

**Regulators, Economists and the Financial Crises:
Learning the Hard Way**

Stefano Mieli

Managing Director
for Banking and Financial Supervision
Banca d'Italia

Invited Speech at the IFABS 2011 International Conference on Financial
Intermediation, Competition and Risk
Rome, 30 June 2011.

Each panic teaches us something new and this accumulating experience should in time enable us to prolong the interval of recurrence if not eventually to prevent the recurrence entirely, just as epidemics of disease, formerly thought inevitable, are now prevented.¹

1. Introduction

It is a great pleasure to be here tonight at IFABS Conference hosted by Roma Tre University. It is also a privilege to exchange views with such a qualified audience on the current state of the financial industry, its recent turbulent past and the way ahead.

The Capitoline Museums celebrate Rome's past greatness and the remarkable achievements of its civilisation. According to J. A. Schumpeter economic analysis, however, is not a field in which the Romans particularly distinguished themselves. Even in the works of authors deeply interested in political and social structures, such as in Cicero's *De Republica*, Schumpeter finds "very little that could interest the economist".² The assessment becomes more benevolent when the great Austrian-American economist moves to examine Roman Law. He acknowledges "a genuinely scientific character", although not without reservations, to the literature produced by Roman jurists. He also recognises that "we owe to them definitions – for example, of price, money, of purchase and sale, of the various kinds of loans (*mutuum* and *commodatum*), of the two types of deposits (*regulare* and *irregulare*), and so on – which provided starting points for later analysis".³ I have no need to emphasize the importance of having accurate definitions of money, purchase and sale, loans and deposits for us who work on banking and finance, both as economists and as regulators. We fully partake of the great Roman civilisation's legacy.

Turning to the Conference, its programme is quite impressive: it covers a wide range of extremely relevant topics and it promises substantial contributions to our understanding of the functioning of financial markets and intermediaries. Not surprisingly, a large

¹ T. Marburg, "The Panic and the Present Depression," *Annals of the American Academy of Political Science*, 1908, Vol. 32, 55–62, p. 55, cited in G.B Gorton. "Slapped by the Invisible Hand. The Panic of 2007", .2010, Oxford, OUP, p. 57.

² J. A. Schumpeter, "History of Economic Analysis" , 1954, London, Allen & Unwin, p. 67.

³ *Ibidem*, p. 69.

portion of the research that has been discussed today and that will be discussed over the next couple of days directly or indirectly deals with the financial crisis. Since its onset a large part of the academic research in banking and finance, both applied and theoretical, has been devoted to the study of the causes, the transmission, and the consequences of the financial crisis. We are fast catching up with the “real world”: the programme of this conference is hard evidence of that, but we still have a long way to go.

Crises often occur after periods of prolonged and strong (excessive?) credit growth which fuels confidence in self-regulation by market forces and a trend to downsize regulation. However, the disruption caused by the flare-up of the crisis shows that good regulation is a key ingredient for sustainable development of the financial sector. As a consequence, policy makers face a strong and articulated demand for new and better regulation of the financial system. The outcome of the reform process depends on a large number of factors affecting the policy-making process (public concerns, stakeholders’ voice, etc.). Therefore, it is extremely important to identify the appropriate policies, to strike the right balance, to avoid “excessive” or “misdirected” regulation. Professional economists play an important role in this respect and their work is much needed to provide guidance in shaping a new, more effective, regulatory framework.

In what follows, I will briefly rehearse the main lessons we have learnt from the crisis, the “hard way”, and how they have contributed to shape the regulatory reforms. I will then focus on some open issues which are particularly important for policy makers and regulators: how large should the capital endowments of banks and other regulated intermediaries be? What is the scope of macro-prudential supervision? How should it be conducted and by whom? These are key areas in which we feel that we need to hone our analytical tools in order to properly assess the trade-offs faced by regulators and supervisors.

2. Lessons from the crisis

The sequence of extraordinary events we have been through since August 2007 has inevitably changed the way we look at the financial side of the global economy. Among the many lessons we have learnt, a few of them are particularly worth emphasizing.

Information and monitoring. At the onset of the crisis there was a poor understanding of several important aspects of the financial industry. A widespread accusation against both the economic profession and supervisory authorities is that they failed to anticipate the crisis and prevent its propagation. The accusation in its crudest forms is misdirected and factually inaccurate. A number of economists and important institutions, such as the Bank for International Settlements, were quite explicit about the risks associated with the fast pace of financial deepening in the years before the crisis. As Governor Mario Draghi pointed out in 2009, one of the reasons that prevented a full appreciation of these warnings was the paucity of systematic information on the state of the financial sector. The coverage of available statistics and accounting data was far from adequate to represent the magnitude of the risks to which individual financial institutions and the entire financial system were exposed. The complexity of the interconnections within the banking sector and between banks and other financial institutions, between markets and intermediaries, unveiled by the crisis was largely unknown before. New financial instruments exchanged over-the-counter in massive amounts were priced and evaluated by means of highly sophisticated models using relatively short time series data that now, with the benefit of hindsight, appear inadequate to the task.

Bank regulation and supervision. Banks were on the front line of the crisis because of their central role as liquidity providers. The sheer amount of taxpayers' money necessary to preserve the basic functioning of payment systems and of financial intermediation testifies to the disproportion between the risks taken by banks and their ability to absorb losses. High leverage and insufficient endowments of high quality capital made banks particularly vulnerable, and the weaknesses of their balance sheets acted as a channel for the propagation of instability. Strengthening the resilience of the banking systems has therefore become a top priority in redesigning the regulatory framework. We need a comprehensive view of the stability of the intermediaries, focusing not only on capital, but also on the structure of funding. Banks heavily engaged in maturity transformation relying on wholesale funding were severely hit when liquidity dried up. Finally, better rules are essential tools that need to be accompanied by better supervisory practices. The "light touch" advocated by many in the past has not stood up to the test of the crisis. On the contrary, damage has been

limited in those countries where supervision activities were based on strong operating practices and stringent and effective action.

Systemically important financial institutions. Banks were crucial to the development of the crisis, but not all in the same way. Shocks to non-bank financial institutions, such as investment banks, insurance companies, and money market funds, posed serious threats to the stability of the financial system as well. We have learnt that a set of institutions, including banks and non-banks, either because of their size or the extent of their relationships within the financial sector, can be a source of widespread instability and contagion. These institutions, “too big to fail”, require specific regulation to reduce the probability of default and a set of procedures to minimize the impact of their bankruptcy, should it occur.

Shadow banking system. Before the crisis, non-bank financial entities performing banking functions and bank activities outside supervised areas grew at a fast pace. These entities and activities are now commonly referred to as the “shadow banking system”. Some scholars estimate that in the US the shadow banking system reached a size comparable to that of the regulated banking system. There is strong evidence that some of the banking activities, specifically lending and maturity transformation, by non-banks played a crucial role in the development of the crisis. An effective regulatory framework requires mapping the shadow banking system, monitoring and eventually curbing the risks to financial stability arising from it .

3. The new regulatory framework

The broad outline of the financial reform programme designed to respond to the challenges of the crisis has been quickly defined under the coordination of the Financial Stability Board. Several necessary reforms have been finalized and some are already being implemented, although the transition period to the new regulatory framework has been made long enough to avoid placing a new burden on intermediaries still under strain during the recovery. The new framework – Basel III as it is widely called – takes stock of the lessons from the crisis and aims at being the building block for a more stable and resilient financial system.

The main feature of the previous Basel Accords, both Basel I and Basel II, was their main, if not their only, focus on micro-stability. The underlying implicit assumption was that the stability of each intermediary could ensure the stability of the system as a whole. One of the main lessons of the crisis has been the relevance of endogenous risk during both its build-up and its propagation. The idea that what looks optimal for single institutions may, in some circumstances, be harmful to the system was highlighted by some scholars and analysts at the launch of Basel II, but it was not given the attention it deserved.⁴ It now inspires Basel III, whose fundamental and most innovative feature consists in marrying the micro-prudential firm-specific and the macro-prudential system-wide approaches to supervision.

At the micro level, the bulwark of stability is capital: the new framework introduces significant changes in all three elements of capital equation, namely numerator, denominator and the ratio itself. As to the numerator, there is a tightening of the definition of what counts as equity: reference is set to common equity. The old definition of capital used to comprise various elements, with a complex set of minimums and maximums for each element. Banks were allowed to keep common equity as low as 2% of risk-weighted assets. The complexity of the definition, the lack of harmonization of the various deductions and filters and the lack of transparency on banks' capital structures made it difficult to assess which capital would be available should losses arise. During the crisis, it became clear that credit losses and write-downs directly impacted on retained earnings and therefore on common equity, while the other instruments proved unable to absorb losses on a going concern basis. As regards the denominator, Basel III improves the coverage of the risks relating to capital market activities: trading book, securitization products, counterparty risks on OTC derivatives, addressing one of the inconsistencies of the pre-crisis years, when a significant increase in total assets was accompanied by a modest increase in risk-weighted assets. The build-up of seemingly low risk exposures can pose a threat to financial stability and low risk weight itself can contribute to the build-up of system-wide risks (as the example of senior tranches of securitization exposures shows). Indeed, some interesting research on financial innovation points at the distortions caused by an artificial demand for low risk assets. Inaccurately calibrated regulatory risk weights can quite significantly contribute

⁴ Danielsson J., Embrechts P., Goodhart C., Keating C., Renault O. and Shin H.Y., "An Academic Response to Basel II", LSE Special Paper, 130, June 2001.

to this very demand.⁵ Finally, the framework modifies the ratio itself, since banks are asked to hold a minimum of 4.5% instead of 2% of risk-weighted assets in common equity and, in addition, they are required to maintain a capital conservation buffer of 2.5%. This buffer aims at preventing distribution policies that are inconsistent with sound capital conservation principles. As capital approaches the minimum, the bank is required to retain an increasing percentage of its earnings, by reducing dividends, share buy-backs and discretionary bonuses.

The measures regarding capital which, taken together, mean increasing the common equity ratio to 7%, are complemented by those on liquidity. Again, the crisis has proved that blind reliance on market liquidity is wrong, since not all participants can be liquid at the same time, and if they try to sell their assets at the same time, markets that used to be perfectly liquid may, almost immediately, dry up. Banks are therefore required to hold liquid assets sufficient to cover their net cash outflows in a monthly time horizon and to operate with a balanced funding structure.

The importance of the changes affecting each institution is enhanced by the macro-prudential framework, which is designed to address systemic risk and its endogenous processes. This overlay consists of four elements: the introduction of a leverage ratio, the measures taken to mitigate procyclicality, those which will be adopted to deal with the externalities generated by systemically important institutions and, finally, a new approach to supervision

The leverage ratio, which includes off-balance sheet exposures and derivatives, supplements the risk-based requirements. It addresses the same problem from another and broader perspective, by re-setting risk weights for market risk, namely that the banks reported high tier 1 ratios and they were at the same time able to build up high levels of on-, and more frequently, off-balance-sheet exposures. The leverage ratio serves as a safeguard against model risk and the attempts to circumvent the risk-based capital requirements. It copes with the fact that regulators, however efficient and timely they may be – and they not always are – are condemned to be behind the curve of financial innovation.

⁵ Gennaioli N., Shleifer A., and Vishny R., “Neglected Risks, Financial Innovation and Financial Fragility” September 2010.

The countercyclical capital requirement, ranging from 0 to 2.5%, is put in place by each jurisdiction when credit growth is deemed excessive. It is aimed at preventing the amplification of cyclicalities through the banking sector; it protects the banking sector from losses resulting from periods of excess credit growth followed by periods of stress, and it helps to ensure that credit remains available during the period of stress. The buffer has been designed to address the problems posed by the interaction between intermediaries in a downturn, when banks adopt a conservative stance, thereby pushing the real economy deeper into trouble, but it will act as a brake during the build-up phase, when credit is granted at a fast pace.

One lesson from the crisis is that the largest banks and other systemically important financial intermediaries should be so regulated as to ensure that their distress produces neither the need for direct public support, nor a harmful disruption to their own or to the system's credit extension capacity. These conditions were not met and the large banks were supported by capital injections that imposed dilution losses on equity holders but no losses on any other category of fund providers. The FSB is dealing with the issue of the too-big-to-fail intermediaries enhancing their resolvability, through mechanisms which enable authorities to impose losses on all debt providers.

Finally, one casualty of the crisis has been an unquestioning reliance on banks' risk models. Based on the assumption of risk exogeneity and fitted on statistical relationships observed on limited time periods, these models failed to detect the tendency of correlation to dramatically increase under stressed conditions. The actual probability of tail events was thus severely underestimated. But poor performances in losses predictions were also driven by an inclination of both regulators and bankers to downplay some known features of the models that banks were using, in particular their inadequacy to cope with the rare credit risk events.

Supervisors have learnt the hard way, the actual limits of risk measurement techniques in exploring the tails of losses distribution. In the new framework Value-at-Risk models will be supplemented with stress tests to overcome some of their weaknesses. Credit risk in trading books will be measured and capitalised with ad-hoc models. But this is

not enough if not accompanied by a more intrusive supervision, where both models and their inputs are effectively challenged.

4. Bank capital

The introduction of the new regulatory framework has spawned a heated debate on the existence and size of the costs implied by higher capital requirements. In a frictionless world with full information and complete markets, the cost of funding is not affected by variations in the capital structure, as shown by Modigliani and Miller in their 1958 seminal paper. The key idea conveyed by the MM theorem is that the higher the leverage, the riskier the equity. So, increasing the capital base relative to debt reduces the required return on equity itself because of the lower risk borne by equity-holders in a company with lower debt.

Yet, it is often argued that the “frictionless world” hypothesis of the MM theorem is not likely to hold, least of all for banks. In general, the capital structure irrelevance result does not hold in the presence of different tax treatment between debt and equity, transactions costs and asymmetric information. In the case of banks, there is one additional element that most typically tends to make equity more expensive than debt: the (implicit) state insurance on debt finance. The higher funding cost associated with equity with respect to debt is the main argument against the introduction of higher capital requirements. This higher cost is thought to translate into bank lending spreads, and hence into loan demand, thus affecting economic activity. A full assessment of the reform should set the costs of regulation against its benefits.

On the one hand, it seems likely that the higher interest rate charged to banks’ end-customers will have some effect on output, although the impact on interest rates will be mitigated by the decrease in the cost of debt associated with an increase in the capital base. It has recently been estimated that a 1 percentage point increase in the capital ratio causes a median 0.09 per cent decline in the level of steady-state output relative to the baseline model of unchanged capital ratio.⁶

⁶ Angelini P., Clerc L., Cúrdia V., Gambacorta V., Gerali A., Locarno A., Motto R., Roeger W., Van den Heuvel, S. and Vlček, S. “BASEL III: Long-term impact on economic performance and fluctuations”. BIS Working Paper, 338, February 2011.

On the other hand, the benefits will outweigh these costs. As several authors have pointed out, in order to evaluate regulatory reforms it is crucial to make a distinction between the private costs/benefits borne by individual institutions and those that mainly pertain to a social perspective. As the long-term economic impact study carried out by Bank for International Settlements has shown, the social benefits of higher capital requirements, namely lower probability of banking crises and their associated output losses, will widely offset its costs.⁷

According to a recent paper by the Bank of England, given the negligible impact on costs and the resilience-enhancing effect of more capital, both estimated on historical data, the desirable amount of equity funding is, in effect, much greater than the benchmark level established in the Basel III framework.⁸ Nevertheless, one should keep in mind that augmenting loss-absorbing capital is not the only instrument available to regulators to minimize the occurrence of financial crises.

5. Financial stability and macro-prudential supervision

The new regulatory framework emerging from the crisis places great importance on macro-prudential supervision, recognizing the role played by financial intermediaries in the business cycle. The activity of financial intermediaries is naturally pro-cyclical: credit growth and risk-taking increase during expansions, they contract during downturns. The experience gained throughout the crisis has highlighted the importance of macro-prudential supervision in this respect. Banking supervision has to maintain its “micro” focus on the stability of single intermediaries. However, that is not sufficient to ensure systemic stability. The latter requires a systemic macro-prudential approach to supervision that takes into account the connections between intermediaries and the correlation of their strategies through the business cycle.

⁷ Basel Committee on Banking Supervision “*An assessment of the long-term economic impact of stronger capital and liquidity requirements*”, August 2010.

⁸ Miles D., Yang J., and Marcheggiano G., “Optimal bank capital”, Bank of England, External MPC Unit, Discussion Paper No. 31, April 2011.

How to design and structure macro-prudential supervision raises a set of key issues.

First, while there is now a growing consensus about what constitutes macro-prudential supervision, there is much less agreement about the identification of measurable indicators of systemic stability. Can we identify reliable indicators for the stability of the financial system that somehow mirror those that identify the stability of single intermediaries? Can we identify indicators that can play the role of operational targets for macro-prudential policy?

A second key issue is the interaction between macro-prudential supervision and monetary policy. Some observers have argued that, besides price stability, monetary policy should also be attributed the goal of pursuing financial stability. By “leaning against the wind” monetary policy could limit excessive credit growth and possibly burst asset price bubbles before they grow too large.

However, this view has important limitations: it is difficult to pursue two objectives with only one tool, the policy rate; it is difficult to identify asset price bubbles until they exist; and finally, increasing the interest rate could be too blunt a tool to burst asset price bubbles while ensuring an orderly adjustment. An alternative view is that monetary policy should keep its focus on price stability, while macro-prudential supervision should deal with financial, systemic stability and be given specific tools.

A further open question here is to what extent macro-prudential supervision should be attributed to the monetary authority and to what extent it should be attributed to a different agency. During the 1990s and the early 2000s, a similar debate concerned the extent to which micro-prudential banking supervision should have been attributed to central banks or to a separate agency. The crisis highlighted that the costs, in terms of transmission of information and coordination, of relying on two separate authorities may outweigh the benefits. This suggests that macro-prudential supervision may be attributed to a dedicated authority, but that the latter has to keep close links and to constantly exchange information with the monetary authority. Such a model, implemented in the Eurosystem with the creation of the European Systemic Risk Board, may help keep the two goals of monetary and financial stability apart, while preserving accountability and ensuring a better resolution of potential conflicts between the two

objectives when needed. This model has been chosen on the basis of our empirical experience during the crisis, and it would be interesting to see results from academic research on the optimal design of macro-prudential supervision.

In general, the contribution from academic research may be extremely important in properly designing macro-prudential policy. Some literature attempts to identify reliable early-warning indicators. However, we also need to increase our understanding of the interaction between real and financial variables at the macro level. Ideally, results should be derived from general equilibrium models including a micro-founded financial sector. This could enhance our understanding of the effect of changes in the monetary policy stance on systemic stability and economic growth. Models could also be used to gain some understanding of the benefits and costs of modifying banks' capital requirements, imposing leverage ratios, and imposing liquidity ratios. They could also be used to improve our understanding of how the transmission of monetary policy has been modified by financial innovation and by the changes in the business models of financial intermediaries.

6. Conclusions

The crisis, together with the changes it has brought about, has spurred a great deal of work to understand its causes, propagation and consequences. Research on banking and financial intermediation can substantially contribute to the work of regulators and policy makers. I mentioned a set of open issues that I find particularly relevant, but that list is by no means exhaustive. I am sure this will be an exciting conference in which new issues will be brought forward and some answers will be provided to the questions that are still open.

Thank you.