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What financial system for the 21st century?

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Introduction

It is a pleasure to be back at the BIS and a great honour to deliver the Per Jacobsson Memorial Lecture. Allow me to begin by remembering the man who stood at this lectern a year ago – our common and much-missed friend, Tommaso Padoa-Schioppa. His wisdom touched and enlightened all of us in this room. He was at heart a central banker, but in the course of an incredibly varied and distinguished career, he had many other roles. He was probably proudest of the key part he played in European Monetary Union, initially as a senior official of the European Commission, then as rapporteur for the Delors Committee, and later as a founder board member of the European Central Bank; but always as a persuasive advocate of European integration.

In addition, he was a securities regulator, a Minister of Finance, Chairman of the International Monetary and Financial Committee, Chairman of the Basel Committee, Chairman of the Committee on Payment and Settlement Systems, Chairman of the Trustees of the International Accounting Standards Board, and much else besides. Indeed, as I remarked in introducing him last year, if he had held all his roles at the same time, he would have been entitled to eight seats in the Financial Stability Board.

Tommaso Padoa-Schioppa was by conviction an internationalist, by temperament an academic, and by profession a policy-maker. His lecture last year exhibited all these perspectives in extraordinary measure. It painted on a broad canvas. His assessment of the financial crisis included a penetrating analysis of the limitations of the post-Westphalian model of state

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sovereignty in an integrated world economy. On this philosophical basis, he then drew conclusions for the way in which governments and markets interact in the current global system of shared monetary and economic decision making.

Like Tommaso, I will try in this lecture to go beyond the immediate debate on regulatory reforms to consider some more general issues. My topic is the principles that should underpin the financial system for the medium- and longer-term future. This means asking what basic functions we expect an efficient and stable financial system to perform, and how such a system adds value to the real economy. It means dealing with the system's apparent tendency to instability in ways that strengthen, rather than weaken, its contribution to optimal resource allocation. And it means exploring the appropriate balance between market discipline, regulation and public sector intervention. In the course of these remarks, I will try to expand the current debate in two directions: first, to encompass the whole financial system, and not simply the banking sector; and second, to ask not just what we want the financial system to avoid (namely, periodic crises) but also what we want it to achieve (the best way of adding value to the real economy).

The financial crisis that began nearly four years ago has raised fundamental questions about how the financial industry is structured, managed and regulated. Given the depth of the crisis, and the enormous economic and social costs of the ensuing recession, this comes as no surprise. In the public square, there is anger and resentment. Anger, that the sector that is supposed to facilitate the efficient working of the rest of the economy should be subject to such spectacular flaws and impose such large costs. And resentment, that those who appear most directly responsible for the crisis should be let off so lightly. As a result, much of the response to the crisis has focused on preventing at all costs a repetition, and responding to the public's desire that banks and bankers pay a price for their past failures.

But while anger and resentment may be useful spurs to action, they are much less helpful in shaping a balanced response to the crisis that both safeguards society against financial fragility and preserves the contribution that the financial sector makes to high-quality sustainable growth. For such a response, I believe we need not just an analysis of the weaknesses that led to the crisis and of the measures that would prevent a recurrence, but also an understanding of the contribution we expect from a well-functioning financial sector and the fundamental requirements that underlie it. Let me begin, therefore, by defining what I mean by the financial system.

The nature of the financial system

The financial system is more than just the institutions that facilitate payments and extend credit. It can be thought of as encompassing all those functions that direct real resources to

their ultimate uses. In this sense, it is the central nervous system of a market economy. The financial sector contains a number of separate, though interdependent, components, all of which are essential to its effective working. One is the set of *intermediaries* (such as banks and insurance companies) which act as principals in assuming liabilities and acquiring claims. A second is the *markets* in which claims are exchanged. These include those for equity and fixed interest securities, but also exchanges or over-the-counter markets for foreign currencies, commodities and derivative contracts. And a third is the *infrastructure* necessary for the effective interaction of intermediaries and markets. Infrastructure includes, most obviously, securities exchanges, and payment and settlement systems. But it also includes the mechanisms that provide contractual certainty, and that generate and verify the information on which efficient financial intermediation depends. This would include, for example, credit ratings, accounting, auditing and financial analysis, as well as the supervisory and regulatory framework.

The three components, intermediaries, markets and infrastructure, are inextricably intertwined. Intermediaries need infrastructures to exchange claims securely, and they need markets in which to hedge the risks arising from their intermediation activities. Markets only function efficiently when strong institutions are available to provide liquidity, and information providers support efficient price discovery. More generally, as I will explore later, the various components of the financial system work together to improve the information available to guide the allocation of resources. High-quality information is the raw material for directing resources to their most efficient use, facilitating intertemporal contracts, and thus strengthening growth potential. Financial sector reform, to be of greatest service to users of financial services, should protect and enhance the capacity of the system to generate such information.

The contribution of the financial sector

In the wake of the recent crisis, it is perhaps not surprising that many have focused on the capacity of the financial sector, and banks in particular, to impose negative externalities on the rest of the economy (Haldane, 2010). Such negative externalities encompass both the direct fiscal costs of supporting financial institutions at risk of failure, and the indirect costs from the recessions that almost invariably accompany large-scale financial distress. If costly crises are seen as the financial sector's main impact on the rest of the economy, it follows that more or less any actions to limit risk-taking by financial institutions can be justified.

In fact, of course, a well-functioning financial system plays an essential role in generating high levels of saving, promoting the efficient allocation of investment, and smoothing economic fluctuations stemming from non-financial causes. By facilitating informed risk-taking, it is a key element in achieving optimal levels of productivity growth, and rising living standards. The

importance of this contribution can be seen in the divergence in economic performance between countries with open and those with repressed financial systems (Caprio and Honohan, 2001). Such a comparison suggests that the contribution of finance to economic performance should be measured by the enhancement of total factor productivity to which the financial system gives rise. It is, however, extraordinarily difficult to quantify this, and to disentangle the individual contributions made by different aspects of the financial system. Still, this does not prevent identifying some of the ways in which the effectiveness of the financial sector is likely to be related to economic performance.

The first, and least controversial, is in the provision of a payment system. No market economy can function without a payment system, and it has long been accepted that banks are the most efficient way of providing this. Some have tended to see this function of the banking system as uniquely important, and the only one that needs to be protected by public policy intervention. This is the fundamental starting point of the “narrow banking” school, whose advocates argue that if the payment mechanism is fully protected, there is no special public interest in how the rest of the financial system is organised.

Insulating the payment system, however, does not by itself guarantee either the stability or the efficiency of the credit supply mechanism. Typically, it is interruptions in credit supply that transmit financial stress to the real economy. And it is inefficiencies in credit allocation that hold economies back from achieving optimal growth. Bubbles and their subsequent bursting are the most obvious manifestation of this.

But more than just being a channel for credit intermediation and making payments, the financial system adds value in at least three other substantive ways. *First*, by converting illiquid and uncertain claims into liabilities that better match the asset-holding preferences of savers, a financial system can both add to the liquidity of non-financial sectors, and increase the overall level of saving within an economy. Maturity transformation is a key way in which the financial system adds value to the rest of the economy, but, as we have seen in the recent crisis, the leverage with which it is typically associated can also be a major source of vulnerability. In designing a financial system for the 21st century, therefore, we should seek to preserve the benefits of maturity transformation for users of financial services, while at the same time making the system robust to a unexpected erosion of liquidity, caused for example by sudden loss of confidence.

Second, and perhaps most important, the financial system is the basic way in which an exchange economy deals with problems of asymmetric information. The extension of credit from ultimate lenders to ultimate borrowers is rife with asymmetric information. Before a loan is made, *adverse selection* results from the fact that a potential borrower has better information than a potential lender about the risks and returns from an investment. After a

loan is made, *moral hazard* can result in the interests of the borrower and lender diverging. Taken together, these factors result in a reduction of intertemporal contracting, lower levels of investment and the sub-optimal allocation of resources.

The growth of a financial system is the social mechanism for overcoming problems of asymmetric information and thus permitting a higher level of utility-enhancing exchange. A bank or other intermediary interposes itself between ultimate borrowers and ultimate lenders who would otherwise be discouraged from contracting by asymmetric information. The financial intermediary does this by putting its own capital at risk. Its *incentive* to do so is the spread it makes between borrowing and lending rates. Its *ability* to do so comes from the specialised resources it can apply, as a “delegated monitor” (Diamond, 1984), to assess credit risks, and to enforce restrictions on borrower behaviour. A financial institution can survive and prosper if the value of the additional information it generates exceeds its cost, and if it is able to derive private value from this information.

The interposition of a financial intermediary is not the only way of transforming maturities, or generating information on creditworthiness. Securities markets can perform a similar function. Just as with banks, however, the effectiveness of securities markets relies on the availability of high-quality information. Also like banks, information will only become available if those that generate it are compensated for the costs of doing so. In securities markets, however, information provision can be impeded by “free rider” problems, about which I will have more to say later. And although specialised information providers, such as the accounting profession and rating agencies, attest to valuations and creditworthiness, they can be subject to conflicts of interest, as we have seen. Moreover, excessive reliance on external information providers can nurture “herding” behaviour. A central role therefore remains for the proprietary activities of trading entities, whose individual views combine to reveal a fair market price. Having a multiplicity of strong institutions making continuous prices is an essential component of efficient capital markets.

A *third* way in which the financial system can promote high-quality growth is by providing a means of hedging against some of the uncertainties of investment. We know that physical loss insurance is a necessary backstop for virtually all real economic activity. Without such insurance, uncertainty would result in a reduction in productive investment and lower rates of economic growth. In addition, however, financial risks in high-value projects can be productively hedged through the use of derivative instruments. These include standardised products to cover interest and exchange rate risk, as well as the risk of commodity price fluctuations. They may also include customised structured products to cover more complex or idiosyncratic risk. It will be important that a reformed financial system does not place obstacles in the way of the appropriate use of instruments that reduce financial risk.

Ensuring prudent financial intermediation

In recent decades, as financial markets became more sophisticated and “complete” (in the technical sense), it came to be believed that market forces could provide sufficiently powerful incentives for financial intermediation to be conducted both efficiently and prudently. It is worth examining why this was thought to be the case, before considering why the paradigm turned out to be flawed.

When financial institutions accept risk on their balance sheets, the interests of stakeholders, working through corporate governance mechanisms, ought to ensure that risks are undertaken consciously and managed prudently. Shareholders, as owners, should insist on high standards of loan underwriting, strong risk management and controls, and an adequate capital cushion to maintain franchise values through all phases of the financial cycle. Prudent risk management by managers of financial institutions would result, and would prevent excessive leverage. In addition, leverage should be constrained by the self-interest of providers of funds. Lenders to financial institutions, whether depositors or holders of debt, should penalise intermediaries that run excessive risks and/or hold too-thin capital cushions.

In securities markets, the mechanisms through which information on financial value is provided should, in an ideal world, provide incentives for quality maintenance. Behind this is the assumption that the long-term value of reputation exceeds any short-term advantage from exploiting information asymmetries. For example, loan originators that supply loans for purchase by third party institutions will increase their franchise value by acquiring and maintaining a reputation for high-quality underwriting standards. Similarly, securitisers of asset-backed securities derive value from a reputation for the quality and transparency of the structures they create. Rating agencies, accounting firms, securities analysts and others all have a long-term interest in gaining a reputation for providing information on which others can rely in making financial judgments.

Clearly, in the recent financial crisis, the financial system did not function in the way just outlined. To simplify somewhat, market mechanisms failed because of perverse incentives, asymmetric information and conflicts of interest. This perspective can be instructive in designing a structural framework for a post-crisis world. Robust reforms will be those that deal with the sources of market failure, while unintended consequences are likely to flow from solutions that simply aim to thwart market outcomes perceived to be problematic.

A first weakness in the market model is the assumption that stakeholders in financial institutions (shareholders, lenders, managers) face incentives that consistently encourage prudent behaviour. The most obvious departure from this assumption is the existence of formal or informal guarantees on the liabilities of financial institutions. These guarantees, introduced

for the understandable reason of avoiding financial panic, considerably weaken the external constraints on leverage. If providers of funds believe they are protected from downside risks, it becomes much easier for managers of financial institutions to expand their balance sheet by taking on additional credit and liquidity risk.

Of course, financial institutions should still be constrained by the internal incentive to preserve their franchise value. However, several factors combine to make this internal constraint weaker in practice than it seems in theory. For example, limited liability means that the downside of a return distribution is curtailed, while leverage can augment the upside. Equity market pressures may push financial managers to exploit potential asymmetries in expected returns. Even if this were not the case, it is notoriously difficult to align the incentives of agents with those of principals, particularly in finance, where long time horizons are needed to judge the effectiveness of a risk-taking strategy, and where asymmetry of information between insiders and outsiders is acute. Finally, risk perceptions may be warped by “disaster myopia”, or a tendency to discount low likelihood events that have not occurred for many decades.

Whatever the mix of underlying causes, however, it is clear that a number of financial institutions succumbed to the temptation to underestimate the risks involved in high leverage and/or rapid expansion of lending activities. Those that did not succumb in this way required fortitude to watch their market share decline over a prolonged period in which the riskier strategies of others gained acclaim by stock markets and outside commentators.

It is also clear that the incentives to high-quality information provision were too weak to overcome conflicts of interest. In the United States, for example, the value attached to quality in mortgage origination seems to have been small relative to the benefits individual mortgage originators derived from high sales volume. As a result, the purchasers of asset-backed securities were misled, perhaps willingly so, about the prospective income streams underlying the securities they were acquiring. Earlier, in the tech bubble and the Enron episode, the judgments of auditors, analysts and rating agencies were also undermined by pressure to generate business. It seems to be the case that, in good times, users of financial information become inclined to employ “short-cuts”, using easily available data such as credit ratings, or recent historical experience, as a substitute for the more in-depth credit analysis that is needed for the careful management of a portfolio.

Promoting stability and maintaining efficiency

I turn now to the principles that should underlie reforms to deal with the weaknesses exposed by the crisis, while preserving, and if possible enhancing, the unique contribution that finance can make to material well-being. These principles should apply not only to the current environment, but to the financial and economic landscape as it may evolve over time. In

particular, they should be consistent with an increasingly integrated world economy, in which national borders play a smaller and smaller role in the organisation of economic activity. They should also be consistent with a world in which reconciling the financing needs of governments with the availability of credit to the market economy is almost certain, unfortunately, to be a continuing challenge.

I will group my remarks under six headings: (i) the problem of “too big to fail”; (ii) capital and liquidity standards at financial institutions; (iii) systemic instability and pro-cyclicality; (iv) improving efficiency of capital markets; (v) infrastructure; and (vi) the role of public sector intervention.

(i) Too big to fail

The existence of institutions that are perceived as too big (or too important) to be allowed to fail can enhance the incentives to socially undesirable risk-taking. As a result, economic distortions are created while such institutions are active, and a potential charge on taxpayers arises when they run into difficulties. Prudently managed and successful enterprises are penalised by comparison. It should not be difficult to agree on the principle that all institutions in a competitive market economy should face the threat of failure as a result of bad business judgment (King, 2010). Indeed it will not be possible to say that a financial system is fit for its 21st century purpose until the anomaly of “too big to fail” is removed.

To make the threat of failure credible, however, it must be possible for all financial institutions, no matter how large or complex, to be sold, merged or wound down without creating unacceptable risk to the broader economy. This is not the case at the moment. Standard bankruptcy procedures are not well-suited for financial institutions. A financial institution cannot function in bankruptcy in the same way as a commercial enterprise. It cannot obtain temporary protection from its creditors, because access by creditors is its *raison d’être*. Moreover, large financial institutions play such a pivotal role in their respective economies, that governments may be reluctant to accept the consequences of their failure.

There are, in my view, four key prerequisites of an acceptable regime that maintains market discipline while permitting the orderly winding down of a failing institution: (i) imposing losses on stakeholders that are predictable and consistent with the avoidance of moral hazard; (ii) avoiding significant damage to “innocent bystanders”, especially when this would provoke a loss of confidence in otherwise sound financial institutions; (iii) minimising the ultimate costs borne by taxpayers; and (iv) sharing equitably across countries the residual burden of resolving troubled institutions that have international operations.

To meet these prerequisites, a specialised resolution regime for large financial institutions needs to be developed. What is important in this connection is not only that there is a regime

for resolving institutions in difficulty, but that market participants believe it can be activated without unacceptable damage to the rest of the economy. There are by now a number of proposals for dealing with systemic distress which aim to meet the prerequisites outlined above (Title II of Dodd Frank, 2010; Jackson et al 2011). In addition, many jurisdictions are requiring financial institutions to develop recovery and resolution plans (“living wills”) to facilitate dealing with stress, should it arise. This work gives reason for hope that, with focused effort, the anomaly of “too big to fail”, at least for domestically-oriented institutions, can be dealt with.

Cross-border financial institutions pose more of a challenge, given divergences in national legal systems and bankruptcy regimes, and the responsibility of national regulators to protect first their domestic financial systems. But work is taking place under the auspices of the Financial Stability Board on how to deal with the issues that arise for institutions with major cross-border activities. None of this will be easy. But preliminary analysis (Tucker, 2010) suggests that, with political will, solutions are reachable which would enable an internationally active financial institution to be wound down in a manner consistent with the prerequisites I outlined above. This is a prize worth striving for.

(ii) Capital and liquidity standards

Capital and liquidity in many financial institutions were clearly inadequate in the run-up to the recent crisis. While the abolition of “too big to fail” will encourage banks to hold higher capital and liquidity cushions, it would be unrealistic to expect this factor alone to be sufficient to provide adequate protection against a systemic crisis. There is thus little dispute that regulatory intervention is needed to achieve desirable levels of system-wide capital and liquidity.

I will not attempt here to assess whether the requirements set out last year by the Basel Committee (BCBS, December 2010) are the right ones. They certainly represent a major strengthening of pre-existing standards. The combination of increased ratios, higher risk weighting of assets and higher quality of capital should make the overall banking system considerably more resilient than before the crisis. Indeed, the minimum level of equity capital required under Basel III is some five times that required under Basel I. Even so, some have called for going further (eg, Miles et al, 2011, Goldstein, 2011 and references therein). Their argument is twofold: (i) that the new Basel proposals may still not be enough to prevent banks encountering difficulties if a crisis is large enough; and (ii) that equity capital should not be regarded as an expensive source of funding for banks, and therefore raising capital requirements would not have a material adverse effect on the rest of the economy (Admati et al, 2010).

The size of crisis we should expect the financial sector to be able to withstand is a matter of judgment that I will address a little later. With regard to the cost issue, the Modigliani-Miller

theorem (Modigliani and Miller, 1958), which is well-accepted in the finance literature, states that funding costs should be invariant to liability structure. It is generally acknowledged that the Modigliani-Miller theorem does not hold precisely, both because of asymmetric information and due to tax considerations, but there is some dispute about how significant the departure is in practice. The IIF argues (IIF, 2010) that an increase in bank funding costs as a result of higher capital requirements could be significant. And securities analysts largely share the assessment that capital is a relatively costly source of funding (UBS, 2011, Oppenheimer, 2011). Most academic studies, however, (Admati et al, 2010, Kashyap et al, 2010, BIS, 2010) find that additional intermediation costs are likely to be of the order of 10-40 basis points or so. If these latter estimates are correct, and if they were the only costs, it would seem like a small price to pay for additional security.

Still, we need to think about the issue from the viewpoint of the financial system as a whole, not just banks. We should be careful that greater safety in banking is not purchased at the cost of reduced efficiency or additional risks elsewhere in the system. Even a modest rise in the intermediation margin for banks can serve as a significant incentive to find credit channels not subject to such costs. (Remember, financial engineering is often driven by potential savings much smaller than 10-40 basis points.)

By pushing intermediation into less regulated channels, (the so-called “shadow banking system”) risks may migrate to areas less amenable to monitoring by regulators. In addition, these alternative channels of finance, utilising capital market mechanisms, may be more subject to free rider problems. The diversion of intermediation into the shadow banking system may thus tend to deplete the pool of information generated by banks in making credit allocation decisions. Lastly, as we have recently been reminded, capital markets are themselves by no means immune to “runs”. In their own way these can be just as damaging as conventional bank runs.

None of this constitutes an argument against suitable capital regulation for banks. Rather, it argues for ensuring that interventions to limit leverage and risk-taking in the banking sector are proportionate, carefully weighed, and do not indirectly subsidise similar activities in other parts of the financial system.

More generally, essential though equity capital is in the prudent management of financial institutions, it would be a mistake to focus only on capital holding as a protection against potential distress. Other factors, particularly the quality of loan portfolios, seem to be a better predictor of financial strains. By focusing on capital as the main protection against threat of failure, attention may be diverted away from the equally important protections provided by strong loan-underwriting standards, loan book diversification and robust hedging. These factors, which generally fall under Pillar II of the Basel rules, are harder to capture in a measure

of risk-weighted assets. They may be even more important, however. They point to the need for *quantitative* capital standards, under Pillar I, to be accompanied by *qualitative* efforts to improve risk capture through continuous efforts to ensure that risk weightings appropriately reflect the underlying riskiness of an overall portfolio.

Similar observations apply to liquidity standards. Liquidity before the crisis was poorly managed by too many institutions. Thus, nobody doubts that minimum liquidity requirements can be helpful in supporting prudent balance sheet management and maintaining a level playing field. But one of the social functions of banks is to be a net liquidity provider to the rest of the economy. External regulatory constraints should be consistent with this function. It involves more than observing quantitative ratios. Judgment is needed to take adequate account of the specific characteristics and vulnerability of particular portfolios. Moreover, capital and liquidity cannot be considered in isolation from each other. Earlier Basel exercises can be faulted for the implicit assumption that adequate capital would ensure access to funding. It would be just as much a mistake to assume that capital adequacy makes no contribution to the availability of liquidity.

(iii) Systemic instability and procyclicality

Systemic instability differs from the fragility of individual institutions in that it focuses on vulnerabilities stemming from interlinkages in the financial system (BIS, 1986). These interlinkages have undoubtedly grown as a result of the growth of transactions within the financial sector and the globalisation of financial activity. The repercussions of subprime mortgage problems in the United States, for example, were felt in markets in Europe and elsewhere. A modern financial structure will have to accept increased interdependence while providing protection against the heightened vulnerability to the propagation of systemic stress.

Particular examples of systemic vulnerability can derive from either (i) common positions taken by a large number of institutions simultaneously (real estate exposure in the run-up to the present crisis would be an example); or (ii) the interconnectedness of financial institutions as counterparties. Both of these sources of vulnerability are, by their nature, less visible to an individual market participant than they are to a supervisor with the capacity to monitor the combined effect of exposures. To reduce the threat of systemic instability, ways will have to be found of more effectively identifying and influencing the build-up of aggregate risk positions in the financial system as a whole.

Common positions (or “crowded trades”) have been a source of financial system vulnerability since at least the time of the tulip and South Sea bubbles. The risks of such positions during periods of rising prices are masked by the increase in collateral values, the apparent liquidity of markets and the perception that “this time is different” (Reinhart and Rogoff, 2009). Individual

market participants are aware of their own exposures, but do not have full information on the positions of others. Regulators and supervisors should be in a better position to judge the size of common exposures, and the extent to which individual intermediaries are interconnected. A useful safeguard against excessive risk could be provided by making such knowledge publicly available (at an aggregate level to preserve the confidentiality of proprietary information). Once again, better information will be key to helping the financial system perform its functions efficiently and safely. In addition, when “crowded trades” reach a point at which a potential unwinding threatens to become disruptive, constraints, say in the form of additional capital requirements, may be useful to slow further speculative activity.

Procyclicality, a phenomenon initially investigated by researchers at the BIS (Borio et al, 2001), describes the apparent tendency of the financial sector to amplify the economic cycle by providing easier credit during booms and restricting credit availability during downturns. It is exacerbated by interlinkages in the financial system and is rooted in both psychological and objective economic factors. The tendency toward herd behaviour can provoke cycles of “greed and fear”. More objectively, in periods of economic expansion, net worth and collateral values increase, creating both the room and the incentive to leverage new wealth with additional credit creation. The process goes into reverse during downturns, often with disastrous consequences. There is increasing recognition that financial policy should try to limit, or at least avoid intensifying, procyclicality. One way of doing this would be to make credit extension progressively harder as a credit-fuelled boom proceeds. This could be achieved, for example, by increasing the cost of asset purchases on margin, or by requiring credit-extending institutions to hold a greater margin of capital against incremental lending (“countercyclical capital surcharges”). To be effective and non-distorting, however, care would have to be taken that such charges were general enough not to simply shift intermediation to other channels or overseas.

(iv) Strengthening efficiency in capital markets

As noted earlier, financial intermediaries are only one element of an effectively functioning financial system, and only one channel of credit intermediation. It seems highly likely that capital markets will continue to play a large and a growing role in the credit supply process. This is wholly appropriate. Longer-term investment in capital formation requires long-term sources of funds, which are more suitably provided from long-term savings than through short-term deposits with banks.

For capital markets to operate with maximum efficiency, there needs to be a supply of information that enables investors to have confidence in securities’ valuations, both in the primary and secondary markets. It is these valuations that ultimately guide the allocation of real resources. Information provision in securities markets can, however, suffer from “free rider”

problems. For example, research on securities valuations, once made available to one market participant, quickly becomes available to all. This means that the social value of the information generated by such research will typically exceed the private benefit. As a result, there may be a sub-optimal level of information provision and inefficient price discovery. To deal with the free rider problem it will be important for new financial arrangements to preserve the incentives for market participants to generate information on financial values and act upon it.

This, in turn, suggests a number of key prerequisites. Most importantly, there need to be opportunities for informed position-taking by a diversity of market participants with the ability and incentive to generate information on securities values. Public opinion often reacts adversely to activities that are labelled “speculation”. As economists know, however, the ability to back market judgment by buying when prices are thought to be unsustainably low, and selling when prices are unsustainably high, has positive consequences for market efficiency and stability. Short-selling is particularly disparaged, but in practice is an essential component of efficient price discovery. A modern financial structure should naturally prevent abuses of market power, but should preserve a place for position-taking.

Capital markets also need institutions, both to help attest to the value of the securities brought to market, and to take trading positions based on proprietary research. These activities are central to enhancing information and improving the price discovery process. They contribute to stabilising prices and improving the environment for saving and investment. But it is key that trading, and financial activity more generally, is not tainted by conflicts of interest. Conflicts of interest are of concern, both on moral grounds, because they undermine basic concepts of “fairness” and trust on which financial activity depends, and more generally because conflicts of interest have the capacity to distort the way in which financial information becomes available (Crockett et al, 2003). It is in the long-term interest of both the financial services sector, and the wider economy which it serves, to find ways of neutralising potential conflicts of interest.

Conflicts of interest arise in any transaction in which one party has multiple objectives. They are far from unique to financial services, but are of particular concern in finance, given the difficulties of establishing with confidence the value of the instruments being exchanged. Financial decision makers will have a duty of care to clients and counterparties, an obligation to act in the best interest of their employer and, often, a personal stake in the outcome of a transaction.

Conflicts of interest in financial services have, over the years, spawned various techniques to alleviate them. The common thread linking these techniques has been the effort to increase the quantity and quality of information. Amongst the earliest were the emergence of independent auditors, and the growth of rating agencies. These were intended to substitute independent judgments for those coming from conflicted parties. Regulatory agencies have also developed

rules covering transparency and information sharing, designed to protect the users of financial services from the exploitation of conflicts of interest.

Enlightened financial firms realise that measures to protect users of financial services and to enhance transparency are ultimately helpful in strengthening confidence in financial intermediation and promoting greater use of financial services. A 21st century financial system will need to seek ways in which regulatory oversight complements (and does not simply substitute for) the interest of the private sector in generating high-quality information. In this endeavour, transparency is generally likely to be more effective than rules that provide for how particular services can be provided and charged for.

(v) Infrastructure

I said at the outset that infrastructure was one of the three components of the financial ecosystem. Indeed, financial infrastructure, like physical infrastructure in the real economy, is the element that links and facilitates the working of the rest of the system. It follows, therefore, that ensuring an efficient infrastructure is a *sine qua non* for a well-functioning financial system.

Perhaps the most obvious element of financial infrastructure is the mechanism for effecting payment and settlement of transactions. There is now considerable agreement that the use of central counterparties and real-time gross settlement of transactions have the capacity not only to greatly reduce exposures within the financial system, but to deal with the problem that market participants did not fully understand where their ultimate exposures lay. Still, it needs to be recognised that use of central clearing and settlement can also concentrate risk, something that makes the oversight of centralised counterparties particularly important. Also, a proliferation of central counterparties has the potential to increase settlement risk by comparison with fully netted bilateral exposures (Duffie and Zhu, 2010).

But infrastructure needs to be construed more widely than just the smooth settlement of financial transactions. Just as important is the network of arrangements that enable contracts to be undertaken on the basis of legal certainty and high-quality information. Relevant in this connection are confidence in contractual obligations (including, in particular, confidence about what happens in the case of *non*-fulfilment of a contract's original terms); the reliability of the information on which transactions are based; and the quality of regulation and supervision of the overall financial system.

An agenda to improve the financial system will need to address each of these issues. As I have already noted, much more needs to be done to develop a relevant legal framework to deal with financial institutions facing stress. Informational reliability is impaired by conflicts of interest, which are most obvious in the financing model of rating agencies, but are by no means confined to them. And financial regulation faces the problems of (i) reconciling national jurisdiction with

the global reach of the financial industry; and (ii) combining the need for discretion to address unpredictable events with the clarity the industry needs to function efficiently. The success with which these challenges are met will be an important determinant of how well the financial system of the future serves the needs of the wider economy.

(vi) The role of public sector intervention

Lastly, in this list of principles for a modern financial system, I turn to what role the public sector should play in dealing with potential financial distress. Past rescues were motivated by fears of systemic disruption. However justified these may have seemed at the time, repeated interventions have generated justified concerns about moral hazard, and a belief that the cumulative distortions that are created are both unfair and costly.

So does the avoidance of moral hazard mean that under no circumstances should governmental assistance be made available to the financial sector, and that financial institutions should self-insure against all potential eventualities? Such a view certainly reflects popular opinion following the financial crisis. And, as I have argued, there is a compelling case for ending “too big to fail”. Still, for several reasons, it is worth pausing to consider whether a fully “hands-off” policy is optimal. *First*, liquidity provision during a crisis, with suitable safeguards, has been a part of central banking theory and practice since the time of Bagehot (Bagehot, 1873); *second*, liquidity support, which only the central bank can provide, may help to prevent the emergence of solvency problems, and more widespread value destruction; *third*, in the presence of multiple equilibria, some form of public intervention may be the only mechanism for solving a collective action problem (Diamond and Dybvig, 1983); and *fourth*, the resolution of a large institution would be an extraordinarily complex matter, which would benefit from temporary government involvement to preserve value. The issue, therefore, becomes one of degree. How far do we expect the financial system to be fully resilient to outside disturbances, and what shocks can appropriately be mitigated by official action?

This is not an issue where technical expertise provides an unambiguous answer. Are there extreme events that are so far outside the capacity of financial institutions to control or predict that forcing them to plan for them would be unreasonable? Standing behind this question is the distinction, due to Knight (Knight, 1921), between risk, which can be estimated using the laws of probability, and uncertainty, which is by definition incapable of being estimated. Another question is how far macroeconomic management has improved so that we can assume major dislocations such as the Great Depression are unlikely to be repeated? And should a generalised financial panic, which cannot be stemmed by any other means, be dealt with by central bank support, provided there is strong evidence that the underlying system is sound?

The structure of the financial industry

I turn, finally, to the issue of whether government should intervene directly in the way the financial industry is organised, and if so, what structures it should favour. Normally, in a market economy, industrial structure is the outcome of competitive forces. Government is rarely better than the market at deciding which structure best promotes efficiency and innovation. There may, however, be exceptions. The most obvious is when concentration in an industry threatens competition. For example, governments have frequently made clear their desire that there be a minimum number of retail banks within their jurisdictions, both to permit adequate competition, and to provide for redundancy in case any one institution should fail (Independent Commission on Banking, 2011).

Many recent proposals to influence the structure of the financial industry have been motivated a different objective, namely the desire to reduce the risk of instability. There have also been suggestions (Turner, 2009) that certain financial activities lack social value (on what grounds is not clear) and implicitly, therefore, that their offer should be restricted. These concerns have motivated proposals to intervene directly in financial sector structure. In what follows, I will deal in turn with three dimensions of industrial structure that have received attention: the *scope, size and geographic reach* of financial institutions.

The idea behind limiting the scope of activities a financial institution can undertake is deceptively simple. In order to preserve the integrity of certain “essential” functions, institutions providing such services should be prevented from undertaking presumptively more risky activities. Their integrity should be protected by high levels of capital, by restrictions on their investment activities, and if necessary by a government guarantee. All other institutions would be clearly identified as not protected by explicit or implicit guarantee, and would be fully subject to market disciplines. Within this general approach, the line between more essential and less essential functions can be drawn in different places. Some would protect only “narrow banks” and limit these institutions to investment in ultra-safe assets, such as short-term government securities (Kay, 2009). Others would make the distinction between commercial banking and investment banking (the Glass-Steagall dividing line) while still others would draw the line at client-service versus proprietary activities (the “Volcker rule”).

In the pure version of narrow banking, customer deposits would be protected only in highly safe institutions, which would thus be obliged to invest in ultra-safe assets, such as cash and short-term government securities. The principle behind the proposal is understandable, but whether it would work in practice is open to question, for several reasons. First, in quiet times, depositors might be tempted to invest in unguaranteed institutions, to obtain the higher returns they were able to offer by virtue of their higher yielding asset portfolios. Would governments be able to stand firm against public demands for ex post guarantees, if a large

number of voters found their deposits to be at risk? Even if the answer to this is yes, would it be socially optimal to give a financing advantage to those whose liabilities were eligible for purchase by narrow banks? Is it certain that these liabilities will always be risk-free (think public sector debt in peripheral Europe)? Finally, would protecting the payment system in this way prevent the disruptions in credit supply that typically propagate financial distress?

To protect the credit supply process, other proposals make the split of activities between commercial and investment banking (the Glass-Steagall demarcation) with the goal of protecting the payment and credit-supply functions of commercial banks. The thinking behind these proposals is that investment banking is more risky, so that in order to preserve the integrity of traditional commercial banking it is necessary to insulate it from investment banking by breaking up universal banks.

It is not clear from the historical experience, however, that universal banks are in fact more likely to fail, or that investment banking activities are inherently more risky than lending to retail customers. (Interestingly, although the current debate emphasises relative risk as a justification for reintroducing Glass-Steagall, the original motivation for the legislation, when it was introduced in the 1930s, was *not* to reduce risk, but to avoid conflicts of interest.) The perception of greater risk (and lower social value) is fostered by the use of pejorative terms such as “casino banking”. But the risk that has traditionally been most problematic for financial institutions is credit risk, and this is at the heart of commercial banking. More research is needed to establish whether the combination of services offered materially raises risk, and if so what combination creates most vulnerability.

Pure proprietary trading would seem to be the activity that is furthest removed from client-focused services, so the one that it would be easiest to accept should be restricted. Even here, however, practical difficulties arise in that it is not easy to distinguish proprietary trading from that undertaken to serve clients or to hedge risk.

Next comes the question of *size*. As I noted a moment ago, there is a well-recognised case for limiting size when it is related to excessive concentration and potential restraints on competition. The argument from the standpoint of financial stability is that a financial institution’s contribution to systemic risk increases more than in proportion to its size (Tarashev et al, 2009). The extent to which this is the case seems to depend on assumptions about the correlation of risk exposures among different institutions. Once again, more research could usefully explore the empirical validity and importance of these assumptions.

A supporting justification for restrictions on the size and range of activities of financial institutions is the claim that there are, in practice, few economies of scale and scope in banking. Therefore, there are few costs to administrative limitations on financial institutions’ size and

structure. Academic research generally points to the absence of such economies (Goldstein, 2011), though the literature is not monolithic (Wheelock and Wilson, 2009; Holzhäuser, 2005). The absence of scale economies seems hard to reconcile, *a priori*, with the cost structure of the industry. The growing use of technology to process information and manage risk has caused overheads to become a growing share of total costs, which suggests a clear potential for positive returns to scale. If these scale economies are not appearing at the aggregate level, is some other element (managerial overstretch?) at play?

Concerning economies of scope, there is similar discordance between the conclusions from available academic research, and the beliefs of practitioners. Several arguments are advanced for expecting advantages from combining different financial functions in one company. From the perspective of the service provider, these include a reduction in overall earnings volatility, lower capital costs and the ability to offer clients a wider range of financial products. From the client's perspective, an advantage of a universal bank could be the convenience of acquiring most financial services from a single provider. And from a social point of view, the broader the range of activities undertaken by a single service provider, the greater its ability to generate the breadth of information on creditworthiness and investment opportunities on which high-quality resource allocation depends.

In assessing the validity of these views, it would again be useful to have more in-depth research on how significant scope economies are, or, if they cannot be detected, what factors exist that work to nullify them. In any event, provided there are no artificial incentives to become large and complex (such as implicit government support) market forces should be a sufficient constraint on growing size and complexity. Good small banks and good large banks would prosper, while poorly managed institutions, of whatever size, would tend to shrink or disappear. Careful consideration needs to be given to how far public policy should substitute for the market-driven process of "creative destruction".

Finally, in the realm of industrial structure, what requirements should be set for *cross-border* operations? It is sometimes argued that the difficulties of resolving a financial institution operating in multiple jurisdictions are so great that the only answer is to provide for separate legal entities in each legal jurisdiction. If this were to mean that a financial company's activities had to be confined to only one country, multinational companies would be forced to have different financial partners in each jurisdiction, something which current practice shows they prefer not to have to do. Moreover, the use by multinational companies of different financial partners in each jurisdiction could easily lead to a loss of information. There would thus be costs to set aside the benefits of greater ease of resolving troubled financial institutions.

This problem would be mitigated if a single financial group were permitted to have separate subsidiaries in different countries. Global clients would then be able to deal with the different

subsidiaries of the same institution, and any inconvenience or loss of information would be minimised. But such separation might not fully insulate subsidiaries from contagion. It would not be easy for a financial group to allow one of its subsidiaries to fail without a massive (and costly) loss of reputation.

A third approach would be to intensify cross-border supervisory cooperation. This would involve building on mechanisms such as supervisory colleges, and developing techniques for sharing information and harmonising approaches to be used in stress situations. Such an approach would aim, in principle, to adapt oversight mechanisms to the reality of globalisation, rather than constrain the structure of the financial industry to reflect the limitations of international cooperation. Applying such a principle brings us back once again to the “post-Westphalian” dilemma. The world is interdependent, but too much of the institutional setting for global economic management assumes state sovereignty remains a satisfactory organising principle.

None of this means that the structure of the banking industry should not be a concern of regulators, only that simplistic notions of how changing structure can reduce risk need to be treated with caution.

Conclusion

Let me conclude by coming back to Tommaso Padoa-Schioppa. Among many striking passages in his lecture is the following. “... Nothing excuses us, as responsible individuals, from the intellectual and moral duty of adopting a truly cosmopolitan perspective and from engaging in the thought experiment of devising the first best response...” The same sentiment should guide the effort to devise a new and stronger financial system. It should be global, it should be robust, it should be an effective servant of the real market economy. Being safe from disruption is a start, but it is not enough.

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