorities. This is an important part of the story of how the first wave of corporate governance reforms in the Middle East and North Africa came about.

II. The first wave

The first corporate governance wave arose with the issuance of corporate governance codes

This wave started with the issuance of corporate governance rules by the national regulators, and somewhat in parallel, with the establishment of national corporate governance institutes. Oman and Egypt were the pioneers in the region, developing domestic governance codes in 2002 and 2005 respectively, both based on the OECD Principles of Corporate Governance. In a region where corporate governance was a nascent concept, such efforts were considered nothing short of revolutionary. Bearing in mind the tremendous need for education and training services, the emergence of corporate governance centres was only a natural extension of this process. The launch of the Egyptian Institute of Directors and of the Hawkamah Institute of Corporate Governance, was as much a response to the existing demand for governance know-how, as it was to create a stronger appetite for corporate governance in the region.

These initial steps foreshadowed a trend which gained regional momentum around the middle of this decade, when the majority of regulators in the region moved to introduce higher corporate governance standards. Between 2005 and 2009, 11 corporate governance codes were introduced by national regulations, in addition to specialised guidance for state-owned enterprises, banks and family-owned companies. The Egyptian Institute of Directors was the first in the region to introduce a governance code targeted specifically at state-owned entities, based on the OECD Guidelines on Corporate Governance of State-Owned Enterprises. The Lebanese Transparency Association and Moroccan Corporate Governance Taskforce introduced specialised guidelines for family-owned small and medium-size enterprises, while the Jordanian, Palestinian and the Emirati regulators introduced codes for banks.

Today, almost all MENA jurisdictions have a corporate governance code

The process of issuing specialised standards is continuing unabated. The Moroccan authorities, which have already issued a general corporate governance code, plan to complement it with specific guidelines for state-owned enterprises, which will be discussed at the next regional meeting of the OECD Taskforce on Corporate Governance of State-Owned Enterprises. The Lebanese, Yemeni and Egyptian Central Banks are currently working on developing guidelines on corporate governance of banks. All these efforts have borne fruit: today, only 3 out of the 17 MENA countries and territories surveyed do not have any corporate governance code or guidelines (Table 2).

Table 2. **Corporate Governance Codes and Recommendations in the MENA region**

Country	General Corporate Governance Code	Date of issuance	Compliance required	Other Codes/Guidelines
Algeria	Yes	2009	No	-
Bahrain	Yes	2010	No	Guidelines for banks
United Arab Emirates	Yes	2007	Yes	Code for banks
Egypt	Yes	2005, currently under revision	No	Code for state-owned enterprise Code for banks being drafted
Jordan	Yes	2008	Yes	Code for banks
Kuwait	No	-	-	-
Lebanon	Yes	2008	No	Code for small and medium-size enterprises Code for state-owned enterprises being drafted
Morocco	Yes	2008	No	Code for small and medium-size enterprises Code for state-owned enterprises being drafted Code for banks/credit institutions
Tunisia	Yes	2008	No	-
Saudi Arabia	Yes	2006, amended 2009	Yes	Guidelines for banks
Oman	Yes	2002	Yes	-
Qatar	Yes	2009	Yes	-
Syria	Yes	2008	No	Code of governance for financial intermediaries
Yemen	Yes	2010	No	Code for banks being drafted
Palestinian National Authority	Yes	2009	No	Code for banks
Libya	No	-	-	-
Iraq	No	-	-	-

Credit is due – perhaps in equal measure – to private sector and non-profit entities as well as governmental initiatives. In fact, support for the creation of sound corporate governance frameworks in the region has come from both quarters. In Algeria for instance, the Corporate Governance Commission, which drafted the Code, was formulated as a grassroots initiative by the private sector. In Oman, Egypt, Saudi Arabia and a number of other countries, key support for the corporate governance agenda has come directly from the public sector; indeed in these countries, the corporate governance centres operate under the umbrella of governmental institutions.

At the outset, corporate governance codes were voluntary

Irrespective of whether codes were private sector or government-initiated, most of them were introduced as voluntary guidelines, providing best-practice recommendations based on international standards, notably the OECD Principles of Corporate Governance. Until recently, when regulators attempted to introduce stricter requirements (beyond the voluntary recommendations contained in the codes), they often faced resistance from the corporate sector. The Omani Capital Markets Authority, for instance, was forced to withdraw one of its regulations in light of the disagreements this measure generated domestically.

Over the years, voluntary recommendations have in some instances been incorporated into the regulatory and legal frameworks. In Egypt, board independence requirements first stipulated in the governance code were subsequently incorporated into the listing standards of the Egyptian Stock Exchange. Generally speaking, however, the process of making specific governance standards more binding has advanced at a cautious pace. Listing requirements on some regional exchanges remain quite lax compared to their international peers, and corporate legislation has generally not been able to keep pace with the rapid evolution in this field internationally.

This is changing as the business case for good governance is becoming increasingly accepted

The end of this decade marks the end of the first corporate governance wave in the region, and it is undeniable that it has brought tangible results. Corporate governance, or *hawkamah* in Arabic, is no longer a term that needs defining, nor is its business case unclear. Even from a family business perspective, the case for better governance needs less justification today than it did only five years ago. This is not to deny that market regulators and stock exchanges across the region continue to face challenges in enticing family-owned companies to list their equity. The reluctance of family-owned firms to open their equity to outside shareholders is perhaps a key factor stifling corporate growth and further development of the region's capital markets.

That being said, within the region, resistance to corporate governance as a concept has shifted from the centre to the periphery – evidence of successful awareness-raising campaigns. Moreover, during the past two years, regional regulators have been abolishing the voluntary nature of governance standards. The Emirati, Saudi, Jordanian, Omani and the Qatari securities regulators have all moved to require corporate disclosure regarding compliance with local corporate governance codes. The substance and structure of the required disclosures varies, as does the mandate and capacity of regulators to ensure compliance.

III. The second wave

The second corporate governance wave has brought implementation into focus

Arguably, these developments mark the beginning of a new wave of corporate governance in the region, focusing on implementation as opposed to awareness-raising. This second wave is being manifested through the revision of governance codes in order to clarify and tighten provisions. In Egypt, the Institute of Directors is in the process of revising the corporate governance code published five years ago. Other regulators have taken a more gradual approach, amending specific articles shown in practice to be insufficiently

precise or ambitious. The Saudi Capital Market Authority has, for instance, recently amended the definition of an "independent board member", clarifying that the ownership of 5% or more of a company by a member of the board will be considered inconsistent with independence (CMA, 2009).

While these efforts demonstrate a clear transition, the impact of these changes should not be taken for granted. A critical ingredient to ensure the effective implementation of exiting corporate governance provisions is the role of the regulator. Do regional regulators have the capacity to monitor companies' compliance and to take enforcement action when necessary? What measures can be taken to further promote the capacity of relevant regulatory bodies?

Promising signs can be seen and regulators' enforcement powers are evolving

Though the answers to these questions are far from evident, some promising signs can be noted. For instance, the Saudi Capital Markets Authority is already publishing enforcement actions on its website, including in relation to its Corporate Governance Regulations. Although this might seem like a globally accepted practice, the notion of publicly "naming and shaming" is novel in MENA countries. Historically, enforcement authorities imposed penalties or forced companies to take corrective actions, without publicly announcing the details of the enforcement actions as they occurred.

While most securities regulators in the region are now endowed with significant regulatory and enforcement powers, the ability of other organisations to materially contribute to upholding better governance standards is evolving. Stock exchanges in the region have substantially less self-regulatory powers compared to their OECD counterparts, and generally speaking, play a less significant role in standard setting and enforcement (with the possible exception of insider trading cases). Important exceptions in this regard are the Egyptian and Kuwaiti exchanges, which over the past several years have moved to delist numerous non-compliant companies.

IV. Moving forward

Will the second wave of corporate governance be as effective as the first?

It is impossible to foretell whether the second wave of corporate governance in the region will be as effective as the first. Regulators' capacity to transparently monitor and enforce breaches of existing regulations, and to fine-tune them when necessary, will continue to be tested. While the rescue of financial and industrial entities in Europe and North America might be seen as "remote", home grown developments with Etisalat, Dubai World, Saad and Algosaibi Groups have most certainly been noted. Regulators will need to learn from these cases, taking into account international developments, which will only gain importance as the region becomes increasingly integrated in the global financial architecture.

Some "bread and butter" issues still need to be addressed

Whereas efforts to establish common regional or sub-regional corporate governance policies may not be the immediate objective, ongoing dialogue between regulators will be crucial. The ability of regulators to address "bread and butter" corporate governance issues in the coming years will be paramount to upholding investor confidence in the MENA markets. Particularly at a time

when restrictions on foreign investment are being removed in some markets, the ability of regulators to review the governance arrangements of listed entities will help prevent potential scandals, serving to attract further foreign interest in MENA markets. Regulators' ability to combat related-party transactions, improve transparency and disclosure, and foster effective board outcomes will determine whether the next wave will be a powerful tide or just a splash.

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