

Lorenzo Bini Smaghi: Macro-prudential supervision

Speech by Mr Lorenzo Bini Smaghi, Member of the Executive Board of the European Central Bank, at the CEPR/ESI 13th Annual Conference on “Financial Supervision in an Uncertain World”, European Banking Center at Venice International University, Venice, 25-26 September 2009.

* * *

Introduction¹

The recent financial crisis has produced a broad consensus on analysis and policy action in at least three areas, namely the need: i) to gain a better understanding of systemic risk; ii) to strengthen the macro-prudential aspects of financial supervision; and iii) to deepen central banks’ involvement in it. The establishment of a new body to conduct macro-prudential supervision at EU level – the European Systemic Risk Board (ESRB) – is one element in a comprehensive set of initiatives and responses in this field.

My remarks today focus on the future work of this body and consist of four parts. I’ll first consider the origins, purpose and structure of the ESRB. In second place, I’ll discuss the concept of systemic risk, and how it can be monitored and assessed effectively. I’ll examine some analytical tools for systemic risk analysis in the EU and look at how these tasks could be organised in the context of the ESRB. In the third part, I’ll cover the ECB’s experience in conducting financial stability surveillance in the euro area and reflect on the vulnerabilities that we (and other authorities) identified before the crisis. I’ll ask why the communications about the risks that built up were insufficient to prevent the crisis. The fourth part is a *what if?* What if the Risk Board had existed in the early 2000s – could the factors that led to the crisis have been identified and averted? The answer should point to some of the key advantages of (and reasons for) the EU’s new macro-prudential function.

1. The setting-up of the European Systemic Risk Board

The idea of establishing a body to monitor and assess systemic risk at European level was first mooted in the late 1990s.² It took over a decade and a financial crisis to implement it. Let me recall the milestones of the setting-up of the ESRB institutional framework. Following the recommendations of the de Larosière Report, in February this year, the main features of the institutional framework for macro-prudential supervision were defined by the Communication published by the European Commission on 27 May as well as the Conclusions approved by the ECOFIN Council on 9 June and by the European Council on 18 and 19 June.

The European Systemic Risk Board will be responsible for the macro-prudential oversight of the financial system within the European Union. It will seek to prevent or mitigate systemic risks within the financial system, so as to avoid widespread financial distress, and it will contribute to a smooth functioning of the Internal Market and ensure a sustainable contribution of the financial sector to economic growth. Its tasks will be to identify and assess risks to systemic stability in the EU, issue risk warnings where risks appear to be significant

¹ I would like to thank L. Cappiello, I. Cabral, P. Hartmann, and F. Recine for their contributions, and D. Clarke for reviewing the document. I bear responsibility for the views expressed and for any errors.

² See, for example, European Shadow Financial Regulatory Committee (1998), “EMU, the ECB and Financial Supervision”, Statement No. 2, 19 October, which proposes a “European Observatory of Systemic Risk” as an initial step towards a European-wide supervisory structure. Aglietta and Scialom (2003), “The Challenge of European Integration for Prudential Policy”, FMG Special Paper, No. 152, October, provide an elaborate discussion of such a body.

and, where necessary, give recommendations on measures to be taken to contain such risks and follow up on their implementation.

The Risk Board will have 33 full members: the 27 EU central bank Governors, the ECB President and Vice-President, a Commission member and the three Chairs of the new European Supervisory Authorities. To ensure close cooperation with supervisors, a representative from one national supervisory authority for each EU country may attend the meetings of the ESRB, but will have no voting rights. In addition, the President of the Economic and Financial Committee (EFC) will participate, but likewise will have no voting rights.

The ECB was requested by ECOFIN to provide the necessary analytical, statistical, administrative and logistical support, and to draw on technical advice from the national central banks and supervisors. This is a clear recognition of the important role that central banks have gained over time in monitoring financial stability.

The Commission proposals specify in detail the new institutional arrangements concerning the establishment of the ESRB and the involvement of the ECB. The ECB/Eurosystem will provide its views when formally consulted according to the Treaty provisions. Indeed, further work is needed to clarify and optimise the details of the institutional framework for the ESRB as well as for the new European Supervisory Authorities for micro-prudential supervision. Sound institutional arrangements are a crucial pre-condition for the effectiveness of these supervisory reforms in general and the establishment of the Risk Board in particular. In this context, let me mention two key elements to be defined by the forthcoming legislation.

One is the arrangements for the exchange of micro-prudential information among national supervisors, the new European Supervisory Authorities and the ESRB (subject to specific confidentiality agreements). In order for the ESRB to perform its functions, it should have the power to request any information it deems necessary (for example, exposures of large and complex financial institutions to structured products).³

The other key element is that a risk warning needs to be translated into appropriate supervisory action. An institutional mechanism should exist to ensure that the recommendations adopted by the ESRB as regards the actions to address the systemic risks identified by the macro-prudential assessment would be followed up by the competent national authorities. However, as the recommendations will not be binding, there should be institutional mechanisms to ensure that they are implemented. And if they are not implemented, an explanation has to be provided.

The ESRB may decide to make the recommendations public. As the recommendations aim to address systemic risks, their publication will increase pressure on the Member State to implement such recommendations.

A peer review mechanism should be set up. In particular, the ECB, on behalf of the Risk Board, would closely monitor the implementation of the recommendations by Member States and national authorities. Cases of non-compliance could be reported to the Council and, where relevant, to the European Supervisory Authorities for appropriate follow-up.

2. The concept of systemic risk and its analysis by the ESRB

How well this institutional framework will enable the ESRB to perform its tasks will depend on its understanding of systemic risk, the amount of relevant information at its disposal, the analytical tools that are available to assess the risks, and the framework used to distil the

³ This was, for example, a clear conclusion of the de Larosière Report (2009), "High-level Group on Financial Supervision in Europe", Brussels.

most important results from all these elements. Let me comment on some of these four aspects and touch on how we intend to fulfil our mandate to support the ESRB.

Conceptual issues of systemic risk

Systemic risk analysis is nothing new to the central banking community, including the ECB. One reflection of this fact is the series of triennial central bank conferences held under the G10 Committee on the Global Financial System between the mid-1990s and early 2000s. Even the European Monetary Institute, which was the forerunner of the ECB, contributed to systemic risk work in this context, alongside the US Federal Reserve, the Bank of England, the Bank of Japan and many other central banks.⁴ For instance, from the outset, the ECB drew up a research agenda on financial stability and systemic risk.⁵ In addition, in 2004 we started to publish a Financial Stability Report (FSR) twice a year. The main objective of this Report is to help identify, at an early stage, potential vulnerabilities and to raise awareness among market participants with a view to promoting preventive and remedial policies. Each issue also contains several special features offering a wealth of further insight into financial stability and systemic risk.

This background suggests that the ECB is a logical choice as a provider of analytical support to the ESRB, but it should not obscure two major challenges we are facing. First, the phenomenon of systemic risk is extraordinarily complex. Second, despite the steps reported above and some lively academic literature on financial contagion over the last two decades, systemic risk analysis and research is far less advanced than that of monetary policy, for example. There are no established frameworks that can be taken “straight off the shelf”.

Having said that, let me describe briefly the concept of systemic risk. Systemic risk was defined by the G10 in 2001 as “... *the risk that an event will trigger a loss of economic value or confidence in, and attendant increases in uncertainty about, a substantial portion of the financial system that is serious enough to quite probably have significant adverse effects on the real economy.*”⁶ In simpler terms, it is the risk that the failure and distress of a significant part of the financial sector reduces the availability of credit, which in turn may adversely affect the real economy. Interestingly, this notion of systemic risk is quite similar to the definition of financial stability that the ECB uses in its Financial Stability Report, underlining the fact that our financial stability work has always had a macro-prudential orientation. Our working definition describes financial stability as a “*condition in which the financial system – comprising of financial intermediaries, markets and market infrastructures – is capable of withstanding shocks and the unravelling of imbalances, thereby mitigating the likelihood of disruptions in the financial intermediation process which are severe enough to significantly impair the allocation of savings to profitable investment opportunities*”.

⁴ See, for example, de Bandt and Hartmann (1998), “What is systemic risk today?”, in *Risk Measurement and Systemic Risk*, Proceedings of the Second Joint Central Bank Research Conference, hosted by the Bank of Japan, Tokyo, 1997.

⁵ In this regard some of the ECB outputs (partly in collaboration with academics and researchers from other central banks and international organisations) include: Fell and Schinasi, (2005), “Assessing Financial Stability: Exploring the Boundaries of Analysis”, National Institute Economic Review, Vol. 192, No. 1; de Bandt and Hartmann (2000), “Systemic risk: A survey”, ECB Working Paper, No 35, November; Hartmann, Straetmans and de Vries (2004), “Asset market linkages in crisis periods”, *Review of Economics and Statistics*, 86(1); Hartmann, Straetmans and de Vries (2005), “Banking system risk: A cross-Atlantic perspective”, NBER Working Paper, No. 11698, October; Cappiello, Engle and Sheppard (2006), “Asymmetric dynamics in the correlation of global equity and bond returns”, *Journal of Financial Econometrics*, 4(4); Gropp, Lo Duca and Vesala (2009), “Cross-border bank contagion in Europe”, in Shin and Gropp (eds.), *Banking Integration, Bank Stability, and Regulation*, special issue of the *International Journal Central Banking*, 5(1); Iyer and Peydró-Alcalde (forthcoming), “Interbank contagion at work: Evidence from a natural experiment”, *Review of Financial Studies*.

⁶ Group of Ten, (2001), “Report on Consolidation in the Financial Sector”, Basel.

Following de Bandt, Hartmann and Peydró-Alcalde (forthcoming), we can distinguish three broad and interrelated ways in which systemic risk can materialise.⁷ The first one is commonly called contagion and is closely studied in the research literature. For example, a supposedly idiosyncratic failure of a financial intermediary leads to the failure of other intermediaries. The second one emerges from imbalances that build up over time, such as credit booms or concentrations of lending in certain regions or sectors. These “bubbles” can go on profitably for most participants who “ride” them for quite a while. Then relatively small events or changes in expectations can lead to their breakdown, simultaneously bringing down a wide range of intermediaries and markets.⁸ The third way in which systemic risk can materialise relates to economic downturns or other aggregate shocks that cause the collapse of a wide range of intermediaries and markets simultaneously.⁹

Other important elements in systemic risk include the strong information intensity of financial contracts and transactions, and a high degree of connectedness between financial intermediaries and markets as well as a strong reliance on debt financing (leverage) and on maturity mismatches between assets and liabilities. These factors imply feedback mechanisms that amplify shocks and can lead to non-linearities in the financial system that then are easily transmitted to the real economy.

Systemic stability, or the absence of systemic risk, can be seen as a public good, thereby legitimising the role of governments and other authorities in addressing it.¹⁰ Like pollution, systemic risk involves externalities, in the sense that each financial intermediary manages its own risks but does not consider its impact on the risk of the system as a whole. The financial crisis contributed considerably to a better understanding of the phenomenon of systemic risk, which is also reflected in aspects of regulatory reforms. In particular, the possibility of aligning capital requirements to a measure of firms’ systemic risk contribution is being contemplated by regulators, e.g. the Basel Committee on Banking Supervision.¹¹

How could the ESRB then structure its supervisory work on systemic risk? In broad terms, systemic risk analysis can be broken down into two core components: i) surveillance, or risk detection, and ii) risk assessment, each of which I will address in turn.

Risk detection

Financial stability surveillance concerns risk identification. This kind of surveillance mainly aims to detect potential sources of risk, especially financial vulnerabilities – that is weaknesses which, if unearthed, could lead to a disruption or failure in part of the financial

⁷ De Bandt, Hartmann and Peydró-Alcalde (2009), “Systemic risk in banking: An update”, forthcoming in the ECB Working Paper series, and Berger, Molyneux and Wilson (eds.), *Oxford Handbook of Banking*, Oxford University Press. This paper surveys all the relevant academic research with respect to the three categories and relates them to the present crisis where applicable.

⁸ This tendency of financial systems towards boom-bust cycles goes back, for example, to the work by Minsky (1977), “A theory of systemic fragility”, in Altman and Sametz, *Financial Crises*, Wiley. Notably, observers from the Bank for International Settlements, such as Bill White and Claudio Borio, warned before 2007 that such imbalances were building up.

⁹ For example, Gorton (1988), “Banking panics and business cycles”, *Oxford Economic Papers*, 40, observes that most US banking crises during the national banking era could have been predicted with a simple business cycle model.

¹⁰ See, for example, Acharya, Pedersen, Philippon and Richardson (2009), “Regulating Systemic Risk”, in Acharya and Richardson (eds.), *Restoring Financial Stability: How to Repair a Failed System*, Wiley; Lo (2008), “Hedge Funds, Systemic Risk, and the Financial Crisis of 2007-2008”, Written Testimony prepared for the US House of Representatives, Committee on Oversight and Government Reforms, Hearing on Hedge Funds, November.

¹¹ Basel Committee on Banking Supervision, “Comprehensive response to the global banking crisis”, press release, 7 September 2009.

system and potentially to a financial crisis. It would have to pay attention to the sources of the three forms of systemic risk discussed earlier – contagion, imbalances and macro shocks.

Risk monitoring should identify sources of risks and vulnerability coming from within the financial system – i.e. stemming from financial institutions, markets or market infrastructure – and also those present in the macroeconomic environment and non-financial related events. These would include vulnerabilities resulting from global imbalances, growth prospects, developments in housing markets, creditworthiness of borrowers, to name a few.

The monitoring involves processing large amounts of (often disparate) information of a statistical nature and is based on market sources. In addition, continuous market intelligence efforts are essential for effective risk monitoring and the early detection of new financial instruments, practices or business strategies which could create vulnerabilities and risks in financial markets.

In the case of the Risk Board, market intelligence will be complemented by what could be called “institutional intelligence” and “policy intelligence”, given the qualitative information and expert knowledge available to central banks and supervisory authorities represented in the ESRB. The Board’s independent, impartial status could prove to be invaluable in the surveillance and identification of risks viewed as material.

Risk monitoring is facilitated by a large set of tools, including contemporaneous financial stability indicators and forward-looking early warning indicators and models. These tools need to be regularly revised and updated in order to capture innovation in financial markets, fuelled by new products and business models.

Macro-prudential indicators comprise a vast set of indicators – on the macroeconomic environment, financial markets, financial institutions and financial system infrastructures. More specifically, they include macroeconomic aspects, financing conditions, monetary conditions, asset valuations, risk appetite, market liquidity, funding liquidity, credit risk, financial strength of institutions, and others. Some of these indicators may contain information relevant to early warnings as they may draw attention to rapidly increasing exposures to specific asset classes, broad-based increases in financial leverage and dynamics in the maturity profile of financial institutions’ debt which could indicate roll-over problems.¹²

In the ESRB context, early warning indicators and early warning signal (EWS) models should play an important role in both the risk surveillance phase and in the lead-up to the risk warning phase. EWS models are designed to indicate when a financial system, market or intermediary reaches a “danger zone”, which usually points to a crisis ahead. In the past, a number of forward-looking stability indicators were used by most central banks, but these were not necessarily comprehensive frameworks of developed EWS models covering most financial systems. One reason for this may have been that the older generation of these models performed well in the sample but they typically failed to predict future crises. Recent research suggests that their out-of-sample performance can be improved, in particular with respect to credit cycles and asset price bubbles.¹³ A caveat that remains is that it seems difficult for them to improve their predictions on the timing of credit booms and asset-bubble bursting.

¹² See, for example, ECB Financial Stability Review, December 2007, Box 16 “A market-based indicator of the probability of adverse systemic events involving large and complex banking groups”; ECB Financial Stability Review, June 2006, Special Feature B “Assessing banking systemic risk with extreme value analysis”.

¹³ See, for example, Alessi and Detken (2009), “‘Real-time’ early warning indicators for costly asset price boom/bust cycles: a role for global liquidity”, ECB WP Series No 1039, March; Borio and Drehmann (2009), “Assessing the risk of banking crises – revisited”, BIS Quarterly Review, March; ECB Financial Stability Review, June 2009, Special Feature D “Estimating probabilities of hedge fund liquidation”.

Risk assessment

Risk assessment relates to the evaluation of the relevance and potential severity of each risk identified as material in the surveillance phase. It should therefore include a quantitative evaluation of the likelihood that the potential risk scenarios could actually materialise, as well as an evaluation of the ability of the financial system to absorb the shocks (for example, through existing capital buffers or through the potential to increase buffers in the future through profit retention). It should also include cost estimates in terms of the failure of institutions, costs deriving from the malfunctioning of financial markets or impairment of the real economy. The product of these factors forms the basis for the ranking of risks. Quantitative methods and analytical tools (for example, macro-stress testing models) should support, together with expert judgement, the prioritising or ranking of these risks. The models will help in the conduct of quantitative impact assessments on the financial sector as well as in the assessment of the potential costs for the real economy, and thereby offer information about the relevance and severity of the risks detected in the surveillance phase.

Macro-stress testing models have become the workhorse of macro-prudential stability analysis in the last decade, notably including quantitative impact studies for specific scenarios. Their main purpose is to assess the resilience of the banking and financial systems against extreme but still plausible events. One problem with these models in the past was that even for large shocks they generated hardly any bank failures. This can probably be improved by using appropriate data, more granular than previously available, and by capturing better and a larger number of adverse feedback loops that can play a role in amplifying the transmission of instability in the financial system. These feedback loops could include contagion effects across banks, market liquidity and funding liquidity problems.¹⁴ Another difficulty for these models is whether they should be extended to also capture feedbacks from real economy outcomes to financial stability variables.

The assessment task is currently much less developed than the surveillance one. This is not only because it involves considerable analytical sophistication, but also and mainly because there are significant gaps in the information on the financial intermediaries themselves and on inter-linkages between the various parts of the financial system.

Viewing the financial system as a network, more information is needed on the key network nodes, and well as on the links between those nodes.¹⁵ The degree of interconnectedness in the system may be determined by common exposures to specific asset classes, such as specific sectors in the economy, for example, commercial property, or to specific regions such as emerging Europe, via granted loans or securities holdings. Inter-linkages may also derive from intra-bank and intra-group exposure, as well as from trading and other correlated positions in the financial markets, such as in the credit derivatives market, which may lead to crowded trades, should they need to be unwound simultaneously. They may derive from cross-ownerships and capital participations among institutions, from similarities in business models, or from reliance on the same external sources for funding, for example.

While it is unrealistic to think that it would be possible to characterise the degree of interconnectedness of the financial system by taking into account all possible channels for contagion, a great deal of invaluable information exists in a scattered form (at the disposal of supervisors, trading platforms or the institutions themselves).

At present, these information gaps imply that most modelling techniques for risk assessment, including macro stress-testing and contagion models, are highly dependent on market-

¹⁴ See, for instance, Aikman, Alessandri, Eklund, Gai, Kapadia, Martin, Mora, Sterne and Willison (2009), "Funding liquidity risk in a quantitative model of systemic stability", Bank of England WP No. 372, June.

¹⁵ See, for instance, ECB Financial Stability Review, June 2009, Special Feature C, "Balance sheet contagion and the transmission of risk in the euro area financial system"; Haldane (2009) "Rethinking the financial system network", speech delivered at the Financial Student Association, Amsterdam, April.

inferred data based on stock prices or credit default swap spreads that, in particular, might not behave reliably at times of turmoil or stress in financial markets.

It is important to note that the complexities of systemic risk and macro-prudential supervision and the state of current research do not allow the analytical tool kit to be limited to just one or two major models. Given that the framework for macro-prudential analysis is at an early stage of development compared with other areas of economics, there is a need to look at a wider range of models and thereby include relevant risks, imbalances and transmission channels.

Systemic risk analysis needs to be supported by a suite of state-of-the-art analytical models and tools, and a conceptual framework for using them. The complex and intertwined economic and financial linkages call for a constant cross-checking of several indicators or measures. In addition, the evolving nature of finance and the pace of innovation also require that the set of tools for systemic risk detection and assessment are constantly adjusted or revised. Many central banks, including the ECB, have in the past developed such models and tools in order to support their regular financial stability analyses and reports. The experiences with the crisis and the decision to establish a macro-prudential stability function in Europe suggest that, even when building on existing structures, significant efforts are called for in order to extend and further improve models and tools. While it would be desirable for the risk assessment exercise to be increasingly quantitative, it should never become mechanistic or fully model-based. Expert judgement and qualitative assessments will always be crucial to understand the messages coming from various analytical tools, also taking into account overall intelligence efforts.

Comprehensive information base

Irrespective of their level of sophistication, models need to be fed with the appropriate data in order to produce results that, in addition to their analytical interest, can support policy messages. A comprehensive information base is also key in the risk surveillance phase that precedes the actual risk assessment. This is because the establishment of a wide radar screen supporting rigorous monitoring is only possible if the critical information is available.

The current crisis has convincingly shown that a significant part of credit intermediation was channelled outside the banking sector and the regulated financial sector. The non-regulated or “shadow” banking system was almost totally off any surveillance radar screen. Not enough was known about special investment vehicles, conduits, securitisation markets and instruments, or about all the financial intermediation that takes place outside the traditional banking system. Moreover, little was known about the direct and indirect exposures between this shadow banking system and the regulated one, which turned out to be substantial.

Information on non-banking institutions, potentially of systemic importance, such as hedge funds, was scattered, not quality-checked and typically provided on a voluntary basis. A tendency to create a bias towards the best performers was the result. Even for the banking sector, for which data is abundant – and, what’s more, there is substantial expertise in conducting risk assessments – the information available to bodies entrusted with financial stability functions but without a supervisory mandate is far from satisfactory. The information on the degree of interconnectedness that I previously mentioned is critical, even if only to identify the key nodes of the financial system network which would need to be closely monitored. So far, for the case of the ECB, systemic risk analysis is conducted solely on the basis of publicly available information, mostly gathered from individual financial reporting.

The failure of Lehman Brothers just over a year ago illustrates well the relevance of such inter-linkages between financial institutions. They may matter more than the size of their balance sheets. And if those linkages are impaired, they can affect the functioning of the entire financial system. In fact, before the crisis an increasing amount of overall risk in the economy was perceived to exist, but there was little certainty as to where the risks lay. Few

suspected that the vast majority of them would be held directly or indirectly at key nodes of the financial system network.

The spectacular growth in the securitisation and credit risk transfer market in the years up to the crisis increased discussion of the potential vulnerabilities, in particular about who were the ultimate holders of the risks originating in the banking system, and their capacity to withstand shocks. These risks were transferred from the originators to various investors outside the banking sector, from institutional investors to hedge funds, but also within the banking sector itself. In fact, weaknesses in the so-called originate-to-distribute model followed by most large banks, and fragilities in the funding of special investment vehicles and conduits resulted in some of those risks backfiring and ending up consolidated on the banks' balance sheets. The eruption of the turmoil left banks sitting on unwanted risks, such as leveraged loans related to leveraged-buy-out transactions, (often referred to as warehousing risk in the financial jargon), which were intended to be sold on to the market. Likewise, in the structuring of collateralised debt obligations (CDOs), which were an extremely profitable business for banks in the years before summer 2007, the banking system ended up accumulating a considerable proportion of CDO tranches. As the crisis broke, these tranches rapidly became a significant fraction of banks' impaired or so-called toxic assets.

Risk warnings

Let's get back to the European Systemic Risk Board. In addition to risk surveillance and risk assessment, the ESRB will be entrusted with a third task – issuing risk warnings and policy recommendations. This is somewhat new to the central banking community. The issuance of risk warnings, in the context of safeguarding financial stability – where the analysis is centred on the downside risks and thus on highly improbable events – differs substantially from other types of analysis focused on a central, most probable, baseline scenario (such as the one supporting monetary policy). The translation of systemic risk assessments into proposals for concrete policy actions – of a prudential or supervisory nature – is also, to a large extent, new to the central banking community.

3. What went wrong?

Confronted with the question of whether central banks and international bodies with financial stability competencies saw the financial crisis coming, it would be fair to answer “Yes, to some extent”. Prior to the summer of 2007, in a number of official publications¹⁶, attention was drawn to a number of growing vulnerabilities and potential risks such as:

- the (then incipient) crisis in the US sub-prime mortgage market and its potential to deepen and spread to other markets;
- the fact that financial market liquidity could vanish abruptly when investor uncertainty and risk aversion rose;
- the role of hedge funds as key players, over the years, in fuelling liquidity in financial markets, implying that a shock to the hedge fund industry would severely affect the smooth functioning of some markets;
- the excessive reliance of investors on the risk assessment of structured products made by rating agencies;

¹⁶ See ECB Financial Stability Review, June 2007; BIS Quarterly Review, June 2007; Bank of England Financial Stability Report, April 2007; IMF Global Financial Stability Report, April 2007.

- the concentration of risks in the financial system, which was becoming increasingly difficult to identify due to the proliferation of structured finance products and credit risk transfer instruments;
- the risk-bearing ability of the ultimate risk-holders in these chains.

However, it would be fair to say that few, if any – including market participants and public authorities – were able to foresee the magnitude and severity of the crisis. In retrospect, it became clear that the crisis was greatly intensified by a myriad of unknown connections and interdependencies between financial intermediaries, within and outside the banking system, including some non-regulated financial sectors. Sophisticated market participants and investors were also apparently unaware of the degree of interconnectedness in the financial system. Otherwise, their behaviour in the months leading up to the summer of 2007 might have shown some anticipation of the developments (e.g. they might have seized some contrarian investment opportunities).

In particular,

- the magnitude of the large off-balance-sheet exposures of banks to the US sub-prime-related structured finance products was widely unknown;
- little information existed about the extent and implications of the activities of new financial entities – conduits and other structured investment vehicles – which are linked through management and liquidity arrangements to banks;
- the probability that the various intertwined vulnerabilities could materialise simultaneously and combine in the way they eventually did was perceived as being very close to zero;
- the extent of inter-linkages between financial intermediaries and across markets was not fully appreciated, and the possibility of tensions in one specific segment of the credit market spreading rapidly to other markets and continents was not foreseen.

For more than two years now, we have been discussing the need for major improvements in supervisory and regulatory frameworks to respond to the weaknesses that came to light as the crisis unfolded. I will not address these issues again today. I will approach the question from the point of view of central banks and ask: what influenced their ability to raise market awareness with respect to building vulnerabilities within the financial system? And can we rely on the ESRB to repair this problem in the future?

The information at the disposal of central banks and other bodies with financial stability competencies enabled them to point to growing risks and vulnerabilities, but it did not allow a deeper understanding of the interconnections in the financial system and of the potential magnitude of the detected risks. As a result, the discussion of the risks in their public communications or publications tended to be mostly of a qualitative nature, and generally did not involve a clear risk prioritisation exercise, and therefore had a potentially smaller impact on market behaviour.

Another important element was that risk assessments were generally not made with the specific aim of suggesting appropriate remedial policy actions in terms of prudential policies or regulation. Recommendations, mostly formulated in broad terms, tended to target market participants' behaviour (e.g. proposing mitigating actions), but they were more muted regarding policy measures that could be taken in the prudential and regulatory area. One reason for this is, again, the information base. The formulation of concrete policy recommendations (e.g. with respect to capital buffers or funding-related issues) would need to be backed by rigorous quantitative assessments, for which publicly available information is generally not sufficient. Along the same lines, and perhaps as a result of the deficient information base, very limited research and analytical efforts have been pooled in the central banking community with a view to supporting policy suggestions in the prudential and regulatory area.

4. Turning the clock back

But let me turn the question around and ask: what if the Risk Board had existed in 2006-07? Would this have prevented the financial crisis?

This is a difficult question because the modus operandi of the ESRB is still to be defined. It is also difficult to know whether the agreed framework and operational processes will prove to be effective. However, if the ESRB is given the appropriate information base, if it combines central banking and supervisory expertise and is supported by a sound analytical framework and can produce solid risk assessments and policy recommendations, the answer should be positive.

Policy-makers, regulators, academics and market participants have learnt an enormous amount from the crisis. As the turmoil spread, they learnt about the functioning of the financial system and the links between the financial system and the real sector. In particular, the crisis highlighted the importance of the shadow banking system in fuelling credit into the economy, of indirect links between the banking and insurance sectors, as well as of fragilities in the securitisation market, just to name a few. However, it seems appropriate to ask: would a pre-crisis ESRB have closely monitored the Asset Backed Commercial Paper (ABCP) markets? Would it have been fully aware of conduits and special investment vehicles (SIVs)?

Against this background, the financial crisis has triggered a number of initiatives to improve the monitoring of the shadow banking system. These include calls for mandatory reporting by financial institutions (e.g. hedge funds with significant volumes of assets under management) as well as the reporting of amendments to the accounting treatment of conduits and SIVs to ensure greater transparency with respect to links to sponsors, for example.

These initiatives are expected to contribute to a better coverage of the non-regulated financial sector, coupled with a greater awareness of the business models and topics that were overlooked in the past. This information would not have been available to a pre-crisis ESRB.

The crisis has also stressed the importance of developing ways to measure systemic risk, as it clearly showed that – both for market participants and regulators – without proper measurement there can be no proper management. A comprehensive strand of work relating to complementary measures of risk, capturing elements of leverage, liquidity, correlation of positions, concentration of exposures, has been initiated both by the private and public sectors. Prior to the summer of 2007, there was less emphasis on the need for targeted and adequate measurement of variables, including a critical stance on systemic risk, for supervisory and financial stability purposes.

The crisis has also shown that firm-level data on financial intermediaries, including of a supervisory nature, might be critical to identify institutions of potential systemic relevance that warrant closer monitoring and to understand interdependencies among firms and markets – interdependencies which, if impaired, could have a strong impact on the overall stability of the financial system.

The key data requirements relate to: i) the possibility of joint failures of institutions resulting from their common exposures at a single point in time (these exposures could derive from shocks that come from outside the financial system or inter-linkages among intermediaries), and ii) the fact that, over time, the dynamics of the financial system and of the real economy reinforce each other, increasing the amplitude of booms and busts, and undermining stability in both the financial sector and the real economy. The financial crisis has shown that monitoring aggregate data is insufficient and may not accurately indicate the vulnerabilities hidden in the financial system and that there is the need to link micro data to macroeconomic risks.

As such, firm-level data (as opposed to, for example, estimates based on country or sector aggregates) have been recognised as essential for more accurate assessments of the potential impact of risks materialising, e.g. estimating the amount of losses for the financial

sector, as well as for conducting system-wide stress testing, contagion analysis, or the assessment of feedback loops between the real and financial sectors.

In the pre-turmoil period, supervisory authorities were more concerned about overburdening institutions with reporting requirements than with enforcing adequate disclosure. As such, an ESRB established before the summer of 2007, but with access to the same information base as the one available to central banks at the time, might not have made substantially different systemic risk assessments.

In addition to the importance of having a more comprehensive information base, the crisis has led to a significant revamping of research into systemic risk and to greater input into the formulation of related policy recommendations. As I just mentioned, in addition to improvements in macro stress-testing techniques and the early warning signal literature, more attention is being paid to contagion and spill-over models, especially for the banking sector, to macro-financial risk-based flow-of-funds approach using contingent claims analysis, and to research tools to support regulatory and supervisory policy recommendations.

One area in which a pre-crisis ESRB could have made a difference is in the conduct of country-specific analysis. Generally, ECB financial stability assessments focus on the euro area as a whole and rarely make distinctions between euro area countries. They mainly consider the risks and vulnerabilities common to most euro area countries; there is little analysis, let alone formulation, of policy recommendations, at country level. While this helps to distil the elements of the analysis relevant to the euro zone, country-specific vulnerabilities might end up receiving insufficient attention.

The ESRB will have a clear mandate to pursue country analysis and to provide country-specific policy recommendations if deemed necessary. If a task of this kind had been carried out by an independent and impartial body before the crisis, it could have signalled growing vulnerabilities in EU countries. Risk warnings about fragilities related to foreign currency lending, about particularly highly leveraged sectors in some countries, or overvaluation in a number of EU housing markets could have been louder. I would add, though, that none of these elements triggered the financial crisis – rather, they intensified it as the crisis spread to the EU financial system.

The crisis also calls for improved coordination and cooperation between the international bodies responsible for safeguarding financial stability at all levels of the analysis. Cooperation between the ESRB, the Financial Stability Board and the IMF, for example, will probably be fruitful in the future, helping to raise awareness of growing vulnerabilities at global level that could not surface as prominently in an EU-focused financial stability surveillance exercise. Cooperation in the risk detection and risk assessment tasks would involve, for example, sharing of technical expertise and of findings from market and policy intelligence efforts. In addition, the ESRB may use these international bodies as a sounding board for its risk assessments, risk warnings and policy recommendations. An ESRB with an EU-wide focus established prior to the summer of 2007 would not have had access to the stepped-up co-operation at global level or to the wealth of information and analysis on the global environment that should be at its disposal as soon as it starts functioning in 2010.

Final remarks

While the ESRB has a better chance of achieving its mandate now than it would have had earlier this decade, its tasks will be difficult and its challenges considerable.

In particular regarding the issuance of risk warnings, the credibility of the ESRB will rest upon the minimisation and balancing of so-called type I errors and type II errors. Type I errors entail the possibility of identifying those risks that subsequently do not materialise, while type II errors relate to the possibility of failing to identify risks that subsequently do materialise. Identifying a long list of potential systemic risks to financial stability could minimise the

probability of making type II errors but may lead to accusations of “crying wolf”. The opposite could lead to an important risk to the EU financial system being overlooked, which if it materialised, could harm the ESRB’s reputation.

Both the rigour of the checks for potential sources of risk and vulnerability, and the quality of the risk assessments (based on the information made available to the ESRB) should have a substantive influence on the credibility and effectiveness of the Board’s work.

Addressing the type I-type II error trade-off by selecting which risks merit risk warnings can only be done by combining a comprehensive and strict monitoring of all potential sources of risk with a well-informed and detailed risk assessment. Expertise in the analysis of financial sector issues, market and public intelligence provided by the EU authorities represented in the ESRB will be considered invaluable. However, assessments of a qualitative nature should, to the extent possible, be complemented by quantitative impact assessments, which will also facilitate the task of prioritising the risks and the decision to issue risk warnings.

In short, if the European Systemic Risk Board is to really strengthen macro-prudential supervision in Europe, four conditions need to be fulfilled. First, a clear legislative framework must be created to underpin the work of the ESRB and the supporting role of the ECB. It should be noted that last June the European Council clearly indicated that the ECB should provide the secretarial, logistical, administrative and analytical support to the ESRB. Second, all parties involved in the preparation of ESRB risk assessments and potential risk warnings need to do the necessary analysis and research to bring our understanding of systemic risk and macro-prudential regulation to a new level, and to find common languages and frameworks. Third, in addition to improving the analytical tools supporting risk surveillance and risk assessment, more detailed and accurate information – to back up ESRB risk warnings – is essential. It should include better data coverage of non-regulated financial sectors, as well as more granular information on key node-institutions in the financial system and on potential inter-linkages between them. The ability to formulate concrete policy recommendations, as opposed to general recommendations, depends greatly on access to critical information. Finally, risk warnings and recommendations made by the ESRB have to be translated into concrete action, in particular by the national supervisory authorities.

To conclude, the European Systemic Risk Board can be compared to a doctor who examines a patient, asking him about his ailment and suggesting that some tests be done. The doctor then makes a diagnosis and eventually recommends some medicines. It’s up to the patient to abide by the doctor’s recommendation. The doctor is not in a position to take direct action. He is not allowed to intervene, even when things get really bad, as in the case of a risk of contagion and the patient has to be put in quarantine. He might be the best doctor in the world, but his treatment will only be as good as the quality and completeness of the patient’s replies – and the patient’s willingness to take the medicines prescribed.

This is the way in which the ESRB has been constructed in Europe. Its success will largely depend on the compliance of its “patients”, who hopefully have learned the lessons of this crisis.

Thank you for your attention.