Regulation and Banking after the Crisis

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PREFACE

Frank Browne, David T. Llewellyn and Philip Molyneux

The Central Bank of Ireland and SUERF organised a joint conference in Dublin on 20th September, 2010 on the general theme of *Regulation and Banking after the Crisis*. In the best traditions of SUERF, the programme included papers and presentations from the three main constituencies of SUERF: Central Banks (including notably the Governor of the Central Bank of Ireland), academics, and financial practitioners. As always, the papers illuminated some of the different perspectives of the three constituencies. We are grateful to the many distinguished contributors who were prepared to make powerful contributions to the conference.

When constructing the programme, we were conscious that there had been many conferences devoted to the causes of the crisis, the nature and extent of official intervention, and the impact of the crisis. Rather than add yet another conference to this well-trodden topic, and conscious that the crisis could prove to be transformational in many dimensions, we chose to focus on aspects of the post crisis scenarios for the possible future structure of financial systems, business models of banks, risk management implications, and the implications for the future regulatory and supervisory regime. In so doing, it was also designed to be a precursor to the 2011 Colloquium to be held in Brussels in May on the topic of *New Paradigms in Money and Finance?* Many of the issues raised at the Dublin conference will doubtless be re-visited in the May Colloquium.

Our intention was to focus on three broad strategic issues in the three sessions of the conference: (1) *Post Crisis Regulation and Intervention Strategies* with papers from Nigel Jenkinson (BIS), Aerdt Houben (De Nederlandsche Bank), and Pat Farrell (Irish Banking Federation), (2) *New Business Models in the Post Crisis Financial System* with papers from Luc Riedweg (Banque de France), David Marques Ibañez (ECB) and Patricia Jackson (Ernst & Young), and (3) *Regulation and the Changing Financial Landscape* with papers from Edward J. Kane (Boston College), Alistair Milne (CASS Business School) and Jesús Saurina (Banco de España). The three sessions were preceded by two keynote Addresses from Patrick Honohan (Governor of the Central Bank of Ireland) and David T. Llewellyn (Loughborough University and SUERF Council Member).

What follows are the two Keynote Addresses, a conference overview by SUERF Secretary General Ernest Gnan and Morten Balling of SUERF, and the majority of the papers given in the three sessions of the conference.

The Council of Management of SUERF would like to formally express its thanks to the Central Bank of Ireland both for contributing to the planning of the conference and acting as a generous host for what proved to be a very successful day. In particular, we extend a special thanks to Governor Patrick Honohan and to Frank Browne who contributed substantially to the planning and execution of the conference.

1. Regulation and Banking after the Crisis

Morten Balling and Ernest Gnan[1]

It is quite evident that the 2007-2010 financial crisis will have substantial lasting consequences for banking and financial market supervision and regulation as well as for the future evolution of banks and the financial industry at large. Since the inception of the crisis, a lot of analysis has been conducted on the causes of the crisis and on appropriate remedies; supervisors and regulators have worked hard to fundamentally revamp international regulatory and supervisory frameworks; and banks have embarked on restructuring and repositioning strategies to respond to the changed financial and economic landscape after the crisis. With work being in full progress in these three areas, SUERF found it useful to provide an overview of the current state of play at a conference. Having the Central Bank of Ireland as a partner organisation for the project proved to be particularly valuable, given this institution's fresh and first-hand experience in crisis management. The conference was structured into four parts: The opening and keynote session aimed to provide an overview of the issues in question. Session 1 took the authorities' view in addressing post crisis regulation and intervention strategies. Session 2 adopted a financial practitioner's angle by discussing new business models in the post-crisis financial system. Session 3 provided some thought-provoking ideas on sovereign states' and financial institutions' safety nets and offered insights from the Spanish experience with dynamic provisioning.

SUERF's President, *Catherine Lubochinsky*, *opened* the conference on behalf of SUERF and raised the issue of increasing complexity of financial systems and financial supervision and regulation. Markets tend to panic, and they continuously look for reasons to panic. She raised the critical issue that Basel III does not seem to impose big new constraints on many banks – many important market participants would have satisfied these rules before the crisis, and continue to do so now. So, will Basel III be capable of preventing future crises?

Frank Browne, Central Bank of Ireland, in his *opening remarks* welcomed the opportunity to co-organise this conference with SUERF, whose three-pillar approach – bringing together practitioners, academics and authorities – proves to be particularly appropriate and necessary during periods of crises and change. The seeds for the current crisis were sawn in the previous 'good' times. Both financial markets and the authorities failed to anticipate or act against the building massive imbalances. An immediate lesson for central banks, regulators and

[1] Editing by Michael Bailey is gratefully acknowledged.

supervisors thus is that they need to be most vigilant when are others least so, they should hold contrarian views and continually question the conventional wisdom about the economy, the banking and broader financial system, and they should operate like financial seismologists. But then they also need to actually take necessary action. Financial stability is a public good which public authorities are mandated to safeguard. Regulation is always a moving target because the financial system will always attempt to circumvent it (as for example the strong growth of shadow banking prior to the crisis was triggered by regulatory arbitrage in the light of Basel II).

Views on the new banking business models which proliferated in the run-up to the crisis are now overwhelmingly negative. But the financial stability assessment of these models before the crisis was actually quite balanced: They could contribute to the resilience of the financial system but also were recognized to bread new risks. For the future, it would be important to distinguish between these new models in themselves and the – flawed – ways in which they were used by banks. The originate and distribute (OAD) model became a source of systemic crisis because of the very fact that it ultimately did not sufficiently distribute risk. Financial innovations should not be discarded in general terms but more care should be taken to minimise their negative effects. In fact, in the years ahead banks may only be in a position to originate new loans if they can sell off existing ones, if they are not to become overly dependent on uncertain wholesale funding.

In the keynote session, chaired by *Catherine Lubochinsky*, Governor *Patrick Honohan* addressed the topic of "Banks and the budget: lessons from Europe". The failure of a number of important banks has also been at the core of budgetary problems in many countries. There are various channels through which banking problems can affect budgets and the real economy. Those channels are visible both during bubbles and busts. The boom in Ireland brought huge windfall tax revenues. For over a decade, the Irish budget was in surplus. As a result, spending control was relaxed. The apparent solidity of the budget was only a mirage, which became obvious when the bubble burst. Banks had fuelled an unsustainable real estate bubble and not taken sufficient precautions for their balance sheets. The regulatory apparatus did not fully appreciate the extent of the bubble and the risks emanating from it. Current measures aim to eliminate the credit overhang and to recapitalise banks.

Much of the Irish government support for banks will show in the 2010 budget figures. The Government has taken far-reaching and painful spending cuts. Still, a further substantial reprogramming of the budget will be necessary to put the future development of debt on a sustainable path. Economic growth is best served by putting the budget on a sustainable path. No matter how international banks seemed to be, in crises they are national. But the case of Iceland probes the limits

of governments being able to save large banks. In many European countries, distressed banks have been forced to shrink back into their home markets.

There are also pressures from the budget on banks. High and unsustainable public debt can sharply raise funding costs for banks, as the past few months have shown. The EU guarantee fund and the ECB's SMP have helped to contain interest rate rises. Furthermore, cross-border holdings of sovereign debt can put pressure on bank balance sheets. Finally, the introduction of various forms of bank taxes to consolidate budgets can be the source of future financial risks if it prevents banks to build up sufficient safeguards or triggers circumvention.

David Llewellyn, Loughborough University and SUERF, talked on "Post crisis regulatory strategy: a matrix approach". He questioned the current consensus that more regulation of the financial sector is needed to prevent future crises and, even if this were to be the case, whether Basel III addressed the right issues. Most of the emphasis in Basel III has been given to pillar 1, very little has been done to improve pillars 2 and 3. Important elements, resolution mechanisms, which Prof. Llewellyn named 'pillar 4', are in his view missing altogether. Inevitably, the crisis triggers a major review of financial market supervision – with good reason: Basel I and II not only did not manage to prevent the crisis, but in his view partly caused it: The design of regulation determines the form of the next crisis rather than preventing it. If regulation indeed has a fundamental problem of endogenously shaping the next crisis, then the problem is fundamental and difficult to solve: it is not enough to just amend and supplement Basel I and II.

Any regulatory regime has two basic objectives: to reduce the probability of bank failure, and to reduce the cost of inevitable bank failure. The first is more difficult than the second, and there are also tradeoffs between the two objectives. If one could reduce the costs of bank failures, one could be less concerned about the probability of bank failures, and thus need less intrusive bank regulation. Also, the cost of regulation is often neglected, which is rising over time – because, to keep regulation effective, it needs to become increasingly restrictive over time. Regulation design should be more strategic than incremental (the latter being the case now). The speaker considered six major classes of instruments in a regulatory regime: 1) structural, 2) behavioural, 3) intervention, 4) taxation and insurance, 5) resolution, and 6) living wills. Structural measures, such as Glass-Steagall etc., do not work in practice, because regulation triggers circumvention and future crises itself. The better strategy is therefore to lower the cost of bank failures. Regulators should invest more in resolution, living wills, and taxation and insurance issues. Resolution strategies should thus be Basel's pillar 4. There is currently an excess of expectations of what regulation can achieve. Regulation is necessary but not sufficient. Current thinking on regulation starts out from a problem in the financial sector, and then tries to address it through regulation.

But the misbehaviour of the financial sector may – at least partly – be endogenous to the regulatory regime. So, regulation shoots at a moving target, and the costs of regulation continuously rise.

Session 1, chaired by *Frank Brown*, Central Bank of Ireland, dealt with "Post crisis regulation and intervention strategies". *Nigel Jenkinson*, Financial Stability Board, opened the session with an overview on "Future regulation and intervention strategies: key issues". The current supervisory reforms have two dimensions: a time-series and a cross-section one. The first group of measures puts special emphasis on containing systemic risks through introducing countercyclical capital buffers, ensuring earlier loan loss recognition and by installing countercyclical margins and haircuts. The cross-section perspective includes measures to contain spillovers and contagion, to improve market functioning and incentives (by shaping compensation schemes, improving oversight and reducing the role of rating agencies, by improving market discipline through greater transparency and by improving market infrastructure), and to lower interdependence (by addressing large exposures, introducing constraints or incentives on size and on undesired financial institution structures). Various studies show that the benefits from this new regulation should by far outweigh the potential output costs, both in the long run and in the transition period. In order to reduce failure costs, both the probability and the costs of failure of systemically important banks need to be reduced. Moral hazard from systemically important institutions needs to be addressed and crisis management capabilities need to be strengthened. Systemically important banks should have higher loss absorbency beyond Basel III. Intergroup exposures should be restricted, activities should be clearly separated. Systemic levies should help to contain activities which entail systemic risk and externalities.

Financial regulation is an important element of the regulatory toolkit, but it clearly has its limits. Interconnections between various elements need to be identified, a holistic approach is necessary. Regulatory tools also need to be robust to changing circumstances. Tradeoffs between predictability and adaptability of regulatory frameworks need to be addressed. International consistency needs to be achieved to avoid cross-border arbitrage. Finally, regulation will always need to remain flexible to address ongoing tendencies to circumvent existing regulatory measures.

Aerdt Houben, De Nederlandsche Bank, drew *lessons from the crisis with regard to risk identification and mitigation*. He conveyed three main messages: First, authorities are not good at identifying and projecting risks. Therefore, second, emphasis should be put on the second and third lines of defence: There should be more emphasis on increasing resilience to absorb shocks, and capabilities to manage and resolve crises need to be improved; resolution schemes should be given

more substance. Third, financial sector policies should follow the proportionality principle.

In principle, the credit crisis emerged while underlying risks were on policy makers' radar screens and institutional structures were focused on financial stability. There was also growing awareness of systemic risk, cross-border complications etc. Warnings on global imbalances, search for yield and excessive risk taking, the shortcomings of the originate-to-distributed model, risks of credit derivatives, risks from large and complex institutions, asset price inflation and leverage were all there before the crisis. Nevertheless, the crisis, and its severity, surprised everybody: Pro-cyclicality was more serious than anticipated, room for manoeuvre to mitigate the crisis turned out to be quite limited, fundamental uncertainty turned out to be more serious than expected, and various behavioural shortcomings, such as disaster myopia, confirmation bias and cognitive dissonance came into play. Both financial markets and supervisors were subject to over-optimism in good times and neglected infrequent risk.

To improve supervision, the authorities, first, need to change their attitude towards risk: it needs to be more forward-looking, focus on vulnerabilities rather than risks, and to focus on propagation channels and systemic linkages. Second, risk mitigation policies need to be improved and the above-mentioned three lines of defence need to be used more quickly. Third, more emphasis needs to be put on precaution, i.e. precautionary action should be taken even though robust scientific proof of the need to take action may not yet be available for financial stability (much the same as it should, e.g., for global warming and nuclear safety): when in doubt, err on the side of caution.

Pat Farrell, Irish Banking Federation, elaborated on "Banking as a social contract – the new regulatory paradigm". A major challenge now is how banking will again focus on retail business: how will it look in the future? As banks restructure, what effects will this have on the economy and on customers? Banks, the authorities and society at large are linked in a social contract: on the one hand, banks do the risky business of turning liquid savings into illiquid loans. On the other hand, regulation, deposit insurance and central banks' lender of last resort function protect the economy from these risks. Banks have failed to fulfil their part of the social contract, their reputation has been severely damaged.

A banking sector and a new social contract of the future need to comprise the following elements: Banks need to return to the 'first principles of banking', i.e. they need to be a safe place for customers' savings, be responsive to customers', the economy's and society's needs, take fewer risks, diversify their loan portfolio better, and work more closely with regulators, the government and all stakeholders. Rather than focusing on short-term gains, banks need to focus on the longer-term future. Rather than relying on profits in the real estate sector, banks

should develop expertise in modern growth centres and develop their services for SMEs. Lending should focus more on cash flow rather than property or other assets.

A number of initiatives to assist distressed homeowners have been taken to help them manage their mortgage and, if possible, keep their homes. One third of Irish SMEs struggle with loan repayments – banks cooperate with the government to find solutions to this problem. Banks have an important role, both economic and social, to play to bring Ireland forward. Banks need to be strong and safe, and innovative and responsive, at the same time in the future.

Session 2, chaired by *David T. Llewellyn*, Loughborough University and SUERF, addressed "New business models in the post-crisis financial system". *Luc Riedweg*, Banque de France, reported on results from a report on "the future of the financial landscape". No business model came out of the crisis as a clear winner. Market participants expect a diversified banking model to increase in importance at the cost of specialised models. Diversification helps to secure important fundamentals for a bank's business: funding, revenues, and customers. However, some regulatory provisions (limits to size and scope, deduction of banks' insurance and bank equity holdings from Tier 1 capital) might hamper diversification. Universal banks, while remaining diversified, are likely to privilege their core markets, activities and clients: they cannot afford to maintain unprofitable business lines; too broad a spectrum of activities may be difficult to control; in an interconnected world, risk diversification through different business lines and regional activity are smaller than thought in the past. In the next years, specialised banks will comprise, on the one hand, large players with high skills and market power; on the other hand, niche and high-growth players with small capital will either require technological advantages or special expertise and customer relationships. Retail banks will have to deal with possibly low loan growth for some while; investment banking will face volatile sources of financing and less leverage. Banks will try to reap economies of scale, cut costs, profit from cross-selling advantages, scale down low-return business, return to basics in their products and services, improve distribution and sales force productivity. Clients will ask for simple, transparent and low-risk products. In the medium term, customers will again ask for high-yield, tailor made, innovative products. Banks will try to find alternative sources of revenues and generate fee income through new forms of financial innovation; opaque and complex products might thus reappear. The consolidation process among EU banks going on already before the crisis can be expected to continue in the medium term, driven by the need to restore profitability. The recent retrenching to domestic markets is likely to be temporary. Funding will not be as easily accessible as before the crisis and will be more expensive. Given that deposit funding is a part of the current 'back to basics' policy pursued by numerous banks and the ongoing work on harmonising deposit guarantee schemes in

the EU, which will increase the attractiveness of cross-border deposits for customers, competition for deposits may increase. The new liquidity requirements may have an important impact on the future of the interbank markets as a funding source.

Regarding possible implications for financial stability, the stricter equity and liquidity requirements may lead to regulatory arbitrage (new products, geographical shift of activities, shift to non-regulated intermediaries). Diversification will need to be accompanied by sound risk management practices to ensure financial stability.

David Marqués Ibañez, European Central Bank, talked about "Bank business models and the role of securitisation and OAD". Banking market liberalisation led to larger financial institutions over the last 30 years. Dismantling of the Glass-Steagall Act played an important role in this. Starting in the mid-1960s, banks went slowly back to the security business. With the financial crisis, the separation between commercial banking and securities business is back on the political agenda. Arguments for separation are to keep deposit taking institutions with access to the deposit insurance out of activities that might lead to higher risk taking; and a possible incompatibility of incentives. Arguments for universal banking are informational economies of scope, wider diversification, international competitiveness, and the risk of activities going into the shadow banking system.

The existing empirical literature overwhelmingly shows that the advantages from universal banking outweigh the disadvantages from potential conflicts of interest. But universal banks need to be carefully supervised. Empirical estimates also show that banks with higher lending growth turn out to be riskier. Market funding and new business models had a huge impact on the transmission mechanism via loan supply. Banks more active in securitisation were also more aggressive in syndicated loan pricing.

Patricia Jackson, Ernst & Young LLP, gave a presentation entitled "A false sense of security: lessons for bank risk management from the crisis". The financial crisis was rooted in disaster myopia and a false sense of security. Therefore, stricter capital provisions are important but by no means sufficient to address problems. A first problem is misleading signals. The management of a large bank depends on appropriate information on risks. The Basel Committee had allowed risk models based on far too short historical time series. Such models in boom periods can be very misleading and nurture over-optimism on correlation and risk. Point in time models (instead of through-the-cycle measures) gave the wrong risk sensitivities and probabilities of default in the case of severe economic downturns. Netting provisions further lowered perceived risk. Also the new countercyclical capital requirements give perverse incentives: banks can compensate the effects of countercyclical regulatory measures. Stress testing now plays a more important

role within banks. But tests need to become tougher and more systematic, also putting more emphasis on liquidity stress testing; all business areas – rather than just a limited range of activities – need to be involved. Also, the right risk metrics need to enter into managers' and staff's incentive mechanisms. Banks' boards of management need to ensure a much greater understanding of risk. The speaker emphasised the strong need for standardised formats of prospectuses and contracts as important steps to improve transparency. There is a need for a clearly formulated risk appetite with quantitative metrics.

An important lesson from the crisis is that market failure, time inconsistency and incomplete information were at the core of the problem. There were core failures in the market's design for structured products: time inconsistency lead to a decline in standards; search costs were too high, thus information was in some cases not easily available. Therefore, the Financial Stability Board should collect information on rapidly growing opaque markets and disseminate it to the market. Clearer and simpler products with guarantees of due diligence are needed.

Session 3, chaired by *Philip Molyneux*, Bangor Business School and SUERF, was devoted to "Regulation and the changing financial landscape". *Alistair Milne*, Cass Business School, City University London, opened the session with a paper on "Limited liability non-bank government debt for the euro zone". Starting from the question whether EMU requires fiscal integration, the author argued in favour of putting more emphasis on market discipline and less on fiscal rules. Fiscal federalism is not clearly defined but claimed as a justification for loans and transfers between sovereign states. Fiscal hawks argue for stricter and fully enforced fiscal policy rules. But why are the current weaknesses of fiscal discipline through market forces not addressed instead of focusing on fiscal federalism or fiscal rules? The available literature shows four methods to control fiscal policy: rules, market forces, administrative procedures, and cooperative systems. The USA, Canada and Switzerland (where there is little if any support for states from the central budget in case of financial difficulties) are basically market based systems, whereas Germany and Japan fall under the category where central bailouts are the norm. Loss of fiscal control seems to be far more prevalent in the latter than in the former type of system.

In the author's view, market discipline on euro area fiscal policy would best be imposed through ex ante rules on debt service and restructuring. In his proposal, debt servicing would be limited to a maximum primary surplus, of e.g. 5% of GDP. Thus, interest payments would be cancelled, and principal payments would be postponed to meet this requirement. There would be limits on bank holdings of government debt. The maturity structure of government borrowing should focus on the long term, whereas a short-term, senior facility would be at a high (i.e. penalty) rate of interest.

Edward J. Kane, Boston College, presented a paper on "Redefining and containing systemic risk". The taxpayer's exposure to loss through the financial system's safety net is the essence of systemic risk. The current crisis reflects uncertainty about the size of the losses and who will bear them. Financial crises are battles over loss distribution, and bailouts are exercises in robbing some agents to pay others. Costs and benefits of tax-transfer programs lack balance. The crisis was not so much caused by de-regulation than by 'de-supervision'. The effectiveness of any financial system depends on the vigilance and conscientiousness of bank supervisors, who are subject to various influences and incentives. In the subprime bubble, private and government supervisors shut their eyes to regulation-induced efforts to disguise leverage and volume-based compensation schemes that reinforced the short-cutting and outsourcing of due diligence. The major symptom of an impending crisis is the unacknowledged proliferation of institutions not viable without implicit government support.

Systemic risk has two symptoms: the potential for substantial spillovers, and the ability of institutions to command implicit and explicit support from national safety nets: authorities' susceptibility to capture give politically strong firms a subsidized 'taxpayer put'. Taxpayers as de facto shareholders of systemically important firms deserve more information and accountability. In practice, institutional arrangements do not hold credit rating agencies and other safety-net supervisors accountable for detecting safety-net subsidies or minimising costs for the taxpayer of saving systemically important institutions. Irresponsible financial firms (and governments) should not be saved by the taxpayer. Safety net reform in the US and the EU is therefore on the wrong track. It is economically wrongly focused by relying on expanding incentive-conflicted regulators' power. It is politically dishonest by claiming 'never again' and by making no effort to clean up the dysfunctional culture of regulatory capture.

Responses need to include a combination of measures: improving public-service contracting to offset pressures from the industry, e.g. by deferred compensation and by requiring agencies to report fully on non-public interactions with politicians; creating an independent agency monitoring and publicizing safety-net subsidies; and recognizing that private firms are responsible to the taxpayer.

The session was concluded with a paper by *Jesús Saurina*, Banco de España, on "Macroprudential regulation". Lending cycles mean that borrowers and lenders are overconfident about investment projects in booms, while during recessions they suddenly turn very conservative. Empirical evidence confirms such pro-cyclical lending behaviour, e.g. collateral requirements decline and higher credit risk is accepted during boom times. Monetary policy may increase banks' risk taking by maintaining overly long periods of low interest rates.

The Spanish system of dynamic provisioning was installed in mid-2000 and modified in 2004. Banks are required to disclose the amount of the dynamic provisions. Thus, financial statements properly reflect the true financial situation of a bank. The Spanish system allows for an earlier detection of credit losses building up, it is a transparent, rule-based and formula-based system and provides information comparable across banks. It can also be regarded as an early warning system for financial statement users. All in all, the tool proved to be useful but is no silver bullet either. In particular, it cannot be expected to play the role which other tools, such as monetary or fiscal policies, are supposed to fulfil. There are various options for implementing countercyclical aspects into Basel III – as often, the devil lies in the detail. But simulations show that it is possible to substantially reduce lending cycles through such measures.

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The roughly 110 participants clearly benefited from the presentations, as reflected by the vivid exchange of views. By bringing together academic researchers, policy makers and financial practitioners SUERF hopes to have again made a contribution in furthering our understanding of issues central to all three constituencies and to society at large.

2. Banks and the Budget: Lessons from Europe

Patrick Honohan

My topic today goes to the heart of the financial crisis from which we are emerging. For it is abundantly clear that a breathtaking series of banking failures have, directly or indirectly, been at the root of the budgetary problems now being faced by so many countries, and the impact of the banking crisis on national budgets is set to colour the pace, character and geographical differentiation of the economic recovery generally over the coming years.

But there are several important channels of influence between banks and the budget, some more obvious than others. Because of the scale and pervasiveness of banks, and the speed with which liquidity conditions can change, the impact of banks on the budget can be crucial. At the same time, budgetary decisions including tax and quasi-taxes crucially impact on the banks themselves as do indirect influences through the direction of credit; when banks get into trouble, they are more likely than almost any other sector to be rescued by a government whose interventions are backed up by budgetary resources.

All of this has been dramatically illustrated in recent years, months and indeed weeks. And although the epicentre of the global financial crisis was the US investment banking market, the links between banks and the budget have arguably been recently illustrated in no region more than Europe and in few European countries more than in Ireland.

2.1. Two-way Channels of Influence Between Banks and the Budget – the Irish Example

The channels of influence are present on the way up and the way down, and in both directions between banks and the budget.

Let me make this concrete by giving you some flavour of the Irish situation. From 2003 to 2007 the Irish banking system imported funds equivalent to over 50 per cent of GDP to fund a runaway property and construction bubble. The tax revenue generated by the boom came in many forms: capital gains on property, stamp duty on property transactions, value added tax on construction materials and income tax from the extra workers – immigrants from the rest of Europe, from Africa, from China, flooded in as the construction sector alone swelled up to

account for about 13 per cent of the numbers at work (about twice the current level, which is closer to what would be normal).

For over a decade the budget was in surplus (averaging over 1½ per cent of GDP) almost every year. No need, it seemed, for restraint in spending, and so, after years of relatively disciplined government budgeting, there was a relaxation of spending controls – one I will say which was broadly welcomed across most of the political spectrum. Alas, that the apparent solidity of the public finances was all a mirage was brutally exposed when global financial confidence collapsed. Already the Irish boom was well over: house prices were falling and the government deficit widening from early 2007. The global recession did its damage to the budget also through the direct effect on world trade and accordingly on economic activity, given the very open nature of the Irish economy. But a more direct effect on the budget was yet to become manifest. The progressive tightening of short-term financial markets during the second half of 2007 and through 2008, peaking in those dramatic weeks after the bankruptcy of Lehman Brothers, eventually exposed the fact that, not only had the banks fuelled an unsustainable property bubble, but they had not safeguarded their own solvency through adequate collateral and guarantees. The Government had little alternative to announcing an extensive guarantee of bank liabilities. This has proved not to be costless, and is imposing a net cost which will place a heavy burden on taxpayers and the users of public services in Ireland for several years – though, as I have repeatedly stated since the broad magnitudes became clearer in March of this year, it is manageable from the point of view of the national public finances and a good deal less than some alarmist commentary had suggested.

To be specific, every one of the top eight retail lenders – three of them subsidiaries or branches of well-known international banking groups – have been recording loan losses which would eventually eat substantially into their capital were it not for the fact that this is in the process of being replenished. Thus the entire banking sector got caught up in an unreal scenario. Each firm was looking over its shoulder at the others and reluctant both to miss out on a seemingly profitable growth business and fearful of the shareholders' reaction to declining market share. In an ideal world, the prudential regulator would have called a halt, but – as I have recently documented in my detailed report to the Minister for Finance on the matter – despite some misgivings about the growing exposure, the regulatory apparatus did not fully appreciate the scale and imminence of the risks whether at the systemic or individual bank level and acted only timidly and ineffectually to restrain the lending boom.

Rather than see the banks limp on, crippled by non-performing loans that would both inhibit their ability to retain depositor funding and discourage any new lending, the government already stepped in at the beginning of 2009 to begin the portfolio restructuring of the system.

The approach being adopted is comprehensive and transparent. It is designed to remove the overhang of large hard-to-recover property loans from the books of the banks, freeing their management to concentrate on providing the credit and other services needed for the economic recovery. The banks are being recapitalized – by parents in the case of the foreign-owned banks, through market-sources, backed-up by injections of capital by government where necessary for the rest.

The asset management agency NAMA has been established to purchase the largest property related loans from the banks on an ambitious scale – indeed, relative to the economy NAMA will be among the largest agencies of its type – China providing possibly the closest parallel. The NAMA approach is to buy the loans at market-related prices, with a view to NAMA breaking even or better over time as it recovers on the loans. Despite the haircuts that this inevitably entails, all five of the main local ly-controlled banks have agreed to participate in NAMA. The process of valuing and transferring the loans is a painstaking one which is taking longer than everyone hoped, but it is well under way, and the discounts on the initial tranches have been large – over 50 per cent in the first two tranches on average.

Of course this crystallization of losses erodes the capital of the banks, and has given rise to a very visible and transparent recapitalization need which has been addressed very energetically by the Central Bank. (I have heard some suggestion that such up-front transparency could have been avoided by brushing the problem under the carpet in any of a variety of ways. Bank resolution history does not provide much support for such a suggestion. Denial and obfuscation would, I believe, not have been credible anyway, and would have prolonged the crisis and increased its ultimate cost.)

It has been clear to the authorities that the banks would need to be recapitalized to a comfortable and credible level if they were to recover their financial independence and operate without placing additional burdens on the budget. Well ahead of the recent EU-wide stress tests, the Central Bank conducted its own stress tests, which we called the prudential capital adequacy review (PCAR), starting with the two main banks. This entailed a detailed assessment of loan-loss prospects across the non-NAMA part of the portfolio to the end of the current loan-loss cycle, assumed to be 2012, as well as a projection of operating income. As a result of this assessment, which challenged and went further than not only the banks' existing provisions, but their management's projections of loan losses, the Central Bank determined for each of the banks an additional capital amount that they would have to raise, one way or another. The additional amount was designed to cover not only the loan losses implied by reading across the first NAMA haircuts to the rest of the non-NAMA book, but also to ensure that the banks would have ample capital to meet the future losses. Thus, on the base case

projection – which as mentioned is highly stressed relative to IFRS provisioning and relative to the banks' own projections – the banks will come through the bottom of the cycle with at least 8 per cent core tier 1 capital (7 per cent equity).

These new capital requirements for Irish banks were announced at the end of March, to be met by the end of the year. Bank of Ireland already satisfies the requirement, having inter alia raised equity capital through a rights issue. AIB, the other large core bank in the system had more to do, and is still working on it, having announced the satisfactory sale of its Polish subsidiary within the last few days. To the extent that AIB may not raise the full amount on its own, the Government has undertaken to meet any deficiency, through the conversion of its preference share stake and if needed with an additional equity injection, presumably using the resources of the National Pension Reserve Fund.

Recapitalization and restructuring of the three smaller institutions is well under way also. Bids have been received from a number of interested parties in EBS, and I expect its future ownership to be resolved quite soon. The disposition of the retail business of Irish Nationwide will follow soon thereafter. The PCAR exercise for the bancassurer ILP has recently been completed and involves only a small additional sum to be raised.

The recapitalization process also benefits the banks' liquidity position, both in terms of cash raised and by reducing the loan to deposit ratios.

The Government's decision on Anglo – a bank whose astonishing level of loan losses has been widely aired, and which has damaged the domestic and international reputation of Irish banking – comes as a welcome relief. The proposed structure will provide a secure home for Anglo's depositors, insulating them from the process of running-off the loan assets over time.

The Government has asked the Central Bank to determine the appropriate levels of capital needed in the two institutions into which Anglo is being split. There are some technicalities involved, and, while I don't want to anticipate the exact numbers to be published, it may be worth explaining that the type of capital assessment we are doing for Anglo is different from those we have already conducted for the other Irish banks, due to the nature of the split bank structure, the goal of working out assets and of derisking the balance sheet and the prospect of a change in the regulatory status of the asset recovery entity over time. Our analysis of base capital calculations will therefore focus on the amount required to ensure the new structure is capitalized in accordance with current Basel capital requirements in light of existing provisions and immediate expected losses. We will also be publishing a stress assessment of the potential future losses taking account of stress funding costs as well. Thus, recognizing that losses may exceed the base assessment over time, by setting out a stress case we aim to provide as much

certainty as is reasonably possible as to the potential exposure presented by Anglo under a severe hypothetical stress scenario in the run off of its book.

I'm not planning to revisit today details of the overall net fiscal cost of the Irish banking crisis. Everyone has known for months that the exposure is large, with a wide, though narrowing, range of uncertainty. Current work seeks to narrow the range as far as possible, though historical experience cautions against expecting great precision. The Anglo base capital and stress calculations will definitely help, and the completion of the NAMA process will also narrow the range – for example with regard to INBS.

Much of the exceptional government financial support for bank restructuring arises this year, and followers of budgetary statistics will see a sizable step jump in Irish government debt, and a sharp transient spike in government borrowing in 2010. Interested market participants are being kept well aware of this, and publication of the exact numbers should not come as a surprise. Actually, though, these exceptional financial injections into banks are smaller than the rest of the government deficit in 2009-10. Just as expansive credit conditions filled the coffers in the good years, so the unwinding of an unsustainable domestic boom is draining the coffers in much the same way and to a similar magnitude.

As many of you will know, the Government has already taken prompt and painful steps to readjust its spending and tax profile, most conspicuously by effectively cutting public sector pay rates. It has kept to the targets it set for net budgetary savings in 2009 and 2010.

I have recently been looking more closely though at the multi-year prospects for the budget. Of course it can be said, if the economy stays close to the track originally envisaged, the deficit would come close to 3 per cent by 2014. But as the IMF and others have noted, the real economy, the price level and also interest rates on Government borrowing, have evolved in a less favorable way. Servicing of the additional debt related to bank restructuring is also a negative factor.

Some explicit reprogramming of the budgetary profile for the coming years is clearly necessary soon if debt dynamics are to be convincingly convergent. Recent movements in the yield spread on Government debt – both for Ireland and for some other countries –readily demonstrate the costs that can result unless international lenders remain convinced that the budget is going to be kept on a convergent path, as indeed the Government is committed to ensuring.

During the 1980s Ireland paid a high price in terms of borrowing costs because the markets feared much steeper exchange rate depreciation than actually occurred. An equilibrium of pessimism, with the economy struggling, and investors requiring a risk premium that imposed additional costs on the taxpayer, displaced what could have been an equilibrium of self-fulfilling optimism. It is

important now to re-set the fiscal path to ensure a virtuous cycle of lower borrowing rates contributing to even faster fiscal adjustment and a lower overall cost of the adjustment to society at large.

While there has been an international debate on this matter for larger countries, there seems to me to be no question, for Ireland and for other small financially-stressed sovereigns, but that national growth is best served by ensuring that the public finances are convincingly on a convergent path: the impact on funding costs and confidence surely more than offsets any short-term adverse impact on domestic demand from lower net public spending.

2.2. OTHER RECENT EUROPEAN EXAMPLES OF BANKS IMPOSING COSTS ON THE BUDGET

There have been several other high profile cases in Europe – Iceland and Latvia most conspicuously – where we have seen the public finances (and the economy generally) crippled by local banking excesses that coincided with, but were not in any close way related to, the contemporary excesses related to the US mortgage market.

These two cases provide a contrast to the Irish one in regard to the impact of bank recapitalisation on the national budget. As Mervyn King has remarked, the current crisis has shown the extent to which, no matter how global banks are in life, in death – or near death experiences – they are local; in this context imposing on the national budget.

As has been thoroughly documented by the report of the inquiry there, Iceland's banks had made a leap for scale which was not simply based on importing funds that pumped up the local economy. Indeed they greatly outgrew the local economy (which after all is very small, with a national population of less than half a million persons) and were heavily involved in the financing of international investment ventures of some of their Iceland-based customers. When these banks – middle sized in an international comparison – failed, the national authorities regarded the burden of meeting all of their liabilities as being too great to be assumed, and their rescue and restructuring of these entities was partial only, with much of the foreign liabilities not covered, a matter which led to a fraught international negotiation, especially with the authorities in the UK and Netherlands.

The Iceland case probes the limits of the impact that banking system rescues can have on the budget. Indeed the general issue of limiting the scope of bailouts has come under increasing international scrutiny with academics and policymakers trying to design viable ways of reducing the number of banks that can be considered too big, too complex, or too interrelated with the rest of the system, to be

allowed to fail with losses to uninsured creditors. Policies designed to limit the size, remove the complexity, and pre-design an orderly liquidation scheme (living will) are all being considered as solutions in this direction. There is much to be said for this line of policy exploration; especially when it seems that some of the institutions that got into trouble globally have become too complex to be reliably managed. But I have to say that I am not altogether optimistic that there will quickly be a full solution that both preserves the effectiveness and cost efficiencies of modern finance and genuinely removes the need for rescues in all conditions.

Latvia's reliance on foreign-owned banks points to the opposite end of the budgetary impact of financial globalization. Although there was a significant local bank failure, much of the actual and prospective loan losses in the Latvian downturn are being borne by the foreign-owned banks that made the loans (the bulk of them denominated in foreign currency, a factor which certainly complicates the assessment of risks and narrows the range of policy options).

These contrasts show the uneven degree of financial globalisation in the European Union (and the European Economic Area, which embraces Iceland). The banking system in some countries, mostly smaller countries in Central and Eastern Europe, is dominated by foreign-owned banks with headquarters elsewhere in the EEA. The direct recapitalisation costs of banking failures in those countries are exported back to the home countries, providing a kind of automatic insurance to the host country. (The primary supervisory responsibility also generally lies with the home country, though the geographical match of risk and regulation is certainly not perfect.) Most EEA countries rely principally, though, on locally-owned and controlled banks. Indeed, banks that have got into trouble and required rescuing have been shrinking back into their home countries, partly in order to help them meet regulatory capital requirements and partly because the European Commission has been taking a jaundiced view of state-aid being used to bolster geographically over-extended business models. The old vision of a seamless European banking market where, regardless of their home country within the EEA, the most cost-effective providers would deliver the financial services needed by firms and households may never have been wholly realistic, at least when it comes to retail services. But this vision has certainly suffered a setback from the Iceland case, to the extent that the regional ambitions of any bank may in practice be limited by the perceived fiscal capacity of its home government.

I have so far dwelt on the problems posed for government budgets by failing banks. The country examples I have chosen are not, of course, the only ones affected. Belgium, Germany, the Netherlands, Spain, Switzerland and the United Kingdom are other European countries which have seen the need for public injections of funds in one form or another. In some cases (such as Switzerland) the main source of the problem was the participation of banks in the tainted securitisations coming from the US; in other cases national bubbles were also present.

2.3. FROM BUDGET TO BANKS

But there are also pressures in the opposite direction, i.e. from budget to banks, which have only now come to the fore for the first time in advanced economies (though this was long an important dimension of the banking crises suffered by many developing countries in the 70s, 80s and 90s).

Two aspects have so far been central here, one of which relates to the pressure that a fiscally weak sovereign places on the funding costs of its home banks; the other to pressures that can be placed on banks in other jurisdictions who have or are thought to have, exposures to those sovereigns.

The first problem has been affecting bank lending rates across much of Europe, and is most evident in the euro area, where these effects are unrelated to currency differentials. The sharp jump in sovereign spreads in the first half of May, 2010 is only the most dramatic illustration of the degree to which these pressures matter. The tensions were transmitted immediately and fully to bank funding conditions affecting both cost and availability of wholesale funds in the relevant countries. With the European Council acting to put in place a huge commitment of public funds – some EUR 750 billion, which is huge in relation, for example, to the outstanding stock of debt in the countries affected – as a financial back-stop mechanism to ensure access of governments to funding needs (conditional on compliance with adequate budgetary discipline – requiring quite sharp fiscal adjustment measures), the ECB stepped in promptly to purchase securities outright, with the aim of unblocking money market conditions, thereby restoring a more normal functioning of debt markets and ensuring a more effective transmission of the monetary policy stance, which has been geared for many months now to providing adequate liquidity at a low interest rate consistent with the overriding goal of low inflation.

Although market functioning improved following these actions, spreads on the debt of several sovereigns have widened again to levels that are exceptionally high by historical standards and this is still passing through to bank interest rates in the relevant countries, and adds to the cost and difficulty of rolling over wholesale deposits and debt issuance by banks in the relevant countries.

As I mentioned at the outset, Irish banks became heavily dependent on foreign funding sources at the height of the boom. It will clearly take some time for the Irish banks, like those in many other jurisdictions, to readjust their funding profile.

For example, as is well know, the Irish banks have been facing an increase in liability refinancing this month. Several policy tools have been available to assist with this process, both from the ELG guarantee scheme – which I understand will

very shortly be formally confirmed as applying to 0-3 month maturities – and from central banking liquidity resources to the extent required.

The second problem has been the emergence of a market perception that significant European banks faced a serious problem with regard to cross-border holdings of sovereign debt. I believe that this issue was greatly overplayed by market participants and the recent EU-wide stress test exercise has, I think, gone a long way to putting it into a more realistic perspective, especially through the extensive disclosure of the relevant exposu res.

Heightened awareness of the interaction between the budget and banks is stiffening a third form of pressure from budgetary policy to the banks. This relates to the new wave of proposals to tax banks one way or another. Given what has happened, it's a natural impulse to see if some revenue can be clawed back from the banking system, especially in countries where most or all of the banks have now weathered the storm and are reporting healthy results. For my part, having seen and analyzed in the past some of the damaging economic distortions around the world caused by poorly designed bank taxation, explicit and implicit, I am relieved that an international consensus seems to be building around forms of taxation that are less likely to add to damaging economic distortions. Not only can many types of bank tax fall disproportionately in practice on the smaller customers of the banks rather than on the shareholders or senior managers of the banks (who are sometimes the political target of such taxes), but the potential for disintermediation to undermine the revenue can mean both a disappointing revenue and sometimes an increase in prudential risks. Fortunately, these dangers are being recognised, thus, for example, imposing a levy on uninsured liabilities of banks, or on a surrogate for the value-added of the banking system, seems more likely to have an acceptable ratio of deadweight cost to revenue, than other forms such as a tax on interest rates, or than a general tax on bank transactions as has been proposed by some, but which would in my view not generate as much revenue as is often supposed, and would not be effective in discouraging the forms of financial excess that caused the crisis. It may be that well-targeted corrective Pigouvian taxes can do even better, for example if they are targeted at excessive reliance by banks and other financial firms on short-term borrowing.

Taxation is of course only one aspect of the heightened policy attention now being given to banks given their role in the crisis generally and not least in the damage they have, directly and indirectly, done to national budgets. Never more, I think, will banks be given the leeway to expand their intermediation activities with only a light regulatory touch to verify soundness. Banks must reconcile themselves to a heightened and more skeptical regulatory scrutiny, such as that which is being put in place in Ireland as in several other countries. The new capital and liquidity requirements recently agreed at Basel, and the heightened inter-

national surveillance of banking systems, exemplified by the proposed European Systemic Risk Board, represent an inevitable recognition of the interdependence of public and private finance, and the proposition that a banking license is a privilege, not a right, and one which needs to be exercised with greater regard to the public good.

3. Post Crisis Regulatory Strategy: A Matrix Approach

David T. Llewellyn

3.1. Some Key Issues

The focus of this paper is on the post-crisis regulatory regime and regulatory strategy. Although they are clearly relevant to regulatory issues, we do not consider the precise nature of the crisis or its causes which are discussed elsewhere (Llewellyn, 2010).

It is evident that, prior to the onset of the crisis, many countries (notably the UK) did not have clearly-defined Resolution arrangements in place which created uncertainty about how governments would respond to serious bank distress. A series of *ad hoc* responses were made which were generally handled well. The UK authorities subsequently reacted quickly to establish such arrangements as seen, for instance, in the Special Resolution Regime which, *inter alia*, gives the authorities power to activate Resolution before a bank becomes technically insolvent. An issue to consider is the moral hazard created by the massive interventions made by governments and central banks.

The structure of the paper is as follows. This section offers an opening perspective by establishing what the key objectives of the regulatory regime should be, outlining some general principles to guide the regulatory reform process, and making a distinction between *incremental* and *strategic* approaches to reform. A Regulation Matrix is outlined based on the two central objectives of any regulatory regime: lowering the probability of bank failures, and minimising the costs of those failures that do occur. The nature of a possible trade-off between the two objectives is reviewed. Section 3.2. considers the various instruments in a regulatory regime and makes a distinction between six alternatives: *structural*, *behavioural*, *intervention*, *tax* and *insurance*, *Resolution* and *Living Wills*. The limits of regulation are outlined in the context of an *endogeneity paradigm*. Section 3.3. reviews the alternative means of reducing the probability of bank failures, and section 3.4. considers the various options to minimise the costs of bank failures. Section 3.5. summarises the main themes by outlining a regulatory reform strategy.

3.1.1. Some General Principles

Before considering regulatory reform, the context is set by establishing a set of general principles to guide regulatory reform.

- the regulatory regime has two key objectives: to lower the probability of bank failures, and to lower the cost of those failures that do occur. Both dimensions need to be considered in future regulatory strategy;
- the central focus needs to be on the systemic dimension rather than myopically on the position of individual banks;
- the Too-Big-To-Fail (TBTF) issue needs to be addressed because of the moral hazard it creates towards excessive risk taking and potential tax-payer liability;
- the perversity of the privatisation of bank profits and the socialisation of bank risk (without *ex ante* insurance being paid) needs to be reversed;
- the costs of any bank failure should be borne by private stakeholders (mainly bank shareholders and unsecured creditors) rather than tax-payers;
- regulatory strategy needs to be based on the general principle of competitive neutrality: all institutions (and not exclusively banks) that can potentially create systemic stability problems are to be included within the orbit of regulation: the 'boundary' issue. Systemic risks need to be addressed irrespective of where they emanate which means that the remit of regulation and supervision needs to be extended to Shadow Banks. This does not mean, however, that all banks are to be treated in the same way as their potential contribution to systemic problems varies;
- partly because of the 'endogeneity problem' (regulation can in itself create perverse incentives and excessive risk-taking by regulated firms), expectations about what in practice regulation can do to ensure the safety and soundness of institutions and systemic stability need to be managed to appropriate levels;
- the regulatory regime needs to encompass credible, predictable, and timely Resolution arrangements for failing institutions which limit the potential liability of tax-payers;
- banks should be able to fail without causing disruption to customer services or imposing costs on the tax-payer;
- there is an important role for market discipline within the overall regulatory regime and measures are needed to enhance this role within the system.

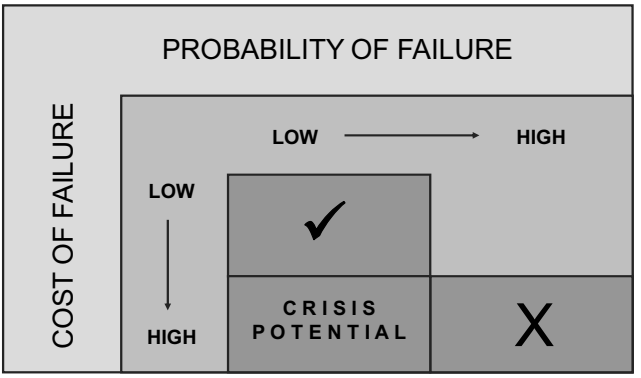
A key issue is the extent to which these general principles are to be secured through *structural*, *behavioural*, and/or *taxation* and *insurance* measures. This raises the particular issue (within structural measures) as to whether there is a need to have different types of banks (e.g. Glass-Steagall and Narrow Bank proposals), or whether existing business models (perhaps with safeguards) are to be sustained.

3.1.2. Objectives of Regulation: Strategic v. Incremental

A central theme is that regulatory reform needs to be *strategic* rather than *incremental*. A strategic focus implies that the regulatory reform process goes back to basics including considering what the ultimate objectives of regulation are, and what it is trying to achieve. This requires a different paradigm than with *incremental* reform which restricts itself to refining existing regulatory requirements (capital ratios, etc). The two broad objectives of any regulatory regime are:
(1) to reduce the *probability* of bank failures; and
(2) to lower the *cost* of those failures that do occur.

In a Regulation Matrix (figure 1), the probability of an event (in this case of a bank failing) is measured on the horizontal axis and the costs of failure are identified on the vertical axis. The costs of bank failures relate to those incurred directly or indirectly by *inter alia* the system as a whole (the systemic stability dimension), tax-payers who might be called upon to finance rescue operations, depositors, deposit protection funds, and customers in general if banking services are disrupted and uncertainty is created.

Figure 1. Regulation Matrix: Probability v. Cost Trade Off



The matrix illustrates the possibility of a trade-off between the two: if the *costs* of failure can be lowered, there need be less concern about the *probability* of failures. In the extreme (totally unrealistic) case, if the costs of bank failures could be reduced to zero, the probability of failures would be of no concern, there would be no potential tax-payer liability, no need for bail-outs, and no moral hazard attached to bail-outs. Furthermore, there would be no need for regulation to reduce the probability of bank failures. Of course, such a utopia is just that! Nevertheless, it serves to illustrate the nature of the trade-off implicit in the Regulation Matrix.

Historically, the focus of regulation has been more on reducing the probability of failures rather than minimising their costs. Indeed, in many countries the second issue has only been addressed in a serious way since the current crisis. For instance, the UK adopted a Special Resolution Regime in 2009 in the context of the absence of any special insolvency arrangements for banks, and weak and ill-defined institutional arrangements for dealing with failing institutions.

Given that all regulatory measures to reduce the probability of bank failures have costs, and the costs that would arise in seeking to reduce the probability of failure to zero (supposing it were at all possible even with the most draconian regulatory impositions) would be substantial, the trade-off between the two dimensions is central to decisions about the optimal intensity of regulation. There may, for instance, be less need for measures to lower the cost of failures if the probability of failure were to be reduced to a low level. Conversely, if this were to be either impossible (or achievable only with draconian and high-cost regulation), the greater is the need to have in place measures to minimise the costs of those bank failures that do occur.

The central strategic issue in any comprehensive regulatory and institutional reform is the positioning to be made on the Regulation Matrix. A combined strategy would move in a north-west direction in the matrix.

3.2. INSTRUMENTS IN A REGULATORY REGIME

With respect to the two core objectives of reducing the probability of bank failures and lowering the costs of those failures that do occur, subsequent sections discuss six strategic options which are summarised in table 1:

(1) *structural* regulation (such as Glass-Steagall-type measures and Narrow Banks) is designed to limit the size and/or allowable business of those banks that are deemed to be TBTF;
(2) *behavioural* regulation (such as capital and liquidity requirements) imposed on banks and other financial institutions designed to lower the probability of failure;
(3) *intervention* measures (such as Structured Early Intervention and Resolution (SEIR) regimes) designed to maintain a failing bank as a going concern. Intervention arrangements focus on remedial action imposed by supervisors in the event of a deteriorating position of a bank;
(4) *tax and Insurance* measures whereby banks pay *ex post* to recoup the costs of past bail-outs (tax), and *ex ante* to cover possible future interventions (insurance), and to compensate the tax-payer for the implicit subsidy given to TBTF institutions;

(5) *resolution* arrangements for closing banks and their subsequent Resolution: bank bankruptcy laws, etc, and how, in the event of a failure, the process is managed in order to minimise costs;
(6) *Living Wills* (or Recovery and Resolution Plans) designed to make explicit how banks will respond to problems that threaten solvency (Recovery), and how, in the event that a bank fails, different parts of the business are to be separately identified so that some can be rescued while others are not (Resolution).

We refer to this six-fold paradigm, and the instruments within it, as the *Regulatory Regime*. A wider definition (including the role of market discipline and governance arrangements) is given in Llewellyn (2001 and 2002).

Measures to lower the probability of bank failures can be divided between *structural*, *behavioural*, and *intervention* measures. Five broad types of measures are available to reduce the cost of bank failures (table 1, p. 34): *structural measures* (such as limits on the size of banks to address the TBTF issue); *behavioural* measures; the charging of *ex post* tax on banks to recoup the cost of past bailouts and *ex ante* insurance and charges; *Resolution* arrangements for closing banks and their subsequent Resolution, and the creation of *Living Wills*. In practice, some measures may be constructed to both lower the probability of bank failure and minismise the costs of failures.

3.2.1. Regulatory Strategy: The Endogeneity Paradigm

A methodological issue to consider is the regulatory process itself. Regulatory strategy conventionally assumes that the problems to be addressed (e.g. excessive risk-taking by banks) are *exogenous* to the regulatory process. In which case a problem is observed and a regulatory response is made to deal with it: i.e. to reduce the probability of it happening. Exogeneity is a bold assumption as problems may be at least partly endogenous to regulation, i.e. caused by the very regulation designed to reduce the probability of problems emerging. This arises as banks seek to circumvent regulation through financial innovation and by changing the way that business is conducted. This in turn calls forth more regulation: Kane's regulatory dialectic (Kane, 1987). In the process, the cost of regulation rises as successive adjustments are made. As the costs of regulation designed to lower the probability of bank failure rise, the trade-off between the two objectives of the regulatory regime changes in favour of minimising the cost of bank failures rather than their probability. The endogeneity problem is likely to raise the cost of effective regulation because it engenders a rules-escalation strategy. By raising regulatory costs, this becomes part of the trade-off between the two core objectives. Overall, optimality shifts towards the second objective the more costly

Table 1. Regulatory Regime Instruments

	Lower Probability of Failure	Reduce Costs of Failure
Structural Measures	• Glass-Steagall • Narrow Banks • Equity Banks	• Limits on size • SIBs • Glass-Steagall • Narrow Bank
Behavioural Measures	• Capital • Liquidity • Remuneration • Connectedness • Funding rules • Macro-prudential focus	• Capital • Connectedness
Intervention Measures	• PCA /SEIR	
Taxation and Insurance		Taxation of banks *Ex ante* insurance
Resolution Measures		• Bank insolvency laws • Private purchase of banks • Bridge Bank • Bad bank • Nationalisation • Business transfers
Living Wills	• Recovery measures	• Resolution measures • Wind-up plans

effective regulation to lower the probability of bank failures becomes, and the more that the costs of bank failures can be reduced.

The process of regulatory arbitrage diverts the nature of the problem. Because of this, regulation is often shooting at a moving target, with the target moving partly because of regulation itself. For instance, the Basel 2 capital regime (hailed at the time as a decisive breakthrough in the regulation of banks) created incentives to remove assets from banks' balance sheets, securitisation, the creation of Structured Investment vehicles (SIVs) and other off-balance sheet vehicles, and the use of credit risk-shifting derivatives: all of these featured as central aspects of the banking crisis (Llewellyn, 2010). Clearly, detailed rules at the time did not prevent the crisis. Kay (2009a) takes a view at one end of the spectrum:

> *"The lesson of the failure of the Basel Accords is not that the regime should be elaborated beyond the 4000 pages of text in the current accords. It is that the whole system should be swept away, and the responsibility for capital adequacy and risk management put back where it belongs – in the hands of the executives of banks, who should then carry heavy and exclusive responsibility for failures of control."*

The limits of regulation can be seen in the Basel capital regime. Many banks that got into serious trouble entered the crisis with excess regulatory capital: sometimes by as much as 100 percent. For instance, the five largest banks in the US that failed or needed to merge (Bear Sterns, Washington Mutual, Lehman Brothers, Watchover and Merrill Lynch) all had capital ratios between 12.3 and 16.1 percent. Experience also suggests that capital can disappear very quickly as shown in the case of Northern Rock which failed within weeks of announcing it would repay 'excess' capital to shareholders. An IMF study compared successful and unsuccessful banks during the crisis and found no significant difference in capital ratios immediately prior to the onset of the crisis (IMF, 2009). The lesson is that capital can be destroyed very quickly which puts further doubt on relying on capital regulation to reduce the probability of bank failures. Apart from the potential for regulatory arbitrage, it is possible that, under some circumstance, capital requirements may induce banks into more risky business. Blundell-Wignall, *et al.* (2008) show a positive correlation between losses and banks' Tier 1 risk-weighted capital ratio, although a negative correlation between losses and the leverage ratio. This suggests that the risk-weight approach to capital adequacy may induce banks to incur more risk through increased leverage as was the case in the years prior to the recent crisis. Unless regulation is to become grossly repressive, regulatory arbitrage will always be a major feature of bank business models. As noted in Haldane, *et al.* (2010), "risks migrate to where regulation is weakest, so there are natural limits to what regulatory strategies can reasonably achieve."

In response to revealed weaknesses, the regime has shifted from Basel 1 to Basel 2 and now to Basel 3. If regulation has not worked as planned this could be either because we have yet to reach the optimal structure of regulation (Basel N), or because there might be fault-lines in the regulatory process itself.

This all suggests that an alternative approach might be more fruitful: rather than focus on incremental measures designed to reduce the probability of bank failures, more emphasis could be given to designing features of a regulatory regime designed to reduce the costs of those bank failures that do occur. Given the weaknesses and limitations of regulation, whilst rules may be a necessary part of the regulatory regime, they are not sufficient. An alternative approach is to lower the cost of bank failures by keeping risks private rather than, as has massively been the case in the recent crisis, socialised by shifting risks to tax-papers.

In practice, both approaches are needed: lowering the probability of bank failure, and limiting the costs of failures. The debate about the role of regulation and supervision for financial stability is about the appropriate weight to be given to the two dimensions. Whilst accepting that both approaches are needed, more emphasis than in the past needs to be given to the latter than the former given

that, however carefully constructed, regulation will never prevent bank failures and neither should it attempt to do so. In principle, and returning to the trade-offs in the Regulation Matrix, if the costs of failure can be reduced through such a mechanism there can be a greater acceptability of the probability of bank failures.

3.3. LOWERING THE PROBABILITY OF BANK FAILURES

A formal distinction is made between measures designed to lower the probability of bank failures, and those designed primarily to lower the cost of those failures that do occur. In practice, this is not a strict dichotomy as some measures (including some structural measures) serve both objectives in different ways. Thus, Glass-Steagall-type separation might lower the probability of a strictly commercial bank failing and also lower the cost of failure in that, in principle, an investment bank could be allowed to fail without disturbing any core commercial banking business. If the two types of business are fully integrated into a single bank, this would not be possible. This, however, begs two questions: whether the risk profile of commercial banks is reduced when investment banking is separate, and whether in practice an investment bank can be allowed to fail because of a judgment that it would not adversely affect commercial banking being conducted elsewhere.

3.3.1. Reduce Probability: Structural Regulation

Measures to reduce the probability of bank failure can be categorised as *structural*, *behavioural,* or *intervention* (table 1). There is a long history of structural regulation in many countries and many of the arguments considered after the recent crisis are not new. Structural measures relate to regulation that prescribes the nature, structure and allowable business of banks and other financial firms, rather than the way business is conducted. One particular example is the proposal of the Obama Administration for a ban on commercial banks conducting proprietary trading on their own account or owning or investing in hedge funds and private equity pools (the 'Volker Rule').

Three key *structural* measures are considered to illustrate the argument: (1) measures to define and limit the allowable business of banks (various versions of the Glass-Steagall model), (2) the concept of Narrow Banking, and (3) an Equity Bank model. Although these three dimensions are related, different issues arise. For some analysts, the ultimate objective of structural measures is to limit the risk profile of certain types of banks and most especially those conducting core commercial banking business. One of the objectives is to prevent commercial banks

being 'contaminated' by different types of risk encountered in investment banking and securities trading.

Our theme, however, is that in practice most of the proposed structural measures are either impractical or largely irrelevant. The evidence of the crisis indicates that a wide range of different types of banks failed: large, small, highly diversified, focused, commercial banks and investment banks. This raises three general questions about structural measures: whether, in practice, a clear distinction can be made between different types of institution and business; whether it is possible to define institutions that are systemically important as against those that are not, and whether issues of size and business lines are the key issues. Prohibiting commercial banks from conducting some forms of speculative activity would not reduce it in total but shift that activity elsewhere in the system and there can be little confidence that the institutions conducting this business would not be systemically significant even though they may not be conducting core commercial banking business. For instance, Lehman Brothers was not a commercial bank conducting core banking business, and yet its failure clearly did impose substantial systemic costs.

3.3.2. *Glass-Steagall* Approach

The obvious main historical precedent for structural measures is the Glass-Steagall Act in the US which, in 1933, in principle (though not in practice) made clear divisions between commercial and investment banking, with commercial banks being barred from a range of investment banking activity and securities trading on their own account. Although this is a very old debate, a new slant is the distinction that has been made between 'casino banking' and 'utility banking' (Kay, 2009). Casino banking includes the more speculative activity that some banks were conducting in the years prior to the recent crisis.

The arguments in favour of a Glass-Steagall type of approach (even if it were not to be as extreme as the 1933 Act in the US) are that of separating the different risks of commercial and investment banking and not contaminating commercial banking with investment banking and securities trading risks. Haldane (2010) suggests that size and diversity have been positively correlated with recent write-down experience. The argument is also that if customers' deposits are to receive some form of protection, it is inappropriate for such deposits to fund speculative activity or securities trading. As put by De Grauwe (2008), under Glass-Steagall-type approaches: "banks are excluded from investing in equities, derivatives and complex structured products. Investment in such products can only be performed by financial institutions, investment banks, which are forbidden from funding these investments by deposits." In these models, commercial banks (or utility-

type banks) which would have the implicit lender-of-last-resort support of the tax-payer would have only a limited range of risks. It is further argued that separation would allow different types of banks to be regulated differently.

There are, however, both practical and analytical problems with a Glass-Steagall-type approach. The practical difficulties of making a formal separation are formidable and the distinction between different types of business is fuzzy at the margins. In fluid markets, and with constant financial re-engineering, it is difficult in practice to separate different types of risks. Banks would also doubtless find ways round any Glass-Steagall imposition. It is also not clear that the empirical evidence supports such a distinction in that, in the recent crisis, a wide range of different types of banks got into serious difficulty: some banks that failed were retail banks. Thus, in the UK, the most spectacular bank failure was that of Northern Rock which was quintessentially a retail commercial bank even though it adopted a different model of banking with heavy use of securitisation and wholesale funding (Llewellyn, 2008). Equally, not all universal banks which combined the full range of activities (such as HSBC) encountered serious problems in the crisis.

Furthermore, it cannot be predicted with any degree of certainty which banks will be allowed to fail (Lehman Brothers v. Bear Stearns v Northern Rock), and the origins of potential systemic crises are equally unpredictable. Bear Stearns was not a 'utility'-type institution and yet, when it got into serious difficulties, the US authorities categorised it as a systemically important institution. In practice, a bail-out of a large Investment Bank would be needed even though it might have no retail deposits. This means that, in a world of interconnected markets and institutions, a Glass-Steagall-type approach would neither identify which banks might fail or what type of institution might need to be rescued in the interests of systemic stability.

It can also be argued that a Glass-Steagall-type approach is based on a faulty diagnosis of the causes of the crisis which were more to do with *inter alia* excess gearing and inter-connectedness which a Glass-Steagall approach would not in itself address. A further consideration is that systemic problems arise largely through cross-sector contagion and the connectedness of banks, and it is not clear that a formal separation of different types of banking activity would address this central issue. Furthermore, it is unlikely that Glass-Steagall would protect against systemic risk between firms when a crisis strikes.

In contrast to the argument supporting the separation of different types of risk, diversification of risks can equally reduce the overall risk profile of a Universal Bank. A formal separation might also destroy the alleged synergies between different activities within a Universal Bank, and the advantages to business customers through having the option of dealing with a single bank for the full range of

their banking requirements. However, the empirical evidence regarding economies of scale and scope is, at best, equivocal and certainly offers no strong support. This is also seen in the conglomerate discount (Laeven and Levine, 2007, and Schmid and Walter, 2009). A formal separation of different types of banks could also reduce competitive pressures by creating regulatory-imposed entry barriers into different areas of banking business.

A particular practical issue and irrespective of any intrinsic merits of this or any other form of structural regulation, is that, in the absence of global agreement (which is highly unlikely), the imposition of structural limits could place a country's banks at a competitive disadvantage when competing in a global market place.

There are, therefore, both practical and empirical questions surrounding a Glass-Steagall-type structural approach to reducing systemic risk. A later section returns to the issue of whether structural measures might lower the cost of bank failures. It is argued below that an approach based on capital adequacy regulation and supervision, and the adoption of Living Wills, is likely to be a more practical and appropriate approach. Furthermore, differentiated capital adequacy regulation (and tighter regulation placed on banks' trading books) could achieve the same result as any structural regulation designed to enforce separation of different types of banks.

3.3.2.1. Narrow Banks

The basic idea of Glass-Steagall-type models is to make a clear distinction between commercial and investment banking. A yet more restrictive arrangement, albeit along the same lines, is the Narrow Bank model of which there are many variants (see FSA, 2009). As with Glass-Steagall, although the discussion here is in terms of reducing the probability of failures, the model can equally be regarded as one to reduce the costs of failure.

A new terminology has emerged with a distinction made between what has been termed *utility* banking and *casino* banking. Kay (2009a) in particular makes this distinction and argues that casino banking cannot in practice be controlled by regulation and hence no attempt should be made to do so. And yet there remains a need to prevent failures in casino banking having systemic effects and jeopardising depositors, and potentially making claims on the tax-payer. The current debate about Narrow Banking is a resurrection of a much older idea first suggested in Litan (1987) where banks receiving insured deposits should be constrained in the risks they are allowed to take on the basis of such 'subsidised' deposits.

Whilst there are various versions of the Narrow Bank model (involving different degrees of restriction) the basic ideas are common: in particular, that there should be a separation between utility and casino banking. As put by Kay (2009b): "The primary objective of the regulation of financial services going forward is that the casino should never again jeopardise the utility". As in the Litan model, banks would not be able to use protected or insured deposits for speculative and casino-like activities. Kotlikoff and Leamer (2009) argue that banks should not hold risky assets and that, while banks should be free to use their comparative information and risk analysis advantages to originate loans, these should then be securitised and held elsewhere. The business of a Narrow Bank would be restricted to accepting deposits and supplying basic banking services (such as payments facilities) and holding low-risk and highly liquid assets. In some versions of the model, the Narrow Bank would be required to hold 100 percent liquidity backing. In other versions, Narrow Banks would be able to make low-risk loans, though how precisely these would be defined remains an open question.

The key property of the model is that retail deposits (and the assets backing them) would be segregated from any other business that the institution incorporating a Narrow Bank might conduct, and that the allowable business of a Narrow Bank would be severely restricted. Furthermore, if a Narrow Bank were to be incorporated within the same organisation (such as a Bank Holding Company), the structure of the bank should allow for the utility part of the bank to be easily separated from the casino part in the event of a failure of the bank. This amounts to a strategy of 'subsidiarisation' where different business lines of a bank are separated and allocated dedicated capital to the extent that one part of the bank can be allowed to fail without endangering the bank as a whole and critically its core commercial banking business.

A property of the Narrow Bank proposal is that only such banks would be rescued in the event of failure though, given the nature of the model, the probability of this would allegedly be low. Some proponents of the model also argue that institutions that are not defined as Narrow Banks would not be subject to regulation but would be allowed to fail. In terms of the Regulation Matrix (figure 1), the probability of failure of Narrow Banks and the costs of failure of other banks would allegedly be low.

Whilst these models might appear attractive in terms of shielding depositors from excessive risk-taking in the investment part of the business, and possibly allowing the latter to fail without a bail-out, the alleged attractions are not convincing:

– all types of institutions can have powerful and de-stabilising systemic implications which means that, in practice, there is no clear-cut division between those banks (Narrow Banks) that will always be supported while others (e.g. investment banks) which will be allowed to fail. As argued in earlier sections,

the key systemic issues arise through connectedness and it is difficult to imagine that in practice Narrow Banks would be entirely immune from the failure of a casino operation;
- to some extent, the same objectives could be achieved through a combination of higher capital requirements on the investment business of a Universal Bank, more intensive regulation and supervision generally, and Living Wills. Behavioural regulation might be a less disruptive alternative to structural regulation;
- the Narrow Bank model could prove to be pro-cyclical (Turner, 2010). In the upswing of the cycle, depositors and business would likely gravitate to the unprotected sector (thereby accentuating the upswing), whereas when trouble strikes a migration of funds to Narrow Banks is likely to occur which would aggravate the downswing;
- synergies between deposit-taking and bank lending would be lost and especially the information advantages a bank gains by running customers' bank accounts with this information being available in the assessment of creditworthiness of borrowing customers (see Llewellyn, 1999a);
- tying up bank deposits in low risk assets (such as government bonds) would be economically wasteful;
- given the potential size of the Narrow Bank sector, the issue arises as to whether the supply of government securities would be sufficient as a counterpart to retail deposits on banks' balance sheets.

Our conclusion is that the concept of the Narrow Bank is unlikely to be a practical way forward.

3.3.2.2. Equity Banks

A key characteristic of banks (abstracting from true Islamic banks), and in contrast to mutual funds, is that both sides of the balance sheet are dominated by various types of debt contracts mixed with a small amount of equity (the banks' equity capital base). The debt contracts on the liabilities side are fixed in money terms whereas the debt contracts (loans) on the assets side are of uncertain value in the event of loan defaults. A bank becomes technically insolvent if the value of the debt contracts on the assets side falls below the value of debt contracts on the liabilities side.

Logically, this could be avoided (along with the associated costs) if the contracts on both sides of the balance sheet were equity-type. Kotlikoff (2010) offers a radical structural measure for credit extension by transforming banks into mutual loan funds. In this model investors would share in the performance and value of the bank's loans. This would also remove debt-contract maturity transformation, and make banks 100 percent equity funded. Which would remove the threat of

bank failure and, therefore, remove the need for any public support in the event of a decline in the value of loans and other assets.

A fundamental critique is that the demand for such banks is likely to be limited as banks evolved in their present form precisely to meet the demand for maturity transformation by borrowing and deposit customers. In effect, banks would cease to perform the basic functions that historically they emerged to undertake. There is a clear distinction between investors who want equity contracts (the banks' shareholders) and the far greater number of investors who acquire debt contracts in the form of traditional deposits.

This concept of Equity Banks amounts to solving for the problems associated with bank failures by abolishing banks!

3.3.3. Reduce Probability: Behavioural Regulation

Most regulation is *behavioural* in that it imposes requirements that affect the way business is conducted and is designed to create incentives for prudent behaviour.

3.3.3.1. Bank Capital

A key dimension is the role of bank capital in the overall regulatory regime: the definition of different types of capital (and most especially the distinction between loss-absorbing capital and some debt instruments that are counted as capital), and required levels of capital adequacy. Capital is a buffer (or internal insurance fund) to cover unexpected risks and outcomes which are not realistically covered in the pricing and the risk premia charged on loans, or which can be externally insured.

A key issue is the extent to which (if at all) imposed equity capital requirements are a true cost either to banks or society generally. It is often claimed (mainly by bankers) that, as the cost of equity is greater than that of debt, to impose higher equity capital requirements on banks would necessarily lead to a rise in the costs of banking and financial intermediation services: the oft-mentioned trade-off between efficiency and stability; lower bank lending, and lower rates of return on equity and hence returns to shareholders. The fact that banks substantially raised their gearing in the years prior to the crisis in order to raise ROEs suggests that banks do regard a rise in required equity capital as a net increase in the costs of banking.

A later section argues the case for a substantial rise in bank (equity) capital as an alternative to structural measures designed to lower the probability of bank failures. This is based in part on the proposition that many of the concerns about

raising equity capital requirements are unfounded when the systemic perspective (rather than the interests of banks themselves) is adopted:

- various versions of the standard Modigliani-Miller theorem suggest that a rise in equity capital ratios should produce an offsetting fall in risk premia (both in equity and debt) as the bank becomes less risky. This in turn lowers the required rate of return on equity to satisfy shareholders. Furthermore, higher equity capital on the balance sheet should, to the extent that it lowers perceived risk, lower the cost of debt for banks;
- even if there were to be net costs, the benefits of a potentially more stable banking system need to be considered as part of the equation of balancing costs and benefits;
- there is a systemic benefit in lowering the cost of bank failures given the higher equity cushion: a higher proportion of potential losses are met by equity shareholders;
- there is currently a bias in favour of debt financing of banks because of perceived safety net arrangements, the different tax treatment of debt and equity, and the expectation of bail-outs. A rise in required equity capital ratios can be viewed as a contribution to minimising this perverse bias. Again, while this will be a cost to banks themselves, it is not a social cost to the extent that it corrects for market distortions. Thus, while a reduction in the tax benefit is a cost to banks (and hence one reason why they prefer high gearing) this is not a social cost;
- moral hazard in terms of risk-taking should also be moderated to the extent that shareholders have more to lose with high equity capital ratios, and hence have a greater incentive to monitor banks' behaviour and risk-taking. Low capital ratios can be an incentive for shareholders to take (or tolerate) high risk strategies.

Admati *et al.* (2010) argue that higher capital requirements are likely to produce more stable returns to bank shareholders albeit lower in buoyant times but higher in distressed times because of a lower appetite for risk.

The key point is that a distinction is to be made between private and social costs when adjusting regulatory capital requirements. Social costs are not increased if banks are required to pay for the subsidies and implicit guarantees they receive. Our overall assessment is that higher (perhaps substantially higher and in the region of 15 percent) capital requirements are likely to imply little social cost but significant systemic benefits.

Five particular critiques of Basel II can be identified for the purposes of the current discussion. Firstly, the risk-weight approach is flawed as in practice it created incentives for banks to incur more risk, raise gearing ratios (in some cases and at some times to as high as 50), and business models (securitisation, CDOs, etc) that

had the effect of raising the degree of connectedness in the banking system. Secondly, and related to this, it created incentives to conduct business through SIVs which provided an easy route for investment in asset-backed securities without the need to have normal equity backing. With respect to the last-mentioned, as SIVs could operate with virtually no capital, they could secure funds at 10 basis points above the commercial paper rate whereas the margin would have been 40 bp had 8 percent capital backing been required (Acharya *et al.*, 2009). Thirdly, although capital ratios on the basis of risk-weights tended to rise, overall ratios fell substantially in many cases because there was an increased concentration on trading book activity where risk weights and regulatory capital requirements were low compared with traditional on-balance sheet business. Fourthly, the complexity of the Basel II requirements was itself a contributory factor in the increased opaqueness of the banking system as it became increasingly difficult for outsiders to assess the risk characteristics of individual banks. Finally, and subsuming these points, precision was mistaken for accuracy: the risk weights were very precise but not obviously related to true actuarial measures of risk. Applying the theory of the second-best, if risk weights are not accurate a better approach than making a rough approximation of risk, could be to apply a different methodology altogether (such as a simple gearing ratio with more intensive supervision).

3.3.4. Lower the Probability of Failures: Intervention

A key component of any regulatory regime, and strategies to reduce the probability of failures, is the nature, timing and form of *Intervention* in the event of a failing bank. Intervention strategies can be based on Prompt Corrective Action programmes (i.e. intervention being made early), and SEIR regimes as in the US. These are similar to the Recovery and Resolution arrangements within Living Wills discussed in a later section.

Intervention arrangements have incentive and moral hazard effects which potentially influence future behaviour of banks and their customers. These arrangements may also have significant implications for the total cost of intervention (e.g. initial forbearance often has the effect of raising the eventual cost of subsequent intervention), and the distribution of those costs between tax-payers and other agents. Different intervention arrangements also have implications for the future efficiency of the financial system in that, for instance, forbearance may have the effect of sustaining inefficient banks and excess capacity in the banking sector. The issue focuses on when intervention is to be made. The experience of banking crises in both developed and developing countries indicates that well-defined strategies for responding to the possible insolvency of financial institutions is needed.

A key issue relates to rules *versus* discretion in the event of bank distress: the extent to which intervention should be circumscribed by clearly-defined rules (so that intervention agencies have no discretion about whether, how and when to act), or whether there should always be discretion simply because relevant circumstances cannot be set out in advance. The obvious *prima facie* advantage for allowing discretion is that it is impossible to foresee all future circumstances and conditions for when a bank might become distressed and close to insolvency.

There are strong arguments against allowing discretion and in favour of a rules approach to intervention. Firstly, a rules approach enhances the credibility of the intervention agency in that market participants have a high degree of certainty that, when necessary, action will be taken. Secondly, allowing discretion may increase the probability of forbearance which usually eventually leads to higher costs when intervention is finally made. It guards against hazards associated with risk-averse regulators who themselves might be disinclined to take action for fear that it will be interpreted as a regulatory failure, and the temptation to allow a firm to trade-out of its difficulty: a policy that amounts to the regulator 'gambling for resurrection'. Kane (2000), for instance, argues that officials may forbear because they face different incentives from those of the market: their own welfare, the interests of the agency they represent, political interests, reputation, future employment prospects, etc. Perhaps less plausibly, he also argues that the present generation of tax-payers may believe they can shift the cost of resolution to future generations. Thirdly, a rules-based approach removes the danger of undue political interference in the disciplining of banks. Experience in many countries indicates that supervisory authorities may face substantial pressure to delay action and intervention. Fourthly, a rules approach guards against supervisors focusing on the short-term costs of intervention compared with the longer-term costs of delaying intervention. Fifthly, it guards against a 'collective euphoria' syndrome whereby all agents (including supervisors) are swept along by a common euphoria (Llewellyn, 2010). Finally, and related to the first, a rules approach to intervention is likely to have a beneficial impact on *ex ante* behaviour of financial firms, and create incentives for management to manage banks prudently so as to reduce the probability of insolvency.

An example of the rules-based approach is to be found in the Prompt Corrective Action (PCA) rules in the US. These specify graduated intervention by the regulators with pre-determined responses triggered by, *inter alia*, capital thresholds. Several other countries have such rules of intervention. SEIR strategies can, therefore, act as a powerful incentive for prudent behaviour.

3.4. MINIMISING THE COSTS OF BANK FAILURES

This section considers measures designed to minimise the costs of bank failures given that, however realistically constructed, measures to reduce the probability of failures will not guarantee there will no bank failures.

3.4.1. Minimise the Cost of Failure: Structural Measures

A central theme is that regulatory reform needs to focus not only on measures to reduce the probability of bank failures, but also arrangements to reduce the cost of those failures that inevitably will occur under any regime. This section outlines some of the *structural* measures (summarised in table 1) designed to lower the cost of bank failures.

3.4.1.1. TBTF and the Size Issue

A central issue in regulatory reform centres on the TBTF syndrome (Huertas, 2009). In evidence to the UK House of Commons Treasury Committee, the Governor of the Bank of England argued that it is probably *the* most important single issue to address. He has also suggested that "if a bank is too big to fail, it is too big!" The Bank of England has pondered the issue of size: "The current size and structure of financial systems may be incompatible with maintaining financial stability and containing calls on public resources" (Bank of England, 2009). On the other hand, in some cases such banks might also be too big to rescue because of the size of the potential tax-payer liability.

Haldane (2009b) suggests that a key issue is how to break out of a 'doom loop': expectations of some banks being TBTF create a moral hazard and excess risk which may lead to failures and the rescue of those banks. The resurrected banks are then free to repeat the process. In this vicious circle, the apparent solution to one problem sows the seeds of the next.

The central objective is to lower the systemic costs of failure although some of the measures discussed could also lower the probability of failure of large banks. In principle, there are five alternative strategies to limit the TBTF problem. Firstly, although in practice unrealistic, a limit might be placed on the size of banks. Secondly, large banks could be broken up. A third option, and more realistic than limiting size, is to impose capital charges based on the size of banks and their systemic significance. In practice to date there has been something of a negative correlation between bank size and capital ratios which, to some extent, has been perversely encouraged by the Basel Capital Accord and especially Basel II. A fourth alterative is to impose a tax on size. Finally, 'wind-up' plans and/or Living Wills could be imposed on large institutions designed to ring-fence some bank

activities so that parts can fail without bringing down the whole bank. Overall, large or systemically important banks could be subject to a higher degree of regulatory intensity.

Herring (2010) suggests two alternatives to bail-outs of TBTF banks: more stringent capital and regulatory requirements on such banks, and the imposition of 'wind-up plans'. The latter is similar to the Living Wills proposal discussed in a later section. Other alternatives (such as the imposition of regulatory leverage ratio limits) to address the TBTF problem are outlined in Warwick Commission (2009).

There are, however, several problems to these structural measures. Firstly, it is difficult in practice to define the size of a bank which triggers the TBTF problem. For instance, in the UK while Northern Rock was not a large bank (it had assets of around £100 billion) the government judged that, faced with a run on the bank in August 2007, it needed to intervene with a rescue operation. Secondly, in a world of network externalities and high connectedness, even the failure of relatively small banks can create systemic problems: Lehman Brothers was not a particularly big bank. It cannot be claimed that only large banks pose systemic vulnerabilities, and in a crisis a wide range of banks and other financial institutions can become systemically significant. Thirdly, to the extent there are economies of scale in banking (though the empirical evidence is at best ambiguous), there could be costs associated with any structural regulation that sought to limit size. Furthermore, if regulatory arbitrage and competitive neutrality problems are to be avoided, any such measures would need to be internationally coordinated and this is unlikely in practice. Such measures could also impose a 'tax' on efficiency in that large banks may have got to their size because of their superior efficiency and performance.

Problems would also emerge if many small banks were to fail at the same time because collectively they would have a large systemic effect. Sinn (2010) argues as follows: "Smallness would make it possible to dispense with government help only if investment risks are uncorrelated, but this can hardly be turned into an argument for smallness, as big banks would not be destroyed by uncorrelated risks in the first place. The whole question of government help arises only in the case of correlated or systemic risks, and in this case small and big banks alike would have to be rescued."

Many of the structural measures described above related to the size issue, apply equally to systemically important banks. Some banks may be systemically significant irrespective of their size. A higher degree of regulatory intensity could be applied to such banks. This could involve calibrating regulatory requirements on the basis of institutions' contribution to systemic risk which would in turn be reflected in their cost of business. While this might mean that consumers pay

more for banking services from such institutions, there would in principle be an offsetting welfare gain by lowering both the probability of failure, and (via Living Wills) also the cost of failures of systemically important banks. The BIS has argued that the rationale of a Systemic Capital Charge would be to create a distribution of capital that reflects the systemic risk posed by individual firms (BIS, 2010).

One option to deal with banks regarded as potentially systemically important is to impose higher capital charges on such institutions as advocated, for instance, by Acharya and Richardson (2009), Brunnermeier *et al.* (2009) and Bernanke (2009). The Financial Services Board has also proposed a global capital charge on SIBs. Chan-Lau (2010) suggests a practical methodology for levying capital charges based on degrees of interconnectedness. These would be based on a bank's incremental contribution to systemic risk and its contribution to increased risk of other institutions. The approach is designed as a way of internalising negative externalities associated with too-connected-to-fail institutions.

As argued in an earlier section, our conclusion is that most structural measures to address the TBTF issue are not in practice feasible, and were not central considerations in the crisis. However, as outlined in a later section, the creation of Living Wills could be a workable structural measure to address this key issue. It recognises the *status quo* that some banks are big and complex and that it is not feasible to limit their size or break them up.

3.4.2. Minimise the Cost of Failures: Taxation

The wide range of intervention measures applied by governments and central banks in the wake of the crisis involved a substantial tax-payer commitment. Tax payers became what amounted to an 'insurer of last resort' but with an inefficient insurance contract in that no *ex ante* premiums were paid by the insured entities. The contract was implicit. In effect, tax-payers became exposed to bank credit risks they themselves had no part in creating and for which no *ex ante* premiums were received.

In order to minimise the cost to tax-payers, banks could be required to pay *ex ante* premiums and/or *ex post* tax for the costs of rescue operations: banks could be required to pay for the costs of the crisis and the benefits received through public intervention. The distribution implications would be difficult to unravel although each bank's liability to pay could in principle be related to a measure of its systemic significance.

The rationale for imposing special taxation on banks is three-fold: (1) to recoup the costs of past bail-outs and intervention, (2) to compensate for the effective subsidy received by banks by virtue of possible future bail-outs and being TBTF,

and, (3) creating incentives to alter funding structures and perhaps against becoming 'too big'. The incentive structure with regard to funding is seen in the UK case where a new tax relates to each bank's balance sheet size minus the sum of core capital, insured (retail) deposits, and cash raised against holdings of government bonds: this is, in effect, a tax on wholesale market borrowing. It amounts to a systemic risk levy whereby the tax internalises to banks the social (systemic) costs they potentially create.

The IMF was mandated by governments to report to the G20 on options for raising money from the financial sector to pay for the costs of government intervention. Two proposals were subsequently made: a *Financial Stability Contribution* and a *Financial Activity Tax*. In the former case, banks would be required to make payments *ex ante* through a levy on their balance sheets. This would imply payments to cover Intervention and Resolution costs. The Financial Activity Tax would be similar to the application of a Value Added Tax.

3.4.3. Minimise the Cost of Failures: Resolution Arrangements

Whatever regulatory regime exists to reduce the probability of bank failures, it can never reduce this to zero and neither should it attempt to do so as this would imply gross over-regulation which would undermine the effectiveness and efficiency of the financial system in general and the banking sector in particular. As there always will be banks that are deemed to be TBTF, and there always will be bank failures, it is prudent to have explicit Resolution regimes so as to reduce the costs of those failures that do occur. Banks need to be put into a Resolution procedure if they are unable to survive without public support, and cannot re-finance maturing debt. The key issue is how banks are to be allowed to fail while minimising costs to depositors, bank customers, the tax-payer and any deposit protection arrangements that might be in place. Resolution needs to be orderly and predictable. A key objective is to minimise the moral hazard created by bank rescues.

The objective is to allow banks to 'fail' without disturbing business and customer relationships, and to ensure that the costs of default fall on equity, bond holders and other non-insured creditors. In effect, the 'socialisation' of the costs of failure is to be avoided. This can be engineered by, for instance, requiring uninsured creditors to provide capital support via 'hair-cuts' and requiring banks to issue convertible bonds: bonds that become equity when needed.

Many countries entered the recent crisis without clearly-defined Resolution arrangements for banks in place and without the legal structure giving powers of intervention before insolvency is reached. Problems emerge when Resolution

arrangements are not clear. Firstly, it creates uncertainty for all stakeholders including depositors and other banks in the system. Secondly, it creates time-consistency problems (and hence credibility issues) as governments may be induced to behave differently over time. Thirdly, stakeholders are inclined to bargain for economic rents often (if not usually) at the expense of the tax-payer. Fourthly, as argued above, it can lead to political pressures for forbearance, and can lead to costly and unnecessary delays in Resolution.

Given the strong presumption in favour of clearly-defined, explicit and predictable Resolution procedures to be in place, a set of key criteria are outlined for constructing such a Resolution regime:

- minimal, or zero, loss or risk to tax-payers;
- banks that cannot survive without public support to be placed in the Resolution procedure;
- resolution to be activated before a bank becomes technically insolvent: this should have the beneficial effect of enhancing market discipline;
- resolution procedures to be activated very quickly so as not to jeopardise customers' banking arrangements: there should be no disruption to the business of the bank for its customers;
- any pay-outs to insured depositors to be made with minimal delay;
- shareholders never to be protected;
- non-insured creditors to share in any costs of insolvency;
- resolution arrangements not to create moral hazard for the future;
- the arrangements need to credibly sustain financial stability and public confidence;
- minimal distortion to competitive neutrality between banks: for EU countries this also implies adherence to EU competition requirements;
- large, and systemically significant, banks to be required to construct their own Resolution plans (Living Wills as discussed below);
- the avoidance of any potential for stakeholders (most especially banks) to bargain for economic rents.

The ultimate objective is for Resolution arrangements to be in place to resolve distressed banks with the minimum of costs and disruption which implies allowing banks to fail without disturbing systemic stability. A basic principle in reducing the cost of bank failures is that it should be possible for the problems of a failed bank to be addressed quickly. This means that insolvency and bankruptcy procedures need to be clear and appropriate for the special position of banks.

Several elements can be included in Resolution arrangements some of which are included in the UK's Special Resolution Regime: the facility for private sector purchases of failed banks, transfer of engagements to a Bridge Bank, partial transfer of assets and liabilities to other institutions, temporary public ownership, the

ability to re-structure claims of an institution (e.g. debt-equity conversions, and the writing down of unsecured creditors' claims), forced merger/acquisitions without shareholder consent, the creation of Bad Banks, and the suspension or termination of powers. Above all, they should allow for Resolution even when the bank has positive capital, they should allow for the continuation of customer business, and there should be fast pay-outs when these are required as part of the Resolution process.

3.4.3.1. Insolvency Arrangements

A basic principle in reducing the cost of bank failures is that it should be possible for the problems of a failed bank to be addressed quickly. This means insolvency and bankruptcy procedures being clear and appropriate for the special position of banks. The legal position and practice varies between countries. In the case of Northern Rock in the UK, one of the problems was the absence of any special bankruptcy arrangements for banks. Instead, banks were subject to the standard arrangements that applied to all companies which can involve a complex, convoluted and time-consuming process. There is a case for treating banks differently in this regard because the uncertainty surrounding a drawn-out procedure creates uncertainty for the financial system as a whole. In reform programmes, the special position of banks needs to be reflected in bankruptcy law so that early and decisive Resolution can be made.

In the UK, a new special bankruptcy code for banks is being created which will take a failing bank out of normal bankruptcy procedures. A Bank Insolvency Order can be made to the courts by the Bank of England, the FSA, or the government on grounds such as: the bank is unable, or unlikely to become unable, to pay its debts, that the winding up of the bank would be in the public interest, and that the winding up of the bank would be fair.

3.4.4. Minimise the Cost of Bank Failures: Living Wills

Prior to the recent crisis, most countries did not have in place the necessary tools to wind down their domestic financial conglomerates. Huertas (2010) argues that Living Wills can in theory create a financial system that is "resilient to shocks and one that assures that banks are not 'too big' or 'too interconnected' to fail." Living Wills can be a superior and more realistic alternative to structural measures to address the TBTF issue. Living Wills seek to prevent the failure of one bank having broad systemic consequences leading to the failure of other innocent banks. As put by Huertas (2010): "Living wills offer the prospect that society can create a lower impact/lower cost solution to the problem posed by large, systemically important banks."

The two key components of Living Wills are *Recovery* and *Resolution* arrangements with the Resolution component kicking in when the Recovery component has failed. In principle, clearly-defined and credible Recovery plans should lower the probability that Resolution will be needed because such plans outline how a bank is to respond to distress situations. They are designed to maintain banks as going-concerns. Living Wills dictate that a bank has in place a clear Recovery plan by requiring it to outline in advance what is to be done in the event that it falls into extreme stress. As put by Huertas (2010): "the bank is forced to think through in advance what it would do if the bank were to fall under extreme stress." In particular, banks are required to have plans in place to ensure that, in such circumstances, they can maintain adequate capital and liquidity. The requirement to have Convertible Bonds as part of a bank's capital base could be part of Living Will arrangements with the circumstances under which the conversion takes place being specified in advance. Other possible routes to recovery include selling parts of the business, exiting from some business lines, running down the scale of the bank, selling the entire business, etc. The essence of Living Wills is that clearly-defined and credible plans are outlined in advance. They amount to a form of SEIR.

The essence of Living Wills is that there are clearly-defined Recovery plans, Resolution arrangements are made explicit, and arrangements are in place to enable a bank to be broken up when in distress so as to protect core depositors' business. There are further advantages to Living Wills in the case of complex and potentially systemically important institutions. Firstly, to the extent that they induce simplified structures in complex banks, interconnectedness might be lowered. Secondly, they are designed to lower the probability of failure through the Recovery component. Thirdly, systemic costs of any failures that do occur should be lowered because clear and credible Resolution plans are put in place in advance. Fourthly, the Resolution process should be made easier and less complex. Fifthly, they would give more information to supervisors in the process of Resolution operations. Finally, there could be general advantages through reducing the need for rescues or bail-outs because alternative Resolution mechanisms would be in place.

Above all, Living Wills should mitigate moral hazard to the extent that they make it clear to creditors that Resolution can take place without a bail-out and, as a result, market discipline should be enhanced. The rationale of Living Wills is that the 'recovery' component should lower the probability that a bank would require intervention by the regulatory authorities, and the Resolution part should lower the costs to society of a bank failure.

Living Wills make recovery and resolution plans more explicit. Banks are particularly complex organisations and generally have more subsidiaries than most

other types of company. Banks can be horrendously complex with subsidiaries, SIVs, SPVs, and with complex relationships between different parts of the business. HSBC, for instance, has in excess of two thousand entities although in many cases they are separately capitalised which makes the bank something of a Bank Holding Company. The structural complexity of large, conglomerate banks creates particular problems for the resolution regime most especially when the objective is to separate the essential parts of a bank (which are to be sustained) from its other activities. Living Wills can be designed to give information about how any wind-down would be executed in practice. They are also designed to include mechanisms to separate the components of a financial firm that are critical as opposed to those that are not, (Hupkes, 2009): in particular, deposits, some lending business, and payments services are to be ring-fenced in the event of a Resolution. This suggests having simple structures so that parts of the bank can easily be sold (Tucker, 2010). The main purpose is to lower the cost, and speed up the process, of Resolution by making it easier to sell different parts of the bank, and to protect the tax-payer by giving an alternative to bail-outs. It needs to be clear which parts of a bank's business are to be supported and kept solvent.

The British government has imposed a requirement on large banks to create Recovery and Resolution Plans (Living Wills) which explain how a bank is to be broken up in the event of resolution. The Group of Thirty has made a similar proposal in order to "develop internationally consistent firm-specific resolution plans" (Group of Thirty, 2009). The UK Financial Services Authority requires that such plans should: be capable of execution within a fairly short period and with a high degree of certainty; be of a size that would have a substantial impact and be capable of turning round a distressed institution, and contain a wide range of alternative options to bolster capital and liquidity when necessary.

3.4.5. Where Is Pillar 4?

The Basel Capital Accord has three pillars: in essence, regulation, supervision, and market discipline. A central argument of this paper has been that a crucial element in any regulatory regime (the Resolution arrangements) is not explicitly covered and yet this is an area which needs just as much international coordination as do the three existing pillars. Different national Resolution arrangements have as much potential to create competitive distortions between different nationalities of banks as would different capital adequacy rules within Pillar 1. A Pillar 4 in the Basel Accord would contribute to making the overall regulatory regime more competitively neutral as between countries.

There are several problems in not having an internationally agreed Pillar 4 within the Basel Capital Accord:

- there is potential for non-neutrality as between countries in intervention arrangements;
- there remains a temptation to adopt bail-out strategies which create moral hazard;
- banks are global in nature and hence a degree of coordination and compatibility in Resolution arrangements is desirable;
- the international dimension raises difficult issues of burden-sharing if in practice there are bail-outs;
- resolution requires quick and predictable action which is likely to be difficult in the case of global banks;
- information sharing is essential and yet this is not always practiced;
- uncertainty is created regarding how different countries will react to banks in distress;
- the time over which Resolution arrangements are applied is likely to be lengthened (e.g. the case of Fortis Bank);
- countries are tempted to adopt national interests.

Clearly, difficult political and logistical issues are involved with a co-ordinated approach. Nevertheless, the advantages of more predictability and compatibility in resolution arrangements are clear.

There are currently formidable problems with respect to coordinated Resolution arrangements with regard to cross-border banks: some supervisory agencies are constrained in their ability to share information with agencies in other jurisdictions, there are major differences between countries with respect to Resolution powers and procedures, legal structures (including with regard to bankruptcy procedures) vary considerably, and co-ordination can be time-consuming. Furthermore, primacy is often given to national interests. All of these, together with a requirement for there to be a degree of convergence in Resolution regimes, need to be addressed if an effective and efficient cross-border Resolution and burden-sharing regime is to be established.

3.5. SUMMARY OF THE ARGUMENT: A REGULATORY STRATEGY

A central theme has been that several dimensions to regulatory strategy need to be considered which involve more than piece-meal reforms to existing approaches focused on the Basel capital arrangements. Regulatory reform needs to be *strategic* rather than *incremental* and cover the full range of instruments and structures within a regulatory regime to address the twin objectives of lowering the proba-

bility of bank failures and limiting their costs. A matrix approach is needed which recognises the potential trade-offs between the costs of regulation and the two objectives of the regulatory regime: lowering the probability of bank failures and minimising their costs.

It may be tempting to assume that the failures revealed in the banking crisis can be solved by yet further detailed elaborations of the existing regulatory structure: the *incremental approach* described earlier which, in terms of the capital regime, takes us from Basel 1 to Basel 2 and now to Basel 3 and eventually to Basel N. However, in practice this alone will not suffice not the least because of the 'endogeneity paradigm'. A more holistic or 'strategic' approach is needed.

The conclusion regarding regulatory and structural strategy is that most, if not all, of the objectives of the regulatory regime can be achieved without major structural measures or ever-more refinements to the existing regime, but through a combination of:

- a significant rise in equity capital requirements applied to banks: our overall assessment is that higher (perhaps substantially higher and in the region of 15 percent) equity capital requirements are likely to imply little net social cost but significant systemic benefits. This would relate to a simple gearing ratio rather than further detailed refinements to the Basel risk-weight methodology. Capital regulation should also include explicit 'bail-in' requirements;
- regulation being based on economic substance rather than arbitrary definitions of institutions that might be the source of systemic instability. A substantial rise in required capital ratios for banks is likely to induce a process of disintermediation through, for instance, Shadow Banks. This implies that the 'boundary issue' needs to be extended to encompass all institutions that are likely to become systemically important;
- differential capital requirements applied to banks that are regarded as systemically significant;
- cyclically adjusted capital requirements and loan-loss provisioning;
- more stringent liquidity requirements on banks related both to asset holding and funding positions;
- tax and insurance impositions on banks;
- a commitment to PCA and SEIR strategies implying early and decisive direct intervention by supervisory agencies;
- the requirement for major banks to have Living Wills incorporating Recovery and Resolution plans. While stopping short of breaking up banks or applying a rigid Glass-Steagall-type approach, one structural measure to be incorporated in Living Wills would be 'subsidiarisation' whereby banks that are deemed to be potentially systemically significant would have dedicated capital allocated to different areas of the business;

– clearly-defined and credible Resolution arrangements. The objective is to allow banks to fail without disturbing business and customer relationships, and to ensure the costs of default fall on equity and bond holders and other non-secured creditors;
– resolution arrangements at the international level to be covered in a Pillar 4 of the Basel Capital Accord;
– measures to make Pillar 3 of the Basel Accord more effective including a focus on internal incentive structures within banks.

Above all, more emphasis needs to be given to supervision focussing on business models and strategies, the testing and monitoring of risk analysis and management systems of banks, earlier direct intervention by supervisory agencies, governance arrangements of banks, internal incentive structures, and a particular focus on high-impact institutions.

This strategy implies a lesser role for Pillar 1, greater emphasis and effectiveness of Pillars 2 and 3, and the addition of a Pillar 4. Pillars 1-3 focus predominantly on the first objective of a regulatory regime (lowering the probability of bank failures) while the proposed Pillar 4 is relevant more for lowering the costs of those failures that, from time to time, will inevitably occur.

We have been sceptical about the relevance and practicality of many of the *structural* measures that have been proposed to reduce the probability of bank failures. Given the 'endogeneity problem', more emphasis needs to be given to designing features of a regulatory regime to reduce the costs of those bank failures that do occur. Lowering the cost of failures implies internalising risks rather than, as is often the case if bank distress, passed to tax-payers. Given the weaknesses and limitations of regulation, whilst rules may be necessary as part of an overall regulatory regime, they are not sufficient. In particular, more emphasis in the overall regulatory regime needs to be given to Resolution arrangements, Living Wills, and taxation and insurance mechanisms designed to offset the implicit subsidy received by TBTF institutions in particular.

REFERENCES

ACHARYA, V. and RICHARDSON, M. (2009), "Government Guarantees: Why the genie needs to be put back in the Bottle", *The Economists Voice*, November, The Berkeley Electronic Press.

ADMATI, A., DEMARZO, P., HELLWIG, M. and PFEIDERER, P., (2010), *Fallacies, Irrelevant Facts and Myths in the Discussion of Capital Regulation: Why Bank Equity Capital is not Expensive*, Rock Centre for Corporate Governance, Stanford University Working Paper No 86, Graduate School of Business, Stanford University.

BANK OF ENGLAND (2009), *Financial Stability Report*, June.

BERNANKE, B. (2009), *Financial Regulation and Supervision after the Crisis – The Role of the Federal Reserve*, speech at the Federal Reserve Bank of Boston 54th Economic Conference, October.

BIS (2010), *Annual Report*, Bank for International Settlement, Basel, June.

BLUNDELL-WIGNALL, A., ATKINSON, P. and LEE, S.G. (2008), "The Current Financial Crisis: Causes and Policy Issues", *OECD Financial Market Trends*, Paris, OECD.

BRUNNERMEIER, M., CROCKETT, A., GOODHART, C., PERSAUD, A. and SHIN, H.-S. (2009), *"The Fundamental Principles of Financial Regulation"*, Geneva Reports of the World Economy.

CHAN-LAU, J.A. (2010), "Regulatory Capital Charges for Too-Connected-to-Fail Institutions: A Practical Proposal", *IMF Working Paper*, Washington, International Monetary Fund.

DE GRAUWE, P. (2008), *The Banking Crisis: Causes, Consequences and Remedies*, CEPS Policy Brief, 178, Brussels, Centre for European Policy Studies, November

FSA (2009), "Turner Review Conference Discussion Paper", *Discussion Paper* 09/4, London, Financial Services Authority, October.

GROUP OF THIRTY (2009), *Financial Reform: A Framework for Financial Stability*, New York, Group of Thirty.

HALDANE, A. (2009b), *Banking on the State*, speech to Federal Reserve Bank of Chicago International Banking Conference on *The International Financial Crisis: Have the Rules of Finance Changed?*, September. Available at www.bankofengland.co.uk/publications/speecges/2009/speech386.pdf.

HALDANE, A. (2010), *The $100 billion Question*, Comments at the Institute of Regulation and Risk, Hong Kong, March. Available at Bank of England website.

HALDANE, A., BRENNAN, S. and MADOURAS, V. (2010), "What is the contribution of the financial sector: Miracle or mirage?" in LONDON SCHOOL OF ECONOMICS, *The Future of Finance*, August.

HERRING, R. (2010), "Bank Wind-down Plans", *EBR Advisory Board Report*, Rome, Italian Bankers Association.

HUERTAS, T. (2009), *Too Big to fail, too complex to contemplate: What to do about systemically important firms*, speech to Committee of European Bank Supervisors conference, 15th September. Available on FSA website.

HUERTAS, T.F. (2010), *Living Wills: How can the Concept be Implemented*, speech to Wharton School of Management, 12th February, 2010. Available on FSA website at www.fsa.gov.uk.

HUPKES, E. (2009), "Too Big, Too Interconnected, and too international to resolve? How to deal with Global Financial Institutions in Crisis", *mimeo*.

INTERNATIONAL MONETARY FUND (2009), *Global Financial Stability Report*, April.

KANE, E. (1987), "Competitive Financial Regulation: an International Perspective" in PORTES, R. and SWOBODA, A. (eds.), *Threats to Financial Stability*, Cambridge, Cambridge University Press.

KAY, J. (2009), "Narrow banking: the reform of banking regulation", www.johnkay.com/2009/09/15/narrow-banking.

KAY, J. (2009a), *Narrow Banking: The Reform of Banking Regulation*, London, Centre for the Study of Financial Innovation.

KAY, J. (2009b), *The Long and the Short of It*, London, Erasmus Press.

KOTLIKOFF, L. (2010), *Jimmy Steward is dead: Ending the World's Ongoing Financial Plague with Limited Purpose Banking*, London, Wiley.

KOTLIKOFF, L. and LEAMER, E. (2009), *A Banking System We Can Trust*, Forbes, 23rd April.

LAEVEN, L. and LEVINE, R. (2007), "Is there a Diversification Discount in Financial Conglomerates?", *Journal of Financial Economics*, vol. 85(2), pp. 331-367.

LITAN, E. (1987), *What Should Banks Do?*, Washington, Brookings Institution.

LLEWELLYN, D.T. (1999), "The Economic Rationale of Financial Regulation", *Occasional Paper,* No. 1, London, Financial Services Authority.

LLEWELLYN, D.T. (1999a), *The New Economics of Banking*, SUERF Study No. 5, Vienna, SUERF.

LLEWELLYN, D.T. (2001), "A Regulatory Regime for Financial Stability" in KAUFMAN, G. (ed.), *Bank Fragility and Regulation: Evidence from Different Countries*, Amsterdam, JAI.

LLEWELLYN, D.T. (2002), "Alternative Approaches to regulation and Corporate Governance in Financial Firms" in JOHNSON, O. (ed.), *Financial Crisis, Stability and Globalisation*, Washington, IMF.

LLEWELLYN, D.T. (2008), "The Failure of Northern Rock: A Crisis Waiting to Happen", *Journal of Financial Regulation and Compliance*, March.

LLEWELLYN, D.T. (2010), "The Global Banking Crisis and the Post-Crisis Banking and Regulatory Scenario", topics in Corporate Finance, Amsterdam Centre for Corporate Finance, University of Amsterdam, October.

SCHMID, M.M. and WALTER, I. (2009), "Do Financial Conglomerates Create or Destroy Economic Value?", *Journal of Financial Intermediation*, vol. 18(2), pp. 193-216.

SINN, H.-W. (2010), *Casino Capitalism*, Oxford, Oxford University Press.

TUCKER, P. (2010), *Remarks to European Commission's Conference on Crisis Management*, available on Bank of England website.

TURNER, A. (2010), "What do banks do? Why do credit booms and busts occur and what can public policy do about it?" in LONDON SCHOOL OF ECONOMICS, *The Future of Finance:* The LSE Report, London.

WARWICK COMMISSION (2009), *In Praise of Unlevel Playing Fields*, University of Warwick, UK.

4. Strengthening the International Framework for Financial Regulation: Some Key Issues and Challenges

Nigel Jenkinson[1,2]

4.1. Introduction

The devastating economic and financial crisis of the past three years has quite rightly prompted a major international work programme to repair deficiencies in the framework for financial regulation. The Conference today provides a welcome opportunity both to stand back and review progress so far, and to look forward to the many challenges that remain.

In my remarks today, I plan to focus on the role of financial regulation in supporting the delivery of financial stability – by which I mean that the overall financial system continues to support a well-functioning market economy by performing its key roles of facilitating the efficient allocation of resources (both within and across time periods), and of aiding the management of financial risks, and that it can maintain these key functions when faced by shocks or imbalances. I do not plan to cover other key goals of financial regulation, such as protecting consumers and preventing market abuse. Nor shall I cover the important objective of preventing monopoly and promoting competition in the provision of financial services.

It is also very important to recognize that, while the crisis has clearly revealed many deficiencies in financial regulation that it is vital to correct, the preservation of financial stability also depends critically on the maintenance of a sound and sustainable macroeconomic policy stance. High and accelerating inflation, imprudent fiscal policies that are not viewed as credible in financial markets, and the growth of major economic imbalances, are all likely to pose huge challenges to the maintenance of financial stability that it is unrealistic to expect financial regulation to counteract. The clear limits to the role of financial regulation, and the importance of a sound overall policy stance, must consequently be borne in mind in developing a stronger framework.

I plan to illustrate a number of the key features of the international reform programme by setting out a number of high level lessons from the crisis and drawing

[1] These comments are personal and do not represent the views of the Financial Stability Board.
[2] I am very grateful to my colleague, Imene Rahmouni-Rousseau for helpful comments and suggestions.

on practical examples of initiatives to address them. I will not, however, provide a comprehensive summary or taxonomy of the full work programme[3].

This short paper is set out as follows. The key lesson of taking a system-wide view is covered in Section 4.2. Measures to contain the build-up of system wide risk are examined in Section 4.3., while Section 4.4. highlights initiatives to provide greater financial system resilience in the event of a shock crystallizing. One key overarching objective is to enable the system to weather shocks and failures without taxpayer support – the measures to address the moral hazard from institutions that are currently considered as 'too big/complex/interconnected' to fail are covered in Section 4.5. A number of overarching challenges to the design of the future regulatory framework are covered in section 4.6. Section 4.7 concludes.

4.2. STRENGTHENING THE SYSTEM-WIDE PERSPECTIVE

There are many definitions of financial stability. My personal favourite is by Garry Schinasi from the IMF:

> *"A financial system is in a range of stability whenever it is capable of facilitating (rather than impeding) the performance of an economy, and of dissipating financial imbalances that arise endogenously or as a result of significant adverse and unanticipated events"*[4].

Drawing on this definition, the aim of financial stability policies is to ensure that the system as a whole supports the broader economy and that the system is robust to stress. The recent crisis sadly shows a clear failure on both counts.

A key objective for financial regulation is to correct for the externalities that imply that risks to the functioning of the system as a whole are not adequately priced and taken into account by individual financial firms, and that also imply that the social costs of failure of an institution exceed the private costs. There are a number of sources of such externalities, including[5]:

– *informational contagion* – a failure of a bank is likely to lead to a loss of confidence – and hence funding – of banks perceived to have similar business models. Uncertainty surrounding counterparty losses to the failed bank may also provide a source of informational contagion;
– *information loss* – a bank failure will lead to the loss of private information on credit quality built up by the failed bank from monitoring clients and

[3] See *Overview of progress in the implementation of the G-20 recommendations for financial stability*, Report of the Financial Stability Board to the G-20 leaders, June 2010.
[4] See SCHINASI, "Defining Financial Stability", *IMF Working Papers* 04/187, 2004.
[5] See BRUNNERMEIER, CROCKETT, GOODHART, PERSAUD and SHIN, "The fundamental principles of financial regulation", *Geneva reports on the world economy* No. 11, 2009.

developing counterparty relationships – at the margin leading to the loss of access to funding for the failed bank's customers;

– *fire sale externalities and liquidity spirals* – a financial institution in distress will sell assets, weakening the balance sheets of other institutions. That may in turn prompt further asset sales and amplify the erosion of market liquidity in an adverse spiral;
– *deleveraging spiral* – a bank lowering credit supply adds to pressure on borrowers. In turn, that adds to pressures on other banks as credit quality weakens and may lead them to lower their own credit provision.

Unlike, say a car company, where a failure may benefit competitors, a failure of a bank is likely to damage competitors (at least in the short run) through these contagion channels, and may, as observed following the Lehman Bros failure, lead to defensive actions that threaten the collapse of the system as a whole. The risk management incentives of bank shareholders and managers do not take account of these broader spillover and contagion effects on the overall system, underscoring the need for regulation.

Before the crisis, the regulatory and supervisory framework placed over-reliance on the premise that maintaining the safety and soundness of individual institutions would lead to a safe and sound overall financial system. The microprudential approach of maintaining sound institutions is of course hugely important in delivering system wide financial stability – it is hard to envisage a stable overall financial system where the individual components are unstable. But, while necessary, it is not sufficient. The approach fell prey to a fallacy of composition – failing to take account of the growing risks to the system as a whole. As Paul Tucker recently noted[6], the importance of the wider system-wide view had been highlighted by a former Chairman of the Basel Committee 20 years previously:

> *"Supervisory standards are set with an eye to protecting (banks) from problems which could be created by wider, systemic developments. A bank may consider a course of action it wishes to take to be acceptable – as it may well be in a limited context. But the same course might, if widely copied by other banks, have unfortunate effects on the banking system as a whole. It is part of the supervisors' job to take that wider systemic view and sometimes to curb practices which even prudent banks might, if left to themselves, regard as safe."*
>
> *George Blunden (former chair of BCBS) 1987*

But in practice there was insufficient follow through in developing and implementing such a system-wide perspective.

[6] P. TUCKER: "The debate on financial system resilience- macroprudential instruments", *Barclays annual lecture*, October 2009, Bank of England.

A simple example easily demonstrates the need to take account of a system-wide perspective when reviewing the health of individual banks and the potential implications of their distress. Consider the case of a bank drawing up a liquidity contingency plan. In normal conditions, when other banks are strong and financial markets are deep and liquid, a bank facing unexpected 'idiosyncratic' liquidity stress could plan to use the following 3 defences:

- *liquefy illiquid assets* – for example, by securitizing loans and selling them on the secondary market;
- *bid for additional deposits* – offering to pay a little more to retail and wholesale depositors, 'paying up' for funds;
- *restrict balance sheet size* – tightening credit terms and lowering asset (growth), thus reducing the funding need.

Under the conditions set out in the example, each of the defences would work fine. The bank would lose a little income as a result of the error in liquidity management, but would readily solve the problem. There is a tiny externality on other firms, e.g. paying up for deposits works in part by bidding away a small portion of other banks' deposits, but the impact would typically be very small in these circumstances.

But now consider what would happen if other banks faced similar stress, for example as a result of increased concern about the credit quality of their loan book and potential exposures to say 'sub-prime' real estate markets or to asset-backed securities markets. Take the 3 cases in turn:

- *liquefy illiquid assets* – the attempt by many participants to exit from similar positions would reveal a system wide risk concentration that cannot readily be unwound. The attempt to exit simultaneously would lead to a 'crowded trade' which would result in the evaporation of market liquidity – in a worst case completely – and to major write downs of asset values;
- *bid for additional deposits* – at a minimum, competitors facing similar stress would protect their position by matching the increase in deposit rates. Indeed they might amplify the increase to try to improve their own position. But the net result would be that spreads would rise with little or no gain in deposits[7];
- *restrict balance sheet size* – the withdrawal of system-wide credit and associated 'credit crunch' would have a major adverse effect on the economy – feeding back on the banking system by raising aggregate credit losses and reinforcing liquidity strains.

The key point is that the defences would no longer work. Indeed, worse than this, their use would exacerbate system-wide stress. The small individual externality effects cumulate to deliver a major overall impact on the system as a whole. And

[7] There would be an incentive to increase aggregate saving. But such an increase may not be very powerful, would take time to work through, and would be shared across all banks.

of course this is not simply a stylized example. Each of these forces described has been very prominent during the financial crisis, necessitating huge policy intervention by governments and central banks to protect financial system functioning.

A clear lesson of the crisis is the need to take a much stronger system-wide view, both to the assessment of risk and to the design and implementation of financial regulation. In terms of risk assessment, much more attention needs to be paid to the assessment of potential systemic risk that could lead to the impairment of all or parts of the financial system, disrupt the provision of financial services, and potentially have a serious deleterious impact on the economy. That involves much greater attention to the build up of leverage, of common exposures and sources of concentrated risks, and to the understanding of potential contagion risks through interconnections and interlinkages. That is a formidable analytical challenge that will require new models, new tools, and new information sources. And in terms of regulatory design, it is crucial to ensure that the framework helps to contain the build up of system-wide risk, and that if risk crystallizes, that defences can be used without magnifying problems elsewhere. Thus, in terms of the example above, one implication drawn on in the new Basel Committee standard for liquidity is that reserves of liquidity should be held in very high quality liquid assets, to minimize the externalities and adverse spillovers from their use.

New institutional frameworks are being put in place in many countries to strengthen the oversight and containment of systemic risk and to introduce a key macroprudential overlay to the design and implementation of financial stability policies. In the United States, the Dodd-Frank Bill has created a Financial Stability Oversight Council. In the European Union, a new European Systemic Risk Board will commence operations in 2011[8]. These new bodies will have important responsibilities for developing and implementing policies to address system-wide risks, such macroprudential policies complementing initiatives to strengthen the microprudential framework. Much work lies ahead for these bodies to create their analytical, policy and operational frameworks[9], including: identifying data and information needs; reviewing policy options and available tools; and developing communication strategies to reinforce accountability.

A stronger system wide perspective thus lies at the heart of the work programme to improve the domestic and international regulatory framework. Indeed, over the past 3 years, considerable progress has been made by the international community to develop proposals to strengthen financial regulation that take into account the central precept of protecting the functioning of the system as a whole. Key initiatives and challenges are set out the following sections.

[8] New institutional arrangements and responsibilities have been announced recently in other countries too, for example in the UK, India and Turkey.

[9] Recognising that powers and responsibilities differ across the new organizations.

4.3. INITIATIVES TO CONTAIN THE BUILD UP OF RISKS

Measures to strengthen system-wide stability can be placed into 3 broad groups:
– initiatives to contain the build-up of risks;
– measures to promote greater resilience to adverse shocks;
– proposals to reduce the costs of failure.

I shall use this broad categorisation to illustrate a number of lessons from the crisis and issues for the regulatory reform programme. But it is essential to highlight at the outset that this categorisation is a highly stylized, taxonomic device and that in practice there are powerful interconnections between the groups. For example, changes to the system for handling failure, such as improvements to resolution regimes, will have an important bearing on the incentives to take risks. And initiatives to improve the resilience of the system to adverse shocks are also likely to have an important influence on the incentive to take risks[10], and vice versa. The categorisation adopted is consequently loose and approximate.

A framework to contain the build up of system-wide risks needs to address both the time-series and cross-section elements. The time series element must focus on the containment of system-wide risks in the upswing, which stem from the incentives to over-extend leverage and credit and to build up risk concentrations and push up asset price values beyond fundamentals, and on the protection of the system in the downswing when these forces move into reverse. The cross-section element must focus on improving the resilience of the system to failure of an institution at any point in time – what measures can and should be taken to contain spillovers and contagion?

The key time series challenge is *procyclicality.* Can measures be introduced to dampen procyclicality in the financial system, and indeed, to not only stop the financial system from being a procyclical amplifier of the business cycle but ideally to enable the system to act as a shock absorber?

The principal initiative under consideration is to introduce *a countercyclical capital buffer in the banking system*. A proposal by the Basel Committee has recently been circulated[11]. Under the proposal, at times of excess credit growth, banks would be asked to put aside additional capital, both to disincentivise a further increase in leverage, and to create a supplementary buffer of capital that could be released in the downswing to support credit growth and cushion deleveraging. As the latter entails releasing capital at a time when banks are facing additional strain, it is important that the minimum level of capital before the countercyclical add on is sufficiently high to retain market confidence, so that the buffer can be

[10] Care of course needs to be taken to avoid the creation of a false illusion of greater resilience that itself encourages a greater build up of risk.
[11] *Countercyclical capital buffer proposal*, Basel Committee, July 2010.

credibly run down. Additional important proposals to lower procyclicality include: encouraging the international accounting standard setters (the IASB and the FASB) to agree on *converged standards that enable earlier loan loss recognition*; and recommendations for the macroprudential authorities to consider the introduction of measures that involve *countercyclical variations in margins and haircuts in securities financing transactions and OTC derivatives markets*[12].

In relation to the cross section dimension, a number of the initiatives under consideration focus on improving the resilience of the system to weather shocks and are reviewed in the next section. But one key important aspect under consideration is reviewing *whether and how the design of regulation should take account of an institution's contribution to systemic risk*. In particular, can regulation be calibrated to the systemic externalities imposed by individual firms, recognizing that the spillovers from distress or failure of a large firm with strong interconnections to the rest of the system are likely to be disproportionately greater than that of a smaller firm at the periphery? And should measures be taken to lower interdependence, for example by imposing tighter constraints on large exposures, and/or placing limits on size and/or structure? The Basel Committee is currently working on the development of proposals for potential systemic surcharges, for example to capital requirements, to take account of the differential contribution to systemic risk. That remains a difficult and challenging area for future regulatory design.

The recent crisis also highlighted a number of areas where distortions in incentives underpinned the build up of systemic risk and exacerbated market strains when risks crystallized. I shall touch briefly on reform proposals in three areas: compensation practices; transparency and disclosure; and credit rating agencies.

Compensation practices in many firms in advance of the crisis were not well-aligned with risk-taking, and provided strong incentives to concentrate on short-term returns at the expense of long-run performance. In consequence, the Financial Stability Board (FSB) has prepared principles and implementation practices[13] which have been agreed and endorsed by the G-20. The principles contain important recommendations to strengthen governance, disclosure, supervisory oversight, and the link to capital. The centerpiece is to improve the alignment with risk taking, through ensuring that the compensation package for the principal risk takers in a firm contains a high, variable component, that a substantial proportion of variable compensation is deferred for not less than 3 years, and that it is paid in shares or equivalent, and remains at risk depending on realized performance. An implementation review published earlier this year[14] concluded that

[12] "The role of margin requirements and haircuts in procyclicality", *CGFS Papers* No. 36, March 2010.
[13] *Principles for Sound Compensation*, April 2009 and *Implementation Standards*, September 2009, Financial Stability Board.
[14] *Thematic review on compensation*, Financial Stability Board, March 2010.

although considerable progress has been made in improving compensation practices across the FSB member jurisdictions, there remains more to do to achieve full implementation of the principles, particularly with regard to the thorny issue of pay structure and risk alignment.

Information problems have played a major role during the crisis. At the onset, a key question was: "Who is holding the risks in the sub-prime market?" That soon transmitted into uncertainties over holdings and values of asset-backed securities and complex structured products. As another example, earlier in 2010, key questions were raised on the health of European banks and on their exposures to sovereign risks. Faced with uncertainty in times of stress, counterparties are likely to take defensive actions, reining back lending and hoarding liquidity, thus amplifying the problems of weaker institutions. Initiatives to improve transparency, such as publication of individual bank stress tests in the US and Europe (in the latter case together with consistent information on sovereign exposures), have helped to lower market uncertainty and improve market functioning. A continued theme of future regulatory work is likely to be to promote *enhanced disclosure and provision* of data to lower opacity and enhance market functioning. The encouragement to the principal accounting standard setters to deliver improved, convergent, standards that support the consistent interpretation of accounts across the globe is a key element of this work.

Credit rating agencies were of course set up to help lower informational asymmetries. But the crisis revealed serious weaknesses both in the performance of the agencies and in the use of this information by clients who placed excess reliance on the rating scores. Initiatives are consequently in hand both to strengthen the regulatory oversight of the rating agencies, in line with the IOSCO Code of Conduct, and to lower the potential for 'cliff' effects in markets at times of rating actions, by reducing market participants' reliance on rating agencies. To help achieve this, the Basel Committee is taking action to lower the use of ratings in the regulatory framework for banks, while the FSB is currently developing principles to lower reliance on ratings more broadly.

4.4. INITIATIVES TO IMPROVE THE RESILIENCE TO STRESS

Although the measures set out above should help to address a number of the previous weaknesses that contributed to the rise in systemic risk in advance of the crisis, and thus help to dampen the financial cycle, they will not eliminate the business cycle and periods of weakness in the economy that inevitably increase pressures on the financial system. Nor will they eliminate poor business decisions and failings of risk management in individual firms. So a key question is how well can the financial system cope with the stresses and strains that inevitably arise?

Will the reformed system be able to absorb shocks and help to dissipate strains? Or will it continue to act as a shock amplifier, and a propagator of contagion?

A clear and early lesson from the crisis is the need to strengthen the resilience of the banking system through higher regulatory standards for capital and liquidity. Once stress crystallized, buffers were not high enough to protect banks from losses and the risks and costs of contagion, leading to a collapse of counterparty confidence in funding markets that ultimately could only be restored by major government injections of capital and provision of guarantees, alongside massive central bank liquidity support.

The package of proposals to toughen banking regulation forms the heart of the international reform initiative. Central elements of the so-called Basel III package are: measures to *improve the quantity and quality of capital as well as the capture of risk; a supplementary leverage ratio* backstop to limit leverage and contain model risk; and *a new international standard for liquidity.*

As well as the general tightening in standards, a number of specific design features will help to raise system resilience. First, the capital framework will include *a capital conservation buffer* that places increasingly tough restrictions on the bank to rebuild capital by retaining earnings and restricting dividend distribution and discretionary bonuses when capital falls into the buffer zone and towards the minimum level. Second, the steps to improve the quality of capital, and in particular its capability to absorb losses, will be bolstered by proposals currently out to consultation, that would require *all hybrid and subordinated bank debt counting as regulatory capital to include a mechanism in their terms and conditions that ensures that they take a loss at the point of non-viability*[15]. And third, as noted earlier, buffers of assets held under the new Liquidity Coverage Ratio will be high quality, to limit any fire-sale externality from their use.

As with all regulatory actions, a key question is what are the potential costs and benefits of the intervention. While with hindsight it clear from the evidence of the crisis that previous standards were too lax, how much tougher should the new ones be? What are the risks of over-regulation as opposed to under-regulation?

Two recent studies help to shed some light on these questions, supporting detailed analysis by the Basel Committee in the form of a Quantitative Impact Study (QIS) and various top down calibration studies. The first reviews the long-term economic impact of higher regulatory standards[16]. The benefits of tougher standards arise from the reduction in the probability of crises and their attendant severe cost in terms of lost output, as well as from the lower volatility of output during non-

[15] *Proposal to ensure the loss absorbency of regulatory capital at the point of non-viability*, Basel Committee, August 2010.

[16] *An assessment of the long-term economic impact of stronger capital and liquidity requirements*, Basel Committee, August 2010.

crisis periods. The main costs stem from the prospect that tighter regulatory standards will lead to higher lending spreads that will lower the level of output. Although the estimates of costs and benefits are subject to considerable uncertainty, the analysis suggest that in terms of output, there is considerable room to tighten capital and liquidity requirements while still yielding net benefits. The second report examines the transitional costs of introducing more stringent standards[17]. Drawing on a range of models, the report estimates that, if requirements are phased in over four years, each one percentage point increase in banks' actual ratio of tangible common equity to risk-weighted assets will lead to a decline in the level of GDP relative to its baseline path by about 0.2% after implementation is completed, with a recovery towards the baseline path thereafter. A 25% increase in liquid asset holdings is found to have an output effect of less than half that associated with a one-percentage point increase in capital ratios.

Evidence from these studies, together with that from the detailed analysis, was drawn on by the Basel Committee in developing the new standards for bank capital that were announced in early September[18]. The new regime substantially strengthens existing capital requirements, raising the common equity requirement from 2% before regulatory adjustments to 7% after stricter regulatory adjustments[19]. The new requirements will be phased in gradually from January 2013. Although the Committee drew on the studies when taking the decisions on the new framework, it also of course needed to exercise considerable judgement, given the many uncertainties and inevitable limitations attached to the empirical work.

The second main strand of work to improve resilience relates to f*inancial market infrastructure*. Robust infrastructure is a vital component of a stable financial system. But more than that, well-designed financial infrastructure can significantly lower systemic risk. Three clear examples are: real-time gross settlement (RTGS) systems that eliminate settlement risk in payment systems; the Continuous Linked Settlement (CLS) system that removes settlement risk in foreign exchange markets; and central counterparties (CCPs) for securities and derivative transactions that reduce settlement risk and lower interconnectedness and contagion risks, by transforming chains of transactions within the system into a more robust central hub and spokes.

One important area where there is clear scope to deliver further benefits of this type is the over-the-counter (OTC) derivatives market. The G-20 has agreed that standardized contracts should be centrally traded and cleared by the end of 2012,

[17] *Assessing the macroeconomic impact of the transition to stronger capital and liquidity standards*, Macroeconomic Assessment Group established by the Financial Stability Board and the Basel Committee, August 2010.
[18] See the statement by the Basel Committee Group of Governors and Heads of Supervision on 12 September 2010.
[19] A minimum of 4.5%, and a capital conservation buffer of 2.5%.

and that all trades should be reported to trade repositories to improve the assessment and understanding of market trends and risks. The Financial Stability Board is currently supporting work led by representatives of IOSCO, CPSS and the European Commission to achieve this goal.

Key financial market infrastructure itself performed well during the crisis. Nonetheless, it is crucial to continue to examine the scope for strengthening infrastructure further, as the flip side of the potential benefit from well-designed infrastructure in concentrating and absorbing risk is that badly designed infrastructure provides a potential single point of failure that could act as a major transmitter of risk through the system. For example, the failure of a central counterparty could have a very serious impact on financial markets and market participants. CPSS and IOSCO have consequently made a number of recommendations to *strengthen standards of robustness for CCPs*.

4.5. CONTAINING MORAL HAZARD AND MANAGING FAILURE

No regulatory measures will prevent all failures. And nor should they, given the importance of the risk of failure in disciplining behaviour in financial markets as elsewhere in the economy.

But this premise also relies on the ability of the system to cope with failure and particularly on the powers of the authorities to deliver an orderly resolution. If failure of an institution is likely to pose a serious threat to the functioning of the whole system, then the authorities have little choice but to step in under these circumstances to prevent failure and eliminate the risk of systemic collapse. The bankruptcy of Lehman Bros and the near breakdown which subsequently resulted, drummed home the inadequacies of the current framework to deal with failure. Authorities stepped in to bolster weak institutions through capital injections, liability guarantees and central bank liquidity support. While vital to preserve financial stability, such actions added substantially to moral hazard and to the perceptions that a number of institutions were 'too big/complex/interconnected to fail' (TBTF). Such perceptions distort financial markets, provide a subsidy to such institutions, and eliminate market discipline. They also lead to the politically unacceptable 'privatisation of profits and socialization of losses'.

Eliminating the moral hazard from the TBTF problem is a political imperative. It is also essential to deliver financial stability. Taking the definition I set out at the start of the talk, it is very hard to argue that a system embodying such moral hazard is 'facilitating the performance of the economy'.

The G-20 has tasked the Financial Stability Board to propose solutions to the problem for consideration at the Seoul Summit in autumn 2010. Six core princi-

ples guiding this work were spelt out in an interim report to the Toronto Summit in the summer[20] and are reported here:

1. *all jurisdictions should have in place a policy framework to reduce the moral hazard risks associated with systemically important financial institutions in their jurisdictions*;
2. *all jurisdictions should have effective resolution tools that enable the authorities to resolve financial firms without systemic disruptions and without taxpayer losses*. These should include powers that facilitate a 'going concern' capital and liability restructuring as well as 'gone concern' restructuring and wind-down measures, including the establishment of a temporary bridge bank to take over and continue operating certain essential functions;
3. *all jurisdictions should have the capacity to impose prudential requirements on firms commensurate with their systemic importance*. There should be a presumption that national authorities would apply supplementary prudential requirements and require changes to legal and organisational structures, where necessary, in order to reduce the externalities that could arise from failure or improve the resilience or resolvability of a firm;
4. *all national supervisory authorities should have the powers to apply differentiated supervision requirements for institutions based on the risk they pose to the financial system*. They should have appropriate mandates, powers, independence and resources to identify risk early and intervene to require changes within an institution as needed to prevent unsound practices and ensure appropriate countermeasures to offset the additional risk;
5. *all jurisdictions should put in place or strengthen core financial market infrastructures to reduce contagion risk upon a firm's failure, and encourage their use*. All core financial infrastructures (e.g., central counterparties) should meet standards of robustness that assure systemic stability;
6. *FSB members will establish an ongoing peer review process to promote national policies to address the risks associated with 'systemically important financial institutions' (SIFIs) that are effective in global risk reduction, as well as consistent and mutually supportive and thus avoid regulatory arbitrage and promote a level playing field*. Supervisory colleges and crisis management groups will have an important role in seeking to ensure that the legitimate interests of home and host authorities are being taken into account and to assist in improving cooperation.

There are four broad strands of work to develop a practical policy framework that encapsulates these principles.

The first strand is to develop *a package of options that lower the probability and*

[20] *Reducing the moral hazard posed by systemically important financial institutions*, Financial Stability Board, June 2010.

impact of failure of SIFIs[21]. A key objective is to raise the loss absorption capacity of SIFIs relative to non-SIFIs, in line with their systemic importance[22]. As well as *intensifying and increasing the effectiveness of supervision* (principle 4), mechanisms under consideration include: *prudential surcharges*, for example in the form of higher capital ratios; and/or a stronger quality of capital; and/or through requirements that firms hold instruments that haircut or 'bail-in' debt holders in the event of severe stress, to help foster recovery or orderly resolution (principle 3). Such measures may be accompanied by restrictions on activities or on firm structures, both to lower the risks and to improve the ability to manage an orderly failure.

The second element is *to ensure that it is possible to deliver an orderly resolution of a large complex financial institution without taxpayer support*. An essential prerequisite is that all countries have resolution regimes in place to achieve this (principle 2). But going further, the need to be able to handle failure of large cross-border institutions also requires there to be *sufficient harmonisation of national resolution regimes to make this a viable option*. Strong political support will be needed to deliver this key goal. Essential attributes of effective resolution regimes (for example covering powers, tools, funding, co-operation frameworks etc) are under discussion as a central component of this work. And to improve the capability of the authorities to handle the failure of large cross-border banks, the authorities are undertaking detailed firm by firm discussions of 'recovery and resolution' plans (so-called 'living wills') to assess their plausibility and to identify steps to strengthen them.

The third component has been highlighted already, namely that *financial infrastructure should be developed and strengthened as necessary to help contain contagion*, such as through the initiative to centralise the trading and clearing of standardised OTC derivatives on robust central counterparties outlined above (principle 5).

Given differences in national financial structures and systems, there will be some discretion at the national level in the optimal choice of tools – the framework will not be 'one size fits all'. But there is clear agreement on the need both to avoid regulatory arbitrage and to provide confidence that the framework will deliver in a cross-border as well as domestic context, and so the FSB is proposing that the discretion must be 'constrained' or 'guided'. Once the appropriate balance between 'discretion' and 'constraint' has been agreed, a *strong peer review process of national policies* will be introduced to underpin this process (principles 1 and 6).

[21] Three broad criteria will be drawn on to estimate systemic importance: size; interconnectedness; and substitutability, see *Guidance to assess the systemic importance of financial institutions, markets and instruments: initial considerations* – background paper prepared by staff of the IMF/BIS/FSB, November 2009.

[22] The statement by the Basel Committee Group of Governors and Heads of Supervision on September 12 2010 emphasised that systemically important banks should have loss absorbing capacity beyond the standards announced on that date.

A package of proposals will be presented to the G-20 for approval in October. Subject to endorsement in Seoul, detailed work will follow to develop and implement the agreed proposals on this critical element of the regulatory reform agenda.

4.6. CHALLENGES TO THE DESIGN OF THE NEW REGULATORY FRAMEWORK

I have provided a brief summary and overview of many of the key elements of the international regulatory reform agenda in the wake of the financial crisis. And I have identified some of the key issues and features relating to individual elements of the programme. In this final section of the paper, I would however like to step back somewhat from the individual elements and highlight a number of the major challenges and questions that govern the design of the overall regulatory framework, and which need to be borne in mind by policy makers. I shall briefly touch on six issues:

- how much financial regulation?
- the risk of tensions between regulatory objectives;
- uncertainty – are regulatory tools and initiatives robust?
- predictability and stability of the regulatory framework versus adaptability and flexibility in the face of structural change;
- international consistency – limiting cross-border regulatory arbitrage;
- maintaining a flexible regulatory perimeter – containing the potential build up of systemic risk outside the regulated sector.

How much financial regulation?: Of course, there is no easy answer to this seemingly straightforward question. Certain principles can be set out to guide potential interventions and assist judgements on 'optimal' levels. What is the externality and market failure that the intervention is addressing? What standards of resilience are desired? What are the costs of the externality and of the potential intervention? And what are the benefits from addressing it? Can these be quantified and assessed?

Analytical tools continue to improve and help shed light on these questions, as illustrated above in relation to the assessment of the long run impact and transitional costs of higher bank capital and liquidity standards. But equally it is important to recognize the many uncertainties surrounding the analysis. There is always likely to be judgement involved in balancing and trading off the costs and benefits of tougher regulatory measures.

The risk of tensions between regulatory objectives: Quite naturally, many of the regulatory initiatives have been formulated to address a particular problem or externality. In many cases, they are likely to reinforce each other. Thus, higher

capital levels will help banks to meet the new liquidity standards and vice versa. In others, there may be risks of tensions between objectives. Thus the perfectly sound initiative to improve the resilience of Money Market Funds in the United States, by shortening the maturity of assets they hold, at the same time pushes in the opposite direction to the equally well-founded initiative for banks to extend the maturity of their liabilities and lower their liquidity risk. And in yet more cases, trade-offs could be considered. For example, in addressing the SIFI 'too big to fail' problem, the lower the confidence that failure could be managed by orderly resolution, the stronger is the case for other interventions to lower the likelihood of failure.

These examples illustrate the importance of assessing the potential interactions between different initiatives and of the incentives they provide, and of forming judgements on the likely overall impact on the financial system. Of course this is very difficult and challenging, but it is important to make further progress in this area. In that respect, one of the key objectives of the Financial Stability Board is to help promote and co-ordinate the alignment of the activities of the international standard setting bodies.

Uncertainty – are regulatory tools and initiatives robust?: Given the considerable uncertainties surrounding the potential impact of regulatory measures, an important question is whether regulatory tools are robust? Would the intervention still work if risks have been miscalculated, for example? Or at least, would it do no harm?

This is an important consideration in the design of macroprudential instruments, for example, given that development of such tools remains in its infancy. It tends to suggest the adoption of relatively simple measures, such as the proposal to build capital buffers at times of exceptionally strong growth in overall credit. As and when knowledge and experience improves, it might be possible to refine and enhance the approach.

Predictability and stability versus adaptability and flexibility: There is a clear trade off here. On the one hand, there are powerful arguments supporting the need to achieve a predictable and stable regulatory framework. That enables agents to plan for the long term, and provides time for the regulatory incentives to work. But on the other, it provides a risk that the regulatory framework ossifies, and fails to adapt to rapid structural change in the financial system. So new risks may not be captured and addressed. And policy makers may appear to be continually fighting the last war.

Again there is no simple answer. Policy makers have to strike a balance between the opposing forces. It suggests a need for the regulatory framework to be kept under constant review in response to continuous innovation. And that the author-

ities demonstrate a willingness to make adjustments rather more quickly than in the past, in the light of emerging systemic risks.

International consistency: Fuelled by deregulation, information and communications technology and innovation, there has been a massive increase in global financial market integration in recent decades[23]. That has helped to reinforce the powerful arguments for developing consistent international regulatory standards, both to reap the benefits of global capital markets and to contain regulatory arbitrage. To underpin that approach, there has been a significant expansion recently in the membership of the Basel Committee and some other sectoral standard setters, while the Financial Stability Forum was re-launched by the G-20 as the Financial Stability Board in 2009 with an enhanced membership[24] and mandate. And, of course, initiatives to strengthen the European financial regulatory architecture have been agreed very recently.

These various initiatives clearly demonstrate the widespread recognition of the benefits of working together to improve the regulatory framework and to ensure consistent application. But it is also important to highlight the need to take into account the important constraint of national fiscal sovereignty that influences perspectives on crisis management planning. And it is also important to avoid regulation at the level of the lowest common denominator. Moreover, as highlighted earlier in discussing the potential solutions to the 'too big to fail' problem, there may also be differences in financial structure that militate against 'one sized fits all' proposals and favour a 'package' solution with national discretion and choice on which elements of the package to apply. Approaches such as peer review may then be needed to buttress the framework and avoid initiatives being undermined by arbitrage.

A flexible regulatory perimeter: Arbitrage incentives do not simply apply across borders. Indeed such initiatives may be most powerful within economies, as new financial structures are set up to circumvent regulatory interventions. The well-documented incentives underpinning the explosion of activity in specialist vehicles in the so-called 'shadow banking' sector owe much to regulatory arbitrage[25].

Improved monitoring and policing of the regulatory perimeter is an important forward objective, to make sure that the boundary is adjusted when necessary. And it is important that common regulatory principles are applied to common activities and risks wherever they are carried out, in order to contain arbitrage

[23] See, for example, R. HAMILTON, N. JENKINSON and A. PENALVER, "Innovation and Integration in Financial Markets and the Implications for Financial Stability" in *The Structure and Resilience of the Financial System*, Reserve Bank of Australia, 2007.

[24] The FSB brings together high level officials in central banks, supervisory authorities and finance ministries in 24 jurisdictions, alongside 6 international standard setting bodies such as the Basel Committee and IOSCO, and 6 international institutions including the IMF, the European Commission and the ECB.

[25] Other forces such as incentives to specialize were also important. See POZSAR, ADRIAN, ASHCRAFT and BOESKY, "Shadow Banking", *FRBNY Staff report* No. 458, July 2010.

and the build up of systemic risk outside the formal regulatory boundary. The FSB is working to develop such principles. Additional information and new statistical data is likely to be necessary to underpin this work.

4.7. CONCLUSIONS

I have aimed in this short paper to highlight briefly many of the key initiatives that are underway within the international regulatory community to strengthen the financial system. Considerable progress has been made since the start of the crisis: in laying the foundations for a more robust and resilient banking system; in correcting misaligned incentives in financial markets and strengthening capital market functioning; and in developing the framework to address the 'too big to fail' problem and put in place arrangements to resolve large, complex banks without taxpayer support. But there remains much to do in many areas to operationalise aspects of the programme, and to implement the results. And there remain difficult transitional issues given the continued fragilities in the financial system and the risks of setback in the global economic recovery.

Moreover, the regulatory agenda will never be fully complete. Adaptation and structural change within the financial system will continue as institutions search for new opportunities and new sources of income. Regulatory interventions will always change behaviour and create incentives for avoidance. And some of these developments may be unexpected and lead to new sources of systemic risk. It is vital that the international community continues to work together to contain and eliminate such risks, and together delivers the financial stability that is essential for sustainable growth.

REFERENCES

BASEL COMMITTEE ON BANKING SUPERVISION, *International framework for liquidity risk measurement, standards and monitoring – consultative document*, December 2009.

BASEL COMMITTEE ON BANKING SUPERVISION, *Countercyclical capital buffer proposal*, July 2010.

BASEL COMMITTEE ON BANKING SUPERVISION, *Proposal to ensure loss absorbency of regulatory capital at the point of non-viability*, August 2010.

BASEL COMMITTEE ON BANKING SUPERVISION, *An assessment of the long-term impact of stronger capital and liquidity requirements*, August 2010.

BASEL COMMITTEE ON BANKING SUPERVISION, *Statement by the Basel Committee Group of Governors and Heads of Supervision*, September 2010.

BRUNNERMEIER, M., CROCKETT, A., GOODHART, C., PERSAUD, A. and SHIN, H., "The fundamental principles of financial regulation", *Geneva Reports on the World Economy* 11, 2009.

COMMITTEE ON THE GLOBAL FINANCIAL SYSTEM, *The role of margin requirements and haircuts in procyclicality*, March 2010.

FINANCIAL STABILITY BOARD, *FSB principles on sound compensation practices: implementation standards*, September 2009.

FINANCIAL STABILITY BOARD, *Financial Stability Board: charter*, September 2009.

FINANCIAL STABILITY BOARD, *Thematic review on compensation: peer review report*, March 2010.

FINANCIAL STABILITY BOARD, *Overview of progress in the inplemenation of the G20 recommendations for strengthening financial stability*, June 2010.

FINANCIAL STABILITY BOARD, *Reducing the moral hazard posed by systemically important financial institutions: interim report to G20 leaders*, June 2010.

FINANCIAL STABILITY FORUM, *Principles for sound compensation practices*, April 2009.

HAMILTON, R. JENKINSON, N. and PENALVER, A., "Innovation and integration in financial markets and the implications for financial stability" in KENT, C. and LAWSON, J. (eds.), *The structure and resilience of the financial system*, Reserve Bank of Australia, 2007.

IMF, BIS and FSB, *Guidance to assess the systemic importance of financial institutions, markets and instruments: initial considerations*, October 2009.

IOSCO, *Code of conduct fundamentals for credit rating agencies*, March 2009.

JENKINSON, N., "Strengthening regimes for controlling liquidity risk: some lessons from the recent turmoil", *Bank of England Quarterly Bulletin*, Q2 2008.

MACROECONOMIC ASSESSMENT GROUP established by the FINANCIAL STABILITY BOARD AND THE BASEL COMMITTEE ON BANKING SUPERVISION, *Assessing the macroeconomic impact of stronger capital and liquidity standards*, August 2010.

POZSAR, Z., ADRIAN, T., ASHCRAFT, A. and BOESKY, H., *Shadow banking*, Federal Reserve Bank of New York staff 458, July 2010.

SCHINASI, G., "Defining financial stability", *IMF working paper* WP/04/187, 2004.

TUCKER, P., "The debate on financial system resilience: macroprudential instruments", *Barclays annual lecture*, Bank of England, 2009.

5. Risk Identification and Mitigation: Lessons from the Crisis

Aerdt Houben and Jan Kakes

5.1. Introduction

A key question is how the credit crisis could emerge while many of the underlying risks were on policymakers' radar screens. A host of financial stability reviews had previously spelt out broad concerns about excessive search for yield, risk tolerance, global imbalances and financial innovation, together boosting leverage in the system[1]. Nonetheless, the worst financial crisis in eighty years erupted. In hindsight, these warnings make it all the more frustrating that the crisis was not prevented. Policymakers were evidently not able to make the prevailing risks sufficiently clear-cut and translate them into mitigating actions. The crisis thus illustrates the limitations to grasp and deal with financial stability risks. A prime lesson is that we need to change our attitude towards risk, recognizing our limited ability to spot vulnerabilities and improving our ability to deal with the unexpected.

In this paper, we discuss risk identification and mitigation policies. Section 5.2. describes lessons from the credit crisis and discusses uncertainties and behavioural aspects governing risk assessments. Section 5.3. explores how risk assessments and mitigating actions can be strengthened. Section 5.4. concludes.

5.2. Risk Identification and the Credit Crisis

5.2.1. The Run-up to the Crisis

More than a decade before the credit crisis, financial stability emerged as a key policy objective of financial authorities. This is illustrated by the prominent place of financial stability in organisational structures, policy mandates and publications[2]. The financial stability objective was widely recognised as increasingly important, given the shift towards larger and more integrated financial systems,

[1] See the 2004-2006 issues of *BIS Annual Report* and *Quarterly Review*, *IMF International Capital Markets Report* and *Global Financial Stability Review*, as well as the *Financial Stability Reviews* of many central banks, including DNB.

[2] According to Oosterloo *et al.* (2007) the number of central banks publishing an FSR increased from 1 to 40 between 1996 and 2005. They also find that the likelihood of publishing an FSR is higher for countries with a high income per capita – which is a proxy for the financial system's stage of development – and countries that experienced a systemic banking crisis in the past.

but also as inherently difficult to control[3]. This reflected the multifaceted nature of financial stability, encompassing a variety of trade-offs and a broad array of relevant policy instruments[4]. The difficulty in controlling financial stability risks was further compounded by the many stakeholders and jurisdictions involved. Moreover, financial stability assessments typically involve 'low probability, high impact' events, which are hard to anticipate due to the complexity and ongoing changes in the financial system.

As the crisis unfolded, these characteristics of financial stability came to the fore. The strains started in the US subprime mortgage market but rapidly spread to broad classes of structured products and became systemic as trust evaporated and liquidity provision dried up in the interbank market. Valuation losses translated into solvency shortfalls, eventually leading to a deep recession. In practice, the interplay of factors driving the crisis – notably globalisation, financial innovation and regulatory changes – made it extremely difficult to assess the main vulnerabilities and forecast their evolution. Thus, although many of the causes of the crisis had been broadly defined as risks beforehand, their actual relevance was ambiguous at the time. For instance, credit risk transfer mechanisms that primarily featured as risk mitigants prior to the crisis, proved actually to have increased interconnectedness, complexity and opacity in the system (see Annex 1). The uncertainty in risk assessments was also visible during the crisis, notably with respect to the possible systemic relevance of Lehman Brothers (see Annex 2). The uncertainty and ambiguity in these assessments contrasts with the precision with which subsequent backward-looking analyses have pinpointed the root causes of the crisis.

5.2.2. Lessons from the crisis

The crisis has underscored the central position of financial stability as a policy objective, but also shows how difficult it is to safeguard in practice. Four lessons stand out.

1. *Procyclicality.* The financial system proved more procyclical than anticipated, due to a variety of factors. As a result of greater interconnectedness, lack of trust led to a widespread reluctance to engage in new transactions and significantly disturbed core funding markets. The shock's transmission was accentuated by the high leverage in the financial system and the limited buffers to absorb losses. Accounting rules based on mark-to-market valuation fuelled a negative spiral of declining asset prices and deteriorating financial positions. Just as the shift to more variable compensation in the financial sector had

[3] See also Houben *et al.* (2004), Allen and Wood (2005) and Schinasi (2006).
[4] Many other policy fields are more focused, the obvious example being monetary policy with one policy target (inflation), one tool (policy rate) and a limited number of indicators (notably inflation projections).

fuelled the upswing, so the move to risk-oriented regulatory frameworks led to more constraining prudential requirements in the downswing. Subsequently, as banks tightened their lending conditions, a negative interaction developed between the financial system and the real economy. These factors reinforced each other and caused a self-sustaining downturn, illustrating the partly endogenous nature of the financial cycle. While policymakers have since taken important measures to reduce the system's procyclicality, this factor will remain a prime driver of financial sector dynamics.

2. *Policy limitations*. Policymakers responded to the crisis with mitigating actions, including massive liquidity support, capital injections, guarantee schemes, and monetary and fiscal stimulus. But they were increasingly confronted by limitations in their room for manoeuvre. Specifically, monetary policy to stimulate the economy is limited by the zero lower bound. Fiscal policy is constrained by institutional barriers (such as the Stability and Growth Pact) and by financial markets' unwillingness to finance unsustainable debt dynamics. And specific support measures (such as capital injections, guarantee schemes and nationalisations) were accompanied by heavy requirements to preserve a competitive level playing field. Crisis management instruments faced legal constraints, including trigger clauses in financial contracts that terminated funding agreements in the case of supervisory measures.
3. *Fundamental uncertainty*. Uncertainty about the potential size and location of financial losses played an important role at the outset of the crisis. But it soon became clear that uncertainty goes far beyond financial exposures and also encompasses unpredictable responses of market participants and coordination challenges between policymakers, as well as 'unknown unknowns'. The interaction between risks and behavioural responses created an unpredictable dynamism and complexity. For instance, in mid-2008, it was impossible to anticipate with any degree of certainty whether the US TARP support program would get political backing, whether Lehman Brothers would be rescued and how this would interact with market sentiment. In fact, the failure of Lehman was initially well-received in the financial press because this institution was not considered systemically relevant (see Annex 2). But Lehman's failure triggered a course of events that was impossible to establish ex ante, including the Madoff investment scandal, the rescue of large cross-border financial firms and the funding pressures in the periphery of the euro area. In contrast to quantifiable risk, this illustrates fundamental (Knightian) uncertainty of which the statistical distribution of possible outcomes is unknown.
4. *Behavioural biases*. The 'human factor' played a crucial role during both the build-up phase and the downturn. Prior to the crisis, a period of benign financial conditions and a relatively stable business cycle – the 'Great Moderation' – had contributed to a perception that financial risks were modest. At the

same time, many economies experienced rapid credit growth, asset price inflation and financial innovation, which were well-known ingredients for past financial crises. From the psychological literature, it is known that people generally underestimate risks that have not materialised for a long time (a phenomenon known as disaster myopia) and are biased towards information that is in line with their a priori beliefs (reflecting confirmation bias and cognitive dissonance). Furthermore, people's perception of risks is strongly influenced by the way information is presented[5]. For instance, risks are weighed more heavily if their probabilities are presented over a longer time span or if their potential impact is cast in terms of readily imaginable events. Moreover, when having to decide under uncertainty, people tend to rely on familiar patterns and to assign more weight to matters that are easier to imagine[6]. In the run-up to the crisis, risk assessments evidently did not convey the magnitude of underlying risks. And once the crisis broke out, herd behaviour and loss aversion triggered an overshooting in many risk bearing markets.

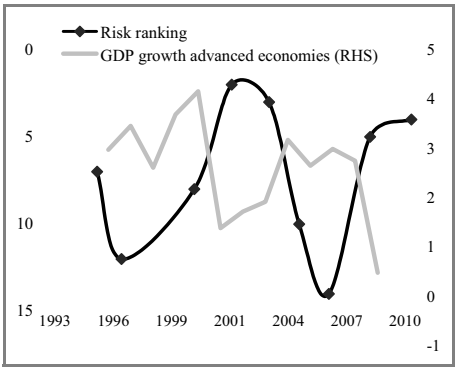
5.2.3. Illustrations of Behavioural Biases in the Financial Sector

Behavioural biases in the financial sector can be illustrated by the 'Banking Banana Skins' survey that has been carried out regularly since the mid-1990s (CSFI, 2010). The latest survey, published in February 2010, is based on responses of over 400 individuals in 49 countries, comprising bankers, regulators, academics, analysts and other observers.

One of the outcomes of this survey is a top 30 ranking of risks. Graphs 1 and 2 present the ranking of two specific risks over time: macroeconomic risk and 'rogue trader' risk. Macroeconomic risk refers to (expected) changes in GDP growth, a key economic indicator which is monitored intensively worldwide. Given their constant access to relevant information, survey respondents are presumably well aware of economic conditions. It is therefore hardly surprising that this risk ranks high in years that coincide or just precede economic downturns. By contrast, 'rogue trader' risk is far more specific and only receives broad media coverage after incidents like the ones caused by Nick Leeson at Barings in 1995 and Jerôme Kerviel at Société Générale in 2007. Graph 2 shows that, immediately following these events, 'rogue trader'-risk rises rapidly as a concern and then gradually fades away again.

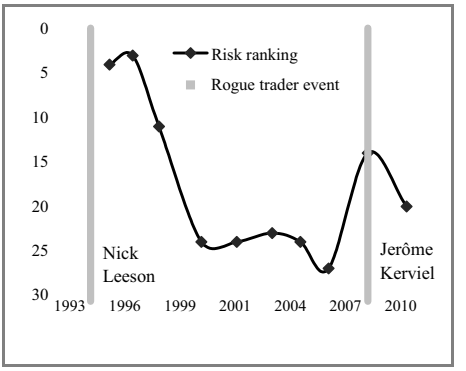
[5] See Slovic (1987).
[6] See Tversky and Kahneman (1974). See also Haldane (2009) for a discussion of disaster myopia in relation to the financial crisis.

Graph 1. Macroeconomic Risk



Source: Banking Banana Skins Survey, various years.

Graph 2. 'Rogue Trader' Risk



Source: Banking Banana Skins Survey, various years.

The financial sector's myopic attitude towards low-frequency risks may be partly due to risk management methodologies based on short data samples that do not include crisis episodes and therefore present an overly rosy picture. For example, VaR measures indicated a low-risk environment in the years 2004-2006, reflecting low volatility on financial markets, while leverage in the system was actually accelerating. Of course, data samples will automatically include a crisis period in the forthcoming years, but the message is to ensure that risk frameworks have a time horizon far longer than the memories of financial sector participants.

Another striking outcome of this financial sector survey is that respondents tend to be optimistic about their ability to handle risks in good times, but become much more uncertain in bad times, as illustrated by the development of assessments following the start of crisis in 2007-2008 (Graph 3, p. 84). Presumably, this reflects a combination of disaster myopia and fundamental uncertainty: the crisis confronted respondents with the complexity and limited controllability of risks.

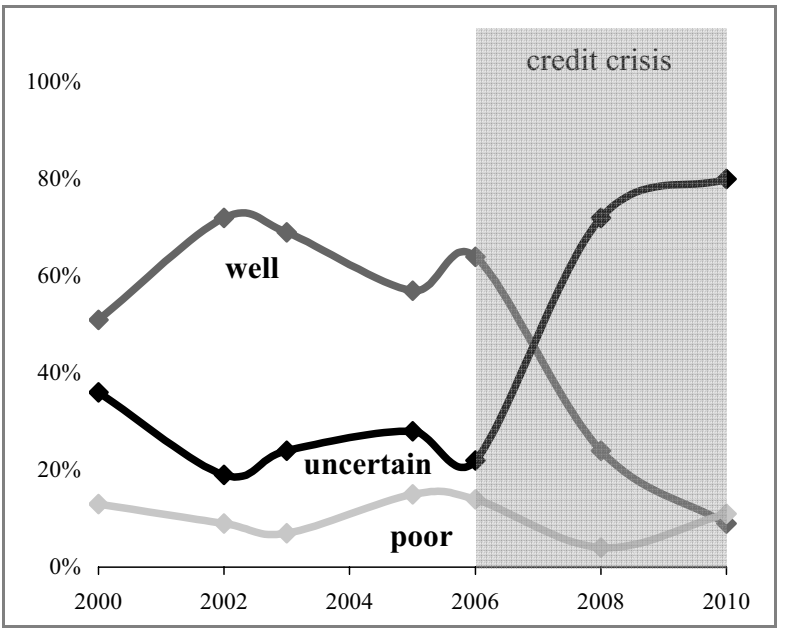
5.3. SCOPE FOR IMPROVEMENT

Given the lessons set out above, how can risk mitigating policies be improved? This requires changes in the approach to both risk assessment and risk mitigation.

5.3.1. Better Risk Assessments

The assessment of financial stability risks can be strengthened in a number of ways. The first challenge is to make risk analyses more forward-looking. In this context, it is striking how Financial Stability Reviews of international financial

Graph 3. How Well Are You prepared to Handle risks?



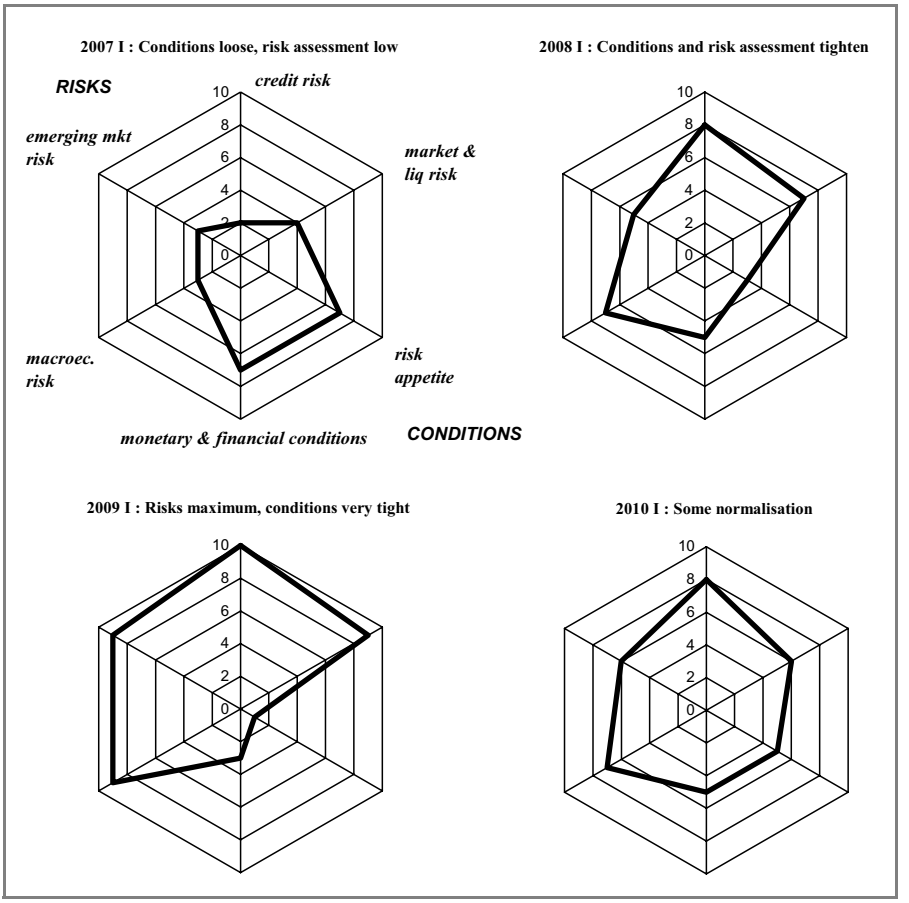
Source: Banking Banana Skins Survey, various years.

institutions and central banks are still largely descriptive of the current state of affairs, rather than focusing on the future. An example is the IMF's Global Financial Risk Map, which presents an overview of financial conditions and specific risk categories (see Graph 4)[7]. In hindsight, the assessment of financial conditions and risks shortly before the crisis presented an overly benign picture of financial stability risks, rather than the message that imbalances were accumulating and mitigating action was required.

Making the financial stability assessments more forward-looking is easier said than done, given the poor performance of early warning indicators[8]. Generally, such indicators have a high noise-to-signal ratio at long advance notice and only give reliable signals at very short time horizons, too late to take preventive action. But forward-looking analysis is broader than early warning models. It involves, for instance, analysing the financial stability implications of different scenarios for several key variables[9]. More specifically, top down and bottom up stress tests can map out how sectors or individual institutions may cope with specific future risk scenarios.

7 See IMF (2007) and Dattels *et al.* (2010).
8 See e.g. Bell and Pain (2000).
9 The IMF and FSB have developed a framework for early warning exercises that include broad assessments and scenarios. See IMF (2010).

Graph 4. IMF Global Financial Stability Risk Map



The IMF Global Financial Stability risk map consists of 6 components: 4 risk categories (credit, market/liquidity, macroeconomic and emerging market risk) and 2 conditions (risk appetite and monetary/financial conditions). The map is updated biannually since 2007; these graphs show the spring assessments of every year. See Dattels et al. (2010) for a recent evaluation.
Source: IMF.

A second improvement is to focus on the accumulation of key underlying vulnerabilities. We cannot spot every risk, but we know from earlier crises that the system's resilience is commonly undermined by, for instance, rapid credit growth in combination with higher leverage and asset price inflation[10]. There are various indicators – including credit to GDP, financial sector leverage, maturity transformation and asset prices developments – that typically signal imbalances. The challenge is to focus on a limited set of variables that provide the 'Big Picture' and to reflect this on the system's vulnerabilities, that is its capacity to absorb risks.

[10] See Borio (2010), Borio and Drehmann (2009).

Third, there is a need to better understand potential propagation channels through systemic linkages, for instance by network analysis. This can help indicate concentration risks as well as the need for infrastructural or institutional circuit breakers. Besides this, insight into systemic linkages will allow informed crisis management. This requires more granular and timely data on interconnections between core financial firms, markets and infrastructure. Recent international initiatives have been launched to reduce data gaps on systemic linkages[11].

5.3.2. More Effective Risk Mitigation

More forward looking risk analyses and better insight in systemic linkages will allow more effective risk mitigation policies through countercyclical measures and circuit breakers. But financial stability risks would still remain inherently uncertain, not well-quantified and not well-forecast[12]. When considered in terms of financial stability's three lines of defence (risk mitigation, risk absorption and crisis resolution; see Graph 5), this suggests the emphasis needs to be shifted towards the second and third line[13]:

1. the first line of defence consists of countering threats to financial stability through early identification and risk mitigation. At a policy level, the crisis has underscored the need to develop macroprudential instruments that can lean against the financial cycle, as a complement to monetary policy directed at price stability and microprudential policies directed at solid financial institutions[14]. At a practical level, it has highlighted the importance of translating risks into specific, timely and forceful mitigating actions, including through close monitoring and evaluation of their implementation[15]. To achieve this, supervisory structures, incentives and cultures may need to be changed. However, as risks are inherently uncertain and ambiguous, while offsetting policies may be constrained, there are limits to what proactive risk mitigation may be expected to achieve;
2. in cases where prevention alone is insufficient, the second line of defence is the resilience of the financial system, or its capacity to absorb shocks without losing its stability. For instance, the burst of the dot-com bubble in 2001 was a shock to the financial system that could be smoothly handled because risks were spread out and solvency cushions were adequate. Key determinants of

[11] See the recommendations by FSB/IMF (2009), which have been endorsed by the G20 finance ministers and central bank governors.

[12] Borio and Drehmann (2010) draw a similar conclusion; they argue that measurement is fundamentally 'fuzzy' and describe a number of desirable features of a financial stability framework, including a focus on systemic issues and procyclicality.

[13] These lines of defence are discussed as part of DNB's broader macroprudential framework in DNB (2010).

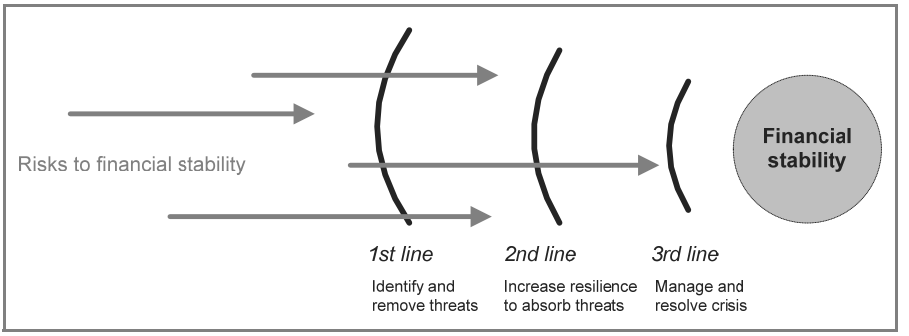
[14] Strictly speaking, macroprudential tools may be aimed at leaning against the wind or at boosting financial sector resilience. The latter belong to the second line of defence set out above. See CGFS (2010).

[15] Viñals *et al.* (2010) presents a lucid analysis of how effective supervision – that is intrusive, skeptical, proactive, comprehensive, adaptive, and conclusive – can contribute to lower risks.

this resilience are institutions' capital and liquidity buffers, as well as the strength of the infrastructure and institutional arrangements. In the wake of the crisis, important steps have been taken to foster financial sector resilience, notably through the Basel III Accord for banking regulation and the plans to establish central counterparty (CCP) clearing for derivatives trading;

3. when a shock is too large for the system's absorption capacity, crisis management is the third and last line of defence to protect financial stability. Potential instruments here are safety net arrangements and interventions in distressed institutions (either going or gone concern). The purpose of such instruments is to contain the disruption of the financial system and therewith to limit damage for the real economy. Here, important challenges relate to strengthening authorities' resolution capacity, through the development of generic 'bail in' and asset and share transfer powers, but progress since the crisis has been more limited.

Graph 5. Lines of Defence



Source: DNB (2010).

5.3.3. Introducing the Precautionary Principle in Financial Stability Policies

Especially in non-crisis periods, there is a tendency to underplay the second and third lines of defence. In the absence of systemic failures, there is pressure to reduce expensive buffers and to postpone the strengthening of crisis resolution tools. Under favourable circumstances, it is difficult to make the case for these risk mitigating instruments on the basis of a cost-benefit analysis, as the benefits – an improved capacity to handle events that may never arise – are difficult to quantify.

Mitigating very uncertain but potentially catastrophic risks is difficult when risks are vague or remote. This is a challenge also faced in other policy fields. Examples are environmental policies (such as those related to global warming) and health

and safety regulation (flu pandemic). To protect these policy fields against society's myopia regarding uncertain threats, the so-called 'precautionary principle' has been developed as a basis for action. According to this principle, policymakers are expected to take action to mitigate a particular risk, even when decisive scientific proof on the importance of that risk is not (yet) available. The burden of proof is thus reversed: the policymaker should only refrain from action if hard evidence exists that the risk is *not* significant[16].

The precautionary principle is controversial, especially when interpreted strictly. Adherence to this principle may cause excessive risk aversion and discourage innovation. Also, it may lead to inconsistencies, as the principle may be proclaimed by opposite advocates of particular policies – albeit within different timeframes – when undesired side-effects such as moral hazard are taken into account[17]. These criticisms imply that the precautionary principle should be part of a broad assessment, alongside other relevant considerations[18].

To our knowledge, the precautionary principle has not been applied explicitly to financial stability policies, even though the trade-offs and potentially far-reaching costs in this policy field indicate it could be very relevant. Fundamental uncertainty, disaster myopia and the limited scope for mitigating policies once a crisis erupts imply that it may be better to err on the side of caution to begin with. An obvious example is the size and composition of capital and liquidity buffers, which may be set higher than purely quantitative risk assessments based on historical data would suggest. Other examples where the precautionary principle may be considered are restrictions on financial institutions' size or activities, or extensions of authorities' crisis resolution tools (e.g. at the expense of shareholder rights).

5.4. CONCLUDING REMARKS

Although policymakers were aware of many of the underlying risks that manifested themselves during the credit crisis, they were evidently unable to take sufficient mitigating action. Financial developments proved to be inherently uncer-

[16] At the Rio Conference in 1992, this was formulated as follows: "In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effectiveness measures to prevent environmental degradation".

[17] An example is the decision to repeal a distortionary fiscal measure (such as the tax deductability of mortgage interest payments) at the risk of financial instability in the short term, against maintaining the measure at the risk of financial instability in the long term. As both risks are hard to quantify and potentially disruptive, both decision outcomes can be motivated by the precautionary principle.

[18] In the Maastricht Treaty of 1992, the precautionary principle is mentioned as one of the underlying principles for environmental policy. Later, the European Commission (2000) issued a more general discussion on the use of the precautionary principle for various policies. The Commission advocates a careful application, emphasizing the need to involve as many interested parties as possible and to be even-handed (with considerations such as proportionality, non-discrimination, consistency).

tain, procyclicality underestimated, human behaviour biased and the scope for mitigating public policy constrained. Lessons from the crisis may be viewed through the prism of the three lines of defence to safeguard financial stability: risk reduction, risk absorption and crisis resolution. While more emphasis may be placed on using forward looking indicators to assess financial vulnerabilities and systemic linkages, the predominance of fundamental uncertainty, procyclicality, behavioural biases and policy constraints suggest the emphasis of mitigating policies should lie with strengthening the financial system's resilience and its crisis management tools. Beyond this, given the difficulties to assess vulnerabilities in the financial system, the high potential costs of systemic failures and society's tendency to underestimate such costs when they do not occur, financial stability policies should be developed in the context of the precautionary principle.

REFERENCES

ALLEN, W.A. and WOOD, G. (2005), "Defining and achieving financial stability", *Journal of Financial Stability*, Vol. 2, pp. 152-172.

BELL, J. and PAIN, D. (2000), "Leading indicator models of banking crises – a critical review", *Bank of England Financial Stability Review*, December, pp. 113-129.

BORIO, C. (2010), *The financial crisis: what implications for new statistics?*, keynote speech at the fifth IFC Conference "Initiatives to address data gaps revealed by the financial crisis", 25-26 August.

BORIO, C. and DREHMANN, M. (2009), "Towards an operational framework for financial stability: 'fuzzy' measurement and its consequences", *BIS Working Papers*, No. 284.

DATTELS, P., MCCAUGHRIN, R., MIYAJIMA, K. and PUIG, J. (2010), "Can you map financial stability?", *IMF Working Paper*, WP/10/145.

CSFI (2010), *Banking Banana Skins 2010*, London.

CGFS (2010), "Macroprudential instruments and frameworks: a stocktaking of issues and experiences", *CGFS Papers*, No. 38.

DNB (2010), *Towards a more stable financial system. Macroprudential supervision at DNB*, downloadable at www.dnb.nl.

EUROPEAN COMMISSION (2000), *Communication from the Commission on the precautionary Principle*, Brussels.

FSB/IMF (2009), *The financial crisis and information gaps*, Report to the G20 finance ministers and central bank governors, October.

HALDANE, A. (2009), *Why banks failed the stresstest*, speech, Marcus-Evans Conference on Stress-testing, 9-10 February 2009.

HOUBEN, A., KAKES, J. and SCHINASI, G. (2004), "Towards a framework for financial stability", *DNB Occasional Study*, Vol. 2, No. 1. Also published as *IMF Working Paper*, WP/04/101.

IMF (2007), *Global Financial Stability Report*, Washington.

IMF (2010), *The IMF-FSB Early Warning Exercise – design and methodological toolkit*, downloadable at www.imf.org/external/np/pp/eng/2010/090110.pdf.

OOSTERLOO, S., DE HAAN, J. and JONG-A-PIN, R. (2007), "Financial stability reviews: a first empirical analysis", *Journal of Financial Stability*, 2, pp. 337-355.

SCHINASI, G. (2006), *Safeguarding financial stability: theory and practice*, IMF.

SLOVIC, P. (1986), "Perception of risk", *Science*, Vol. 236, No. 4799, pp. 280-285.

TVERSKY, D. and KAHNEMAN, D. (1974), "Judgement under uncertainty: heuristics and biases", *Science*, Vol. 185, No. 4157, pp. 1124-1131.

VIÑALS, J., FIECHTER, J., NARAIN, A., ELLIOTT, J., TOWER, I., BOLOGNA, P. and HSU, M. (2010), "The making of good supervision: learning to say 'No'", *IMF staff position note*, SPN/10/08.

ANNEX 1. AMBIGUITY IN RISK ASSESSMENTS: PRE-CRISIS VIEWS ON CRT

Credit risk transfer (CRT) instruments such as Collateralized Debt Obligations (CDOs) and Credit Default Swaps (CDS) have played an important role in the crisis. Before the crisis, official publications by the BIS and the IMF – reflecting global consensus among policymakers – had paid a lot of attention to CRT markets. These publications illustrate the ambiguous attitude towards CRT instruments, as they highlighted the benefits but also spelt out associated risks, including those related to complexity, leverage, regulatory arbitrage and misguided ratings. Even in retrospect, these assessments prove to have been quite accurate. At the same time, however, it appears that the risk warnings went unheeded because they were ambiguous and remained at a conceptual level, rather than being translated into specific mitigating actions.

BIS, 2002 (Annual Report, pp. 131-133)

> *"Recent years (…) have also seen very strong growth in markets for credit derivatives (…). These markets have contributed to resilience in a number of ways. Most importantly, they permit risk to be transferred away from institutions that have a comparative advantage in arranging loans towards those that specialise in bearing and managing risk. This allows institutions to be better diversified and (…) it can also promote more stable patterns of financing. These markets also enhance the pricing and transparency of risk assessments."*
>
> *"Against this generally positive background, recent developments give rise to a number of potential concerns. First, to some degree, the growth of credit risk transfer instruments has been driven by regulatory arbitrage.(…) Second, interdependencies within the financial system have increased (…). Third, the development of complex financial instruments can make it more difficult to assess the overall level of risk and its distribution within the financial system. And finally, (…) the development of instruments that allow credit risk to be easily transferred can facilitate the build-up of leverage in the corporate sector."*

IMF, April 2006 (Global Financial Stability Report, pp. 51-61)

> *"There is growing recognition that the dispersion of credit risk by banks to a broader and more diverse group of investors (…) has helped to make the banking and overall financial system more resilient. (…) At the same time, the transition from bank-dominated to more market-based financial systems presents new challenges and vulnerabilities."*
>
> *"(…) rating agencies have played a significant role in the acceptance of new products by investors, (…) heavily reliant on sophisticated quantita-*

tive modelling. Not surprisingly, the development of structured credit markets has coincided with the increasing involvement of people with the advanced financial engineering skills (…). In fact, (…) the application of such skills may have become more important than fundamental credit analysis. Some questions remain as to whether all investors fully understand the risk profile of these instruments, and how it differs from that of similarly rated corporate bonds. In particular, structured credit products are likely to suffer more severe, multiple notch downgrades, relative to the typically smoother downgrade paths of corporate bonds. Many investors (and their senior management) may therefore be negatively surprised during the next rating downgrade cycle."

ANNEX 2. AMBIGUITY IN RISK ASSESSMENTS: INITIAL ASSESSMENTS OF LEHMAN COLLAPSE

On 15 September 2008, the US investment bank Lehman Brothers filed for bankruptcy. This triggered a sharp deterioration in market sentiment and precipitated a global systemic crisis. However, at the time of the decision whether or not to provide public support, the assessments of Lehman's systemic nature were ambiguous, if not favourable. The then prevailing uncertainty and ambiguity, as illustrated by selected quotes from editorials and leading economists, contrasts sharply with the systemic relevance that became evident in retrospect.

FT Editorial "Decisive Inaction", 11 September 2008

> *"The US government has bailed out Fannie Mae and Freddie Mac. The market now seems to view Lehman Brothers (…) as next in line, with possibly more to come. It is time for the authorities to step back. Further such rescues should be avoided like the plague. It is the job of a government to save the financial system, not individual institutions. What has been done so far should be enough. Yes, banks are going through tough times. (…) Yet a sudden failure, such as that of Bear Stearns in March, seems unlikely, since liquidity is assured by the Federal Reserve's decision to open the discount window to investment banks. This is buying damaged institutions time needed to come up with a private sector solution. That is what they must seek. Apart from offering short-term liquidity, the Fed and the Treasury should remain on the sidelines."*

Willem Buiter (ft.com/maverecom), 15 September 2008

> *"We may have a test as early as tomorrow morning (Tuesday, 15 September 2005), of whether there are significant systemic externalities from the failure of a household-name investment bank. I am optimistic that investment banks will turn out to be more like normal businesses than like the negative-externalities-on-steroids painted by the Fed and the Treasury during the Bear Stearns rescue. The frantic attempts by the Fed and the Treasury to broker a private sector rescue/takeover of Lehman suggest that the monetary and fiscal authorities are not too confident that a household-name investment bank can fail without causing significant systemic damage."*

Martin Wolf, "The end of lightly regulated finance has come far closer", 16 September 2008

> *"(…) Today, however, the authorities must also ask themselves whether what they are doing will make the system safer after the crisis is over. By these standards, the decision not to bail out Lehman looked right. But it was also risky, because we have to get through the crisis. Let us hope the*

decision proves to be part of the solution, not an aggravation of the challenges we face. I would now take no bets on this benign outcome."

Willem Buiter (ft.com/maverecom), 18 September 2008

"(…) From a long-run financial stability perspective, the decision not to put public money behind a bail-out of Lehman Brothers also would seem to be the correct one. While it may well have increased short-term volatility and uncertainty, the deleterious effect of tax payer support for a bank that was not systemically significant on incentives for future investment, lending and borrowing would have been horrendous – an open invitation for excessive risk taking. (…)"

6. Banking as a Social Contract – The New Regulatory Paradigm

Pat Farrell

It is now two years since the collapse of Lehman Brothers, and two years since the introduction by Government of the bank guarantee scheme. These two actions – one taking place in New York and the other in Government Buildings on Merrion Row – have, for many of us, come to represent the key defining moments of the crisis, both internationally and nationally.

In the time that has passed we – all of us – have been focussed, to an exceptional degree, on the unfolding situation that has enveloped us. This is understandable, as in an often fast-moving and turbulent environment the main focus has to be on 'today', and on the actions that are needed immediately to guarantee stability in the short-term.

In this way, coping with the challenges that have arisen since 2008 has been the main aim for the sector, for the Government, and for the wider economy. However, the new challenge is how we move forward – how we rebuild and repair in a way that meets the needs of our customers, and that allows for responsible growth, stability and job creation.

It is, therefore, appropriate that we assess what the years ahead hold for Irish banking, and consider how we will address the issues that are now emerging. What will the retail banking model in Ireland look like in the future? As banks consolidate what impact will this have on both customers and the broader economy? And, in this changed financial world, how will the pressures of new regulation and interest rate increases be met by the banking sector?

However, the bedrock to each of these issues, and many others that arise today and will arise in the future, is the nature of the relationship between the banking sector and the Government, the regulatory structure, the Central Bank and the ECB, and all customers. This bedrock is sometimes called the *social contract*.

Over the course of the recent crisis there has been significant debate as to the nature of the *social contract* between the banking sector and these key stakeholders. For the purposes of clarity, the definition of the *social contract* given by the Deputy Governor of the Bank of England Paul Tucker is, I believe, a good starting point for our discussion today. To quote the Deputy Governor:

> *For over a century...there has effectively been a social contract between the banking system and the authorities. On one side of the contract, commercial banks have been permitted to profit from maturity transformation, turning liquid savings into illiquid loans...but maturity transformation – borrowing short to lend long – is risky; it relies on confidence. And if that confidence cracks the costs are felt not just by the customers and shareholders of the banks concerned but more widely in the economy given the potential disruption to the payment system.*
>
> *The other side of the contract has, accordingly, had three elements designed to protect the economy from these risks. First: prudential regulation of the banks to contain their risk taking and so reduce the likelihood of confidence cracking. Second: deposit insurance, to make retail depositors more or less whole in the event of failure, not withstanding that regulation. And third: central bank liquidity policy. Essentially, central banks have stood ready to provide unlimited amounts of liquidity against good collateral at a rate above the market rate prevailing during peace time.*

As we can see from this comment, by its nature banking includes an element of risk which is a fundamental part of the process of lending money to businesses and individuals. However, in the normal course of events, this risk is tempered by – amongst other issues – appropriate regulation, supervision and oversight coupled with risk management policies within the banks.

Given the upheaval of recent years, what changes to this *social contract* are necessary? What new regulation is needed? And, how can the banking sector respond in a way that helps the economy to once again begin to stabilise, grow and develop?

To assess this, it's appropriate to recognise where we are *now*, today, at the end of the first decade of the 21st century. That place is, it goes without saying, a wiser and sorrier place than we had ever expected to be when the new millennium began – a time of strong growth, low unemployment and budget surpluses.

Today, the reputation of the banking sector has been damaged – through a combination of unsustainable practices and behaviours – and the sector has consequently lost the trust of stakeholders including the public. People feel let down by the banks and, frankly, they have indeed been let down. This is expressed in understandable anger and frustration on a daily basis.

The banking sector recognises this, and fully acknowledges its responsibility in moving Ireland forward, in rebuilding lost trust, and in playing the vital role that it must play in getting Ireland's economy moving and growing once again.

But what do we want the banking sector to look like in the future? And what will a new *social contract* entail? In approaching these questions it is important, I

believe, to go back to the fundamentals of good banking. We should consider what we could call the 'first principles of banking' – principles that we must recover and forge anew for the future.

In the view of the Irish Banking Federation, these first principles are that Ireland's banks *must*:

- be a safe place for our customers money;
- be socially aware;
- be responsive to our customers needs and to both the economic *and* social needs of our economy and society;
- respond to the needs of the economy, in a real way that recognises the fast changing nature of business;
- be able to serve customers that are competing on the national and international stage in this era of globalisation;
- be less capital intensive and less focussed on property assets, the overreliance on which has caused much of the current difficulty;
- *take less risks*;
- be diversified in loan profile and less exposed to individual sectors;
- work collaboratively with Government, regulators and all stakeholders;
- reflect the size and diversity of our economy; and finally
- through these principles return the banking sector to a healthy, stable and profitable state

These first principles are the bedrock of the future *social contract* between the Irish banking sector and all stakeholders.

To realise these aims we are taking the first steps. The banking sector is working in an open and collaborative way with Government, a range of agencies, and our customers in a move towards the practical realisation of these principles.

The often rapidly changing circumstances that we have all been faced with in recent years has – understandably – lead to us reacting with immediate needs and short term gains in mind. However, it is important that we now become more future-focussed and recognise that banking has a real role to play in moving Ireland forward.

Part of this means moving away from property-based speculation, allowing us all – both the banking sector and the wider economy – to focus on new developments in both the traditional and new economy which can deliver sustainable, reasonable growth and the jobs we badly need in the medium to long term.

For example, since earlier this year the IBF has been working with Enterprise Ireland to develop sectoral expertise in modern growth centres in the Irish economy. In addition, we are working to develop our services to meet the needs of SMEs working in these sectors and trading internationally, developing new credit

products in areas where cashflow, rather than property or assets, is the basis for business lending.

These are key developments, and they could be described as exemplifying the new *social contract* that will define Irish banking for the next generation.

In addition, the banking sector is working with homeowners and SMEs who are bearing the brunt of the current downturn.

IBF members are working with these homeowners and a range of initiatives have been put in place to assist distressed homeowners. These include the IBF Pledge on Home Repossessions, the IBF/MABS Protocol on Debt Management and the designated website www.helpinghomeowners.ie all of which are in addition to the existing statutory Code of Conduct on Mortgage Arrears.

Today, in excess of 30,000 mortgage holders who are experiencing difficulties with their mortgages are being accommodated by their lenders in some form. We are working with these customers to manage their mortgage and other debt repayments. And, in conjunction with member banks and building societies, the IBF will contribute constructively to the consultation process on the revised Code of Conduct on Mortgage Arrears.

In addition, there has been a significant focus on the borrowing needs of small and medium enterprises. These are undoubtedly very challenging times for SMEs who face declining domestic demand as well as a drop in spending from overseas visitors. At the same time many SMEs are struggling to get paid and this can have a direct impact on cashflow, the lifeblood of the business.

It is now estimated that more than one-third of SMEs customers are struggling with loan repayments.

The banking sector is actively engaging with Government departments and agencies to identify the key issues regarding access to finance facing SMEs, and to find solutions to these issues. We are also participating in the Department of Enterprise's Credit Supply Clearing Group which is examining a range of ways to improve the relationship between the banks and the SME sector.

Perhaps surprisingly for some here today, the figures for lending to the SME sector were strong in 2009. The total lending to SMEs, over the course of what was the worst period of economic decline, was EUR 32.2 billion, down just 3.6%. Four in every five applications for credit were approved. New drawdowns totalled EUR 377 million per month. And, approximately EUR 2.6 billion in approved overdrafts were available but unused.

And, Irish banks are working with the new regulatory structures which are being put in place to ensure that the new social contract between banking and wider society is as strong as possible.

It is very important that the key focuses for the strengthened regulatory regime are financial stability, effective prudential and market supervision, and consumer protection. Each of these must be delivered through a regulatory approach that fosters a competitive domestic economy and underpins the reputation of Ireland as an attractive international financial services centre.

The IBF supports the new regulatory structure being developed. The approach being taken is welcome as it is seeking at the outset to get the balance right in managing what are competing concerns and mandates – market, prudential and conduct of business rules.

All of this is with a view to making sure that history does not repeat itself. The checks and balances that were missing or inadequate in recent years should be strengthened. Put simply, we need to make sure that we ask ourselves the tough questions when tough questions need to be asked – the type of questions that we didn't ask during the boom.

This makes sense for all of us – the banking sector, the regulatory environment, and society as a whole.

CONCLUSION

These are vitally important first steps – working with homeowners, supporting SMEs, reworking regulation and returning to the *first principles* of banking. Each of these steps is one towards the type of stability and security that we all need to make progress – for both our economy and for our country.

Banking has a real role to play in moving Ireland forward. We see this especially today, in the heart of the International Financial Services Centre (IFSC). The financial institutions located here generate 25,000 jobs and support 10,000 more in advisory services.

The extraordinary shocks of the recent years have lead to high unemployment, and the generation of new jobs is something that banking must be a at the heart of – both by supporting new and traditional enterprises and also securing Ireland's position as an important location for financial services.

A new *social contract* is taking shape in banking. However, at the heart of the reforms that I have outlined is a very simple proposition – for the future, Ireland's banking sector must play a strong social as well as economic role. For the future, Ireland's banking sector must be strong and safe. And, for the future, Ireland's banking sector must be innovative and responsive.

7. A False Sense of Security: Lessons from the Crisis for Bank Management and Regulators

Patricia Jackson[1]

Abstract

The financial crisis has highlighted weaknesses in risk transparency within banks and wider deficiencies in risk management. The impact of different approaches to risk modelling are considered. In particular, the effect of point in time IRB models relative to through the cycle models on the accuracy of risk measures in booms and recessions. The implications for the success of the Basel III countercyclical capital buffers are also assessed. The wider causes of the crisis are considered and recommendations are made with regard to the FSBs role in reviewing fast growing opaque markets.

7.1. Introduction

The markets are emerging from a financial crisis which has proved more severe than any since the Great Depression. It is therefore important to take stock and review the causes and draw conclusions about ways to strengthen the system going forward. A number of papers (for example Portes and Obstfeld and Rogoff) have focussed on the effect of global imbalances and macro policy as key factors behind the crisis. Others (for example Blundell-Wignall, Atkinson and Hoon Lee) have focussed on regulatory and policy factors – for example, the pressure within the US for an increase in mortgage lending to the less wealthy. Undoubtedly global imbalances and macroeconomic policy provided the fuel for the crisis but they do not explain why certain banks held concentrated positions sufficient to undermine their solvency. Bubbles and global imbalances will undoubtedly happen again, and therefore focussing on the question of what led banks to take too much risk is important. This is bound up with questions of incentives but it is also intrinsically related to how risks are managed and monitored within firms.

This paper looks at the causes of the crisis in terms of the holdings of concentrated positions by some banks and the lessons that can be drawn. A number of areas which contributed to the build up in risk are identified. One is misleading

[1] The views expressed are mine and do not necessarily reflect those of Ernst & Young. I thank Mark London for some PD estimates and an unnamed bank for their PD data. I also thank the participants at the SUERF/Central Bank and Financial Services Authority of Ireland Conference "Regulation and Banking after the Crisis" for useful comments as well as the participants at an LSE Financial Markets Group seminar.

risk signals in the banks. Models under-read risk and, in particular, VaR models based on relatively short data histories reinforced over optimism. This was also true of point in time IRB models which inverted some relative risks and substantially under estimated others. One policy recommendation is that the authorities pay far more attention to risk transparency within the banks going forward. The paper also shows that allowing banks the choice between point in time and through the cycle IRB models will negate the new countercyclical capital buffers being introduced under Basel III. The paper also looks at the increasing focus on setting a clear risk appetite within the banks as well as tightening control structures. A further policy area is the role of the Financial Stability Board (FSB) in terms of reviewing risks in fast growing opaque markets. One cause of the crisis was the fact that the market changed sharply between 2004 and 2006 and lack of transparency undoubtedly made this harder to spot. Going forward the FSB should have a clear mandate to gather risk information on large rapidly growing markets and carry out an independent risk assessment.

7.2. LESSONS FROM THE CRISIS

The genesis of the crisis lay in the magnitude of exposures to structured products and different types of off-balance sheet vehicle. The massive growth in the structured product markets, in particular retail mortgage backed securities (RMBS), has been well documented. By 2007 new issuance in the RMBS market had reached around USD 1.7 trillion[2]. For highly rated paper, the securities carried spreads which on the face of it were very advantageous and banks were holding large quantities of structured paper themselves. Much of the paper was underpinned by US mortgages and, as the realisation grew that default rates in the pools of mortgages underpinning the securities were rising (following the increase in interest rates in the US), the paper was downgraded and losses accumulated. But some banks also held other types of exposure which were highly correlated in terms of risks – for example warehousing of loans to go into the vehicles. The original solvency questions spilled over into a liquidity crisis for a number of reasons. All banks suffered a tightening in liquidity as the funding from securities products dried up. Assets such as those held in SIVs (structured investment vehicles) still had to be funded by many banks which had chosen for reputation reasons to re-absorb them. Banks which were dependent on securitisation for funding could not stop originating new loans again for reputation/franchise reasons. In effect USD 1.7 trillion of funding was no-longer available. As banks came under increasing liquidity pressure so they became reluctant to place funds in the interbank market at anything other than short maturities – because they might need it in the future. Concern about the exposure to structured products of dif-

[2] SIFMA research report September 2008.

ferent firms also added to caution. Many banks had invested a sizeable portion of their treasury funds in structured products which were now not only making losses but were not saleable – this undermined the banks own internal liquidity pool. When Lehman's failed, firms with concentrated holdings of credit default swaps suffered because spreads widened across the board. This pulled AIG into the crisis.

In risk management terms, what were the key factors in all this? Banks had large risk concentrations which had not been recognised. The USD 50/USD 70bn holdings of structured products in the treasury areas of some banks were treated as diversified holdings of rated securities, whereas in fact, although they were underpinned by different pools of loans, they were substantially underpinned by one market – namely the US mortgage market. On the liabilities side of the balance sheet, dependence on concentrated sources of funding in terms of securitisation issuance had not been recognised as a risk even though the mortgage securitisation vehicles had triggers built into them which would mean that the vehicle would go into runoff if default rates on mortgages rose too high. This meant that the vulnerability to a stop in funding was there even without the magnitude of the events which in effect brought the whole securitisation market to a close. The liquidity risk of investing a large part of the bank's treasury holdings in less liquid securities also had not been recognised.

Banks were also vulnerable to risks in their own loan books again through underestimating the lower quality of some types of mortgage – for example, buy to let and self certify in the UK, and underestimating the magnitude of risks caused by concentrated holdings of commercial property loans.

The feature of this crisis was that it did not just reflect Herring-type disaster myopia (see Herring, 1986) but in many cases a false sense of security drawn from the asset backed nature of many loans. There was also a false sense of security in the quality/accuracy of many of the risk measurement tools that had been developed in the late 1990s and 2000s.

7.3. Misleading Signals

One important theme is the extent to which the signals regarding the risks being run had been misleading. This was related to the structure of the methods of risk assessment being used. A basic failing in many of the models was that they reinforced rather than challenged the over optimism in the boom.

One of the major changes in risk management from the mid 1990s was the wide spread use of models to measure risks. In the trading area both internal risk measurement and regulatory capital had struggled before then to deal with the variety of positions in a trading book with longs and shorts and different types of instru-

ment plus different types of hedge. The introduction of a regulatory allowance for the use of VaR models in estimating trading book capital in 1996 encouraged widespread use of VaR models across the market. However, the regulatory treatment also probably encouraged the use of point in time models. The patterns of volatility in the markets are very pronounced with long periods of low volatility, followed by a market shock and a period of amplitude, and then the market returns to the low volatile environment. The issue with the design of the VaR was how these patterns in volatility were treated. The early published papers on VaR identified that long data periods were needed to give a high enough capital requirement for the next shock, (for example Jackson, 1996). If short data periods were used the tail probabilities of the portfolio were not accurately calculated. This was because in a low volatile period the VaR would reflect the characteristics of only that period. The Basel Committee, however, adopted a minimum window length for data of one year which influenced the design of the models in the market. In addition, although the models were designed for positions which could be sold or hedged in 24 hours with an additional holding period of 10 days to provide a buffer, there were no constraints on what positions could be put into the VaR. A bank just had to follow the accounting standards and look at whether a position was being held for resale. There were requirements on stress testing but these did not go far enough.

This undoubtedly led to an understatement in the risks being carried in the run up to the crisis. Many of the exposures which were intrinsically related to the crisis were in the trading books and VaR models were used to calculate the risks. Because of the short data windows the VaRs were not highlighting possible more extreme risks if there was a market shock. In addition, loans and illiquid structured products were being placed in the VaR which again meant that risks were being understated – positions could not be sold quickly so risks would have to be carried over a much longer period than assumed in the VaR. Many structured products were included in the VaRs using ordinary bond price series because of lack of a past data history for the structured product. In some firms much of the risk carried was also not in the VaR because the positions generated non-linear risk. This meant that the risk statistics being reported through the firm and to the board were substantially underestimating the amount of risk being run. As most trading books have core limit structures based on VaR this also undermined the basic controls.

The difficulties with VaR in the crisis do not mean that a return to a haircut-style regime, based on rules, bucketing exposures into bands would be preferable. This would under or over state some risks given the complexity of dealing with the variety of positions in the trading book giving perverse incentives. The firms would not in this case be encouraged to improve modelling approaches and therefore internal risk signals. In fact after the crisis the Basel Committee moved to

adoption of stress VaR and capital requirements for risks not in VaR which in Europe are being introduced by the end of 2011. The stress VaR deals with the problem of short data histories understating risks. However, the Basel Committee has not taken action on the use of VaR for illiquid positions. This will almost certainly come into the fundamental trading book review this year. It is important that illiquid positions should either be excluded or there should be a distinct treatment of liquidity in the VaR which covers a much wider spread of adjustments than is currently the norm.

Economic capital models being used for internal risk measurement in the banks and not for regulatory capital also understated the risks. In addition to the issues with VaR, which is an input, the economic capital models had their own deficiencies. This was in part because some risk categories were omitted – e.g. reputation risk which could mean that a non-contractual exposure might have to be accepted onto the balance sheet. Overall, off-balance sheet risk had also not been captured in a coherent way; the extent to which apparently off balance sheet vehicles could cause losses and liquidity problems had not been factored into the measures. Also the correlations assumed in the models proved far too optimistic. Some banks have started to remove correlations and simply aggregate risks in the economic capital models.

Another aspect of risk transparency in the run-up to the crisis was that the market risk and economic capital models, using various assumptions, netting and correlations, reduced very large notional positions to, in some cases, a small risk figure. With no sight of the sheer size of the positions being run, further senior management scrutiny is not triggered. Some firms are now moving to internal reporting of notional underlying amounts.

Although most of the structured products in the banks which made substantial losses in the crisis were in the trading books, and in the VaR, for banks with large mortgage or commercial property portfolios there is a potential issue of how the credit risk models had been constructed. Large losses were experienced in some of these portfolios in some countries – particularly Ireland but also some banks in the UK and Spain as well as Germany. In the same way that a VaR model can reflect point in time volatility, or alternatively can be constructed to take into account risks if the market climate changes, an IRB model can reflect risks at just the current point in the cycle or risks across a cycle. One of the issues in the run up to the crisis was the extent of mortgage lending on the books of some banks was in high loan to value (LTV) bands, also to buy to let customers and to higher risk borrowers. This again raises the issue of how good the risk signals were in the banks in these areas.

One cornerstone of the Basel II Accord introduced in 2007/2008 was a move away from flat insensitive credit risk charges first introduced under Basel I to a

more risk sensitive approach. This approach allowed a simple Standardised method with limited risk sensitivity or the use of the internal ratings based approach (or IRB). Under the IRB, banks estimate the probability of default (PD) for the individual borrower and under the advanced approach estimate the loss given default as well. These are used in a regulatory formula to calculate the capital requirements needed for more extreme periods. As in the case of VaR models, banks were allowed by some regulators to build the models reflecting default rates at the current point in the cycle (i.e. point in time) or default rates reflecting the risks over the life of the portfolio (through the cycle). This too had a substantial effect on the quality of risk signals in some banks.

Some regulators had even encouraged the use of point in time modelling on the grounds that these models were more risk sensitive and their point in time accuracy is easier to check. (Gordy, 2004). The IRB measures produced by point in time models do indeed move more and demonstrate deterioration in book quality – but this is when that deterioration is actually happening. The problem is that point in time measures will encourage a much greater build up of risk in a boom because they understate the quantity of risk being taken when there is a search for yield. In this they are the opposite of accurate risk measures. Books priced on point in time measures in a boom are also more likely to be loss making over a longer horizon. The debate may have not sufficiently recognised differences cross country. Much of the encouragement for point in time models came from the US but there the much greater use of securitisation meant that banks would not necessarily be holding loans on their books when the cyclical deterioration occurred. In contrast, in Europe, where the loans tended to be kept on the balance sheet, the longer term performance is more important. With the closure of the securitisation market this is now much more of an issue in the US as well.

It is possible to illustrate the issue by taking the example of one type of cyclical loan, the mortgage. The probability of default for loans such as mortgages is very low in booms for all types of loan. This meant that for banks with point in time models the absolute risk on the mortgage books looked low in the run up to the crisis. In addition, the difference between traditional mortgages and higher risk mortgages, such as buy to let or self certify, looked slight. Chart 1, below, plots point in time estimates for a traditional mortgage book (90% LTV) against a through the cycle average. It also plots estimates for point in time PDs and a through the cycle average for a buy-to-let mortgage book with similar LTV. The figures are based on a number of representative portfolios. What the data shows is that point-in-time PD estimates for much higher risk buy-to-let books can be lower in booms than for traditional mortgages but accelerate much more sharply in recessions, to much higher levels. The PD estimate in effect switches over and in the recession the buy to let book looks much higher risk (when arrears rates have started to rise sharply) wheras in the boom the reverse seems to be the case.

The point-in-time estimates therefore give a distorted view of risk relativities in the boom and if used for pricing would lead to long term losses. Chart 2 shows actual point in time estimates for a single bank portfolio of non-prime versus prime mortgages provided by a major bank. It also shows how the point in time PD underestimates the risk differentials in a boom.

Chart 1. Stylised PDs for Buy to Let versus Traditional Mortgages

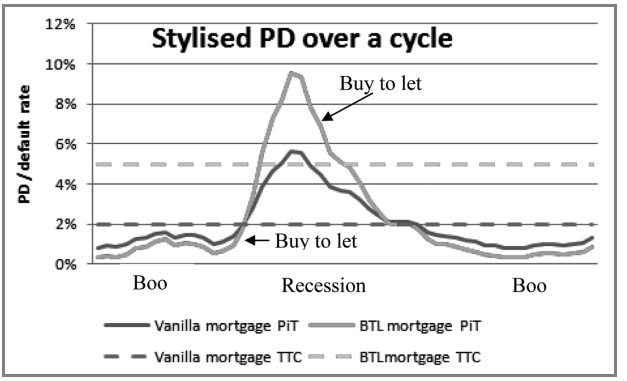
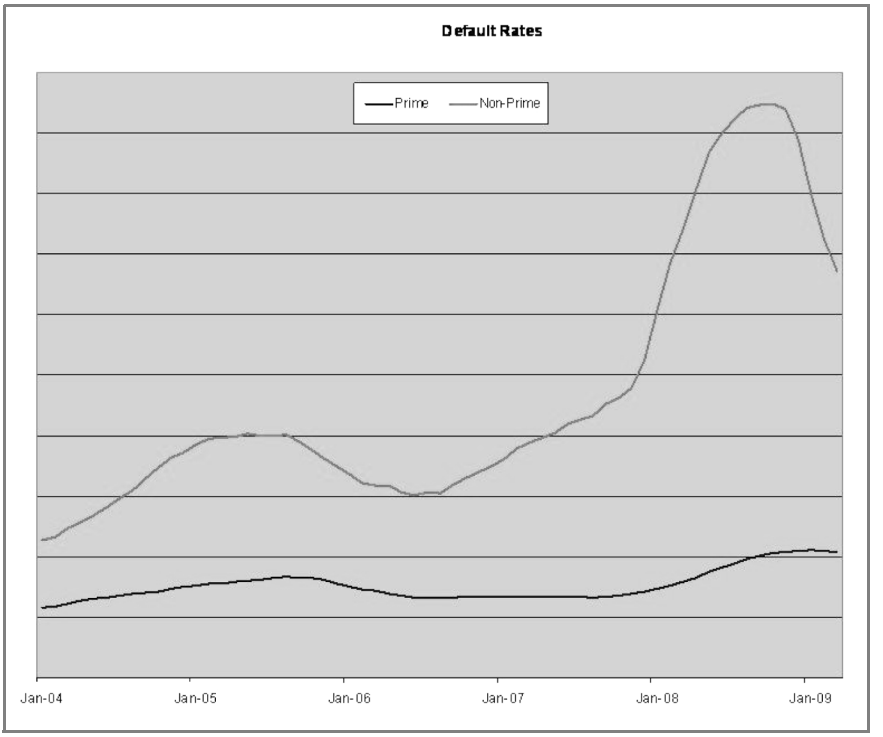


Chart 2. Point in Time PDs for a Single Bank's Prime versus Non Prime Portfolios



More conservative banks had favoured more through the cycle methods of modelling so that pricing and exposure decisions were taken on a more accurate view of the risk over the life of the loan. Banks which had adopted more through the cycle approaches to credit modelling under Basel II could see the degree of risk and the relativities more easily. Some banks have adopted a scalar approach enabling them to see both the point in time measure and the through the cycle – the point in time measure is scaled to give a through the cycle measure given the point in the cycle. This gives the best of both worlds: a volatile measure that will show risk deterioration but also a more stable measure which will show the true risk on longer term loans. Scalar models can be built very successfully.

Going forward, ensuring that the risk signals truly reflect the risks being run is essential. In the UK the FSA has, since the crisis, encouraged banks with point in time PD models to develop scalar methodologies to translate them into through the cycle. The Basel Committee has, however, decided not to include this as a requirement for Basel III, given the perceived complexity.

Many banks have adopted systems which are part-way between a through the cycle and a point in time modelling approach but (in the absence of a regulatory counterweight) the adoption of countercyclical capital buffers under Basel III could provide incentives to move the models towards more point in time to offset the countercyclical buffer. The Basel Committee, under Basel III, is proposing the introduction of two countercyclical buffers to encourage banks to build up more capital in boom periods (BCBS, 2010). By January 2015 minimum Common Equity tier 1 will increase to 4.5% (i.e. capital must amount to 4.5% of risk weighted assets) and this will have to be met at all times. Over and above this, a capital conservation buffer of 2.5% is being introduced that will encourage more capital to be built up in good times. Banks should hold 7% (i.e. the total of 4.5% plus 2.5%) but they can utilise the capital conservation buffer in difficult times if need be. While they are below 7% they will be constrained in their ability to distribute profit through dividends, share buy-backs, or discretionary bonuses to encourage a faster rebuilding of capital. This provides a buffer which can be drawn down when the market is under pressure. In addition, a new countercyclical buffer of an extra 2.5% can be introduced for overheating markets in any country. Minimum tier 1 capital would then peak at 9.5% for a period.

The concept of banks building up higher capital buffers in good times and being able to draw them down in bad times is sound. The industry would have to aim at carrying the full amount of buffer come what may but it would provide a safety valve which a static minimum capital level does not provide. The problem is that the buffer is dependent on the way that the risk weights are calculated for the risk weighted assets calculation. This will in turn depend on whether a bank is using point in time or through the cycle modelling.

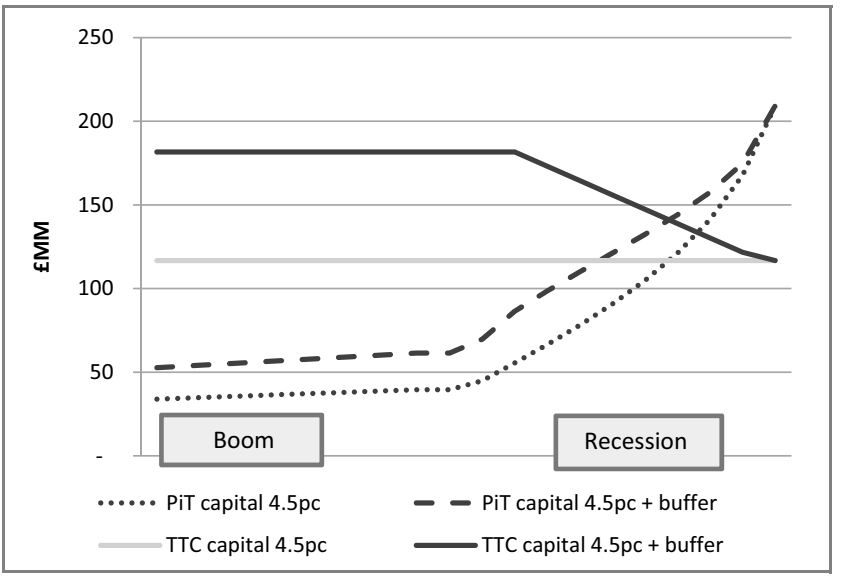
Chart 3 shows the tier 1 capital buffers which a mortgage bank would hold under the Basel III regime depending on whether the IRB models are point in time or not. The flat line is the capital figure which would be derived from the 4.5% minimum requirement where a bank has through the cycle PD models. In fact no actual PD model would be completely stable but the fluctuations would be muted. The top line is the capital amount that would be held adding the capital conservation buffer to the minimum buffer. It is high in booms and then has the potential to fall to meet the minimum buffer in recessions. In contrast, the bottom line on the chart is the amount of minimum capital which would be held if a bank was using a purely point in time model. The line above it is the amount of capital which would be held by the bank with the addition of the countercyclical buffer. As can be seen for the bank using the through the cycle model the shape of the buffer is as planned – higher in booms than recessions. For the bank using the point in time models the shape of the capital buffer (in monetary terms) is the mirror image of that which the Basel Committee is trying to achieve.

Although the example used in this section is a mortgage bank, the same pattern would be seen in commercial property portfolios and other cyclical portfolios. Even in large corporate portfolios the PDs can increase by around 40% or 50% boom to recession in point in time models which will also affect the overall Basel III buffers.

The Basel Committee discusses this issue of the cyclicality of minimum capital in the 2010 paper and mentions a number of safeguards which were introduced in Basel II to deal with cyclicality – use of long term data horizons to estimate probability of default, down-turn loss given default estimates and calibration of the risk functions. Only the first bears on the issue of the cyclicality of PD estimates and long data sets are not enough of themselves to ensure that models are through the cycle. In an IRB model in contrast to a VaR model it is not the length of data but the variables used in the model. For example, a point in time mortgage model might be driven by current arrears rates and current LTV whereas a through the cycle mortgage model might use initial LTV and property type.

The Committee is considering other measures to reduce cyclicality of the capital requirements but these will not aid risk transparency in the firms nor to the market. One suggestion is that a different supervisory buffer under Pillar 2 should be used if firms use point in time models. This could address the issue of additional capital (in monetary terms) being built up in booms but would still leave the perverse effect of the point in time models on risk transparency within the firm and to the market. It is the Pillar 1 numbers which are disclosed to the market not Pillar 2 – so a bank with a low Pillar 1 capital requirement but high Pillar 2 buffer would simply look well capitalised to the market.

Chart 3. Basel III Requirements for a Mortgage Bank Using through the Cycle or Point in Time PDs



This means that, even with an extra Pillar 2 buffer to 'compensate', a bank would have an incentive to move to point in time approach because this would make its capital position apparently much stronger in good times than would otherwise be the case. Here Basel III will be providing perverse incentives which could result in the damaging of risk signals within banks. Only by requiring the modelling to take into account the potential risks over the life of a loan book could this be avoided.

If the fundamental risk models are under-reading risks being taken, stress tests can help to provide a counterweight but this will not completely address the issue of the core risk signals. The output of the stress testing tends to be reported internally within a bank for the bank as a whole whereas the riskiness of individual portfolios tends to rely on the models. Nonetheless the role of stress testing is critical in terms of uncovering risk concentrations and this is an area where there is both more regulatory focus and far more focus in the firms. Firms are using more severe scenarios and moving away from an ad-hoc approach to more systematic approaches (Ernst & Young, 2010). There is also a clear role for reverse stress testing in terms of trying to uncover fault lines in businesses and products, by looking at the different combinations of events which could cause failure.

7.4. Risk Governance and Incentives

The magnitude of loss in many banks has called into question the overall governance of risk within the banks. The President's Working Group on Financial Regulation for example identified this as a principal underlying cause of the market turmoil in 2008. The Senior Supervisors Group (2008) also identified a number of areas of weaknesses in risk management which contributed to the crisis.

Improvements in risk governance and in setting a more explicit risk appetite are core areas of focus for many of the banks (Ernst & Young, 2009). For some banks which had been badly affected by the crisis there is a root and branch review underway. A number of banks are changing the structures in place while others feel that they had had the right structures but they had just not been effective. To make the structure more effective some banks are focussing on the culture in the organisation and some see the need to reduce the sales driven focus. Also changes in compensation arrangements are being made to reinforce the shift in culture. For some banks it is a question of adjusting their approach rather than a fundamental change- for example creating broader compensation pools based on profit rather than revenue or increasing the focus on group results rather than individual businesses and using risk adjusted return on capital as a factor. Many banks are reducing the percentage of income from bonuses or spreading bonuses over several years. However, measurement issues remain – for example how to calculate long term profit. But the biggest issue faced by the industry is coordination. It would only take a couple of banks to break ranks and offer large joining bonuses, pulling teams out of other banks, for progress in this area to be brought to an end as the banks on the receiving end are forced to fight back. Here a consistent regulatory approach globally is important to provide a level playing field.

In terms of risk governance structures, a number of banks have identified gaps in the remit of the risk function. In some banks new product development was outside the scope of the risk function, also substantial strategic decisions often did not involve the risk function. Across most banks, liquidity risk fell under the ALCO and the risk function did not have a say. These areas are now being addressed in many of these banks.

But there is also focus on the seniority and standing of the risk function. Banks are changing reporting lines so that the CRO reports to the CEO and in some cases the CRO joins the board. Ellul and Yerramilli (2010) found that, across a sample of 74 banks, holdings of RMBS were higher for those banks where CROs had lower status. There is also the question of CRO remuneration and Kashyap (2010) found that the ratio of CRO pay to CEO pay was related to risk. Bank share price volatility was highest for banks where CROs had lower compensa-

tion. In an industry where compensation affects and reflects status this is a proxy for how the CRO was viewed.

Banks are also reviewing the overall structure of executive committees. Some banks are putting in place a balance sheet committee with the CRO, CFO and heads of businesses as members to look at the wider implications of the strategy – for example funding risks or other risks stemming from the strategy. Others are setting up a central function to monitor adherence to a new more explicit risk appetite. Banks are, in general, reviewing the risk appetite statement agreed by the board and are trying to include more explicit quantitative elements. Moving away from more general qualitative statements enables a control structure to be put in place to deliver the risk appetite statement. For example, if the board agrees with a statement that says that in a one-in-50 year recession the bank should lose no more than £10bn, stress testing would have to be used to test whether this was met. Business controls would be needed to ensure that exposures, across the business, had not increased risks above this threshold. Risk concentrations would need to be monitored and management information would be needed to enable senior management to assess if the controls were working and exposures were consistent with the risk appetite. A number of measures both quantitative and qualitative are needed in the risk appetite but only with some hard measures can the control framework fully test compliance.

The role of the board and the structure of board committees is also under review. The Walker review in the UK recommended that banks should consider having a dedicated board risk committee, with responsibility for oversight and advice to the board on the current risk exposures of the entity and future risk strategy, and some banks are putting one in place. Ellul and Yerramilli found that only 33% of the bank holding companies they reviewed had a separate board risk committee A board risk committee could enable board members to act in a more coordinated way – for example requesting more detailed briefing or reports. The audit committees give the members a clear locus to ask pointed questions and request more information as a body. It may be harder culturally for individual board members to act in the same way regarding risk at the main board meetings.

The board needs to examine closely the rate return targets set for different business units. During the boom the treasury operations in a number of banks had been given profit targets which could only be achieved by investing the liquidity pool of the banks in structured products. These targets in turn were driven by the perceived need to meet a high overall return on equity. Particular vigilance will be needed in the next boom because the new leverage ratio could focus strategies on high yield areas.

7.5. Market Failure – Time Inconsistency and Incomplete Information

There were three important features of the structured product markets which exacerbated the risk management problems. The first is that the market changed radically in the matter of a few years. As the volumes exploded, the proportion of sub-prime loans in the pools grew and the quality of those sub-prime loans deteriorated (see Dell'Ariccia *et al.*, 2008). This paper uses Home Mortgage Disclosure Act information for the period 2002 to 2006, and shows that subprime mortgage originations tripled between 2000 and 2006 reaching USD 600bn. By 2006 sub-prime accounted for 20% of mortgage originations. The absolute size of the subprime market was USD 1.3 trillion in 2006. Of most note, however, are the results on the percentage of loan applications denied. The Dell'Ariccia paper clearly shows that there was a substantial decrease in denial rates on sub-prime loan applications and an increase in the loan to income ratio on the sub–prime loans indicating a worsening in lending standards. The expansion in the proportion of sub-prime in the pools probably would have been visible to buyers of securities but the decline in lending standards vis a vis these sub-prime loans may well have been harder to see.

Fitch (2007) reports a review of the loan files for a small sample of the early defaulting 2006 vintage retail mortgage backed securities. They found that in many instances the loans were affected by poor lending decisions or misrepresentation by the borrowers – with evidence of fraud or misrepresentation in almost every file. They concluded that poor underwriting quality or fraud could account for a quarter of the under performance of the late vintage RMBS. The areas covered included misrepresentation of occupancy, incorrect calculation of debt-to-income ratios, as well as acceptance of little evidence of a sound credit history. This deterioration in lending standards and lack of adequate review of borrower information would have been largely non-obvious to investors.

The risk management hazard in this type of market lies in its time inconsistency. There is a principal agent problem and recognising this the buyer of securities in 2002 or 2004 might have carried out due diligence to understand the processes and lending standards of the agents. But by 2006/7 the market had fundamentally changed. The lending standards and scope for fraud had substantially increased because of slackening agent due diligence. In this type of market there needs to be some kind of guarantee around the due diligence and lending standards to ensure that they do not deteriorate over time. This raises an issue around disclosure and the roles of the agents.

The length of the prospectuses, in many cases 500 or more pages long, and non standardised format substantially increased search costs and may have made the

deterioration harder to spot – for example, each RMBS structure had different conditions. The IIF (2009) has proposed adoption of standardisation in this area. Going forward more standardisation of contracts and prospectuses in the securitisation market with much greater clarity on due diligence (e.g. amount of sampling of borrower documentation) and loan quality will probably be necessary to restart the market. But these features of standardisation and clear disclosure would be important for any market of this kind. This would have to include sufficient clarity regarding the lending standards and mechanisms to ensure that consistency was maintained over time.

Mechanisms have become standard for other markets to ensure that standards are maintained. Equities, where fair pricing is highly reliant on the quality and timing of information disclosure, are covered by disclosure standards for companies. Standardisation of documentation and contracts was introduced into the swap market with the ISDA agreements to make the market manageable.

The securitisation market was also structured so that no one party could see all the information on default rates in the pools. Only investors in a particular structure could see the data on the performance of the loans in the pool. This may have helped to delay the recognition that default rates were indeed rising in the pools-there was a delay between the default rates picking up in 2005 and the market adjustments. All these aspects hampered the due diligence within the firms. Going forward there could be an important role for the authorities in monitoring fast growing opaque markets and providing aggregate data to the market. The authorities could, for example, have sampled lending standards across the market and also collected aggregate information on defaults in pools.

The banks are addressing risk management in this area – e.g. reviewing their approaches to valuation of securities and are reducing reliance on ratings. But in markets where the search costs are very high or indeed ratings agencies have access to information not available to investors (in this case the aggregate default data across many pools) ratings are likely to continue to play an important role.

7.6. CONCLUSIONS

Risk management was one factor at the heart of the crisis and the industry and regulators are currently addressing various areas to strengthen it going forward. There are a range of aspects to this. The models used in some firms placed too much emphasis on risks given current market conditions and not enough on the risks if market conditions changed. This was true of VaR models for trading book risk and also point in time IRB models for credit risk. The regulators can do much to encourage modelling techniques which encourage more focus on risks in a range of market climates. Indeed, with countercyclical capital buffers being intro-

duced under Basel III, the whole approach will be undermined if banks are able to calculate their minimum capital requirements using point in time models. Pillar 2 buffers, which are not disclosed, will not address this issue because to the market it would appear that a bank on a point in time modelling approach was simply very well capitalised in booms. In addition, all the risk information in the firm would be based on the point in time estimates. Economic capital models also understated risk by using correlations which proved over optimistic and also ignored the possibility of risks falling back onto the balance sheet from off balance sheet structures. Going forward risk transparency within the banks should therefore be a key area of focus. Better stress testing and control over risk concentrations also has a central role.

Risk governance and control is also being revisited with seniority of the CRO being increased in some banks and the remit of the function being broadened. But part of this is also a move away from a sales driven culture in some organisations supported by a change in compensation arrangements. The role of the board is also being revisited, with some banks introducing a board risk committee. Banks generally are amending their risk appetite statements to ensure that they are clear enough and that controls can be set to deliver them. These improvements are still work in progress in many firms as methodologies and systems are changed.

But beyond the risk management of the firms, the structure of the markets also needs to be reviewed. There were a number of aspects of the structured products market which made risks more difficult to manage. The complete lack of standardisation of structures or documentation made the search costs very high for any investor, increasing reliance on ratings. Also the amount of due diligence and lending standards were not consistent over time. An investor which had examined the market lending standards in 2002 or 2004 would have been wrong-footed by 2006. Much more standardisation and guarantees of consistency will be needed to get the market going again and should be maintained. Also the availability of default data in a pool to only those investors in that structure hampered awareness of rising default rates across the market. In this regard the FSB should take an active interest in fast growing opaque markets and collect data for dissemination to the market as a whole. In addition the FSB should have a clear mandate to review risks in such markets.

References

BCBS (2010), *Basel III: A global regulatory framework for more resilient banks and Banking systems*.

Blundell-Wignall, A., Atkinson, P. and Hoon Lee, S. (2008), *The Current Financial Crisis: Causes and Policy Issues*, OECD Financial Trends.

DELL'ARICCIA, G., IGAN, D. and LAEVEN, L. (2008), *Credit Booms and Lending Standards: Evidence from the Subprime Mortgage Market*, IMF Working Paper.

ELLUL, A. and YERRAMILLI, V. (2010), *Stronger Risk Controls, Lower Risk: Evidence from US Bank Holding Companies*, working paper, University of Indiana.

ERNST & YOUNG LLP (2009), *Risk Governance – agenda for change; survey of the implementation of the IIF's Best Practice Recommendations, Survey on behalf of IIF.*

FITCH RATINGS (2007), *The Impact of Poor Underwriting Practices and Fraud in Subprime RMBS Performance.*

GORDY, M.B. and HOWELLS, B. (2004), *Procyclicality in Basel II: Can We Treat the Disease Without Killing the Patient?*, Board of Governors of the Federal Reserve System.

IIF (2009), *Final Report of the IIF Committee on Market Best Practices* (CMBP Report).

JACKSON, P., MAUDE, D. and PERRAUDIN, W. (1996), *Bank Capital and Value at risk*, Journal of Derivatives.

KASHYAP, A.K. (2010), *Lessons from the Financial Crisis for Risk Management*, Paper prepared for the Financial Crisis Inquiry Commission.

OBSTFELD, M. and ROGOFF, K. (2009), *Global Imbalances and the Financial Crisis: Products of Common Causes*, Federal Reserve Bank of San Francisco Asia Economic Policy Conference, Santa Barbara, CA.

PORTES, R. (2009), *Global Imbalances*, London Business School.

SENIOR SUPERVISORS GROUP (2009), *Risk Management Lessons from the Global Banking Crisis of 2008.*

WALKER, Sir D. (2009), *A review of corporate governance in UK banks and other financial industry entities – Final recommendations.*

8. Redefining and Containing Systemic Risk[1]

Edward J. Kane

Abstract

Official definitions of systemic risk leave out the role of government officials in generating it. Policymakers' support of creative forms of risk-taking and their proclivity for absorbing losses in crisis situations encourages opportunistic firms to foster and exploit incentive conflicts within the supervisory sector. To restore faith in the diligence competence and integrity of officials responsible for managing the financial safety net, reforms need to rework operative incentives in the government and financial sectors. The goal should be to align the incentives of private risk managers, accountants, credit-rating firms, and government supervisors with those of ordinary taxpayers. This article describes a series of complementary ways of advancing toward this goal. The most important steps would be to measure regulatory performance in terms of its effect on safety-net risk exposures and to require insured institutions to support this effort. This entails estimating the explicit and implicit safety-net benefits they receive and issuing extended-liability securities designed to improve the accuracy of these estimates.

Government officials everywhere acknowledge a responsibility for overseeing systemic risk. But before one can begin to control a target variable (even something as straightforward as the temperature of a room), one must define the variable comprehensively and fashion from this definition one or more verifiable metrics for monitoring the target. Official definitions of systemic risk fail both of these tests.

Official definitions focus on a perceived potential for substantial spillovers of institutional defaults across important firms in the financial sector and from this sector to the real economy. These definitions are not comprehensive because they exclude a systemic phenomenon: that substantial spillovers of actual defaults have remained largely and predictably hypothetical.

Actual spillovers are minimal because authorities instinctively choose to intervene in the default process by characterizing firms that are politically or administratively difficult to fail and unwind (DFU) as 'systemically important' (SI) and supporting DFU firms' credit when they allow themselves to become economically insolvent. In effect, authorities exercise a loss-shifting 'taxpayer put' that allows

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insolvent DFU firms to operate as corporate zombies (Kane, 1986; Eberlein and Madan, 2010).

Official definitions of systemic risk lead to an incomplete diagnosis of its roots: that systemic risk is caused by defective risk management at DFU firms. The diagnosis is incomplete because it ignores the role of opportunism at DFU firms in exploiting gaps and incentive conflicts in policy making and it undermines accountability for regulatory mistakes because it lacks a verifiable metric. The incomplete diagnosis supports an incomplete treatment plan, one that would: toughen capital requirements; reconfigure the boundaries of regulation; and extend new powers to regulators (e.g., over executive compensation, derivatives trading, and insolvency resolution) without addressing the fundamental incentive conflicts that persuade authorities to undersupervise innovative forms of risk taking at DFU firms and so-called 'shadow' banking affiliates.

Economic policymaking is a balancing act, but one in which blame avoidance distorts the release and analysis of key information. It is no accident that the official diagnosis of the securitization bubble and the treatment plan it supports do not address the endogenous role that safety-net subsidies play in incentivizing firms to operate outside the boundaries of the regulatory system and to take political and economic action to attain and strengthen DFU status. Authorities do not wish to acknowledge that principled efforts to define and pursue the public interest are contested and repeatedly knocked off course by conflicting personal, bureaucratic, and political concerns that impinge inappropriately on government decisionmakers.

To understand why defects in insolvency detection and resolution persist, analysts must acknowledge that large financial institutions invest in disguising their risk-taking and in building and exercising political clout. Mainstream models of safety-net management are just beginning to acknowledge that, even in good times, politically powerful financial firms shape and reshape their lobbying activity, product lines, accounting systems, and organizational forms to collect hard-to-document subsidies to leveraged risk-taking from national safety nets (Kane, 2009; Acharya, Schnabl, and Suarez, 2010; Eberlein and Madan, 2010).

Leveraged risk-taking intensifies financial bubbles and increases the costs to taxpayers of repairing the damage that a bursting bubble entails. To minimize the extent and frequency of future bubbles and crises, reformers must understand that safety-net subsidies trace to the political clout, managerial opportunism, and organizational flexibility that aggressive firms exercise and not to a firm's size or complexity *per se*. Rulemaking that adjusts accounting standards or sets caps on size and complexity of selected categories of firms without introducing controls on clout, opportunism, or structural flexibility strongly incentivizes efforts to deconstruct and circumvent the changes introduced.

This paper argues that, microeconomically and macroeconomically, the capitalized value of the safety-net subsidies that financial firms capture represents a cogent way to measure what authorities mean by 'systemic risk' and that regulation-induced innovation is the vehicle through which subsidies to systemic risk-taking are conveyed. This hypothesis implies that proposals for financial reform need to be judged by two criteria: (1) how much they promise to discourage financial institutions from abusing safety-net support and (2) how much they promise to improve the ways in which authorities measure, monitor, and restrain the flow of *ex ante* and *ex post* subsidies to creative forms of institutional risk-taking.

Because they supply equity through the safety net, taxpayers ought to be empowered to monitor the value of their equity stake in the financial sector. Both within and across countries, financial systems can be made more stable by gathering and reporting this information on a regular basis.Regular disclosures would have the further benefit of making market signals more informative. Confidence intervals around each firm's estimates of its taxpayer put can be improved by reconfiguring the way that they keep their accounts, how they report to regulators, and how regulators conceive of their responsibilities to taxpayers.

Reformers would do well to refocus their efforts on incentives. In government arenas, this means rewriting regulatory officials' oaths of office; changing the ways officials are recruited, trained and compensated; and reworking the ways they measure and report regulatory performance. For the private sector, this means changing the character of the debt and equity securities that important financial institutions have to issue and requiring such firms to estimate and report the putative value of the safety-net benefits they receive and to file, negotiate, and update regularly a windup plan with their chartering authority and principal regulator.

8.1. WHEN DO RISKS BECOME SYSTEMIC?

Systemic risk may be likened to a disease. In medicine, comprehensive and verifiable definitions of disease lead to more accurate tests for its existence and more effective patterns of treatment. The primary characteristic of systemic risk is the emergence of widespread concerns about the *potential* for substantial 'spillovers' of contagious defaults across counterparties in the financial sector and from these defaults to breakdowns in the real economy. This potential is traced either to individual firms' overexposure to common risk factors (underdiversification) or to a nexus of derivative contracts that result in an unobservable web of debt that highly leveraged institutions owe to one another (contagion).

These concerns cannot be the only symptom because, with the notable exception of the Lehman bankruptcy, in modern crises substantial spillovers of actual defaults have remained largely hypothetical. In country after country and sector

after sector, monetary and fiscal authorities instinctively choose to intervene in the default process by supporting the credit of 'systemically important' institutions that allow themselves to become economically insolvent. Such institutions are called 'zombies' because the black magic of subsidized government loans and guarantees prevents their creditors from pulling the plug on their dangerous and unnaturally animated corporate corpse (Kane, 1989).

The existence of this verifiable additional symptom suggests that an authentic definition of systemic risk ought to focus on a firm's or sector's ability to command or extract implicit and explicit life support from national safety nets. Eberlein and Madan (2010) portray zombies as being allowed to exercise what they term a 'taxpayer put'. Highlighting this symptom links systemic risk not only to a condition of widespread financial weakness, but also to unhealthy forms of competition for regulatory clients (i.e., turf) and to other factors that make a firm or collection of firms politically or administratively 'difficult to fail and unwind' (DFU). Diagnosing these links makes it clear that, to be truly reliable, programs for reforming the regulation and supervision of DFU firms cannot ignore political and administrative issues. Systemic taxpayer loss exposures come not just from creative and aggressive risk-taking by DFU firms, but from defects in micro and macro prudential supervision of the leverage and other risk exposures regulated and unregulated firms take on. This layering of blame makes it clear that meaningful reform must identify and remedy the incentive conflicts that tempted authorities to ignore the buildup of systemic risk in the shadow banking system during the securitization bubble and then led them to rush to aid zombie firms when the bubble burst without developing a program to confront and resolve the zombies' growing economic insolvency in a definitive way.

8.2. ADVERSE CONSEQUENCES OF MISDIAGNOSING THE POLICY PROBLEM

Both in medicine and in crisis management, superficial diagnoses lead to ineffective treatment and deepening infirmity. Credit spreads faced by short-funded financial institutions surged in August 2007 and stayed high for months afterward. This surge lowered the value of these firms' risky assets and thereby reduced their capacity to replace their maturing debts. For months, Federal Reserve officials refused to concede that higher credit spreads had pushed asset and collateral values down to levels that raised legitimate doubts about short-funded borrowers' solvency and that these doubts underlay the collateral calls stressed by Gorton (2008) that made it difficult for highly levered firms to roll over asset-backed debt. Without acknowledging the subsidy entailed in lending to insolvent institutions or how such lending turned monetary policy into tax-transfer policy, Federal Reserve officials repeatedly misframed the funding diffi-

culties that DFU firms were experiencing as evidence of a shortfall in aggregate liquidity. Financing the deepening insolvency of zombie firms such as Bear Stearns, Lehman, and AIG allowed their managers not only to pay themselves undeserved bonuses, but to gamble improvidently for resurrection at taxpayer and creditor expense.

Despite being challenged by the persistence of funding difficulties and especially by the costs of the Bear Stearns rescue in March 2008, remnants of the liquidity-shortage hypothesis survived until mid-September 2008. Back-to-back policy decisions at that time consoled investors by effectively nationalizing Fannie and Freddie, but surprised everyone by forcing creditors of Lehman to accept haircuts dictated by the bankruptcy process, and days later turned around and surprised them again by refusing to haircut the creditors and swap counterparties of the far more deeply insolvent AIG. The failure to offer a convincing rationale for shifting to and fro between contradictory insolvency-resolution strategies and resulting volatility in the value of DFU firms' 'taxpayer puts' raised doubts about the diligence, integrity, and competence of Fed and Treasury officials. Consumer and investor concerns about regulatory diligence and competence were reinforced by a series of doomsday pronouncements about the size and extent of industry weakness that deepened the recession by frightening the populace into cutting back their spending (Kane, 2009a).

The policy of *explicitly* supporting the creditors and counterparties of AIG and other zombie firms represented a new and seemingly desperate treatment plan. Its antiegalitarian effects on the distribution of income (which accorded top priority to bankers and other derivatives counterparties) were as obvious as they were hard to defend. Public justifications have mutated over time, but all have relied on the untestable (and insufficiently supported) claim that *extravagant* support of financial sector was a price that society *had* to pay to avoid another Great Depression.

8.3. ALTERNATIVE DEFINITIONS OF SYSTEMIC RISK LEAD TO DIFFERENT STRATEGIES OF REGULATORY REFORM

Blame avoidance plays an unspoken role in any policy debate. Blame avoidance helps to explain why officials adopt definitions of systemic risk that lead to the self-serving hypothesis that systemic risk is caused by defective risk management at 'systemically important firms' (SIFIs). Using our definition of systemic risk, SIFIs are private firms that have made themselves politically, economically, and administratively difficult to fail and unwind. By ignoring the process by which a firm attains and solidifies DFU status, the official diagnosis of safety-net risk exposure is distressingly shallow and leads to the incomplete treatment plan of trying to identify DFU firms by size and/or business plan and demanding that such firms monitor and support their risk exposures more effectively.

In the US and Europe, the components of this incomplete plan are evolving along four principal dimensions:

1. designing tougher and more comprehensive capital requirements for bank and nonbank financial firms (e.g., by measuring risk exposures in ever more granular ways);
2. restricting the level and composition of executive compensation at financial firms (e.g., by limiting bonuses and incentive-based compensation at SIFIs);
3. enhancing the powers that government regulators may exercise (e.g., with respect to taking over or liquidating a failing institution and intervening in how and where derivatives may trade);
4. extending the boundaries of government regulation (e.g., to encompass hedge funds, derivatives trading, and credit-rating firms).

A financial crisis occurs when a sufficient amount of adversity hits a fragile system whose managers have concentrated and leveraged their portfolio enough to make their firms vulnerable to this amount and type of adversity. Our broader definition of systemic risk recognizes that regulatory enterprises are vulnerable SIFIs, too. Their managers determine how much of the deep downside of the risk exposures that DFU institutions pursue are transferred to taxpayers. Including regulators in the risk-generation process requires us to think about how political, bureaucratic, and administrative concerns are likely to influence the way in which new controls would be deployed under various circumstances.

The buildup of systemic risk in structured securitizations was generated by short-cutting and outsourcing due diligence in both the private and government sectors. Until the securitization bubble burst in 2008, authorities failed to isolate and respond to the safety-net consequences of the risk transfers that were taking place along the chain of originating, valuing, selling, pooling, risk-rating, and insuring loans so that their risky cash flows could be engineered into highly rated tradable securities. The durability of this neglect should warn us that, to reduce the depth and frequency of future crises, it is not enough to improve the mechanics of risk control. A parallel effort must be made to reframe the incentives of the system's operators. They must be encouraged to treat the interests of ordinary citizens less callously than they have in recent years.

Forward-looking policymakers must expect managers of financial firms to continue to mask leverage, credit, and interest-rate risk and to stall and subvert sensible reforms in order to protect their capacity to extract safety-net subsidies. To lessen their capacity to do this, officials and private managers must be tasked with estimating and controlling the effects that safety-net subsidies have on the stock price, credit spreads, and credit default swaps of the firms they oversee. The next two sections of the paper identify a few ways in which this might be done.

8.4. WHY INCENTIVE DEFECTS PERSIST

Blame accrues to people who do 'bad' (i.e., immoral, negligent, or incompetent) things. This means that assigning blame for government and market failures that led to the securitization crisis is both an economic and an ethical problem. Ethics seep into our definition of systemic risk to the extent that industry and government officials knowingly tolerate defective institutional arrangements[2] or fail to fulfill fiduciary duties that in principle they owe to one or more participants in the securitization process.

To be complete, reform strategies must address features of top officials' employment situation that encourage weakness in insolvency detection and dispose them to subsidize the financial sector massively in times of crisis. Table 1 lists six such features. Top officials are exposed to scapegoating and the reputational risk that scapegoating entails renders more tentative their ability to stay in office. Limited terms and relatively low salaries encourage top regulators to use their government service to nurture post-government career opportunities in the very industries they regulate. It is hard for an agency's leadership to balance: (1) the certain and immediate damage to their reputations that industry criticism is bound to visit on them if and when they resist strong lobbying pressure against (2) the less certain damage their reputations might or might not suffer from public-interested censure later. In most crises, it is not until long after an official has left office that careful investigations by Inspector Generals or other watchdogs can surface irrefutable and convincing evidence about the inappropriateness of safety-net policies. In any case, once insolvencies become deep and widespread, authorities are tempted to gamble that cycle-driven improvements in industry conditions will make insolvent institutions whole again (Kane, 1989).

Table 1. Layers of Incentive Conflict that Encourage Weak Enforcement

1.	Asymmetric Information (Creates Easy Alibis and Opportunities for Coverup)
2.	Uncertain hold on positions (Shortens horizons)
3.	Reputational and Budgetary Damage Generated by Industry Criticism (Dysfunctional Accountability)
4.	Post-government Career Opportunities (Revolving Door)
5.	Attraction of Passively Waiting for a Cyclical Upswing (Gambling for Resurrection)
6.	Administrative and Staffing Difficulties of Trying to Restructure Complex Firms

* A Complete Program of Reform Should Mitigate These Difficulties by Improving Compensation Structures, Performance Measurement, and Reporting Responsibilities.

[2] I have in mind the push to adopt Basel II in the face of defects such as those uncovered by Kupiec (2009).

Their situation is further complicated by the existence of multiple principals and differences in the ability of different principals to defend their interests. Principals differ: in their understanding of the duties officials owe them, in their *ex ante* ability to influence official decisions in their favor, in their ability to appreciate the consequences of these decisions, and in their *ex post* ability to offer rewards for favorable and unfavorable decisions. The result is that *de facto* accountability to informed and politically powerful sectors routinely trumps the abstract duties that top regulators owe to society as a whole.

Changes in compensation structure, performance measurement, and reporting responsibilities *can* be designed to lessen these incentive conflicts (Kane, 2010). But the current generation of politicians and other persons in authority is unlikely to benefit from pushing for such changes. As in a long-running poker game in which one player (here, the taxpayer) is a perennial and relatively clueless loser, other players see little reason to disturb the equilibrium.

8.5. STEPS THAT GOVERNMENT AND INDUSTRY COULD TAKE TOWARD GENUINE REFORM[3]

The essential problem of financial reform is how to incentivize safety-net managers and managers of protected institutions to serve more conscientiously the interests of the average taxpayer. To make this possible, financial firms and their supervisors must agree to work together to design, implement, and staff an information system that can measure the flow of safety-net costs and benefits and a control system that can restrain the process of subsidy generation within and across major countries.

8.5.1. Joint Private-Sector and Governmental Reforms

DFU institutions could simplify the task of safety-net management by making taxpayer stakes in these firms both more transparent and administratively easier to protect in times of duress.

One way to do this is to agree to separate the supervisory function of diagnosing systemic risk from that of treating it. Because the emergence of widespread insolvency inevitably embarrasses an agency's leaders, supervisory agencies have repeatedly succumbed to the temptation to understate or cover up surges in insolvency when they first occur. Insolvency detection can be improved by developing explicit metrics for measuring the value of safety-net support at individual institutions and requiring safety-net beneficiaries to use these metrics to estimate the

[3] This section draws heavily on Kane (2010).

value of their safety-net support and to report their estimates at regular intervals to their principal supervisor. For these estimates to be taken seriously, they must be challenged and vetted for accuracy by trained risk-management personnel at each supervisory agency.

Individual-institution data must then be aggregated across firms and across supervisory agencies. To minimize incentive conflict in staffing this function and processing politically sensitive information, the task of aggregating and publicizing the estimates should be assigned to a new federal entity (Levine, 2009; Lo, 2009) or to a special division of the General Accountability office specifically charged with measuring and monitoring safety-net costs and benefits. The idea is to not only separate accountability for mismonitoring safety-net subsidies from accountability for underpolicing them. It is also to make someone specifically responsible for identifying on an ongoing basis the ways in which regulation-induced innovation may be undermining existing supervisory turf.

Monitoring Systemic Risk. The layering of blame for the current crisis implies that private and government sources of systemic risk must be monitored and policed jointly. Although still at an early stage, econometric strategies for measuring safety-net subsidies already exist. Following the lead of Merton (1977,1978), researchers have developed several promising metrics that a Safety-Net Accountability Office (SAF) could use to assess the value of safety-net support from balance-sheet and market data. Ronn and Verma (1986), Duan, Moreau, and Sealey (1992), Hovakimian and Kane (2000), and Carbo, Kane, and Rodriguez (2009) estimate the value of safety-net support from data on a banking organization's stock price. These models show that the value of safety-net credit support increases dramatically as it stockholder-contributed capital begins to disappear. Baker and McArthur (2009) extract estimates from a firm's credit spread. Hart and Zingales (2009) show the usefulness of data on the prices of institutions' credit default swaps. Huang, Zhou, and Zhu (2009) use stock price, credit spreads, and credit default swap data simultaneously. Finally, Eberlein and Madan (2010) combine data on equity option prices with balance sheet data on the same dates to calculate values for the taxpayer put. At yearend 2008, they estimate loosely that, for six of the most important US SIFIs, safety-net subsidies totaled over 860 billion dollars, with individual benefits ranging from a low of USD 3.37 billion (at Goldman Sachs) to USD 293.96 billion (at JP Morgan Chase).

Of course, the capitalized value of taxpayer costs for supporting safety-net benefits is generally less than the sum of the benefits that accrue to individual firms. But because correlations increase in crises and asset bubbles, it may not be much less. The costs of supporting the safety net may be analyzed as the return from a portfolio of the imperfectly correlated positions in the various firms the net pro-

tects. Research on correlations shows that the effects of crisis-generating and other large common industry shocks are more highly correlated than smaller common shocks that industry capital is expected to absorb(see, e.g., Gropp and Moerman, 2003).

To establish a better framework for analysis, I propose to divide responsibilities for collecting and processing dataon safety-net benefits into at least three pieces. The first segment would task managers of financial firms with estimating and reporting to their primary regulators (on, say, a quarterly basis) interval estimates of the value of the safety-net benefits their firm receives. Especially for large or complicated firms, this task could (as discussed later) be streamlined by requiring financial institutions to issue securities that automatically convert to equity in troubled circumstances or carry extended liability. The second segment would task individual regulators with examining (i.e., conscientiously challenging the accuracy of) these estimates and undertaking correlation studies that would allow them to prepare interval estimates of the aggregate value of taxpayer support accruing to the firms they supervise. The third segment would task the regulators to report and justify their estimates and aggregation procedures to the Safety Net Accountability Office (SAF) and task the SAF with publically reporting interval estimates of the aggregate value of safety-net subsidies for different industry sectors. A fourth segment could eventually task SAFs in different nations with establishing arrangements for monitoring the quality of one another's work and preparing and publishing interval estimates of the value of bilateral and multilateral cross-country safety-net support.

If the analytical resources of the world's central banks and largest institutions can be incentivized to attack these estimation problems on a massive scale, the point estimates emerging from different methods should converge over time. Each nation's SAF should also recognize that the confidence intervals that careful statisticians need to place around the different point estimates are apt to narrow with experience, but be sabotaged by regulation-induced innovation and to increase in times of financial turmoil.

Crisis Planning. To make insolvency resolution easier to initiate, supervisors and DFU firms must be made to plan and rehearse for crisis. Richard Herring was the first to propose that managers be required to prepare and file with their principal regulator a standby reorganization plan with which to handle their firm's demise and be obliged to test, update, and refile this plan on a regular basis. This proposal is explored and developed in Herring (2010) and Avgouleas, Goodhart, and Schoenmaker (2010).

The main value of an up-to-date corporate 'living will' is as a starting point for planning divestitures that could reduce subsidies to creditors of declining firms. It promises to make the threat of putting an insolvent institution into receivership

or conservatorship more credible as creditors and because it promises to lower the costs of executing the threat. Unlike the chaotic and ineffective haggling observed in addressing the insolvencies of Lehman Brothers and AIG in September 2008 (Ferguson and Johnson, 2009), having a benchmark winding-up scheme in place would make it much easier for authorities to dilute the claims of zombie stockholders and to negotiate haircuts with uninsured creditors.

Security Design. Another way of making insolvencies easier to handle would be to re-establish extended liability for some or all classes of financial-institution stock. An important source of systemic risk is the limited liability that stockholders enjoy. Practically speaking, the less capital stockholders provide, the more safety-net support flows to them and their counterparties. Extended liability means that a supervisor's decision to liquidate an insolvent commercial or investment bank carries with it a right to collect specified amounts of additional funds from the personal or corporate assets of assessable stockholders. Holders of extended-liability stock (i.e. 'assessable shares') in a liquidating firm accept the obligation to absorb to a specified degree the first waves of corporate losses that are found to exceed the value of the capital explicitly accumulated at the corporate level. Several now-industrialized countries (including the United Kingdom, the US and Canada) imposed extended liability on bank shares when their safety nets and private contacting environments were less well-developed.

Extending stockholder liability would increase transparency, strengthen private market discipline, and improve regulatory accountability at the same time. It would do this by encouraging holders of assessable shares to monitor the firm more closely. These well-informed investors' efforts to trade away from their extended liability would transform movements in the stock price of publicly traded institutions into a clearer and more timely signal of the strength or weakness of unfolding business plans.

To control compensation that risk managers might earn from promoting aggressive risk-taking, bonuses and incentive compensation at any firm for which the value of estimated safety-net subsidies appears substantial could be paid exclusively in slow-to-vest assessable stock. Financial markets would imbed the value of the shareholder's contingent obligation into the price of the issuing firm's assessable shares. Like safety-net subsidies, the value of the contingency would be negligible for any institution that was adequately supporting its risk with paid-in corporate capital. However, safety-net managers' contingent claim on stockholder resources would become increasingly valuable whenever a firm began to take poorly supported risks or to slide into financial distress. By increasing the sensitivity of stock prices to changes in earning power and earnings volatility, assessable shares would reveal stockholder doubt about the viability of troubled institutions in advance of their final slide into zombie status.

Trading in extended-liability stock and what we might call 'assessment derivatives' would improve the quality of counterparty and regulatory supervision because it would encourage insiders to identify institutions that deserve supervisory attention before stockholder-contributed capital at these institutions can evaporate. Contingent private capital resembles government safety-net support in that it is drawn onto an institution's balance sheet when and as its level of distress grows. Mark Flannery's proposal for contingent capital certificates (2009) works in a similar way and would work even better for firms that had assessable shares outstanding. This is because market-based, downward price movements in assessable shares promise to act as a more reliable trigger for forcing debt-to-equity conversions than self-interestedly overstated accounting measures of a troubled firm's net worth.

8.5.2. Strictly Governmental Reforms

In government supervision, incentive conflict is rooted in three circumstances. First, no one is charged with measuring and monitoring safety-net subsides *per se*. Second, top government officials have horizons much shorter than the taxpayers they formally serve. Third, taxpayers are not an official's only principal and ordinary citizens are poorly positioned to defend their stake in financial regulation.

Under the assumption that private institutions prepare a regulator-certified unwinding plan and estimate the value of the safety-net support they enjoy, it becomes easy to define the missions of micro- and macro-prudential regulators sharply and independently of the particular bureaucratic structure of regulation a country might establish. The first task would be for agencies to test and verify the estimates of the value of safety-net support that would be supplied to them by institutions under their purview. To do this, they would use robust modeling techniques of solvency assessment and on-site and electronic methods of data collection. They would also be expected to communicate to the Safety-Net Accountability Office the estimates of safety-net subsidies that they and individual institutions they supervise produce. Each micro-prudential regulator would also prepare consolidated estimates of the aggregate value of safety-net benefits at the firms they supervise and report their methods of aggregation and estimates to the SAF for further analysis.

A second task would be to establish, publicize, and rehearse periodically a prepackaged bankruptcy-like scheme for allocating losses incurred in insolvency and crisis management. Authorities would be free to deviate from their benchmark plan during an actual crisis, but they would be obliged to explain why they are doing so.

A desirable third task would be to discourage elected officials from trying to win special treatment for firms that contribute money to their campaigns. One way to do this would be to oblige regulatory personnel and elected officials to report to the SAF promptly, fully, and separately on interactions with elected officials that occur outside the public eye.

These three reforms would make the jobs and recruitment of top regulators more difficult. For this reason, the US and other countries would be well advised to establish the equivalent of a publicly funded West Point for financial regulators and welcome cadets from anywhere in the world. Reinforced by appropriate changes in regulators' oaths of office, such an academy would raise the prestige of this form of public service and instill a stronger and broader sense of communal duty in safety-net managers than the current generation of officials has shown during the current crisis. In view of the damage crises can cause, it is unfortunate that regulators are not trained and incentivized as carefully as military, police, firefighting, and nuclear-safety personnel.

In principle, supervisors should be recruited from a population of individuals who are willing to embrace explicitly the fiduciary duties their agency owes to society and be prepared to perform these duties selflessly and conscientiously. Ideally, oaths of office could be reworked to include five duties that conscientious supervisors ought to agree that they owe to the community that employs them:

1. *a duty of vision*: Supervisors should continually adapt their surveillance systems to discover and neutralize innovative regulatee efforts to disguise their rule breaking;
2. *a duty of prompt corrective action*: Supervisors should stand ready to propose new rules and to discipline regulatees whenever a problem is observed;
3. *a duty of efficient operation*: Supervisors should strive to produce their insurance, loss-detection, and loss-resolution services at minimum cost;
4. *a duty of conscientious representation*: Supervisors should be prepared to put the interests of the community they serve ahead of their own;
5. *a duty of accountability:* Implicit in the first four duties is an obligation for safety-net managers embrace political accountability by bonding themselves to disclose enough information about their decision making to render themselves answerable for mishandling their responsibilities.

Legislatures around the world could extend loss-control responsibilities beyond national borders by establishing schemes in which private and governmental monitoring organizations would be able to hold one another financially responsible for the quality of their supervisory work. In the US, Congress has proposed imposing product liability on credit-rating organizations and requiring safety-net managers to move trading in over-the-counter derivatives and other securities to clearinghouses or exchanges when and as their volume becomes large enough to

pose material safety-net consequences. This duty affects other countries and would be strengthened if national deposit insurers were made to reinsure in private markets the coverages they provide to market makers in derivative instruments. This could be done either by writing credit default swaps or by transacting directly in reinsurance markets.

To offset their enhanced accountability, it would be appropriate to raise the salaries of top officials. However, to lengthen the horizons of safety-net managers, the raise should be framed as deferred compensation that would have to be forfeited if a crisis occurred within three or five years of their leaving office. While the incremental loss of income might seem trivial, the impact on a regulator's reputation and ability to resist lobbying pressure could be considerable. If payouts were tied to measures of safety-net subsidies, deferred compensation would have the further benefit of making incoming appointees more cognizant of unresolved problems that his or her predecessor might be leaving behind.

8.6. SUMMARY IMPLICATIONS

In good times, systemic risk and safety-net subsidies are easy to overlook. Systemic risk is rooted in the economic and political difficulties of monitoring and controlling the production and distribution of safety-net subsidies. Regulation-induced innovation by financial firms is designed to outstrip the monitoring technology and to circumvent the tools and administrative focus that supervisory personnel use in controlling institutional risk-taking.

To reduce the threat of future crises, the pressing task is not to rework bureaucratic patterns of financial regulation, but to repair defects in the information flow and incentive structure under which private and government supervisors manage the safety net.

Without appropriate reforms in incentives, redesigning capital requirements, introducing a few new regulatory instruments, and relocating bureaucratic responsibilities for particular components of national safety nets will change the form, but not the substance of safety-net arbitrage. To build a robust and reliable system of financial regulation, financial-institution managers and national regulators must accept responsibility for estimating and controlling in a timely, proactive, and accountable manner the safety-net consequences of transformative financial contracts and institutional structures.

REFERENCES

ACHARYA, V., SCHNABL, Ph. and SUAREZ, G. (2010), "Securitization Without Risk Transfer", *NBER Working Paper* No. 15730, Cambridge, MA, February.

AVAGOULEAS, E., GOODHART, Ch. and SCHOENMAKER, D. (2010), *Living Wills as a Catalyst for Action*, http://ssrn.com/abstract:1533808.

BAKER, D., and MCARTHUR, T. (2009), *The Value of the 'Too Big to Fail' Big Bank Subsidy*, Washington, DC, Center for Economic and Policy Research Issue Brief, September.

CARBO-VALVERDE, S., KANE, E. and RODRIGUEZ-FERNANDEZ, F. (2009), "Regulatory Arbitrage in Cross-Border Mergers of Banks in the EU", *Journal of Money Credit and Banking,* (forthcoming).

DUAN, J.-C., MOREAU, A.F. and SEALEY, C.W. (1992), "Fixed-Rate Deposit Insurance and Risk-Shifting Behavior at Commercial Banks", *Journal of Banking and Finance*, 16, 715-42.

EBERLEIN, E. and MADAN, D. (2010), *Unlimited Liabilities, Reserve Capital Requirements, and the Taxpayer Put Option*, Unpublished Working Paper, College Park, MD, University of Maryland, March 20.

FLANNERY, M.J. (2009), *Stabilizing Large Financial Institutions with Contingent Capital Certificates*, Unpublished University of Florida Working Paper, September 18.

FERGUSON, Th. and JOHNSON, R. (2009), "Too Big to Bail: The "Paulson Put," Presidential Politics, and the Global Financial Meltdown", *International Journal of Political Economy*, 38, No. 1 (3-34) and No. 2 (5-43).

GORTON, G. (2008), *The Panic of 2007*, Unpublished Working Paper, New Haven, Yale University.

GROPP, R. and MOERMAN, G. (2003), "Measurement of Contagion in Banks' Equity Prices", Frankfurt, *European Central Bank Working Paper* No. 297, December.

HART, O. and ZINGALES, L. (2009), "A New Capital Regulation for Large Financial Institutions", *Chicago Booth Research Paper* No. 09-36, October 2.

HERRING, R.J. (2010), "Wind-down Plans as an Alternative to Bailouts: The Cross-Border Challenges" in SCOTT, K., SHULTZ, G. and TAYLOR, J. (eds.), *Ending Government Bailouts as We Know Them*, Stanford University, Hoover Press, 2010.

HOVAKIMIAN, A. and KANE, E.J. (2000), "Effectiveness of Capital Regulation at U.S. Commercial Banks, 1985-1994", *Journal of Finance*, 55, March, 451-469.

HUANG, X., ZHOU, H. and ZHU, H. (2009), "A Framework for Assessing the Systemic Risk of Major Financial Institutions", *Working Paper*, University of Oklahoma, May.

KANE, E.J. (1986), "Appearance and Reality in Deposit Insurance: The Case for Reform", *Journal of Banking and Finance*, 10, June, 175-188.

KANE, E.J. (1989), *The S&L Insurance Mess: How Did It Happen?*, Washington, Urban Institute Press.

KANE, E.J. (2009a), "Incentive Roots of the Securitization Crisis and Its Early Mismanagement", *Yale Journal of Regulation*, 21, Winter, 28-33.

KANE, E.J. (2009b), "Extracting Nontransparent Subsidies by Strategically Expanding and Contracting a Financial Institution's Balance Sheet", *Journal of Financial Services Research*, 35, December, 161-68.

KANE, E.J. (2010), "The Importance of Monitoring and Mitigating the Safety-Net Consequences of Regulation-Induced Innovation", *Review of Social Economy*, 68, June, 145-161.

KUPIEC, P. (2009), *How Well Does the Vasicek Basel Model Fit the Data?: Evidence from a Long Time Series of Corporate Credit Rating Data*, Washington, Federal Deposit Insurance Corporation, November.

LEVINE, R. (2009), *The Sentinel: An Auxiliary Precaution for Governing Financial Regulations*, presented at Federal Reserve Bank of Chicago's Twelfth Annual International Conference, September.

LO, A.W. (2009), *The Feasibility of Systemic Risk Measurement*, Testimony Before the Financial Services Committee of the U.S. House of Representatives, October 19.

MERTON, R.C. (1977), "An Analytic Derivation of the Cost of Deposit Insurance and Loan Guarantees", *Journal of Banking and Finance*, 1, 3-11.

MERTON, R.C. (1978), "On the Cost of Deposit Insurance When There Are Surveillance Costs", *Journal of Business*, 51, 439-52.

RONN, E. and VERMA, A.R. (1986), "Pricing Risk-Adjusted Deposit Insurance: An Option-Based Model", *Journal of Finance*, 41, 871-95.

9. The Case for Limited Liability Eurozone Government Debt

Alistair Milne

Abstract

Leading political figures in Europe have on several occasions stated that there will never be any restructuring of euro area sovereign debt. But the ability of governments to raise sufficient domestic resources to service their debts cannot be guaranteed; so this position implies that the euro area stands ready in extremis to providing either monetary financing or resources from other countries to prevent debt default, thus overriding Maastricht Treaty articles 104, 104a and 104b. This paper argues that it is unnecessary to abandon the Maastricht Treaty in this way. Instead limited liability arrangements can set out ex-ante when and how restructuring will take place. This will complement the article 104c rules on debt and deficits, which are anyway neither necessary nor sufficient for the stability of European monetary union and cannot realistically be enforced as rigidly as current European Commission proposals envisage. By guiding market expectations about restructuring, limited liability will make clear that debt repudiation is not possible and that restructuring should it occur will impose only relatively small investor haircuts. Thus limited liability can be expected to substantially reduce spreads on periphery euro area debt.

9.1. Introduction

On 29th September, 2010, the European Commission announced legislative proposals for strengthening euro area controls on euro member national fiscal debt and deficits (European Commission (2010)). At the time of writing, these proposals – the official follow up to the creation by the European Council in May, 2010 of the USD 500bn plus European financial stabilisation mechanism for providing emergency financial support to euro area governments facing problems in refinancing their debt as a consequence of the periphery euro area sovereign debt crisis – still have to be approved by the Council of Ministers and the European Parliament, but do not require treaty changes or approval by national parliaments.

The need for policy action is clear. The euro area periphery debt crisis has highlighted the fiscal vulnerabilities of some member countries. This is a euro area problem because these vulnerabilities are no longer confined within national borders. Market pricing of government debt of many countries has become highly sensitive to news about economic growth, government revenues and government

expenditure; concerns about individual countries are affecting the market pricing of the debt of several other Euro-area governments, even those for whom the need for to correct public sector debts and deficits is not so urgent. These contagions are exacerbated by the extensive cross-border bank exposures to government debt in the euro area, meaning that market concerns about possible debt default are transmitted into increased doubts about bank solvency.

What is far less clear is that this single policy action, strengthening of euro area surveillance and controls over national fiscal policy, is the best or only response to these problems. There are costs as well as benefits to such central controls. If they are applied inflexibly they could exacerbate cyclical and systemic risks; but applied flexibly they will be ineffective. Other complementary measures are also possible. Before this approach of adopting stronger central controls is accepted, wider discussion must take place, exploring the full range of other possible policy responses.

This paper presents the case for one such complimentary policy response, a proposal for limited liability government debt, set out in Milne (2011). This proposal can be seen as a return to the twin-track approach to euro area fiscal policy, originally set out in the Maastricht Treaty. The treaty proposed a *combination* of measures governing fiscal policy, not only rules governing debt and deficits (art. 104c later implemented in the stability and growth pact) but also prohibitions on both monetary financing of fiscal deficits (art. 104, art. 104a) and on bail-out of fiscal deficits by other euro area countries (art. 104b).

Limited liability government debt is a means of reinforcing articles 104, 104a and 104b, just as the new procedures of surveillance and control reinforce article 104c and the stability and growth pact. This paper argues that these two complementary approached (rules on debts and deficits plus prohibitions on monetary and cross country financing) can and should be pursued in tandem, just as was originally envisaged in the Maastricht Treaty. Article 104c should not come to dominate.

There is still a breathing space for discussing such policy alternatives. The May announcement of the European financial stabilisation mechanism, means that the more highly indebted euro area governments are not required to raise money from the markets for at least two years. Although using this facility, turning to their European partners in order to finance their budget deficits will never be a first choice, the EUR 500bn on offer have removed concerns about prospective default. This breathing space should be used to more fully explore the options

This paper is arranged as follows. Section 9.2. briefly outlines the proposal for limited liability government debt, and associated emergency liquidity arrangements for providing finance to individual member governments when they are

unable to access market finance. It also discusses a concern with market disciplines on fiscal policy, that these swing from being ineffective in normal times and to being excessively strict in times of crisis; and argues that limited liability can help correct this shortcoming.

Section 9.3. examines the claim (implicitly the claim supporting the current policy proposals) that rigid rules on fiscal deficits are both necessary and sufficient for the stability of monetary union. It finds that this claim is without empirical foundation. There is nothing in this experience of either sub-national fiscal arrangements or in previous monetary and currency unions (an experience reviewed in greater detail in Milne (2011)) to indicate that there cannot be a stable monetary integration without allowing individual sub-units considerable freedom to borrow. The necessary conditions for a stable monetary integration are only that there is no monetisation of deficits and no expectation by those facing fiscal problems of fiscal support from others.

Section 9.4. discusses the costs imposed on investors by debt restructuring under limited liabillity. The concern of investors is that, without strict rules on debt and deficits, there is likely eventually to follow debt repudiations and consequent disorderly and costly process of debt restructuring. This has been the salutary experience of much foreign currency debt issue by emerging market sovereigns. There is an obvious parallel with European monetary union. In both cases inflationary monetary finance cannot be used as a means of reducing the burden of debt, hence making a disorderly restructuring much more likely. Section 9.4. argues that this parallel is inexact. Because monetary union is a club, governed by strict rules and offering substantial economic benefits to all participants, it is possible to impose ex-ante rules limits on the burden of debt servicing and the postponement of repayment when these limits are reached, a discipline that cannot be imposed on emerging market sovereigns. Limited liability debt is a simple way of imposing such ex-ante limits. This also implies that there is no need for an ex-post European sovereign debt restructuring mechanism, as has been argued by some commentators, because the restructuring rules can always be clear ex-ante.

Some simple calculations suggest that, with limited liability debt, restructuring is a relatively remote event even for highly indebted countries such as Greece, and were it to happen, the haircuts on investors would be comparatively small, compared to those that have been experienced with emerging market sovereign debt repudiations. Surprisingly high debt to GDP ratios can be maintained without any postponement of repayments. This also suggests (although more work is required) that the high level of spreads recently observed for some euro area sovereign debt relative to that of Germany, can be substantially reduced by the introduction of limited liability. Section 9.5. summarises and concludes.

9.2. THE PROPOSALS

Milne (2011) puts forward a set of proposals, designed to ensure make articles 104, 104a and 104b of the Maastricht Treaty enforceable (these are the articles prohibiting both monetary financing of government deficits and the financing of government deficits by other member states).

The centrepiece of these proposals is that of 'limited liability' for euro area government debt. Specifically debt servicing (payment of interest and principal) on euro area government debt should be limited by establishing a maximum primary government surplus as a percentage of GDP (the limit might be say 5% of GDP, but the exact percentage is not important). The primary surplus is the amount of resource available for payment of interest and principal (assuming that there is no new borrowing). Under this limited liability proposal, if total government revenues less non-debt related government expenditures, exceed this limit, then the government has the option to cancel interest payments due and to postpone repayment of principal (with an increase of the principal due based on a measure of average euro area short term risk free rates of interest).

Why limited liability of this kind and how will it help strengthen the Maastricht Treaty? Because there are, inevitably, political limits on the amount of resources that can be allocated to debt servicing.-In some circumstances, hopefully remote, governments will be unable to fully service their debts. Thus, if the Maastricht articles 104, 104a and 104b are to be enforced, then there has to be at least a possibility that restructuring of debt repayments will take place. Limited liability makes it clear when and how this will happen.

There is a parallel with current proposals for ensuring that bank debt holders bear responsibility for bank losses, when bank capital is exhausted[1]. Limited taxpayer liability of this kind ensures that when the burden of debt becomes unsupportable, that part of the costs fall on debt holders. In fact it is relatively easy to impose such debt holder exposure for sovereigns compared to banks It is easier to define a trigger point in terms of variables (tax revenues, expenditure and GDP) which are not subject to the whims of market sentiment. Asymmetric information is also much smaller for sovereign borrowing than is the case for bank debt, so exposure of debt holders to risk of loss will have a compariativly small impact on the cost of debt.

This proposal for limited liability runs directly counter to the position taken by some of Europe's leaders, who have denied any possibility of debt restructuring. This is an understandable pragmatic response to current fiscal problems. A hint to the markets that a restructuring is possible, would further depress the price of

[1] For example the proposals for 'Co-Co' or contingent capital bonds, currently promoted by the G20, that convert into equity when some trigger point is passed.

euro area sovereign debt. This explains the public views of ECB president Jean-Claude Trichet, who has stated that there will be no default on euro area sovereign debt[2]. More recently Greek prime minster George Papandreou has expressed much the same sentiment[3].

These are amongst the most eminent individuals in Europe, but their high office does not override an obvious problem with their position: it is inconsistent with Maastricht treaty articles 104, 104a and 104b. There will always be possible circumstances, for example if the global economy were to go into a prolonged economic slump, in which euro area sovereign debt restructuring can be avoided only by the monetizing of debt or by other member countries taking on responsibility for repayment. Thus, if we are to enforce Maastricht articles 104, 104a and 104b in all circumstances, we must have a potential for debt restructuring.

The possibility of restructuring is at the core of the present sovereign debt problems faced by periphery euro area governments. It is no longer an entirely remote possibility (despite official claims to the contrary) and should restructuring take place, then the outcome for investors is highly unpredictable. One concern is that restructuring will be associated with a radical shift of political power, with a repudiation of debt repayment by a populist political grouping that wins an electoral mandate for throwing off the yoke of international financial oppression. And even if such a sharp political swing against the interests of investors is avoided, a debt restructuring is still likely to be a prolonged and disorderly process with a protracted legal disputes amongst different classes of debt holder.

Therefore it is essential, in order to ensure political, monetary, and financial stability in the euro area, to set out *ex-ante* the circumstances in which debt restructuring will take place and how it will be carried out. The limited liability proposal of Milne (2011) does exactly this.

The limited liability proposal is related to other proposals linking the payment and coupons on sovereign bonds to GDP. Considerable attention has been paid to so called GDP bonds in which coupon payments and principal are adjusted up (or down) whenever real GDP growth exceeds or falls short of a projected steady state growth path[4]. Issuing debt of this kind is attractive to governments coping with a combination of fiscal adjustment and recession and has been done by Bulgaria, Bosnia-Herzogovina, and (in a forced post-2001 restructuring swap for conventional bonds) by Argentina. A different form of GDP related bond is the 'trill' proposed by Kamstra and Shiller (2008) which pays a quarterly dividend

2 His words are quoted in Milne (2010a).

3 Papandreou stated in an Financial Times interview of September 16th, 2010 "People fail to see the costs to both Greece and the Eurozone of a restructuring: the cost to its citizens, the cost to its access to markets. If Greece restructures, why on earth would people *invest* in other peripheral economies? It would be a fundamental break to the unity of the Eurozone."

4 For discussion see Borensztein and Mauro (2004) and Griffiths-Jones and Sharma (2006).

equal to one trillionth of national GDP (in the case of the US this would be about USD 60 per year), which they argue should appeal to pension funds and other long term investors with liabilities that are GDP related. But limited liability government debt has the advantage that it limits repayment only when this is at the limits of political acceptability.

This centrepiece proposal for limited liability government debt in Milne (2011) is supported by three other related proposals:

- *limits on the composition of bank holdings of government debt*. This is appropriate because European banks have been pro-cyclical investors in periphery euro area government debt. They have build up relatively large cross border holdings in euro area debt (most notably French bank investment in Greece and Spanish bank investment in Portugal)[5]; but as sentiment in these exposures has soured European banks are no longer so willing to acquire periphery euro area debt. This can be addressed by requiring that euro area banks purchase euro are government debt in rough proportion to the amounts outstanding and do not engage in pro-cyclical chasing of small interest spreads between different debt classes;
- *long term maturity structure*. euro area governments should be encouraged to take on longer term, the ideal would be a 30 year amortising debt structure. This is appropriate in order to sharply reduce the extend of annual debt refinancing and hence limit the exposure to sudden refinancing problems;
- *a euro-wide, senior government financing facility, at high (slightly penal) rate of interest*. This is the provision of a governmental lender of last resort facility, something that is automatically available to governments that retain monetary sovereignty and their own central bank, but which has been sacrificed by governments joining the euro system. The facility could operate through direct loans from the ECB, or, as has now been proposed in the recent intergovernmental agreement, through the establishment of a permanent financial stability facility. Like this lending facility, it would be made available only subject to strict conditionality on addressing unsustainable debts and deficits. But there would be one key difference from the current emergency financial stabilization mechanism. Once euro government debt is subject to limited liability, then it is straightforward to make the euro wide facility senior to all private sector debt i.e. its interest payments would never be cancelled by limited liability (although principal repayments might be delayed alongside those of the private sector.)

[5] This point is documented in Milne (2010b).

9.3. DOES MONETARY UNION REQUIRE FISCAL RULES?

This section considers rules on fiscal debts and deficits. It turns out that these may be a useful, additionally to limited liability, in order to help prevent weaknesses of national political systems resulting in loss of fiscal discipline. But these are neither necessary, nor sufficient, to maintain monetary and financial stability.

We consider first necessity. That fiscal rules of the kind enshrined in the Maastricht Treaty article 104 are not necessary to the stability of European monetary union, is evident from the substantial literature on fiscal arrangements for sub-national units of government[6]. There is huge variety of different approaches to organising these fiscal relationships. Some are rule based (either limits on debt and deficits or 'golden rules' in which borrowing is supposed only to be for investment purposes). Some however are market based, in the sense that there is no rule based or administrative restrictions on borrowing by subunits, the only limitation is the ability to sell debt on the markets (examples include Canadian provinces, Swiss Cantons, and Finnish local authorities). Other countries do not have any formal rules but instead apply administrative controls on borrowing by sub-units of government (examples are the United Kingdom and France). Yet others (for example Australian states) have a process of negotiation between higher and lower levels of government to determine expenditure and borrowing.

The experience of some countries that do apply central rules (for example Germany and Japan) is that these have not worked well in disciplining expenditure and borrowing by lower units of government, because of an expectation that central or Federal government will provide financial resources to sub-units facing fiscal problems (in Germany such support is constitutionally guaranteed). There are many ways in which rules can be evaded and the expectation of fiscal support provides an incentive for doing so.

As a response to this problem, Germany has very recently adopted much stricter central rules on borrowing and expenditure by the Lander. It appears that the current European Commission proposals have been largely read across from this German precedent, even though the political and fiscal situation of the euro area as a whole and of Germany are completely different. In particular Germany (for constitutional reasons) is unable to impose the equivalent of Maastricht articles 104, 104a and 104b; and Germany, unlike the euro area, has the political cohesion that can make such strict rules acceptable.

US states also have rules on sub-governmental borrowing (every state except Vermont has some form of balanced budget rule) but this is different from Germany because these rules are *not* centrally imposed but instead voluntarily adopted by

[6] This evidence is reviewed in greater detail by Milne (2011). See especially the work of Ter-Minissian and Craig (1997) and Feld and Baskaran (2009).

the states themselves. This is in part because it is clear that the federal government would not provide financial support for any state that go into fiscal difficulties. The historical precedent is that the federal US government does not bail out states that cannot repay their debts[7]. The US Congress is highly unlikely to change this precedent in order to support the bail out of a profligate member state.

A different argument for the necessity of fiscal rules to support monetary union is the observation that no previous monetary or currency union has survived, without being followed by fiscal and political integration. Some conclude (quite wrongly) from this that a stable monetary union requires an accompanying fiscal union. The examples cited are the successful 18th and 19th monetary unions of the United States, Germany, and Italy; and the failed Latin and Scandinavian currency unions that were created in the late 19th century and collapsed because of the fiscal strains of World War I[8].

Why is this conclusion wrong? The early successful monetary union were simply one aspect of process of national integration, with an initial political union followed by a long drawn out process of fiscal and monetary integration. But this experience says nothing at all about the stability or otherwise of European Monetary Union, which is of an entirely different nature. It is the unparalleled case of a monetary union, in which the fiscal and political sovereignty of the members has been retained.

It is true that by joining the European monetary union, member states have lost some sovereignty. They have given up the possibility of turning to monetary finance of their fiscal deficits. This loss of sovereignty (enshrined in Maastricht Treaty article 104) is clearly essential for stability. The experience of the late 19th century currency unions, in which member states retained the right to finance their budget deficits by issuing silver and gold coin, demonstrates that currency unions are not stable. The members retained the right to monetise deficits and this in turn triggered the breakup of these currency unions, through excessive issue of coinage in the face of the severe fiscal strains of World War I.

Indeed a key argument for introducing limited liability for euro area government debt, and the other accompanying measures proposed in Milne (2011), is that together these will fully compensate for this loss of sovereignty from joining the euro, providing governments with the means to achieve everything that they might otherwise seek from monetising of their deficits. Governments will be able to use restructuring, rather than the inflation tax, as a means of controlling unsustainable debts and deficits. They will also be able to turn to the accompanying European senior government financing facility, as a government lender of last

[7] The precedent is the debt default of seven US states and territories in the 1840s, see Grinath, Wallis and Sylla (1997) for details of this episode.

[8] For a review of these episodes see Bordo and James (2008).

resort, in the situation where they cannot obtain short term market financing at reasonable terms. With these measures in place there will in fact be no real loss of sovereignty from membership of European monetary union at all (except in relation to the application of the article 104c rules on debt and deficits) and hence no reason for fiscal problems to destabilise monetary union.

So much for the necessity of rules on debt and deficits for the stability of European monetary union. What about sufficiency? While it is true that strict enforcement of fiscal disciplines, of the kind stated in the Maastricht rules, would prevent fiscal problems of one euro area country affecting other euro member states, it is fairly obvious that it would generate a different kind of instability in the euro area. Strict enforcements will be resented, especially when the economic environment is difficult. For example global demand is likely weak over the next few years, following the global financial crisis, and if this does happen strict enforcement of rules on debt and deficits will add to the weakness of demand. Monetary policy may prove unable to correct the situation. In this case, rather than accept the costs of fiscal retrenchment, countries with relatively great fiscal burdens are likely to prefer instead to leave the euro, in order to recover their monetary sovereignty and monetise their deficits. Only if they are given alternative mechanisms for achieving the same end (coping with unsustainable debt and deficits and addressing breakdowns in the availability of short term finance) will they be willing to stay within the euro. Limited liability and the other proposals of Milne (2011) are thus an essential accompaniment to the article 104c rules on the level of debt and deficits.

This is not to argue against some effort at stronger enforcement of Maastricht article 104 rules on debt and deficits. There is undoubted bias in democratic systems towards short term policy objectives and this can discourage politicians from taking painful measures to ensure long term fiscal sustainability. euro area rules to offset such bias can be a welcome discipline for all euro area countries. But this discipline has to be imposed flexibility, it should not rule out short term increases in borrowing to cope with adverse economic circumstances, and because such flexibility is needed there have to be other disciplines to prevent debts being monetised or expectation fo support from other countries. In otherwords the Maastricht article 104c rules and the article 104, 104a and 104b prohibitions are complementary. One should not be pursued while neglecting the others.

9.4. THE COSTS OF DEBT RESTRUCTURING: NEED THEY BE SO LARGE?

Investors, understandably, are very afraid of euro area debt restructurings. This fear comes, in part, from the experience of the restructuring of foreign currency sovereign debt issued by emerging market governments[9].

There is an obvious parallel with the situation of euro area countries. The euro is to these countries, in effect, a foreign currency because indebted euro area governments, like emerging market governments borrowing in foreign currency, cannot monetise their euro denominated debts.

There have been very many sovereign debt restructurings in recent years. One recent paper identifies no less than 93 emerging market debt restructurings since 1975[10]. There has also been a great deal of debate about how best to handle them including widespread discussion of IMF proposals for a sovereign debt restructuring mechanisms (SDRM), a form of sovereign bankruptcy proposed to eliminate many of the costs of restructuring, in particular by imposing collective action clauses that prevent individual debtors holding out for better terms[11].

Euro area sovereign debt is however different. The essential reason is that the rules of the euro area can prevent repudiation of debt repayment, provided that is that there is no requirement to continue making debt repayments beyond some reasonable politically acceptable limit. Emerging market sovereigns, once they face difficulties in refinancing external debt, have little incentive to maintain repayments on their existing foreign currency liabilities. It is then in their interests to default on repayments (what the theoretical literature calls 'strategic default') in order to persuade lenders to offer them better terms. Indeed one of the main arguments against the IMF SDRM proposal is that making restructuring orderly and efficient would also make it too attractive to debtors.

In the case of the euro strategic default will not be an issue, provided there are ex-ante rules on restructuring such as those in the Milne (2011) limited liability proposals. Any refusal to make debt service payments, short of the relief provided by limited liability, can be me prevented by imposing substantial penalties, the most extreme of which would be expulsion not just from the euro but from the European Union (if a country fell behind on payments due and made no serious effort to catch up). A range of financial penalties short of this ultimatum could also be applied.

[9] Sturzenegger and Zettelmeyer (2005) find that most haircuts on emerging market sovereign debt restructurings are clustered in the 13-25% range (although some are much higher still).
[10] Bolton and Jeanne (2007).
[11] See Krueger (2002) for a summary of the IMF SDRM proposal.

Once the possibility of debt restructuring is limited to the case where primary surplus exceeds some maximum level of GDP, say 5%, then it becomes clear that the prospective haircuts on euro area sovereign debt when these become unsustainable will be relatively small, certainly well inside the ranges experienced on emerging market sovereign debt defaults.

A simple steady state example can make this clear. Suppose that a country is enjoying modest nominal GDP growth of 4% (2% real growth and 2% inflation) and borrows at a 5.5% nominal interest rate. Suppose also (for illustrative purposes) that it has a 100% Debt to GDP ratio. It must then run a primary surplus of 1.4% (= 5.5% – 4%) to keep its debt to GDP ratio stable. The total gov. deficit is then 4%-1.5% = 2.5%.

This implies that this country can maintain a debt to GDP ratio approaching 300% of GDP, without breaching the 5% maximum on the primary surplus (in this case the primary surplus would be 4.5%). This makes clear that a primary surplus of 5% of GDP is consistent with comparatively high ratios of government debt to GDP, very much higher than the maximum of 60% proposed in the Maastricht Treaty.

Of course steady state nominal growth is an abstraction. There will be fluctuations and a country with a ratio of government debt to GDP, even if it enjoys average nominal growth of 4%, would sometimes breach the limits. This in turn means it would have to pay somewhat higher nominal rates of interest. But the temporary liquidity available from a central euro area senior liquidity mechanism, would help it ride out short term problems and refinance only when debt interest rates are comparatively favourable. Further investigation is warranted, but it seems clear that a debt to GDP ratio of say 250% would be perfectly containable, under the limited liability proposals of Milne (2011), thus relieving much of the fiscal pressure currently facing periphery euro area governments.

The reason is that having clear ex-ante rules on restructuring, together with a mechanism for providing senior short term liquidity, removes the 'fear factor' that drives up spreads on government debt. Simple calculations show that, even if the primary surplus limit is breached, the consequence loss of present value to investors is comparatively small (suppose for example that the repayments due via primary surplus were say 6% of GDP for a run of five years, while the maximum was only 5%, then the haircut would only be 1% of the outstanding debt principal for each of five years, and this would imply a haircut of less than 5%. Even if the required primary surplus were 6% of GDP forever, the loss of present value would be a haircut of at most only 16.67% (one sixth of all repayments are still made on time).

The bottom line is that with the ex-ante debt restructuring arrangements of the Milne (2011) limited liability proposals, the costs falling on investors when a government is unable to fully servie its debt will be comparatively small. The costs of restructuring, when handled in a predictable and orderly manner, are not large at all.

9.5. SUMMARY AND CONCLUSION: THE EURO AREA AUTHORITIES ARE PLAYING WITH FIRE

The principal message of this paper can be put very simply. By failing as a matter of priority to establish clear, orderly and predictable mechanisms for euro area sovereign debt restructuring, the euro area authorities are playing with fire.

They may not get burned. It is possible that there will be a strong resumption of global growth and that this benign development will enable all the periphery euro area countries, even Greece which is the most exposed, to pay down their government debt and for the costs of their borrowing to come down close to the levels enjoyed by Germany.

But it is just as likely (indeed the experience of many previous financial crises suggests it is more likely) that global growth will be weak in the next decade or two[12]. In which case there is a real possibility of a euro area government default. At present this is a hugely uncertain event for bond investors and, understandably, they are demanding very high spreads on periphery euro area government bonds, to protect themselves against this possibility.

Denials of the possibility of restructuring go a little way towards bringing these spreads down, but they also risk a complete loss of credibility for the euro area authorities, in the event that one country buckles under the pressure and defaults. The outcome will be disorderly and create considerable system wide financial risks across the euro area (not least because of the substantial exposures of euro area banks).

The new strict monitoring and enforcement of the Maastricht rules is a classic case of 'shutting the stable door after the horse has bolted'. Yes such strict enforcement could have been very useful in preventing the present situation arising in the first place, but it is wishful thinking to believe that such string monitoring and enforcement will reduce the political costs of maintaining debt service or do anything to calm bond market concerns about the risk and potential costs of default.

[12] The review of financial crises over several centuries by Reinhart and Rogoff (2009) indicates that most financial crises are followed by long periods of sluggish growth.

It is obvious that within the next two years, by the time the present European financial stability mechanism comes close to the end of its temporary life, some mechanism must be put in place to allow such restructuring to take place in an orderly and predictable fashion, so in turn ensuring that even in a difficult global economic environment there will be no ballooning of euro area government debt spreads that will in turn trigger a renewed euro area financial crisis and possible large scale withdrawals from the single currency.

The limited liability proposals of Milne (2011) offer just such a predictable mechanism. There are presumably other ways that might be explored to achieve the same end. For example an ex-post European sovereighn debt restructuring mechanism, that reallocated the burden of repayments following a euro area sovereign default might offer many of the same benefits. But the ex ante limited liability proposals appears very much simpler to explain and to operate, and much more predictable in its effect.

Some such mechanism, a strengthening of the Maastricht Treaty articles 104, 104a and 104b and making the consequences of debt restructuring orderly and predictable, will be an essential complement to the present efforts by the European Commision to strengthen article 104c limits on debt and deficits. It is often noted that market disciplines on fiscal policy are inconsistent, in good times they are relatively weak, while in bad times they are excessively severe. But the reason for this is the unpredictabile nature of most sovereign debt defaults. Making these consequences orderly and predictable will allow the impact of default to be properly calculated, in good times and in bad, and so ensure that there is always a more appropriate market discipline on government debt and deficits.

Limited liability will also compensate fully for the loss of monetary sovereignty when a country joins the euro and make it attractive to relatively weak countries as well as the relatively strong. Such a compensation is necessary, if the European single currency is in the future to expand, as it should, to embrace all the countries of the European Union, rather than contract to a northern core (the likely outcome of a future euro area periphery sovereign debt crisis).

To conclude, the approach toaken by European policy makers, in response to the euro area periphery sovereign debt crisis, has to date been far too narrow. The future of the euro is being put at risk by a failure to properly explore all the possible policy alternatives. It is to be hoped this paper, and the more detailed exploration of the limited liability proposal in Milne (2011), will go some way to persuade policy makers to be more open minded.

REFERENCES

BOLTON, P. and JEANNE, O. (2007), "Structuring and Restructuring Sovereign Debt: The Role of a Bankruptcy Regime", *IMF working paper* WP/07/192.

BORDO, M.D. and JAMES, H. (2008), "A Long Term Perspective On The Euro", *NBER Working Paper* 13815.

BORENSZTEIN, E. and MAURO, P. (2004), "The case for GDP-indexed bonds", *Economic Policy*, 19(38), 165-216.

EUROPEAN COUNCIL (2010), *Press Release, Extraordinary Council Meeting, Economic and Financial Affairs*, www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ecofin/114324.pdf.

EUROPEAN COMMISSION (2010), *EU economic governance: the Commission delivers a comprehensive package of legislative measures*, press release IP/10/1199 of 29 September.

FELD, L.P. and BASKARAN, T. (2009), "Federalism Commission II – Recent Reforms of Federal-Länder Financial Relationships in Germany", *Federal Forum working paper*, www.forumfed.org/en/pubs/2009-10-26-feld.pdf.

GRIFFITH-JONES, S. and SHARMA, K. (2006), "GDP Indexed Bonds: Making It Happen", *DESA Working Paper* No. 21.

GRINATH, A., WALLIS, J.J. and SYLLA, R. (1997), "Debt, Default and Revenue Structure: The American State Debt Crisis of the early 1840s", *NBER Historical paper* No. 97.

KAMSTRA, M. and SHILLER, R. (2008), "The Case for Trills: Giving Canadians and their Pension Funds a Stake in the Wealth of the Nation", *C D How Institute Pension Papers* No. 271, August, www.cdhowe.org/pdf/commentary_271.pdf.

KRUEGER, A. (2002), *A New Approach to Sovereign Debt Restructuring*, Pamphlet, International Monetary Fund, April.

MILNE, A. (2010a), *Limited Liability Non-Bank Government Debt for the Euro Zone*. Available at SSRN: http://ssrn.com/abstract=1595930 (August 31).

MILNE, A. (2010b), *Eleven Years of the Euro: Implications for the Theory of Optimum Currency Areas*, working paper, Cass Business School.

MILNE, A. (2011), "Limited Liability Government Debt for the Euro Zone", *CES-Info Economics Studies*, 57 (1): 44-78.

REINHART and ROGOFF (2010), *This Time its Different: Eight Centuries of Financial Folly*, Princeton University Press.

TER-MINASSIAN, T. and CRAIG, J. (1997), "Control of sub-national Government Borrowing" in TER-MINASSIAN, T. (ed.), *Fiscal Federalism in Theory and Practice*, International Monetary Fund.

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