

# Regulatory Issues Related To Financial Innovation

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*This note explores various regulatory issues related to financial innovation. It starts from a premise that financial innovations are neither always helpful (or benign) nor always threatening. Innovations have the potential to provide for a more efficient allocation of resources and thereby a higher level of capital productivity and economic growth. Many financial innovations have had this effect. But others have not. Examples of the latter include products that may have been misrepresented to end-users and resulted in delinquencies, bankruptcies or other problems among them, or products that have been inadequately managed with respect to the various credit or market risks they entail. Considerations of problems aside, innovation should be seen as a natural aspect of the workings of a competitive system. Thus, the ideal policy approach is to find an appropriate balance between preserving safety and soundness of the system and allowing financial institutions and markets to perform their intended functions. That approach entails first ensuring that the necessary market-framing and market-perfecting rules are in place and then establishing a proper structure for reviewing financial innovations. Seven steps needed to accomplish this task are outlined in the report.*

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## I. Introduction

*Financial innovations are neither inherently good nor inherently bad*

This note outlines components of a balanced regulatory approach to financial innovation, defined as one that gives proper weight to each of the three common core policy objectives featured in most regulatory frameworks: mitigating systemic risk, ensuring proper market conduct, and ensuring adequate protection for retail borrowers and investors and other end-users of financial services. It starts from a premise that financial innovations are a natural outcome of a competitive economy. They are neither inherently good nor inherently bad. Innovations have the potential to provide for a more efficient allocation of resources and thereby a higher level of capital productivity and economic growth. Many financial innovations have this effect and for that reason policymakers may wish to adopt a positive attitude towards innovative activities; that is, to start from a presumption of benefit until detriment is proven as opposed to the reverse construction.

*Many innovations prove to be beneficial, on net, but some others result in adverse outcomes*

But there is a need for caution. Innovations can affect financial intermediation and the effective working of the financial intermediation process is inherently a matter of public interest.<sup>1</sup> Moreover, while many innovations, perhaps even most, prove to be beneficial, on net, others can result in adverse outcomes, some of which may be quite severe. Examples of the latter include products that are misrepresented or simply inappropriate for end-users and result in delinquencies, bankruptcies or other problems among them, or products that are inadequately managed with respect to the various credit or market risks they entail and result in broader negative consequences for the financial system or the economy at large.

*The potential for possibly severe adverse outcomes sounds a note of caution regarding innovative activities...*

Most regulatory frameworks have a mandate to protect consumers and the private and social costs of major financial instability are sufficiently high that policymakers have a clear role as well in preserving financial stability in order to minimise the risks and costs of widespread financial distress. Under the circumstances, the tendency should naturally be to err on the side of caution. Doing so may require placing greater weight on up-front avoidance of systemic problems as opposed to *ex post* resolution of crises. And at the end of the day, the commercial success of financial intermediaries themselves rests squarely on the effectiveness with which their activities contribute to the macro goals of mobilising and allocating savings, which is arguably the core function of the financial system.

*...and may argue against adopting a completely hands-off approach*

These caveats argue against a completely hands-off approach to innovative activities in finance. The benefits to the system are not from innovation per se but, rather, from sustainable innovations, those that do not result in undesirable distributional outcomes or other negative externalities. Failure to make this distinction can lead to the unhealthy premise that all innovations are necessary for the growth and development of financial systems over time, which past and recent experience suggests is not true.

*That said, it is no easy task to move from expressions of concern about*

The real question is, thus, what should be the appropriate policy response to financial innovations. The view expressed in this note is that authorities should seek ways to preserve the benefits of innovative activities, while ensuring that new products and services that prove *harmful* are appropriately contained.

*potential harm  
from innovations  
to a concrete  
financial  
innovation policy*

Admittedly, this task is not an easy one to achieve. For one, distinguishing “beneficial” from “harmful” innovations at an early stage is by no means a straightforward exercise for policymakers; indeed, some observers, prudential supervisors among them, question even the feasibility of doing so. Second, were potentially harmful innovations to be identified, different categories of authorities (*i.e.* micro-prudential, macro-prudential, consumer protection, tax) would likely have different views as to the appropriate degree of containment. For example, products that facilitate tax avoidance may raise no safety and soundness concerns. And, as with any regulatory policy, an attempt to subject innovative activities to stricter regulatory oversight would no doubt suffer from two sets of errors – false positives and false negatives.

*At a minimum,  
authorities must  
ensure that the  
infrastructure  
needed to support  
innovative  
activities in  
finance is in place  
and functioning  
properly*

To minimise the chances that such mistakes occur the note argues that relatively greater weight should be given to ensuring that the infrastructure needed to support innovative activities is in place and functioning properly. Measures addressed to physical, legal, and human components are cited. Other elements depend on the specificities of particular types of innovations. That is, rather than seeking to impose controls on innovative products per se, authorities should seek to ensure that all participants, ranging from service providers to end-users, have the necessary capacities to engage in said activities. Of course, where shortcomings are identified, authorities must be willing to act accordingly.

The paper is organised as follows. The next major section examines financial innovations over time in the context of their influence on the financial intermediation process. The noted developments include the increase of capital market activities in intermediation and the corresponding shift in the activities of banks and other intermediaries to broader risk transformation. The difficulties associated with this process are discussed afterwards. They include the increased exposure of banks to market risks and a more general tendency towards periodic bouts of marked illiquidity, insolvency, and market misconduct.

This discussion is followed by a suggestion of measures needed to make the financial system more *accommodative* to innovative activities, which include enhancements to regulation and supervision and improvements in governance and internal controls of financial intermediaries. The following section offers reasons why this task won't be easily accomplished.

If a general conclusion is to be drawn from the discussion it is perhaps that remedial measures should be designed to address specific problems. Looking at recent history, one finds that many of the innovations in product offerings have suffered from the same market defect – a tremendous information asymmetry between the creators of the products and services and the end-users. For such issues of a consumer protection nature, the regulatory approach tends naturally to be *ex ante*, in the sense of being more proactive or preventative. Preventive measures are also generally required to avoid potential systemic instability. Otherwise, the best direction for public policy may well be *ex post* corrective measures.

## II. Policy concerns arising from financial innovations

### *Financial innovations and the intermediation process*

*Innovations in finance run the gamut in terms of policy issues*

Innovations in finance have encompassed a vast range of products and services, processes and functions. They run the gamut in terms of policy issues, so it is generally not helpful to consider them *en masse* and attempt to treat “financial innovation” as a singular issue. In this sense there can be no “financial innovation policy” per se, but rather, various policies attuned to the nature and incidence of particular innovations.

*The wide range argues for a case-by-case treatment of innovations*

By this reasoning, an optimal approach to financial innovation would examine innovations on a case-by-case basis in the context of a standardised framework that considers the financial landscape in which the innovation is introduced, the policy objectives that have been elaborated for the financial system, and the system of institutions (policy instruments) that may be drawn upon to meet those objectives.<sup>2</sup>

*History shows that many innovations, perhaps most, have been beneficial for the economy, but some innovations have had undesirable side-effects*

An impartial review of financial innovations over time would find that many innovations have been beneficial, resulting in increased choice for consumers and greater flexibility on the part of other economic agents. And while no complete accounting has been done, a valid case can probably be made that the effect of innovations for the global economy has, on net, been positive over the longer term. That said, an impartial observer would also note that there have been unexpected and undesirable side-effects associated with some new products and services. The fact that episodes of financial instability have often occurred in the wake of a change in the structural regime that reflected some form of market innovation has not gone unnoticed by advocates of stricter oversight of innovative activities in financial services.

*In addressing these concerns, authorities have sought ways to make the system more resilient*

Numerous reforms in recent decades have been introduced in response to episodes of instability. Unfortunately, many of the measures adopted, in effect, looked backwards at previous problems, while the intended target had moved off in some other direction. Crises have elements in common, but rarely the same trigger. Obviously, what is needed is something more flexible, capable of looking forward a bit more. That such a framework has not been implemented is reflected in the system’s periodic lack of resiliency.

*A number of trends and developments in the financial services industry have increased the need for greater resilience*

A number of structural developments have tended to affect the degree of resilience of the financial system, in part, by leading to increased potential for problems in individual institutions or markets to spread. Innovations in product design have blurred the distinctions between instruments and institutions, and several market segments, wholesale markets in particular, have trended towards international integration. Among other important structural changes have been the increased importance of capital markets in credit intermediation relative to banks and other traditional lenders, corresponding changes in the activities and risk profiles of financial institutions, and the related growth and development of products and markets for intermediating risks.

*Some developments can be traced to efforts at liberalisation, which allowed for increased competition across sectors and borders*

Some of these developments can be traced to efforts at liberalisation, which succeeded in boosting competition across sectors and borders. Many measures to liberalise entry and ownership restrictions and to facilitate international trade in financial services were introduced during the 1980s and 1990s. Along with changes in regulatory objectives and other aspects of the regulatory framework governing financial services, the reforms had the effect of enlarging the set of tactical and strategic manoeuvres institutions could employ in response to competitive impulses.<sup>3</sup> All told, the choices of various segments of the financial services industry have covered a range of options with regard to strategies, product mix, and organisational structures.

*A natural consequence of these developments is a change in the nature of the intermediation process...*

This ongoing change in the intermediation process is part of the normal development of financial systems over time. Banks and other loan originators specialise in lending to borrowers for which publicly available information about credit histories is lacking and in financing activities that contain a large measure of subjectivity and are difficult to assess. To survive in competitive markets, primary lenders must be able to distinguish better credit risks from poorer ones and set their loan terms accordingly. Banks, for example, are usually (though obviously not always) good at assessing credit quality in deciding whether or not to extend credit,<sup>4</sup> and in addition to higher interest charges and other fees levied on risky borrowers, banks also use non-price terms to reduce the risk of default and mitigate other agency costs.

These arrangements protect the bank's interests and also help to insulate its creditors from credit risk. In addition, regulators require depository institutions to maintain a buffer layer of capital that is subordinate to the claims of depositors and other providers of low cost funds and market forces compel banks to endeavour to maintain capital cushions above the regulatory minimum. Relatively speaking, this buffer layer of capital is expensive.<sup>5</sup>

*...which generally entails the most creditworthy borrowers shifting to capital markets, while credits that require more direct monitoring are forced to rely on banks and other traditional lenders*

A general conclusion of the academic research in this area is that borrowers whose credit risk is relatively easy to assess and for which indirect monitoring mechanisms are adequate will opt for capital market financing, while borrowers for which comparable information about credit histories is lacking will be forced to rely on banks, other intermediaries, or non-formal sources of credit. Banks, thus, tend to specialise in financing activities that require more direct monitoring mechanisms. Competition from lower cost sources of credit forces banks to operate more or less at the edge of illiquidity (as reflected in holdings of less marketable assets), typically in transactions where arm's length contracts are more difficult to specify.<sup>6</sup> Their ability to successfully provide such credit is one of the reasons why banks are special and why they are so important to the functioning of the financial system.

*Banks typically respond to this 'disintermediation' by altering their business models and product mix,*

As competition for the "best" borrowers increases, banks respond by altering their activities and product mix, which for many institutions entails taking on more complicated risks. Larger banks in particular have shifted from traditional lending against deposit liabilities to trading and market-making in various market segments, in some cases reaching out to non-traditional customers or to traditional customers but with innovative products.<sup>7</sup> Larger

*often to include entirely new products and trading strategies*

institutions increasingly have focused on the creation of new products and services to satisfy myriad needs of their clients, by transforming liquidity and maturity risks and other dimensions of financial contracts, thanks to analytical breakthroughs in modelling contingent claims and other complex instruments, which have enabled them to adopt variable holding periods for their risk exposures and to implement corresponding rapid changes in trading strategies.

*Large complex institutions have shifted from credit intermediation to risk intermediation...*

For the largest institutions, especially globally active ones, intermediation has expanded from more straightforward credit intermediation to *risk intermediation*, in which institutions make use of advanced statistical techniques and quantitative models as the basis for risk measurement and pricing, sometimes as full scale substitutes for more traditional qualitative judgments. Securities firms have also been at the centre of this intermediation landscape.

*...a strategy that relies heavily on the use of derivatives and complex models of risk*

In this context, large commercial banking organisations, their securities arms, and independent investment banks have become fairly active users of credit derivatives and other such “hedging” instruments to off-load specific credit risk exposures to other investors. As a consequence, both the scale and complexity of their funding and trading interrelationships have grown, including with counterparties that operate outside regulated segments of the financial system.<sup>8</sup> Major market participants now maintain a variety of such relationships over numerous markets in different financial instruments, currencies, and time zones.

*At the same time, banks will typically securitise a large portion of traditional credits, which may leave them holding more complicated risks*

Thanks to advances in securitisation, banks can actually transfer off their balance sheets much of the risk associated with many of the “plain-vanilla” credits they do originate (e.g., residential mortgages and certain types of consumer loans), although when market discipline functions properly, they have to retain a portion, usually the first loss, to signal the quality of the risks to potential buyers. But while some risks may be transferred to other investors, banks’ balance sheets may not necessarily be any safer than in the past, as they may well contain newer, perhaps even more complicated risks, including risks arising from the customisation of products for specific clients.

*The implications of these developments for the system as a whole are ambiguous*

What these developments mean for the system as a whole is ambiguous. Successful process innovations, such as new risk management techniques, and product innovations (the creation and introduction of new financial instruments) have the potential to facilitate a more efficient allocation of resources and, thereby, a higher level of capital productivity and economic growth. For example, new products and markets broaden the menu of financial services available to borrowers, lenders, issuers of securities, and other market participants. And improved risk measurement and risk management techniques can result in a more optimal distribution of risks throughout the system.

*The result could be a more optimal distribution of risks throughout the system...*

Certainly, the entry and broader participation of new entities in the financial system has allowed risks to be more widely spread throughout the economy, which brings some advantages. For example, compared with banks, some of the new participants have longer investment horizons and different risk management and investment objectives, which may facilitate less cyclical provision of credit. But the opposite may also be true and there are growing concerns that some new activities and participants may constitute sources of instability.

*... to the extent that risks are shifted to parties with the wherewithal to bear them*

Exposure to risk is inherent in economic activity. It is the coverage and proper management of such exposures that offers benefits to individuals, enterprises and the economy as a whole. Thus, the dispersal of risks throughout the system has benefits only to the extent that risks are shifted to parties that have the knowledge and wherewithal to bear them, and not just that risks exit the banking sector.

*Banks' balance sheets have become more dynamic in the process...*

For many banks, meanwhile, increased trading activity has significantly increased their exposure to market risk, and as *market risks* have grown in importance, the balance sheet has become more dynamic, in the sense that risk exposures can change rapidly and possibly with severe adverse consequences.

*...and the degree of leverage in the system has increased*

The risks and opportunities for failure tend to be exacerbated by the leverage associated with many new activities and by the larger numbers of players and greater degree of anonymity in today's financial markets.<sup>9</sup> For instance, some new products have involved substantially greater amounts of complexity than traditional products and proved eventually to be quite damaging.

### *Difficulties associated with the evolution of financial services*

*Usually, despite these changes, the system functions as intended...*

When functioning well, the financial system helps to produce fair, stable, and efficient market outcomes to support sustainable long-run growth of the economy. And quite often, financial markets do function properly, which means they achieve their core objective of ensuring that savings are allocated optimally among competing investment opportunities. But periodically, the financial services industry is subject to episodes of marked illiquidity, insolvency, fraud and other misconduct to the detriment of consumers and investors and the economy at large.

*...but there are periodic episodes of instability...*

*...which tend to occur in the wake of innovations*

These outcomes are not so rare in practice. Experience shows that erosion in market discipline tends to occur periodically, as market participants shun prudence in pursuit of short-term profit opportunities. Problems develop during boom periods and either manifest themselves during busts or precipitate them. Innovations have often been implicated in these developments in the sense that episodes of marked financial instability have often been preceded by some form of market innovation that altered the nature of competition and gave rise to subsequent adverse consequences.

*Various reasons account for these outcomes, including the behaviour of individuals and institutions...*

The recent near meltdown in the global financial system and the emergence of numerous other episodes in the past couple of decades in which isolated financial sector problems developed and reached crisis proportions provide a compelling argument that markets left more or less to their own devices will not always generate socially optimal outcomes. For one, individual behaviour often runs counter to the assumptions of economic theory. And perhaps more important, the behaviour of individual agents or institutions in the pursuit of their own goals does not ensure collective rationality.

*...and the fact that participants do not*

There is nothing necessarily insidious in this assertion. Economic agents may be expected to act in their own best interest, which for institutions means

*face market pressure to internalise external costs needed to protect the system*

the pursuit of profits. Market participants may be expected to manage their affairs to balance revenues against costs, which would entail taking on risks up to the point where the cost of doing so makes sense from their own point of view of their balance sheets. From each individual institution's perspective, there may be little, if any, economic incentive to internalise costs that may be associated with the protection of third parties or the system as a whole.

*Differences between private and social costs of financial activities are one of the major imperfections in financial markets*

The existence of such differences between the private and social costs of financial activities, so-called spillover effects or negative externalities, has long been recognised (at least in some quarters) as one of the important imperfections in financial markets. Other potential market imperfections can include:

- Market power imbalances, including the existence of market participants who cannot be expected to make appropriate choices for themselves and thus need protection;
- The existence of indivisibilities or pervasive economies of scale;
- The existence of public goods (*e.g.* market liquidity); and
- Information asymmetries

*The existence of market failures interferes in the proper functioning of markets...*

When market failures exist, markets may not allocate resources efficiently across space and time, may not effectively manage risk, and as a consequence, may become unstable or subject to other weaknesses. Importantly, in the presence of market failures, market discipline may not function effectively, among other things allowing risks to the system to become mispriced.

*...which may include impeding market discipline, as in the recent crisis...*

The recent crisis is a case in point. It shares with a number of previous crisis episodes a substantial build-up of leverage and accumulation of assets, in an environment characterised by very low risk spreads and high concentrations of risk, bred in this case by a long period of high growth, low real interest rates, and subdued volatility, and supported by evolutions in risk management processes and wider acceptance of instruments for credit risk transfer and various other structured products. The crisis erupted against the backdrop of a range of weaknesses, beginning with imbalances on the macroeconomic front and including flawed incentives across the range of market participants in the chain running from loan origination to distribution of securities backed by the loans.

*...in which there were failures of discipline across all participants ranging from end-investors to service providers and third-parties*

In particular, there was weak management of core risks on the part of major financial institutions, including poorly defined and weakly enforced lending limits, poor governance and internal controls, and inadequate control of operational risks.<sup>10</sup> Investors for their part performed little due diligence of their own and relied solely on credit ratings they failed to understand fully. Furthermore, without sufficient pressure from supervisors to adequately enforce proper underwriting and risk management criteria, excess leverage built up in structured investment vehicles (SIVs) and conduits. And most market participants grossly underestimated the liquidity required to support the market, part of a more general critical lack of appreciation of underlying risks, reflecting the use of complex products and off-balance sheet vehicles.



*Insufficient concerns about credit risk were at the core of the problems, motivated in some cases by the desire to accommodate demands for risk*

At the core of the problem was a mispricing of credit risk, or insufficient regard for it. Through the use of credit default swaps (CDS) and other risk transfer instruments and based on predictions of quantitative risk models, originators/sponsors were inclined toward the view that their exposures were sufficiently hedged. At the same time, the lack of any perceived concentrated risk exposures left them with too little incentive to monitor the performance of individual loans. Rather, underwriting criteria were relaxed, in part, to feed a growing demand for higher yielding securities on the part of investors and perhaps as well to facilitate tax arbitrage.<sup>11</sup> The underlying loans were then bundled, via the use of leveraged funds, and repackaged into various heterogeneous complex structures.

*The tiered structures of risks that had been built up to feed the process collapsed once the degree of mispricing of risk became evident*

Many of these structures of tiered risks began to collapse once the deterioration in the performance of subprime collateral began to surface and participants began to sense that many of the basic assumptions implicit in the underlying analysis of credit risk, such as those concerning default correlations, were inaccurate.<sup>12</sup> But securities structures had become so complex and heterogeneous that it was difficult for participants to disentangle the various layers to determine who bore what risks, at least not on the basis of standardised approaches. In that environment, market participants lacked confidence in the financial integrity of potential counterparties to the extent that credit extension and financial intermediation more generally ceased to function.

*Though unusually severe, the crisis reflects a typical pattern*

The financial crisis itself has been unusually severe by various measures. But in other respects, the recent developments actually match the historical pattern quite well. Indeed, looking backwards over time one finds many periods in which rapid growth has been spurred and supported by financial innovations, but in which the pace of growth masked key underlying risks, as innovation outpaced the capacity of managers, boards of directors, supervisors, and the market as a whole to adapt accordingly.

*Importantly, liberalisation and innovation are important for financial development, but often have hidden flaws...*

One official notes in this context that financial development depends on the liberalisation of financial markets and on innovations that improve the flow of information. Even sophisticated market participants must have sufficient information if they are to protect themselves from risks related to new products, markets, or market players. Unfortunately, liberalisation measures and financial innovations often have hidden flaws and do not solve information problems as well as markets may have assumed. When these flaws become evident, markets sometimes seize up, often with very negative consequences for the real economy.<sup>13</sup>

*...which can prove problematic when they do emerge*

The flaws associated with recent innovations derived mainly from excessive heterogeneity, complexity, and opacity, which obscured underlying risks, allowing them to build to levels grossly disproportionate to the perceived benefits.<sup>14</sup> It is important to note that the individual products themselves may not be intrinsically bad. When used appropriately, they can be useful instruments for hedging selected risk exposures. But their higher degree of complexity increases the chances for mistakes to be made, while the associated higher amounts of leverage to which they give rise act to magnify any problems that do emerge. And the risks of inappropriate use are not limited to end-investors. Financial

intermediaries may also use them inappropriately, either through mistakes in risk management or as part of deliberate risk-taking strategies. Indeed, the bubble that preceded the crisis was fed by various participants shifting into asset classes seemingly irrespective of the risks, in some cases to mimic product offerings that had proved profitable for competitors.

*Problems this time with new products included excessive complexity and opacity, which allowed risks to build to unsustainable levels*

In the end, the complexity of product design and the sheer pace of market innovations exceeded the capacity of the entire system to measure and limit risk and to manage incentive problems in the securitisation process, which was caused in large part by a general failure of many market participants, to understand fully the instruments that were created. A wide-spread lack of awareness about risk certainly increases the odds of participants making incorrect choices that precipitate problems, and in an integrated network of the sort that has come to characterise modern financial systems there is a non-trivial chance that those problems when they do emerge can become systemic.

*Properly functioning markets for new products and services take time to develop*

Looking back, it seems that new products and services can be introduced and markets for them can develop and even flourish for some time in the absence of formal enabling regulations, relying instead on the basic legal infrastructure or on the regulatory framework in place for other components of the financial system. But while new products may be introduced and gain acceptance among a broad audience, properly functioning markets for the products need some time to develop, which typically entails a less rapid process of learning and strategic adjustment.

*For example, the validity of model assumptions becomes evident only after some time has passed*

For example, market participants use models and various statistical techniques to project cash flows and estimate the risk exposures related to new financial instruments, but the true nature of these factors becomes evident only over time, through observations of behaviour under a variety of economic conditions, such as over the credit or business cycle. Problems with the infrastructure needed to support an innovation may also emerge with a delay, at which point they can threaten the health of individual institutions, markets or the system as a whole.

### ***Measures needed to enable the system to accommodate innovation***

*The current institutional framework cannot manage innovative activities in an acceptable way*

It seems, given the periodic breakdowns that have occurred, that the system does not seem especially robust to innovative activities. Authorities must find ways to protect the system against systemic risk, and must ensure proper market conduct on the part of financial service providers and adequate protection for consumers and investors, if they are to prevent problems at individual institutions and markets from propagating and to preserve public confidence in the integrity of the financial system.

*In particular, it does not seem to provide for adequate protection of consumers and*

Financial activity depends to a considerable extent on notions of trust and fairness. In particular, end-users of financial products and services – especially unsophisticated consumers and investors – find it difficult to evaluate the quality of financial products and related information. There are limits to the ability of small retail consumers and investors to protect themselves in their dealings with the financial services industry, so they generally need some form of assurance

*avoidance of systemic near-meltdowns*

that financial institutions and markets operate according to rules and procedures that are transparent and fair, in the sense of being free from manipulation, conflicts of interest, or other such shortcomings.<sup>15</sup>

*To do so effectively would require a case-by-case assessment of innovations*

The difficulty is that it does not seem possible within the current regulatory and institutional setup to accommodate innovative activities in a way that achieves the objectives of protecting consumers and the system on an ongoing basis, which means avoiding widespread delinquencies or periodic meltdowns. This note argues that two sets of measures are needed to accomplish these tasks and make the financial system more resilient. One set consists of required improvements in the infrastructure for financial services. Other measures target various types of innovations.

### ***Measures needed to prepare the system for innovative activities***

#### *Step 1: Adopt an unbiased stance*

Historically, periods of heightened innovation have often been followed by a much slower pace or even a reversal or retreat to previous norms, as subsequent failures or crises brought on, at least temporarily, strong anti-innovation sentiment among members of the general public and policymakers alike. But in time, tempers calm, memories fade, and the pace of innovation picks up anew.

*Despite periodic problems, innovations have generally been positive, on net, for economic growth and development*

This response is to be expected. Innovation is best viewed as a natural aspect of the workings of a competitive system. And despite the periodic upheavals, it is arguably the case that the effect of financial innovations has, as noted above, been positive, among other things by lowering the costs and broadening the menu of financial products and services available to ultimate savers, ultimate borrowers, and other market participants.<sup>16</sup> Moreover, customers who once were forced to remain outside the formal financial system have gained access to credit, via the availability of new lending products and distribution channels.

*Thus, authorities should not be predisposed against innovations*

Advances of this type are important if economies are to replenish themselves over time. And for that reason, authorities should refrain from adopting a negative bias against innovative activities. Of course, an unbiased stance does not mean that authorities/supervisors should not care at all about innovative activities and adopt a completely hands-off approach, whereby new financial instruments or activities are allowed to develop and spread without any official scrutiny whatsoever. The issue is where the proper line should be drawn.

#### *Step 2: Ensure that the necessary framework conditions for markets to function properly are in place*

*There are a number of important pre-requisites for the*

At the broadest level, government intervention in the financial sector seeks to ensure that the financial system supports the smooth functioning of the real economy and a large component of the fundamental regulation of financial services is generic to all parts of the economy. Basic elements include measures

*financial system to perform its functions*

to ensure that the legal system supports economic exchange by protecting property rights (through anti-fraud provisions and contract and commercial law<sup>17</sup>), establishing judicial and other enforcement mechanisms, and ensuring proper market conduct.<sup>18</sup> These measures are among the core components of a well developed infrastructure for financial services, which also includes reliable accounting, auditing, and tax systems, as well as more specific requirements at the level of individual sectors (*i.e.* banking, insurance, securities).

*But market framing rules alone are not sufficient*

All of these measures are necessary framework conditions for markets to work. But these *market framing* rules alone are not sufficient to enable a market to function properly. They must be backed by sound fiscal and macroeconomic policies and appropriate monetary controls to support sustainable aggregate economic activity and constrain major internal and external imbalances<sup>19</sup> and by a broader set of *market perfecting* measures.

*Rather, various market-perfecting measures are needed, which include various forms of regulation*

Basic anti-fraud measures typically suffice for private, bilateral contractual agreements but more intrusive regulatory requirements are introduced as the complexity of financial arrangements increases and as balance sheets of service providers become more opaque. The main components of the regulatory framework for financial services in most OECD economies generally include the following activities: (1) licensing, registration, and prudential supervision of some categories of financial institutions; (2) disclosure requirements for public offerings of securities; (3) authorisation and oversight of securities markets; (4) regulatory and supervisory procedures governing the management of financial distress events and the restructuring or exit of insolvent financial institutions; (5) regulation of anti-competitive market structures and takeover activity; and (6) regulation of market conduct.

*The challenge is link the structure to innovative activities*

The key is to link this structure to innovative activities, bearing in mind the ability of market participants to contract around regulatory hurdles. As market practices in financial services can evolve rapidly, overly detailed regulations may not be effective and may become counterproductive over the longer term. Broad regulatory principles will need to be applied in some circumstances.

*Step 3: Acknowledge that there is no one policy measure that can be considered optimal in all circumstances*

*A balanced approach is required, which means regulation and supervision in combination with competition and market pressure*

The next step in the design of a regulatory framework adapted to innovations in financial services is to accept that the issue for policy is not a choice between two polar cases of exclusive reliance on competition and market pressure (*i.e.* market discipline) on the one hand versus complete reliance on regulation and supervision on the other. Competition and market pressure are necessary for the attainment of sustainable market outcomes, but alone are rarely sufficient. But by the same token, though necessary for the attainment of stable and efficient market outcomes, regulation and supervision alone are also not sufficient.

*Both sets of measures have their role to play*

It is important for policymakers to appreciate the fact that both sets of instruments have their place in the policy repertoire. In economic parlance, they are not perfect substitutes; that is, it is not possible to make wholesale

substitutions between them and attain desired outcomes. Rather, government policy affects market outcomes in interaction with private sector behaviour and, as the *General Guidance* notes, the success of regulation as a policy instrument depends to a significant extent on encouraging proper behaviour, which requires aligning the incentives of participants with policy objectives.

*Regulation is important, but if not properly designed, could result in unforeseen consequences that precipitate wider problems*

Regulations are obviously important, but they are only one component of a full complement of measures that underpin the proper functioning of financial systems. It is important to recognise that regulation is not a panacea for problems and imperfections that arise in the financial system. For one, all official interventions in the workings of the economy have their own costs and can create distortions of market signals or have unforeseen consequences that precipitate wider problems down the road. The end result could well be efficiency losses that are at least as substantial in economic terms as the market imperfections the regulations are supposed to correct.

*For example, poorly designed regulation can distort market signals and result in net economic costs rather than net benefits*

Usually, it is improperly conceived and poorly designed regulation that results in net economic costs. This outcome sometimes results from direct effects on individual market participants or segments, but more often occurs indirectly through the distortion of market signals. And often as not, that outcome stems from ambiguous objectives. It is important to take a step back and ask again what is it that we are trying to achieve with financial policy. The answer should be a precise statement of the desired outcome, such as, improving standards of market conduct, changing the behaviour of all participants in a certain way, improving the capacity of consumers to understand the products on offer, etc. If the goal is not clear, it becomes difficult to design or implement efficient corrective measures.

*Step 4: Ensure that the policy instruments needed to achieve incentive-compatible objectives are in the toolkit*

(a) Clarify what is meant by maintaining systemic stability

*More regulation may or may not be the answer to emerging problems*

When problems do occur, it may prove to be the case that the correct policy prescription entails tighter regulatory control. But it may not and policymakers should resist taking the false comfort that comes from the view that more regulation is always the solution to market failures. Instead, policymakers should seek the right balance among policy instruments. Financial policy instruments are complementary, which means that changing one measure alone could prove to be counterproductive. All components – market discipline and regulation/supervision – must work in concert to achieve desired outcomes.

*Policy needs to start from a clear set of objectives*

As most people would agree that a principal goal of financial regulation is to promote financial system stability, that's a good place to start. In most countries some authority, be it the central bank, another entity, or a committee has a broad objective of maintaining the stability of the financial system, owing to the simple fact that if the system is not safe and stable, then it is exceedingly difficult, if not impossible, to achieve any of the other objectives. Surprisingly, considering the importance of this goal, what exactly is meant by this

commitment has often not been clearly defined.<sup>20</sup> This ambiguity has historically not been constructive.

*The place to begin is with a clear idea of what is meant by the goal of systemic stability*

Occurrences of financial instability become systemic when an event (some type of shock<sup>21</sup>) triggers reactions that are sufficiently large or widespread to produce significant adverse effects for the financial system as a whole and thereby the broader economy. Accepting this description as valid suggests that the avoidance of systemic risk requires preventing disruptions at individual institutions and markets from propagating and spilling over to disinterested third parties and the broader economy. Technically speaking, failures of individual institutions need not be causes for concern. Failures are a normal outcome of the proper functioning of a competitive economy. The failure of individual projects and at times of entire firms (even financial institutions) is one means by which competitive markets weed out weaker performers. It is the ultimate market discipline. Indeed, sustained economic growth requires that resources are reallocated in this way, shifted from activities that are no longer profitable to more productive uses.

*This goal should normally not be taken to imply zero failures*

Thus, the goal of public policy towards the financial system has to be to make the system more resilient in the wake of failures by preventing problems at individual institutions and markets from propagating and not by reducing the incidence of failure to zero.

(b) Properly address exit problems for large institutions

*The current approach seeks to prevent problems from occurring at institutions*

The current approach to protecting the financial system from the propagation of disturbances is to try to prevent serious problems from developing at individual institutions, under the premise that maintaining the health of individual institutions is the best way to ensure the health of the system or at least to preserve confidence in it.

*Special care is taken to avoid problems at large institutions...*

Inasmuch as system-wide financial crises have often occurred in the wake of a widespread loss of confidence that in turn was prompted by the failure of a major financial institution, authorities in many jurisdictions have treated prospective failures of large institutions differently from failures of small institutions. And so, while a principle of allowing poorly managed institutions to fail is fine in theory, in practice, when confronted with the potential failure of large institutions, most authorities have been reluctant to take the chance that non-intervention will work out for the economy. The so-called ‘constructive ambiguity’ regarding intervention tends to be ambiguous only with respect to small institutions, while very large institutions become perceived as “too big to fail”, out of fear of the potential risk to the system and the threat to government safety nets.

*... but such an approach can give rise to moral hazard*

The problem with this approach is that accidents that are waiting to happen eventually do. Thus, institutions that are considered too-big-to-fail most certainly will; they will just cause big problems when they do, unless procedures are in place to facilitate their winding down in an orderly fashion. Orderly, equitable, and transparent exit procedures are the counterpart to minimal entry barriers to achieve an efficient allocation of resources, from older, less productive entities to newer, more innovative ones.

*In fact, the adoption of a too-big-to-fail doctrine may encourage excess risk taking that results in more serious problems once failures do occur*

Failures of financial institutions can generate sizeable negative spillover effects if not properly managed, but it is abundantly clear that a too-big-to-fail approach gives rise to considerable moral hazard. The existence of government guarantees and other insurance mechanisms may reduce the incentives of private financial counterparties to manage the risk exposures they assume. For example, the moral hazard problem associated with explicit safety net guarantees such as deposit guarantees arises from the potential for the deposit-taking institution, the depositor, or both to be less “prudent” than might otherwise be the case, relying instead on the existence of the state-sponsored safety net to underwrite mistakes.

Similarly, the expectation of public sector intervention to ward off “systemic” losses in the event of financial difficulties of large institutions is a form of implicit safety net that may encourage some participants to hold more concentrated exposures with covered institutions than they likely would operating under an effective potential for failure.

*The threat of failure can help to minimise tendencies towards excess risk taking*

The threat of failure keeps institutions ‘honest’ by inhibiting any tendency to trend towards excessive risk. The willingness of creditors to withdraw their funds on suspicion of improper behaviour or excessive risk taking is an important component of market discipline. This component is not active if prospective creditors and counterparties have sound reasons to believe that large financial institutions will not be allowed to fail abruptly.

*It must be possible for institutions to fail, even large ones*

The obvious policy conclusion is that if market discipline is to function properly, participants must believe that it will be possible for institutions to fail, regardless of their size or degree of interconnectedness, with obvious negative consequences for creditor and investors.<sup>22</sup> The pursuit of systemic stability should not entail adopting a too-big-to-fail approach for large institutions.

It has been argued many times that, even with failures of large institutions, market principles need to be applied. They include that managers of failed institutions receive the appropriate punishment, that shareholders are forced to bear their burden of loss, and that the financial community as a whole is involved in efforts to resolve the problem. The rationale is that adherence to these principles should help to lower moral hazard and instil more discipline in the market. But, of course, under current arrangements, once an institution’s size and complexity and its degree of interconnectedness pass certain thresholds the likelihood of an abrupt exit is perceived by many participants to decline considerably.

*To make such a system operational requires a dedicated framework for the orderly unwinding of failed institutions*

The need for a dedicated framework for facilitating the orderly unwinding of financial institutions, both for entities that take deposits and for other large integrated intermediaries that operate in scale across numerous markets, has been acknowledged for some time. But few such frameworks have been introduced. Special procedures may apply for banks, but similar measures may not be available for other forms of large, complex financial organisations. There are discussions underway in a number of jurisdictions regarding measures to enable the system to cope with isolated failures of large, complex institutions (*e.g.* a rapid resolution plan). Ideally, these discussions should converge on an approach that can be made operational across jurisdictions, but the difficulties in doing so will not be easily resolved.

## (c) Establish a proper macro-prudential framework

*Focussing on individual institutions is questionable*

The second issue with current safety and soundness regulation is the mistaken premise that a focus on the behaviour of individual institutions is sufficient to ensure the health of the system as a whole. The current crisis has illustrated all too well that risks to the system can hide in the interactions between intermediaries, products, and markets, and not with particular institutions per se.

*Oversight needs to be expanded to address macro-prudential concerns, including in securities markets*

It is now a given that regulation needs to be enhanced in scope to address systemic risk. A particular concern in this context is the approach to securities market oversight, which in many jurisdictions has had a focus almost exclusively on protection of retail investors and largely through disclosure requirements. This focus is mostly the outcome of specific historical, political, and economic circumstances (especially the Great Depression). The problem with this approach is that it ignores other risks that can negatively affect the integrity of markets and the system as a whole.

*A system-wide macro-prudential approach is needed to account for risks that hide in the interface between institutions and markets*

In the run-up to the crisis, for example, many entities or products that either were exempt from regulation altogether or benefitted from a 'light touch' contributed to the mispricing of assets, excess leverage, and ultimate instability. Even products directed at sophisticated parties must be subject to proper oversight as regards their market impact. And where sophisticated investors are institutional investors, there must be proper oversight to ensure that they themselves are aware of and capable of managing the risks to which they gain exposure, in order to ensure said risks do not harm their fiduciary mandates or have broader market impacts (*e.g.* from their need to make disorderly portfolio adjustments or to withdraw altogether as sources of liquidity).

All of these changes are needed to ensure that the institutional structure of regulation is sound for all components of the regulatory framework. All components of the regulatory framework must operate according to proper mandates if the financial system is to sustainably accommodate innovations and be resilient to failures. Properly construed and enforced regulation is part of the core infrastructure that supports financial stability and innovation.

## (d) Establish a proper framework to ensure adequate protection for consumers

*And it is necessary to maintain adequate protection for retail consumers and investors...*

The potential private costs of financial instability are large (*i.e.* losses to banks' clients and shareholders), but it is the large social costs that often induce authorities to act. They include losses on the part of small depositors and investors, reduced (if any) access to credit on the part of small to medium-sized enterprises especially but borrowers in general, disruptions to payment and settlement systems, reductions in output, higher unemployment, and costs to taxpayers. As a consequence, authorities use various preventive mechanisms to ensure the stability of the system as a whole and to maintain the integrity of the payments system and public confidence in the system.

*...if the financial system is to continue to attract capital and function efficiently*

What about protecting consumers and investors? Maintaining consumer and investor confidence is necessary if the financial system is to attract capital and function efficiently. Market confidence is undermined if the financial system is not adequately protected from abuse, as trust and confidence once lost are difficult to restore. There are no obvious instruments for doing so, which



explains why authorities have had few options to address the problems faced by unsophisticated consumers/investors other than various forms of bonding arrangements (*i.e.* guarantees), which are designed to provide partial or complete protection against undue losses. The word ‘undue’ is extremely important. End-users of financial services should be protected against fraud, malpractice and other misconduct on the part of service providers. But this objective should not entail efforts to reverse errors of judgment that are committed knowingly.

*Step 5: Ensure regulators and supervisors have the requisite skills and experience*

*Regulators and supervisors will need enhanced capabilities to effectively handle the complexities of today’s financial markets*

The core elements of high-quality regulation are not limited to the policies alone. Supervisors need to develop skills and expertise in the appropriate use of regulatory instruments in order to apply them in an effective manner, which may in some cases require taking a proactive approach. Hence, the next step in the design of a framework that is capable of effectively and efficiently responding to innovations is to ensure that staffs of experienced, well-trained supervisors exist in all inter-connected jurisdictions; otherwise, the weakest among them becomes the port of entry for subsequent problems.

*This includes some mechanism to address cross-border issues*

Moreover, there is an international character to many product developments, which requires that the level of cross-border supervisory communication and coordination is commensurate with the degree of interconnectedness of markets. The recent crisis makes it clear that a better coordination mechanism is needed for all areas of cross-jurisdictional oversight.

*Supervisors must have an in-depth understanding of the activities of supervised institutions...*

The crisis also serves as a reminder of the types of conflicts of interest, governance problems, and weaknesses in risk management that can arise in large integrated financial institutions. When present, these conditions hamper the functioning of market discipline. Self-discipline also becomes less effective as problems develop within an institution, which means that increasing regulatory intervention becomes necessary. Particular challenges brought on by recent market innovations have included among other failings an overly rapid pace, a lack of transparency, complexity, and a lack of understanding of core risks.

*...which includes understanding the particulars of risk management models and internal control structures*

The requirements for supervisors to effectively monitor and address these issues are far from trivial. Supervisors need to develop as much knowledge about an institution and its risk management models and control procedures as the individuals who build the quantitative models and the members of the management team who formulate the risk management strategy in which the model plays a role. Some activities may appear to be highly profitable, but often enough that outcome may reflect the fact that some risk is either being mispriced or not priced. Supervisors need to be able to identify these cases. And they must be capable of doing so relatively quickly and flexibly under potentially rapidly changing circumstances.

*Step 6: Ensure a proper balance between regulation and governance*

*Need for proper governance and internal controls at financial institutions themselves*

The improvement in the capabilities of supervisors must work in concert with institutions' own internal controls. The relationship between regulatory policy and broader governance is critical. The success of regulation as a policy instrument depends to a significant extent on influencing behaviour, which means that regulatory policies must be complementary to other aspects of a jurisdiction's corporate governance regime. This governance structure must function properly.

In the run-up to the crisis, the weak capacity of boards to exert proper oversight of their institutions' business operations and attendant risks was at the core of the problems. Crucial information perhaps never reached the board, or the members failed to understand the risks inherent in their institution's change in business model, or were powerless to do anything to stop it. None of these possibilities is acceptable.

*Authorities need to ensure that institutions have the proper internal control mechanisms for the types of risks they assume*

It must be acknowledged that it is not the purpose of policymakers to substitute for boards and senior management of financial intermediaries. Regulated institutions are still private companies and are responsible to their shareholders. However, it is the purpose of policy to ensure that institutions internalise all costs, including the social costs associated with their own operations, their market conduct, and their behaviour vis-à-vis clients and customers. Institutions should be free to pursue their chosen business strategies (subject to shareholder and board approval), provided they take into account all costs. To wit, some activities may need to be backed by higher levels of capital support, more stringent disclosure obligations, etc., as needed to ensure adequate protection for the system.

*There are special requirements in the case of new products and services...*

Authorities need to ensure that the governance framework for an institution is appropriate for the institution's risk profile and business model. For example, the requirements for sitting on the board of a small retail institution are obviously different from those for a globally active financial group. An institution's business mix and risk appetite places important demands on the management and control structure through which it operates. Proper risk management and control processes are especially important as regards innovative activities.

*...which may be extremely complex and based on instruments that can make the balance sheet vulnerable in times of stress*

Some new products seem to be complex, but actually can be decomposed into a few simple payment streams that are themselves combinations of even more basic components. But some other new products are extremely complex. They may be based on entirely new processes; sometimes new organisational structures are also involved (e.g. SIVs and conduits), all of which can result in substantially greater levels of complexity and opacity than for similar, more traditional products. New financial products that are tailored to specific clients are often based on complex derivatives and place considerable reliance on market liquidity, arrangements that can tend to make the balance sheet vulnerable in times of stress.

*Dynamic risk exposures require an integrated approach to risk management*

The types of dynamic risk exposures that can arise in the development and distribution of new products can affect both sides of an institution's balance sheet and cut across its constituent entities, such that aggregate risk for the entity as a whole can exceed the sum of the risk exposures of individual units. In such an environment, the application of standard risk management tools for the constituent entities on a stand-alone basis likely will not suffice. Rather, institutions must have an integrated approach to risk management at a sufficiently high level in the organisational structure to manage the risks associated with new product development.

*Measures addressed to particular innovative activities*

*Even with these measures in place, failures of institutions will occur*

All of the above-mentioned measures are intended to ensure that the financial system is capable of measuring and managing risk and able to withstand periodic dislocations, either of individual markets or of the system as a whole, without teetering on the edge of collapse. But mistakes and accidents are going to happen nonetheless. Risk is an inherent aspect of financial activity and a core function of banks and other intermediaries is to price, manage and allocate risk. There is some component of risk in the system that stems from commercial activity and cannot be eliminated. The end result of attempting to make the system safe by driving all risk from regulated sectors would be to push it toward less transparent, unregulated entities or onto households, which is even less beneficial from a social or systemic stability perspective.

*The objective is not to prevent all failures; it is to attempt to moderate the amplitude of swings and prevent serious problems and harm to consumers*

The implication, of course, is that failures will occur. There is no cost-effective way to prevent all failures. What we tend to learn from crisis events is how to avoid a repetition of the very same debacle, not how to prevent them altogether. Financial markets have historically been subject to periodic booms and subsequent crashes and most likely will continue to be. Thus, the objective is not to attempt to prevent crashes, which is probably unattainable. But it should be possible to moderate the amplitude of the swings and prevent egregious errors and to better insulate retail end-users from the vagaries of institutions' mistakes. To do so requires a more focussed attention on certain types of innovative activities.

*Step 7: There should be appropriate monitoring of new products, markets, and processes*

*Authorities should develop a thorough understanding of financial innovations*

Authorities need to develop a thorough understanding of financial innovations to avoid the potential for a given innovation to cause widespread harm to consumers or prove catastrophic for the system. One of the higher principles to be observed in this context is the need for *precaution*. The *General Guidance* highlights the need for oversight of the financial system to be risk-based, which partly entails guarding against outcomes that occur with low probability but at very high costs.

*In short, new products and processes should be analysed over*

The analysis of new products and processes over time should be seen as a critical tool to facilitate authorities' understanding of financial innovations. There need be no presumption that specific action is necessary, but a failure to adapt regulation and supervision to changed market circumstances can be

*time to see if amendments to regulations are needed*

problematic. There can be a considerable delay between the introduction of a new product and the emergence of problems. Thus, a determination that an existing policy approach is sufficient should be based on a sound analytical foundation.

*The process of monitoring of new products and processes should entail consideration of a range of issues to ensure the system can remain resilient should problems emerge*

All of the measures described above in Steps 1-5 have as their focus ensuring that the system remains resilient in the wake of problems. There is a wide range of potential issues to be considered, which may include:

- What appears to be the intended target of the innovation: *e.g.* individuals (retail, high-net-worth, sophisticated); institutions (a particular category or type, cross-border, cross-sector); a particular industry or sector; infrastructure (trading platforms, clearing and settlement systems, procedures, or processes)?
- What appears to be the core purpose of the innovation: *e.g.* risk mitigation, capital relief, regulatory or tax avoidance, revenue enhancement, hedging, arbitrage, client need?
- Does the innovation result in true value added or does it represent a transfer from one entity or sector to another?
- What are the key assumptions underlying the innovation: *e.g.* existence of abundant liquidity; continued low or high interest rates, inflation, or volatility; benign macroeconomic environment?
- What is the timing of the innovation (*i.e.* in what part of the cycle is it being introduced; has it been tested under conditions of stress)?
- How does the product itself or the process used to produce it differ from traditional methods or products? Is the innovation revolutionary, or is it adaptive?<sup>23</sup>
- Is the innovation accompanied by a change in institutional structure or business models? New structures can serve multiple purposes. For example, by channelling risk positions through conduits or special purpose vehicles created solely for the purpose of unbundling and repackaging selected risks, banks were able to obtain favourable treatment under applicable accounting standards; under corporate, tax, bankruptcy, and securities laws; and under numerous banking capital regulations.<sup>24</sup>

*Part of the analysis is to gain an understanding of the motivation behind the particular innovation*

Among particular developments, micro-prudential supervisors will want to be alert to innovations that seemingly are created solely to reduce capital requirements. There are various motivations to free up capital, including passing along the benefits to shareholders in the form of increased dividend payouts or share repurchases, or simply re-deploying the capital to other more highly remunerative activities. Freeing up capital allocated to the loan book first became an issue back in the late-1980s, as banks came under regulatory scrutiny for exposures to highly leveraged borrowers. These pressures, concomitant with demands from shareholders for higher returns on equity, gave impetus to the development of the secondary market for loans.

*For banks, capital relief has been a common factor motivating innovative activities*

Securitisation is one technique by which institutions have traditionally sought a more effective use of capital. Initially, securitisation was used mainly for assets for which the costs of acquiring and distributing information to rating agencies and investors about loans and borrowers was low, reflecting the use of standardised loan underwriting criteria and advances in information technology, which made it easier to estimate default probabilities and payment patterns under a variety of economic conditions.

*Securitisation has been an oft-used technique in this regard, especially for standardised loans*

Assets such as mortgages and consumer receivables were sufficiently standardised that they could be “insured” at relatively low cost, such that most of the assurance of payment was inherent in the underlying collateral and the ability of mortgage insurers to successfully guarantee the ultimate payment of interest and principal, while issuers and servicers assured the timeliness of payments. That, at least, is how it was in the past. But financial innovations have since facilitated the use of the techniques even for very heterogeneous assets, albeit at a cost of considerable complexity and subsequent problems.

*Step 8: Adapt the regulatory system as necessary to the market environment it is intended to regulate*

*Decisions about regulatory intervention should be based on a systematic analysis of all these issues*

The decision to intervene, either to modify existing rules or to introduce new ones, should be based on a systematic analysis of these and various other issues. Where problems or concerns are found to exist, the analysis should identify whether its origins lie in the characteristics of particular market participants (including consumers and investors), in the products and services offered, or in the structure of the market.

In principle, policymakers have a range of strategies for responding to any concerns about potential negative side effects associated with particular innovations. Which approach is chosen depends in part on what regulation seeks to achieve.

*Measures are to be based in part on the incentives of market participants and end-users...*

The measures adopted should take into account the nature of the incentives of market participants and end-users through which they have to work. Different thresholds may be involved for different policy objectives; that is, some objectives may call for *ex ante* preventive measures while *ex post* corrective measures may be better for others.

*...and partly on the underlying objectives of policy, which can differ among them*

Consider the recent crisis. The degree of heterogeneity and rapid pace of introduction of new products, and the complexity of product design overwhelmed the capacity of the system to measure and limit risk and to maintain proper incentives in the securitisation process. The traditional antidote for complexity is simplicity, accompanied by enhanced transparency and disclosure. But while disclosure and transparency are important for properly functioning markets, they are not panaceas.

*Unsophisticated customers and investors have difficulty processing*

End-users of financial products and services, especially unsophisticated customers and investors, have difficulty processing financial information to evaluate the quality and perhaps even the suitability of financial products and services. Thus, there are limits in their ability to protect themselves in their dealings with financial service providers. Even the best disclosures, alone, are

*financial information, thus even the best disclosures alone are not adequate protection*

not adequate. And it is highly unlikely that more, read lengthier and possibly more detailed, disclosures are going to resolve the problem. Some products are just not suitable for unsophisticated consumers and investors. To avoid situations in which retail investors become involved with unsuitable products institutions should be “encouraged” to develop sufficient measures for client protection as part of their product development activities.

*Consequently, some authorities have taken more direct measures to ensure protection against innovations deemed unsuitable for a retail clientele...*

Different jurisdictions sometimes draw different conclusions of the exact form such encouragement should take. For example, the central bank of the United Arab Emirates (UAE) issued a recent directive to local banks requiring them to obtain the central bank’s permission before selling structured products to their retail customers. According to the directive, banks must first submit a written request to the central bank containing the relevant details and the rationale for asking for an exemption to the rule. The central bank expressed the view that it is not desirable for banks operating in the UAE to sell structured products to their retail customers, a category that in the central bank’s view includes high net worth individuals.

*...who may not fully appreciate the risks inherent in structured products*

A somewhat different approach has been adopted by the Monetary Authority of Singapore (MAS) in response to the fallout from the presumed ‘mis-selling’ of so-called Lehman Brothers “mini-bonds” to retail investors. Mini-bonds were not actually bonds in the traditional sense, but instead were ‘capital protected’ structured notes. One difficulty lies in the label – capital protected, which along with ‘principal protected’, suggests for many investors a degree of protection that is not actually provided. An investor is ensured of getting back all of his or her invested funds at maturity only with ‘guaranteed’ products, such as ‘capital guaranteed’ products, which are backed by third-party (or affiliated) insurance.

*But other authorities have opted to strengthen and enhance disclosures and introduce measures to better educate the public*

The Monetary Authority of Singapore (MAS) has reviewed the regulatory regime governing the sale and marketing of unlisted investment products following the fallout from the presumed ‘mis-selling’ of the Lehman Minibond Notes to retail investors. In March 2009, it proposed a series of measures to promote more effective disclosure, strengthen fair dealing in the sale and advisory process, educate the public and enhance MAS’ powers to investigate and take regulatory action. Some of the main proposals are as follows:

- a) Issuers will be required to prepare a short, user-friendly *Product Highlights Sheet* to promote more effective disclosure. In addition, requirements for ongoing disclosure and fair and balanced advertising will be strengthened.
- b) Financial institutions will be required to undertake an enhanced product due diligence process before selling new investment products.
- c) Representatives will be required to enhance the quality of information obtained from their customers. They will be required to provide customers with more details in their basis for recommendation and set out more clearly in a formal document why the products are suitable for them.

- d) A new category of “complex investment products” will be introduced, and subject to enhanced regulatory requirements. Financial institutions will only be able to sell a complex investment product to customers when they give customers advice on whether it is suitable for them. The prospectus, *Product Highlights Sheet*, and all marketing and advertising materials of complex investment products will carry “health warnings” that serve to alert investors that they may not easily understand the risks and features of the product and should seek to do so when their financial adviser provides them advice. The “health warning” should further include that investors should not buy the product if they are unable to fully understand the product.
- e) MAS’ powers to investigate and take regulatory action will be strengthened.

The Singapore financial services industry has already put in place some of the proposals put forward by the MAS. The Association of Banks in Singapore (ABS) in July 2009 announced a series of measures that its member banks would be adopting to further protect the interests of consumers who buy investment products. The measures include a prohibition on bank tellers referring customers to representatives for the purchase of investment products, as well as enhanced due diligence for new products. Member banks of the ABS have also adopted a seven-day cooling off period proposal for structured products with the exception of time-sensitive treasury or investment products.

*Better financial education remains necessary*

Measures such as the ones described above should help to ensure that consumers have the information they need to make appropriate choices. Of course, consumers must also have the education to understand the information that is provided, and available evidence suggests that much remains to be achieved on the financial education front. For example, surveys in OECD and other countries continue to show that consumers have low levels of financial literacy and often overestimate their skills, knowledge and awareness when it comes to credit products. The consequences of uninformed credit decisions can be disastrous, especially if the credit in question concerns a mortgage loan, which may be the single largest and perhaps the most important financial commitment an individual or household makes.

*Difficulties to be encountered when mapping policy instruments to financial innovations*

As mentioned early on in this report, regulatory frameworks in OECD countries generally endeavour to achieve three broad policy goals:

- mitigating systemic risk,
- ensuring proper market conduct, and
- ensuring adequate protection for retail borrowers and investors and other end-users of financial services.

These broad goals will typically map into a broader range of objectives at the sector level, as different functions of the financial system give rise to different sets of “micro” policy issues.<sup>25</sup> Unfortunately, no systematic way has been found to link policy objectives with policy instruments, even in static environments, and financial innovations, which change the status quo, greatly complicate this task. Among the challenges innovative activities can pose for existing regulatory structures is that a given innovation can straddle multiple policy areas.

*Functional equivalence makes it difficult to generalise among innovations...*

Form and substance problems help explain why financial regulation has historically had difficulty adjusting to the innovation process. It can be challenging in some cases to determine what regulatory entity should have oversight over products that span institutional categories, or to decide what body of regulation should apply.

*...and are especially challenging for formal rules*

Jurisprudential scholars have long considered the existence of form and substance problems, that is, situations in which financial arrangements having the same intrinsic characteristics can be represented by myriad different formal instruments, to impede the use of “rules” to regulate behaviour. Rules tend to break down in the presence of such “functional equivalence”.<sup>26</sup>

*Formal definitions apply regulatory standards to institutions or products that fall within the prescribed category...*

To understand the difficulties, it helps to consider an example, bearing in mind that it is but one of many that occur time and again in finance. Note, first, that many jurisdictions use either or both of two basic classification systems for linking financial institutions and products and services to regulatory structures: “formal” versus “functional” definitions. A formal definition creates a regulatory category and typically applies a regulatory standard on institutions or products that fall within the category. Typically, the category itself will be determined under the chartering statute for the institution involved. Rules may stipulate, for example, that only entities formally licensed as “insurers” may engage in the business of insurance. The advantage of formal definitions is that they are based for the most part on unambiguous legal requirements. The problem with formal definitions is that they are subject to a high degree of manipulation, the incentives for which are particularly acute when the definition is used as a prerequisite for imposing a regulatory burden.

*...but functionally equivalent institutions or products will be exempt from the rule*

There are numerous examples. Take the United States as a case in point. Back in the early 1980s, US regulations controlled the payment of interest on various deposits at ‘depository’ institutions (*i.e.* banks and savings and loan associations). But the restrictions did not apply to stand-alone securities firms, as they were not *formally* licensed as depository institutions. By the same token, securities firms, not being banks or thrifts, could not *technically* offer checking accounts, but that proved not to matter. A number of securities firms took advantage of the loophole in the formal definition to create money market mutual funds with check-writing privileges, using contractual agreements with partner commercial banks to gain legal access to check clearing systems. The products were *functionally* equivalent to bank checking deposits, but were not subject to the same regulatory controls on payment of interest and proved to be extremely popular among retail investors, attracting a considerable outflow of deposits from banks and thrifts, which lacked equivalent products to offer.<sup>27</sup>



*An alternative approach is the use of functional definitions to categorise financial activities*

An alternative approach to establishing regulatory jurisdiction that avoids the limitations of formal definitions is to assign financial activities to regulatory structures by means of “functional” definitions. Functional definitions establish jurisdictional boundaries most often by identifying a set of “core” characteristics for the activity or institution in question. For example, the insurance business can be said to include various core activities (*e.g.* the issuance of contingent promises) and only entities licensed as insurance companies and that are subject to and comply with the regulatory provisions governing insurers can be allowed to conduct said activities.

*Functional definitions overcome some of the shortcomings of formal definitions, but among other difficulties can be over-inclusive*

Functional definitions, thus, overcome the difficulties formal definitions have with functional equivalence. On the minus side, however, they tend in practice themselves to be indeterminate and can be over-inclusive. It can be difficult to establish firm boundaries around activities to determine whether they belong principally within one category of business versus another. Using the example of insurance once again, a functional definition based primarily on the issuance and management of contingent promises would capture a wide range of activities that are probably not the intended targets of the regulatory provisions, such as credit default swaps (CDS) to name one example.

*Consequently, functional definitions are typically bounded by a series of exceptions or exclusions*

As a consequence, functional definitions of financial activities are typically bounded by a series of exceptions or exclusions, which include among other types, numerical exclusions, sophisticated investor exemptions, and institutional carve-outs. Binding regulatory constraints open up a range of interesting possibilities in this context. There is considerable incentive for private parties to avoid regulation by having their activities fall within one or another category of legal exemptions. Hedge funds, for example, historically avoided being subject to regulatory provisions governing private investment companies by requiring initial investments well above the regulatory minimum, marketing themselves only to wealthy investors, and limiting the overall number of investors.<sup>28</sup>

*There are numerous reasons why classification schemes for financial innovations can be difficult*

In sum, classification schemes for financial innovations can be problematic for various reasons. As illustrated by the example, lists based on traditional (*i.e.* legal or regulatory) labels are problematic, as innovations are often designed with the express intent of spanning different traditional labels or avoiding them.<sup>29</sup> Lists by name are equally unhelpful because names are often used to differentiate products that are otherwise quite similar. An alternative is to use a classification scheme based on product function, but even that is no panacea as no functional scheme would avoid the complication that any single innovation is likely to involve multiple functions.<sup>30</sup> Consider, for example, a mortgage combined with a unit-linked life insurance policy; this hybrid financial product embodies banking, securities, and insurance components.

*Most efforts to resolve problems of functional equivalence rely on subjective assessments*

Classifications based on product feature can result in a system that has too many dimensions to be definitive, as most products will almost always embody multiple aspects. As a consequence, most efforts to resolve issues of functional equivalence attempt to determine the “predominant” characteristic of the transaction in question and then classify it according to that subjective assessment. One way to proceed with such an approach is to base the determination on the perceived “principal motive” behind the product or service.

*There are many possible motivations for financial innovations*

In the review by Tufano<sup>31</sup>, the list of common motivations for financial innovations includes the following:

- Innovation exists to complete inherently incomplete markets (*i.e.* unmet needs or preferences of clients);
- Innovation exists to address inherent agency concerns and information asymmetries;
- Innovation enables parties to minimise search, transactions, or marketing costs;
- Innovation is a response to taxes and regulation (*e.g.* decoupling economic ownership or exposure from legal ownership – governance and tax implications);
- Innovation is a response to globalisation and increasing risks; and
- Innovation is the result of technological shocks.

*But no one single explanation will typically apply*

But there can be other motivations and in general no single explanation will typically suffice on its own, which makes it difficult to establish conclusively which factor is “most” important.

*These difficulties aside, the proper choice for policymakers is not to walk away and admit defeat, as innovations touch on issues that are of considerable public interest*

What should policymakers do? Walk away, throw up their hands and admit defeat, and hope the market gets it right this time? The obvious answer is no. Innovations can affect financial intermediation and the effective working of the financial intermediation process is inherently a matter of public interest.<sup>32</sup> And at the end of the day, the commercial success of financial intermediaries themselves rests squarely on the effectiveness with which their activities contribute to the macro goals of mobilising and allocating savings, which is arguably the core function of the financial system. Authorities, thus, need to find ways to preserve the benefits of *positive* innovations, while curtailing the diffusion of *harmful* ones. Admittedly, this task is not an easy one to achieve and, as with any regulatory policy, a regulatory approach to financial innovation will no doubt experience two sets of errors – false positives and false negatives.

*Not all innovations are necessary for growth and development of the economy*

But authorities should not be swayed by worst-case scenarios of the “likely” adverse outcomes of subjecting financial innovations to some form of regulatory oversight. Failure to make a distinction between innovations leads to the unhealthy premise that all innovations are necessary for the growth and development of financial systems over time and, hence, to the conclusion that policy should be predisposed toward accepting all innovations as is. Past and recent experience suggests that this approach is fraught with danger.

*The benefits to the system are from ‘positive’ innovations and not from innovation per se*

The benefits to the system are not from innovation per se but, rather, from positive innovations, those that do not result in undesirable distributional outcomes or other negative externalities. While numerous innovations over the years have contributed to economic welfare, some have contributed to consumer detriment, to institutional failures and to market or systemic crashes. Most regulatory frameworks have a mandate to protect consumers and the private and social costs of major financial instability are sufficiently high that the government has a clear role as well in preserving financial stability in order to

minimise the risks and costs of widespread financial distress. Under the circumstances, the tendency should naturally be to err on the side of caution, which requires placing greater weight on up-front prevention of systemic problems as opposed to *ex post* resolution of crises. The real question is, thus, not whether there should be regulation in this area, but rather what form should it take.

#### IV. Concluding remarks

Financial markets today are characterised by rapid innovation and an evolving business environment, together with longer-term changes in customer needs and profiles. The result has been a greater array of participants, products, and distribution channels. In such an environment, regulatory measures that are overly detailed or too restrictive may induce distortions in the allocation and pricing of financial resources and may limit the ability of financial institutions to respond to changes in the competitive environment, which may render them unprofitable or unsafe. The ideal approach is to find an appropriate balance between preserving safety and soundness of the system and allowing financial institutions and markets to perform their intended risk management functions.

That approach entails first ensuring that the necessary market-framing and market-perfecting rules are in place and then establishing a proper structure for reviewing financial innovations. The first step in the process is surveillance, with a particular focus on certain red flag developments that have been linked to problems in the past. The next step involves careful analysis, which requires that regulators and supervisors have the necessary experience and skills to understand what may be complex instruments. That understanding should be considered a pre-condition for allowing a product to continue as is, without the need for official measures to ensure providers take on board all costs associated with the activity, including social costs of market or system failures. Different thresholds may be involved for different policy objectives. A given product or activity may not raise particular concerns for some objectives, but may be a serious issue for others. All objectives must be considered and some authority must take a system-wide view.

## NOTES

<sup>1</sup> Corrigan (2004).

<sup>2</sup> These criteria are the core components of OECD (2009).

<sup>3</sup> Take banking, for example. In the 1970s, prior to the reforms, commercial banking in many economies was a protected industry – government regulation shielded the industry from geographic competition, from product competition and, at least in part of the business, from pricing competition. In the product dimension, banks were insulated from competition from investment banks, insurance companies, and brokerage firms. On the liability side, there were ceilings on deposit rates. Loan markets were segmented across financial institutions and within the banking industry itself.

<sup>4</sup> But experience suggests banks are not always good at assessing credit risk, as they show a recurrent tendency to lend against collateral whose market values in the late stages of cycles are at historical highs.

<sup>5</sup> A bank with market-rate funding would have to charge the borrower a sizable mark-up attributable to capital requirements in order to provide an adequate return on equity to its shareholders. In contrast, when a borrower obtains credit directly from the capital market, the investor who buys its bonds has knowingly and willingly accepted the credit risk involved, so there is no need for that buffer layer of capital imposed on banks to protect the saver (*i.e.* depositor) on the other side of the transaction.

<sup>6</sup> Rajan (2005).

<sup>7</sup> To that end, financial institutions have engineered a host of sophisticated products, in some cases by unbundling and repackaging the risks embedded in existing products and selling them separately to customers, and in others by pooling risks from a number of products and creating new instruments based on the pool.

<sup>8</sup> As margins on more traditional investments have been competed away, newer institutions like venture capital funds and hedge funds have successfully emerged to search for excess returns in more “exotic” ways.

<sup>9</sup> See the speech by Thomas Hoenig (1996) Federal Reserve Bank of Kansas City, delivered at the World Economic Forum 1996 Annual Meeting, during the session on Rogue Traders, Risk and Regulation in the International Financial System, in Davos, Switzerland.

<sup>10</sup> Other key factors that have contributed to previous crises include for many of them weak management of core risks on the part of major financial institutions, in particular, poorly designed and weakly enforced lending limits; poor governance and internal controls; and inadequate control of operational risks. At times, there have also been problems with inadequate disclosure and lack of transparency (e.g. Enron); problems related to interdependencies across institutions and markets (e.g. LTCM), especially for institutions operating in or funding themselves across multiple jurisdictions (e.g. Continental Illinois); problems with risk management models and other innovations (e.g. LTCM); and runs on market liquidity (e.g. failure of the junk bond market). For a review, see Lumpkin (2008).

<sup>11</sup> An arbitrage incentive is created by tax treatment of interest and credit default losses that is symmetric for financial institutions, while many taxable “buy and hold” investors face higher taxes on their interest income than they can recover in the event of losses. This means that insurance against default is worth more to the buy-and-hold investor than to the financial institution selling the insurance. The price of the insurance determines how the difference is shared between the buyer and seller. It appears that the financial

institutions writing swaps were able typically to get most of the benefit. And since the derivatives contracts allow the credit risk to be separated from the time value of money component of the contractual interest rate on the security itself, a CDS is a very efficient instrument as it requires essentially no capital since there is no need to pay for the underlying security.

<sup>12</sup> For a brief discussion, see Schich (2009).

<sup>13</sup> Mishkin (2008).

<sup>14</sup> See the discussion by White (1997).

<sup>15</sup> Absent some form of assurance that clients or customers will not be unfairly exploited, savers and investors would limit the extent of their involvement in the market and the allocation of financial resources would become constrained in scale and subject to higher costs and lower investment volumes than economically optimal.

<sup>16</sup> See, for example, Rajan (2005).

<sup>17</sup> Even the most unregulated bilateral exchanges rely on contracts and their enforceability, rights to property, and anti-fraud measures.

<sup>18</sup> Even the most unregulated bilateral exchanges rely on contracts and their enforceability, rights to property, and anti-fraud measures.

<sup>19</sup> All of these measures are pre-requisites for markets to work and a key goal of financial policy is to ensure that the necessary market-framing conditions are in place and functioning properly.

<sup>20</sup> See the discussion by Schinasi (2005).

<sup>21</sup> Such shocks may originate outside the financial sector (e.g. natural disaster, macroeconomic imbalances, or political disturbances), but often enough stem from developments internal to it, which may include the sudden failure of a major participant in the financial system; a technological breakdown at a critical stage of payments or settlements; asset price misalignments; or runs on market liquidity. Such events can disrupt the normal functioning of financial markets and institutions by destroying the mutual trust required for most financial transactions to be concluded.

<sup>22</sup> See IIF (2009).

<sup>23</sup> As in most industries, in financial services one finds elements of both “innovation” (in the Schumpeterian sense of entirely new products or services) and imitation/diffusion (whereby competitors engage in research to acquire the non-patentable information embodied in a rival’s innovation, which they then imitate and follow up with the introduction of a broadly similar, if not identical, product). Imitative activities result in the broader ‘diffusion’ of the product or service. But while products offered by a given type of institution may be simply a variation on a theme of products already offered by their competitors, even a slight change in features of a given financial product can significantly alter its risk characteristics. And a given risk can have entirely different effects when part of different balance sheets.

<sup>24</sup> Banks seeking to boost their regulatory capital essentially had two approaches to follow: (1) increasing the measures of regulatory capital appearing in the numerator of their capital ratios, or (2) decreasing the regulatory measures of total risk appearing in the denominators of those expressions. Over time, banks opted increasingly for strategies that lowered measured risk and securitisation began to play an ever greater role. In practice, these strategies generally entailed repackaging credit risk positions so as to concentrate the bulk of risks in assets having the smallest expected credit loss; structuring transactions so as to avoid recourse treatment; or converting credit risk positions into instruments having lower risk weights.

Subsequently, the techniques used to securitise loans began to be applied to other assets, and thusly, collateralised bond obligations and collateralised debt obligations were created.

<sup>25</sup> While the primary goal of regulation in each sector is to limit risk-taking on the part of the particular intermediaries involved, or to ensure adequate oversight of the related products on offer, no systematic way has been found to link policy objectives to policy instruments and the regulatory tools used to control risk in each sector may differ considerably.

<sup>26</sup> In practice, when principles fail, they are replaced with rules. Conversely, when rules break down they are replaced with more flexible principles.

<sup>27</sup> The official response to the growth of money funds included passage of the Monetary Control Act of 1980 and the Garn-St. Germain Act of 1982, which along with other regulatory provisions, eliminated many of the interest rate and term restrictions on banks' and thrifts' retail deposits, effectively allowing both types of institutions to offer products with similar rate and liquidity provisions as money market funds.

<sup>28</sup> See Schich (2007).

<sup>29</sup> In fact, various derivatives contracts, including swaps, options and structured notes are often designed with the express purpose of creating unregulated transactions that are economically equivalent to their regulated counterparts or to fall under the purview of one regulatory regime versus another.

<sup>30</sup> Among the functions financial products serve are: reallocating risk; increasing liquidity; reducing agency costs; reducing transactions costs; reducing taxes; circumventing regulatory constraints; moving funds across space and time; managing risks; extracting and disseminating information; facilitating the sale or purchase of goods and services.

<sup>31</sup> Tufano (2002).

<sup>32</sup> Corrigan (2004).

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