The future financial system

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The financial crisis has rightly led to a reconsideration of the nature of finance in the economy. Questions about the scale and structure of the system are at the forefront of most people’s minds. And, given the role of regulation in finance, the failures of the past half-decade have led naturally to significant reforms of the legal framework supporting the financial system.

As I consider the appropriate structure of finance and banking in the post-crisis world, three questions occur to me. Going from the narrow to the broad in scope, they are:

1. How should we think about capital regulation?
2. Can we rely on markets to discipline financial institutions?
3. What do we want the financial system to look like 20 years from now?

In the remainder of this short note, I will comment on each of these.

How should we think about capital regulation?

For a variety of reasons, including deposit insurance and limited liability (to which I will return in a moment), banks can hold too little capital. Capital regulation is the response to this. But as the regulatory framework has evolved, we have moved to more and more complex structures. In particular, we have moved to risk weighting. That is, we ask a bank to hold more capital to support riskier assets or activities. In its internal risk management process, a bank’s capital is allocated to different activities based on models calibrated from historical data. These models are then used to generate probability estimates of losses of particular size. Or, at least, that’s my understanding.

In thinking about capital regulation and risk weighting, I am immediately inclined to ask whether there really are enough data for the regulators to be doing what they are doing and what the banks are doing in response. Capital allocation and risk weighting require what I would call lower-tail modelling. And getting some sense of the shape and size of the tail of probability distribution means trying to figure out how frequently infrequent events occur. Well, infrequent events are infrequent. The model that you start with is going to be very important for the answers you get. And, the answers will be very imprecise.

As an aside, I will mention that for some time we have had evidence that return distributions may not have fourth moments. And, if they have no fourth moment, the sampling variance of the variance estimator doesn’t exist. In plain language, that means that the attempt to estimate second moments that are used as the foundation to calibrate simple risk models may be doomed. But that’s a question for another day.

Continuing with the problem of capital regulation and risk management, one of the lessons of the crisis is that the people running large complex financial institutions don’t understand

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them. Recall that these institutions often have thousands of subsidiaries in dozens of countries, all with balance sheets. One of the more shocking things that the crisis revealed was that no one knew the combined exposure of the consolidated entity to a single counterparty. We can and should expect them to do better.

At this point, I need to distinguish two uses for risk modelling: the management of risks inside institutions; and the evaluation of riskiness by supervisors. For the first, models are the bedrock on which management evaluates the legitimacy and underlying riskiness of individual investment strategies, the diversification benefits that arise across activities, and the vulnerabilities inherent in different business models. That is to say, risk management based on state-of-the-art statistical analysis is indispensable to maximising the bank’s risk-adjusted return on equity – what I take to be the objective of the bank’s liability holders, owners and managers.

By contrast, supervisors’ goal is to protect the public at large from the consequences of institution failure. That is, the authorities look to reduce both the likelihood and severity of a public bailout. This means in practice ensuring resilience to tail events, both those that are in the historical record and those that are not! In this circumstance, I submit, statistical modelling and risk weighting simply will not work. Put another way, our models are at their worst when we need them the most.

How should we respond? Well, in a world in which we can’t appropriately evaluate the riskiness of one asset relative to another, or of one portfolio relative to another, the answer is to treat everything equally. That means reliance on an unweighted, simple leverage ratio and expressing the capital requirement without regard to riskiness; it for this reason that the Basel III requirements include a leverage ratio as a backstop.2

Before moving to my second question, I would like to discuss the related issue of financial innovation. In the context of capital regulation and risk management, how should you treat new instruments? These are things for which you have little or no history, so estimating the shape of the probability density for returns is impossible. Of course, the introduction of new instruments creates challenges for consumer protection as well as regulation. With that in mind, in the 2009 BIS Annual Report, we suggested the creation of a Securities Safety Commission (SSC) that registers products and then licenses them as safe to varying degrees. Analogous to pharmaceuticals, there would be a hierarchy. Some securities would be approved for purchase by everyone, like aspirin; others only by those with a licence, equivalent to prescription drugs; still others in only limited amounts by highly qualified people, as in experimental drug trials; and finally, there would be securities deemed illegal, just like heroin. Moving items from one category to another would require testing and data – essentially clinical trials. And approval would be up to the Commission. This approval process would effectively control the quantity of a particular security that is outstanding as well. This could be done both by imposing explicit quantity restrictions and by forcing those who buy or sell securities in various categories to hold some form of capital to back up their transactions.

Can we rely on markets to discipline financial institutions?

One of the bedrock principles of the movement to deregulate the financial system that took hold in the decades prior to the crisis was that market forces would lead the financial system to discipline itself. Profitable activities, those that passed the market test, would thrive. And, this profitability itself was a sufficient signal of the social worth of the enterprise.2

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2 The primary argument against a leverage ratio is that it leads to a bias towards the holding of risky assets. My response to this is threefold. First, prices should adjust, equilibrating risk-adjusted returns. Second, this is the concern of the owners, not the regulators. And third, it is an argument for increasing the minimum capital requirement to ensure that the probability of failure stays where it should be, even with these incentives.
Such an argument requires that there be no externalities – that private and social costs and benefits are equal at the margin; and that there be no costs imposed, but not borne, by a financial institution on others through its actions. This has never been true, and the crisis has brought this fact into stark relief.

We also need to recognise that, most of the time, the private interests of banks and bankers diverge from those of society at large. This is especially true when it comes to the stability of the system and the direct or indirect burden on taxpayers. The fundamental source of this conflict is limited liability: the fact that owners and employees are not held financially accountable beyond their actual investment. What this means is that the bank’s owners and managers have a call option on the firm. Finance theory tells us that, everything else equal, this option will be more valuable the higher the volatility of the firm's assets. More volatility means a higher probability of both a large positive and a large negative payoff. The option created by limited liability means that the increased upside is greater, but the increased downside is irrelevant.

All of this creates an incentive for increased leverage. Leverage makes the call option closer to being in the money at the same time that it increases the volatility of the return. Both of these make the call option unambiguously more valuable. It is therefore very much in the interest of the bank’s owners and managers to lever up as much as possible and to pursue volatility-inducing strategies. And, as a part of this, they will pursue strategies that hide and underprice tail risks. The result is low measured volatility in good times, but potentially large losses and high volatility in bad times. To continue with the options analogy, there have been rewards to selling far out-of-the-money puts.

Clearly, this private desire for volatility and increased risk does not coincide with the public interest for a stable, safe and resilient financial system. The response is regulation. And regulation that forces the call option held by the bank’s owners and managers as far in the money as possible. That is, forces the bank to have less leverage, forcing the owners’ and managers’ interest to be better aligned with the publics. And, again, to ensure we get it right, the leverage ratio should be as simple as possible to compute.

Before turning to my third and final question, I would like to comment on the issue of financial innovation and complexity. And, as the financial industry evolves, authorities need to keep up. The official sector has to sort the good from the bad innovation: the creativity that improves the allocation of resources and risk and increases the efficiency of the economy from the creativity that moves risk into the shadows where it could damage everyone. Doing this means that we must work to understand how banks and other players are adapting to new regulations and head off some of the most damaging behaviours. We should be on the lookout for persistently high returns. If returns look too good to be true, they probably are, and authorities should step in. Most importantly, authorities should continue to force banks to reduce leverage, and to stop them from increasing it stealthily with new instruments and tactics. Many European banks, for example, remain highly leveraged, with assets exceeding capital by around a factor of 20. Although banks in other places may seem better capitalised, much of this is due to

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3 Many people have written about the two categories of externalities that create systemic risk: one is joint failures arising from common exposures (institutions are all exposed to the same risk) and interlinkages (institutions are inextricably tied together); and the other is procyclicality. See BIS, 79th Annual Report, June 2009, Chapter VII.

4 There are two very critical issues that I have ignored in this brief discussion: market- versus book-value accounting, and gross versus net positions for derivatives. As difficult as it is, for banks market value strikes me as the way to go. And on derivatives, recent experience strongly points to gross value as the right metric. On the latter point, this will further increase the incentives to move to central clearing – something I strongly support.
differences in accounting rules. Even banks that appear well capitalised may in fact still be highly leveraged due to massive derivatives positions. Recent outsize losses related to derivatives trading highlight the risks associated with such positions. In short, banks need to find business models that are less risky, more sustainable and more clearly in the public interest.

**What do we want the financial system to look like 20 years from now?**

Let me start by listing possible structures:

- A large number of small banks
- A small number of large banks
- Banks that are limited to a small set of activities assured to keep them very safe
- Banks with no leverage and only equity
- Banks whose owners and managers face unlimited liability

Presumably, we want to ensure that the financial system does some amount of maturity transformation and some amount of risk transformation. And, for various reasons, in most places, banks are the centre of the financial system. This would seem to eliminate some of the possibilities on my list. That is, the equity-only bank and the limited-purpose bank. In market-based financial systems that are prevalent in common-law Anglo-Saxon countries, these may work. But elsewhere, I am doubtful.

That said, as I think through the possibilities for the financial landscape of 2032, I am led to write down a set of principles to guide my thinking. Relative to 2006:

1) The financial system should be safer, simpler and smaller.
2) All financial institutions should be able to fail without imposing costs on others.
3) All financial institutions should be transparent enough that authorities, managers and investors can understand them relatively easily.

My guess is that these principles can be supported by a variety of organisational structures, so I will not really answer my question. What I will say is that we are likely to continue to refine the regulatory system into the indefinite future. Some of these adjustments will be small, and others large; but they will be adjustments nevertheless. That said, in order for our successors and our future selves to be content with the financial system around us, we will have to have put in place a simpler set of principles for regulation. That will mean a regulatory framework that does not spawn complex financial structures, and respond with ever more complex sets of regulations. That is the challenge that we face today.