

## **Vitor Constâncio: Macro-prudential policy – strengthening the foundations, enhancing the toolkit and taking action**

Keynote address by Mr Vitor Constâncio, Vice-President of the European Central Bank, at the First conference of the Macro-prudential Research Network (MaRs), Frankfurt am Main, 5 October 2011.

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Ladies and gentlemen,

It is a great pleasure to speak to you at the first conference of the Macro-prudential Research Network (MaRs). I would like to thank the organisers for this very important and timely gathering, which marks the first year of the network.

The sources and the propagation of the financial crisis have proven the need for macro-prudential policies to address systemic risk, as well as take account of the interplay between the financial system and the real economy. New institutions have been put in place, such as the European System of Financial Supervision and the Financial Stability Oversight Council in the United States, and regulatory reforms are taking shape, notably Basel III and a host of other initiatives under the leadership of the Financial Stability Board. However, it is also very clear that in the macro-prudential field we are in a much less comfortable position than in the monetary policy field, in particular concerning widely accepted scientific foundations and long experience with tested policy instruments.

Against this background, I will start by providing a brief overview of the research that has been carried out in the MaRs network. I will then focus on one important operational tool that we are pushing forward at the European Central Bank (ECB) to assess systemic risks: our top-down stress-testing framework. I will conclude by referring to a key aspect of our future regulatory framework in Europe, namely the set of macro-prudential policy instruments embedded in the Capital Requirements Directive (CRD) IV, and how these instruments should be made compatible with the requirements for both safeguarding financial stability and further developing the Single Market for financial services.

### **1. A snapshot of progress in macro-prudential research**

The rudimentary state of the scientific foundations in the macro-prudential field led the 27 EU national central banks and the ECB, which constitute the majority of the member institutions of the European Systemic Risk Board (ESRB), to establish a network of researchers working on macroprudential issues called MaRs – standing for Macro-prudential Research, but in a way also referring to a journey into unknown territory. The objective of MaRs is to develop core conceptual frameworks, models and tools to improve macro-prudential supervision in the EU. Through MaRs, we hope to fill some of the identified analytical gaps ourselves and also to act as a catalyst for more and better-targeted academic research in this field.

This conference today is the first public event organised by MaRs. The papers presented here are only a small sample of the research conducted. Many more projects are under way and we envisage publishing all papers produced in the ECB Working Paper Series.

The network has been charged with conducting research in three areas where gaps were identified and the need for analytical support for policy choices seemed greater.

The first MaRs work area deals with the development of macro-financial models linking financial instability and the performance of the economy. A large part of this workstream is aimed at providing relatively fundamental research and therefore not immediately operational policy tools. The first three sessions of the conference feature papers from this workstream.

The modelling of bank defaults is crucial to characterising financial instability. In the paper by Eichberger et al. the authors analyse the endogenous and interconnected nature of default risk, therefore implying that models that treat default risk as exogenous may be subject to significant biases and mistakes. Another fundamental topic is the shadow banking sector. The model by Goodhart et al. includes the presence of a shadow banking system, which holds securitised assets issued by the traditional banking system that are subject to default. The analysis explores how different types of financial regulation would perform in the event of many of the phenomena that were observed during the financial crisis.

A lot of attention has been devoted recently to the debt and leverage ratios of financial intermediaries and to their variation over the business cycle. The dynamic stochastic general equilibrium (DSGE) model proposed by Rannenberg shows that in presence of a costly bankruptcy and moral hazard between banks and their depositors, the yield requested on loans is affected by the leverage of both the borrower and the lender. This set-up is helpful in understanding the sources of the leverage cycle, since the response of the external finance premium and the overall economy to monetary policy and productivity shocks is greatly amplified.

Another area of particular interest is the analysis of the interactions between monetary and macro-prudential policies. The estimated DSGE model with financial frictions by Beau et al. shows that the combination of an independent macro-prudential policy leaning against “excessive” credit growth and a monetary policy focusing on inflation is the best response to asset price or credit supply shocks to maintain price stability. In addition, a monetary policy taking into account any macroeconomic effects resulting from macro-prudential policies will optimise general welfare.

The paper by Lambertini et al. examines in particular the effects of monetary and macro-prudential policies that lean against boom-bust cycles in housing and credit. They show that counter-cyclical -loan-to-value rules responding to credit growth do not increase inflation volatility and are effective in maintaining financial stability. However, a welfare comparison between the impact of an extended interest rate rule – including financial variables – and counter-cyclical loan-to-value ratios leads to ambiguous results, as lenders and borrowers are affected in opposite ways. This suggests a strong need for cooperation between monetary and macro-prudential authorities to avoid conflicting policies.

Let me now turn briefly to the area of MaRs dealing with early warning models and systemic risk indicators, which is the theme of sessions V and VI. The results of this workstream suggest that the value of early warning indicators has increased thanks to improved methodologies and the use of less exploited data sources. It should also be added that the focus has been shifted somewhat from predicting crises to predicting growing imbalances, which has most likely contributed to the greater effectiveness of new early warning tools.

A number of studies examine the variables to be included in estimated models in order to improve forecasting ability. Fornari and Lemke, and Abildgren examine the predictive value of financial variables. More generally, the work carried out by MaRs researchers shows how the predictive information can be improved by using individual balance sheet data of financial firms combined with traditional macro-financial variables. Concerning specific indicators, the merit of private credit gaps and the role of global variables in early warnings has been confirmed, while the performance of bank solvency and liquidity ratios in this regard is still under debate.

Very valuable information for policy-makers comes from the measurement of the current level of systemic financial stress. Again, it seems that valuable indications arise from the use of firm balance sheet data combined with financial market data, as is the case for the indicator given by Louzis and Vouldis. Other studies emphasise that, for example, the decoupling of credit risk conditions of financial firms from the macro-financial environment can serve as an early warning indicator of systemic stress.

The third area in which the MaRs network seeks to achieve progress is the assessment of contagion risks, addressed in Session IV. In this context the analysis of the interbank market is crucial, and the paper by Memmel and his co-authors provides very useful insights. They confirm previous evidence of tiering in the case of Germany, where some banks distribute liquidity to others. Moreover, a relatively large share of default cases result either in a tiny loss or in a very large loss. This stands in contrast to the usual assumption that loss-given-default averages about 40% and adds an element of fragility to the interbank system.

Overall, more extensive research on risks from cross-border bank contagion in Europe is still held back by data limitations, which we hope will continue to relax over time. A large project assessing cross-border financial links using TARGET2 data and involving researchers from several central banks is just starting under MaRs.

## 2. The ECB's top-down stress-testing framework

Beyond MaRs' research in a cross-institutional context, a lot more analytical macro-prudential work is undertaken here at the ECB, as at other central banks. Our main aim with this work is to be in a position to carry out systemic risk assessments in real time, directly and regularly supporting policy discussions. For this we have at our disposal a number of tools and techniques which help to assess and quantify the impact of systemic risks on the banking sector and ultimately on the real economy. This enables us to rank, according to their severity, the systemic risks we have identified at any point in time.

I will now specifically focus on the top-down stress-testing framework developed by the ECB, which is one of our major tools. This toolkit has proven particularly valuable during the recent financial crisis and the ongoing sovereign debt crisis. Systemic risks emerged, intensified and evolved rapidly, calling for a flexible and operational tool that could deliver quantified impact assessments in a timely fashion. The tool is comprehensive enough to cover individual banks and it incorporates real-financial interactions.

The ECB top-down stress tests are a regular contribution to ESRB meetings. The analysis provided by the tests is also used to support the financial stability assessments in the ECB's Financial Stability Review and also for background policy analyses. Importantly, our top-down stress test results were used as an input for the "peer review" process of the European Banking Authority (EBA) 2011 EU-wide stress testing exercise. The top-down analysis provided a basis for benchmarking and, where necessary, to challenge the results of the bottom-up exercise. For instance, the top-down stress test uses common methodologies and assumptions across all banks, whereas the bottom-up approach allows for some heterogeneity across banks with respect to certain assumptions and applications, such as the use of banks' own internal credit risk models. The top-down assessment can therefore be employed to capture outlier results of individual banks in the bottom-up stress test.

The current ECB top-down macro stress testing consists of a number of distinct but interrelated building blocks. They can be grouped into four broad areas reflecting different stages of the process.

**First, a macro-financial scenario building block.** The identified sources of systemic risks facing the EU banking sector need to be translated into specific shocks that drive macro and financial variables. Subsequently, an adverse macroeconomic scenario is derived, by computing the effects on the economy of these, exogenous, shocks. A topical example of such exogenous shocks could be contagion in the euro area sovereign debt market tensions.

This could be simulated through increases in government bond spreads of different euro area countries, which in turn would have adverse effects on the general macroeconomic outlook, resulting in a decline in GDP compared with a baseline scenario. This translation of shocks to macro-financial scenarios is done using a variety of tools, ranging from in-house large-scale macro models to smaller time-series models. An especially useful and flexible multi-country, EU-wide, macro simulation tool is our set of "stress test elasticities" (STEs).

This provides impulse response functions of endogenous variables to a set of pre-defined exogenous shocks.

For example, a shock to EU external demand – perhaps arising from confidence-driven developments in the United States – would lead to differentiated effects on GDP and other domestic demand variables across EU countries, with the impact depending on country-specific factors, such as the degree of trade openness. However, we do not have a single preferred choice for the macro-financial scenario simulation tool, but rather select from the wide menu of models available at the ECB, depending on the specific scenario we want to construct. Over time, models developed by researchers in Workstream 1 of MaRs could also be applied to inform our macro-financial scenario design.

**Second, a benchmark parameter block.** The macro-financial scenario will in turn affect the banking sector through a number of channels including the impact on banks' credit portfolios, their trading book and the various components of profits. In practice, this transmission is performed via a number of satellite models. The impact is three-fold, affecting credit risk, market risk and bank profitability.

- Our efforts so far have focused on deriving properly modelled credit risk parameters (that is, probabilities of default and loss-given-default rates from which loss rates are calculated). We have invested heavily in this area because credit risk still is the main risk component for most European banks.
- Regarding market risk, the benchmark parameter calibration techniques we have developed have mostly concerned the computation of haircuts on banks' sovereign debt holdings. (This uses a model that was specifically constructed for and used in the last two EBA EU-wide stress testing exercises.).
- Finally, regarding the modelling of bank profitability, we currently focus much of our efforts on simulating net interest income, because this remains the most important profit component for the majority of EU banks. Other items affecting bank earnings, such as trading income, fees and commissions, taxes and dividend policies, are generally based on judgemental assumptions or extrapolations.

**Third, the balance sheet part of the framework.** This third module includes models to estimate loan losses and tools to simulate banks' balance sheet items (accounting and regulatory) as well as their profit and loss statements to calculate the impact on banks' capitalisation. As the modelling framework is based on a bank-by-bank assessment of individual banks' balance sheets, it is flexible with respect to the geographical coverage in the EU or euro area.

**Fourth, contagion and feedback effects.** Typically, stress tests (including the EBA EU-wide exercise) do not look beyond the first-order impact on banks' solvency positions. However, identified capital shortfalls likely have repercussions beyond such immediate effects at the individual bank level. Hence, our fourth building block, which is still the least developed, concerns the modelling of contagion from banks failing the stress test to other banks (via various forms of counterparty exposure) and, more broadly, also to other economic sectors (using a flow-of-funds-based propagation tool). In addition, real economic feedbacks are modelled via reductions in loan supply by capital-constrained banks. Operationally, this is typically done by feeding our stress test results into some of our large-scale macro models that include an active banking sector and thus can adequately capture the real-financial linkages. Nonetheless, further modelling enhancements are warranted in this fourth building block, and for this purpose we will continue to closely monitor the progress in the tools developed in Workstreams 1 and 3 of MaRs.

Having described the various building blocks, let me furthermore emphasise that our framework is based entirely on publicly available consolidated bank-level data; no supervisory information is employed in our set-up.

Our analytical framework should also not be mistaken for the constrained “bottom-up” approach adopted by the EBA for its annual EU-wide stress test. The EBA stress testing exercise is carried out at the bank level and applying granular bank level data only available to the banks and their national supervisors. Compared with supervisory stress tests carried out between banks and their home supervisors, the EBA bottom-up stress test is “constrained” in the sense of using a common scenario across all banks and to a large extent also relies on common methodologies.

Bottom-up and top-down stress tests should not be directly juxtaposed, as a one-to-one mapping of their results is not possible. Rather they should be seen as complementary tools to assess the resilience of the financial sector; they are characterised by different strengths and weaknesses. Importantly, although top-down stress tests are far from perfect and suffer from many deficiencies, they are a useful tool to challenge the more granular bottom-up approaches and especially to detect outlier responses by individual banks in the latter case.

### **3. The use of macro-prudential policy instruments in the Single Market**

I would like to conclude by turning to the design of policy instruments that authorities may use to address the risks identified by various analytical tools.

As a consequence of the lessons learned from the crisis, the focus of financial regulation has gradually shifted towards a macro-prudential approach, a key element of which is the establishment of authorities with macro-prudential mandates at both the national and the international level. In the EU context, the ESRB has been operational since the beginning of this year. The ESRB is currently working on developing a macro-prudential toolkit of policy instruments that authorities can use to address systemic risks.

Moreover, the Basel III regulatory framework – considered the cornerstone of the global regulatory reform for banks and endorsed by the G20 leaders last year – already includes some elements of a macro-prudential toolkit. Indeed, the counter-cyclical capital buffer can be considered as a predominantly macro-prudential tool. The capital buffer will be built up in periods of excessive credit growth and released in stress situations, thus introducing a counter-cyclical element in financial regulation.

Other elements of a macro-prudential toolkit fall primarily in the domain of what is traditionally micro-prudential supervision. We have capital and liquidity rules which aim to mitigate risks at the level of individual institutions, but which could, in principle, be recalibrated to address macro-prudential concerns as well.

With the aim of implementing Basel III, the European Commission recently published a rulebook, known as “CRD IV”. This includes a proposal for two new legal acts: a directive, which needs to be implemented in each Member State, with provisions on the authorisation and supervision of credit institutions and investment firms; and a regulation laying down the prudential standards which will have direct application across the EU.

Recently, concerns have been raised with regard to the ability of authorities to use micro-prudential tools for macro-prudential purposes if the capital and liquidity rules are introduced as a directly applicable regulation in the EU. This would imply not only a minimum but also a “maximum harmonisation” of prudential requirements, in that a country could adopt neither more nor less stringent implementations of the policy instruments.

The maximum harmonisation approach aims to ensure a consistent implementation of prudential measures in the Single Market. It ensures that a level playing field for financial institutions will be established through a single rulebook, thus avoiding regulatory arbitrage and distortions to competition. Furthermore, the harmonised rules also support financial integration and improve transparency. Finally, this approach also reduces regulatory costs as well as banks’ compliance costs. Given the substantial benefits of greater financial

integration, the ECB has consistently supported the “single rulebook” approach for financial regulation, with the aim of promoting the smooth functioning of the Single Market.

At the same time, however, let me underline that, for financial stability reasons, it is desirable that national authorities have the possibility to impose a more stringent calibration of capital requirements and a few other requirements than those proposed in the regulation.

The need for such a macro-prudential framework overlay is justified by the fact that different countries are at different stages of the cycle within Europe, potentially facing different types of systemic risk. Authorities therefore need a certain degree of national discretion to calibrate the given set of macro-prudential policy instruments to their specific cyclical situation, i.e. to address the time dimension of systemic risk. There are also significant differences in the structural importance of the financial sector or the size of the banking sector relative to GDP across EU countries, which may translate into different levels of systemic risk at a given point in time. Authorities may thus need appropriate tools with which to address the cross-sectional dimension of systemic risks as well.

However, given that regulations are directly applicable and Member States cannot modify them or add provisions unless this is explicitly provided for in the regulation itself, I am of the view that the establishment of a general macro-prudential regime in the Capital Requirement Regulation is warranted. This macro-prudential regime should have three main features:

First, adjustments should only be possible in the direction of strengthening the harmonised minima.

Second, and as mentioned earlier, only calibrations should be subject to upward adjustment. Definitions should be maintained, thus respecting the principle of an EU rulebook.

Third, this macro-prudential regime should be subject to strict safeguards, under the ex ante coordination of the ESRB. The purpose of this coordination before new calibrations are introduced by individual countries is to guard against possible unintended consequences and spillover effects. These safeguards could include the identification of the macro-prudential concerns in the respective countries and confirmation by the ESRB. Deviations should be subject to close monitoring by the ESRB as well as to disclosure requirements. Finally, when the macro-prudential concerns cease to exist, the calibrations should return to the harmonised minimum in the EU rulebook.

This should provide macro-prudential authorities with the flexibility required to preserve financial stability while including safeguards against adverse side-effects on other countries and, ultimately, possible impairments of the Single Market for financial services in the EU.

More generally, let me highlight that, while most of the arguments put forward against a more stringent national calibration tend to stress the potential trade-offs between financial integration and financial stability, this may not always be the case. The occasional introduction of more stringently implemented macro-prudential measures by specific countries under the aegis of the ESRB may actually enhance both financial stability and financial integration by protecting the Single Market from excessive boom-bust cycles. By avoiding, or at least mitigating, such cyclical swings, macro-prudential authorities may effectively contribute to the smooth functioning of the EU financial system and the Single Market in the medium to long term.

The work of the MaRs is an important contribution to a new pillar of policies that the crisis showed to be indispensable. As you can see, the ECB follows your work with great interest. I wish you a very fruitful conference.

Many thanks for your attention.

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