Vítor Constâncio: The ECB and macro-prudential policy – from research to implementation

Speech by Mr Vítor Constâncio, Vice-President of the European Central Bank, at the Third Conference of the Macro-prudential Research Network, Frankfurt am Main, 23 June 2014.

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Ladies and Gentlemen,

It is a great pleasure to open the ***Third Conference of the Macro-prudential Research Network (MaRs).*** MaRs was established by the General Council of the ***European Central Bank (ECB)*** in the spring of 2010 with the objective of developing core conceptual frameworks, models and/or tools that would provide research support in order to improve macro-prudential supervision in the European Union (EU). ***This was a very significant collective undertaking of the European System of Central Banks*** (ESCB), i.e. all EU central banks, in order to broaden our analytical foundations in this area. Nobody would have expected when we launched MaRs that the ECB would soon become a banking supervisor with distinct macro-prudential policy competencies.

Now, that the ***Single Supervisory Mechanism (SSM) starts in only a few months***, we are glad that we started this investment so much in advance. Moreover, macro-prudential policy is again very much on the agenda. Take the historically low interest rates and range of unconventional monetary policies around the world in order to support modest recoveries and too low rates of inflation. This is an environment where investors search for yield and financial imbalances can build up. And, in fact, the ECB's and the IMF's financial stability analyses confirm that specific asset segments, among which real estate, point to some overheating in several countries. The issue then arises as to whether macro-prudential policy needs to react. In fact, in the last quarter, and considering only the euro area, four countries – Belgium, The Netherlands, Slovenia and Estonia – have activated macro-prudential policy tools (all capital-related measures), in line with the EU regulatory framework. This new policy area is getting traction and robust analysis is needed to allow for timely and adequate interventions.

In my remarks today, I want to first start from the concept of systemic risk and discuss the way our understanding of systemic risk shapes the objectives of macro-prudential policy. Most importantly, I will argue that the ***build-up of systemic risk over the financial cycle is an endogenous outcome*** – a man-made construct – and the job of macro-prudential policy is to try to smoothen this cycle as much as possible. Beyond increasing the resilience of the system, I will argue that macro-prudential policy should be ambitious in leaning against imbalances and if so, it has to be prepared to be bold and intrusive. Decisions on the timing, design and calibration of interventions need to be underpinned by robust analysis. While monetary policy should not be employed to smoothen the credit cycle, under the principle of "one objective, one tool", the macro-prudential policy function should rest under the responsibility of central banks given synergies and the interactions between the two policy functions. This reflects the macro-prudential policy framework adopted for the ECB/SSM.

The nature of systemic risk and the objectives of macro-prudential policy

Macro-prudential policies aim to maintain the stability of the financial system as a whole through containing systemic risks. ***Systemic risks*** can be defined as risks that, if materialised, have the potential to make financial instability become so widespread that the functioning of the financial system is impaired to an extent that growth and welfare suffer materially (ECB 2009). ECB staff, combining available literature and practical experiences, has developed a conceptual framework that relies on three mechanisms that can lead to systemic financial instability: risk coming from large aggregate shocks, contagion risk, and

the risk from the unravelling of widespread financial imbalances that have built up endogenously over time.[1]

Contagion occurs when the failure of one institution "infects" other hitherto "healthy" institutions. Prominent recent examples of the materialisation of contagion risk include the drying up of interbank funding following the collapse of Lehman Brothers. ***Large aggregate shocks have always been an important source of widespread financial instability through history.*** Gorton (1988) documented how negative economic news were the best leading indicators of the likelihood of banking panics in 19th century USA.

The third, and, in my view, most important source of systemic risk is the risk of the unravelling of financial imbalances. These imbalances may build up gradually, mostly endogenously, and can then unravel abruptly. They form part of the inherent pro-cyclicality of the financial system.[2]

It is crucial to recognise that the financial cycle has an important endogenous component which arises because banks take too much solvency and liquidity risk. The aim of macro-prudential policy should be to temper the financial cycle rather than to merely enhance the resilience of the financial sector ahead of crises.

It seems unacceptable that macro-prudential authorities would passively watch the development of a bubble in housing prices and other asset prices, comforted by the idea that the banking sector is prepared to weather the storm and that the central bank would deal with the painful aftermath. The crisis showed that the amount of risk endogenously generated by a financial cycle spinning "out-of-control" dwarfs the "mopping up" ability of fiscal and monetary policy due to fiscal capacity limits and the zero lower bound on nominal interest rates. In matters of financial instability, prevention is always better than cure.

Taming the financial cycle

The challenge of taming the financial cycle is, no doubt, formidable. The nature of systemic instability is not fully understood, and by the same token, analytical tools for risk detection, risk assessment and to support policy responses are being developed. This is why the progress of researchers in MaRs and elsewhere has been very welcome. Despite all the difficulties, the new field of macro finance has already identified a number of important financial amplification channels.

"Collateral amplification" has been an important way to think about procyclicality ever since the seminal work of Kiyotaki and Moore (1997).[3] This mechanism operates because easier credit would by itself increase the value of collateral, thereby further encouraging the supply of credit. During the boom, firms and households borrow too much because they ignore the fact that their collective leverage decisions make the economy more vulnerable to

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1 See de Bandt, O., P. Hartmann and J.L. Peydró (2009), Systemic risk: An update, in A. Berger et al. (eds.), Oxford Handbook of Banking, Oxford University Press, and the special features on "The concept of systemic risk" and "Analytical models and tools for the identification and assessment of systemic risks" in the December 2009 and June 2010 ECB Financial Stability Review, respectively.

2 Borio, C., 2009. "Implementing the Macroprudential Approach to Financial Regulation and Supervision", Banque de France Financial Stability Review, Vol. 13; Shin, H.S. 2011, "Macroprudential policies beyond Basel III", in Macroprudential regulation and policy, BIS papers 60.

3 Kiyotaki, N. and Moore, J. (1997), "Credit Cycles", *Journal of Political Economy*.

negative shocks (Lorenzoni (2008),[4] Bianchi and Mendoza (2010),[5] Korinek and Jeanne (2010).[6]

In Brunnermeier and Sannikov (2014)[7] the same "collateral amplification" mechanism is taken a step further and shown to generate endogenous leverage and volatility cycles. Long booms boost bank capital ratios to such an extent that credit availability stops being a constraint on economic activity. This endogenously leads to a Great Moderation in output and asset price volatility which encourages banks to lever up further. Then the system becomes highly vulnerable to shocks in what is now widely known as the "stability paradox".

MaRs has made significant contributions to the modelling of boom-bust cycles. Boissay, Collard and Smets (2012),[8] for example, tackle the idea that long booms endogenously sow the seeds of crises. In their framework, a long boom leads to excessive liquidity in the banking system, a reduction in interest rates and the entry of bad banks. Eventually, the boom unravels because banks lose trust in one another and the interbank market freezes up. This model captures two important aspects highlighted by the empirical evidence of Schularick and Taylor (2012):[9] crises tend to follow long booms and periods of low interest rates. The results are also consistent with the findings of Hahm, Shin and Shin (2013)[10] and the MaRs paper by Bonfim and Kim (2013).[11] Both show that financial crises are associated with a build-up of liquidity risk.

The three papers we will see in the first session of the conference (Clerc et. al. (2013),[12] Nguyen (2013)[13] and Benes, Kumhof and Laxton (2013)[14] contribute to a literature that motivates financial imbalances and excessive risk-taking from over-optimism or from the implicit safety net guarantees for banks. In these models, too, the build-up of imbalances activates the kinds of adverse feedbacks between the financial sector and the real economy that we know can cause deep and prolonged downturns in activity.

These studies are welcome first steps on the road towards a new framework for the analysis of macro-prudential policy. They integrate boom-bust cycles in state of the art macro-models and thus may support the introduction of macro-prudential tools or regulatory measures as a pre-emptive policy in the context of credit and asset price booms.

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4 Lorenzoni, G. (2008), "Inefficient Credit Booms", *Review of Economic Studies*.

5 Bianchi, J. and Mendoza, E. (2010), "Overborrowing, Financial Crises and 'Macro-prudential' Taxes", NBER WP 16091.

6 Korinek, A. and Jeanne, O. (2010), "Managing Credit Booms and Busts: A Pigouvian Taxation Approach", NBER WP 16377.

7 Brunnermeier, M. and Sannikov, Y. (2014), "A Macroeconomic Model with a Financial Sector", *American Economic Review*.

8 Boissay, F., Collard, F. and Smets, F. (2013), "Booms and Banking Crises", mimeo.

9 Schularick, M. and Taylor, A. (2012), "Credit Booms Gone Bust: Monetary Policy, Leverage Cycles and Financial Crises, 1870–2008", *American Economic Review*.

10 Hahm, J.H., Shin, H.S., and K. Shin, 2013, "Non-Core Bank Liabilities and Financial Vulnerability", Journal of Money, Credit and Banking. Shin, H.S., 2010 "Risk and Liquidity", Clarendon Lecture in Finance, Oxford University Press.

11 Bonfim, D. and M. Kim, "Liquidity Risk in Banking: is there herding?", mimeo, Banco de Portugal, 2013.

12 Clerc, L., Derviz, A., Mendicino, C., Moyen, S., Nikolov, K., Suarez, J., Stracca, L. and Vardoulakis, A. (2013), "Assessing Capital Regulation in Macroeconomic Model with Three Layers of Defaults", mimeo.

13 Nguyen, T. (2013), "Bank Capital Requirements: A Quantitative Analysis", mimeo.

14 Benes, J., Kumhof, M. and Laxton, D. (2013), "Examples of Macro-prudential Policy Experiments in MAPMOD" IMF Working Paper.

Earlier and decisive action seems to be paramount in this respect, necessitating reliable early warning tools. The beneficial impact of higher credit depends on the extent to which credit booms contribute to a permanent financial deepening.[15] It is therefore encouraging that we have new "early warning" models and considerable work on the topic (Alessi and Detken (2013),[16] Alessi et. al. (2014)[17] and Gregory et. al. (2014)[18] presented here at the MaRs conference. These analytical tools exploit multiple and novel data sources, variables and models in order to generate accurate crisis predictions. Many of these tools are already in use in regular macro-prudential surveillance work at the ECB.

Let me summarise. Systemic risk is a largely endogenous phenomenon due to the inherent procyclicality of the financial system. Preventing instability from occurring is better than dealing with its consequences and therefore leaning against the financial cycle should be the key objective of macro-prudential policies. Of course, this implicitly assumes that we have effective and efficient tools at our disposal. I will now turn to the issue of effectiveness.

What instruments should we use to lean against imbalances?

Understanding transmission channels of macro-prudential policies

In advanced economies, actual experience on the use of macro-prudential policies is relatively limited, with the exception of the administrative interventions that were usual in many European countries in the 60s to the 80s, like limits to credit or minimum down payments for consumer credit. These instruments played a containment role on the credit cycle but these were times of less sophisticated financial systems. Nowadays, the transmission channels of stylised macro-prudential instruments are far more complex which makes their calibration especially hard. Policy makers will inevitably have to start with some trial-and-error approaches, that will help identifying and addressing the main operational issues. Having said that, I would also underline that MaRs and relevant research in the macro-prudential policy area have shed light on the transmission channels of financial instability as well as of selected policy and regulatory instruments.

But enhancing our understanding with more analytical work is very much needed to support the choice and implementation of policy instruments. Macro-prudential policies may address financial imbalances building up in specific sectors, by using targeted instruments. This could facilitate the analysis of transmission mechanisms. At the same time, though, the variety of possible combinations of macro-prudential instruments also makes the implementation of macro-prudential policy a complex endeavour, which has to take into account *interactions*, *leakages* and *waterbed effects*. Going forward, analytical frameworks also need to take these elements into account.

Macro-prudential policy: Implementation issues and effectiveness

It is worthwhile to group macro-prudential policies into two categories according to the way they operate. A simple distinction can be made between measures that act through cost-price incentives, like capital requirements, and those that depend on quantitative limits, like large exposures or LTV/DTIs limits. Capital based instruments act to restrain the boom as long as banks' overall cost of funds is sensitive to the structure of its liabilities. We know

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[15] Since countries with more credit booms also experienced more crises (on average), there seems to be a trade-off between macroeconomic performance and stability (Rancière, Tornell, and Westermann, 2008).

[16] Alessi, L. and Detken, C. (2014), "Identifying Excessive Credit Growth and Leverage", mimeo.

[17] Alessi et. al. (2014), "Comparing Different Early Warning Systems: Results from a Horse Race Competition Among Members of the MaRs Network", mimeo.

[18] Gregory, D., Kapadia, K., Nyman, R., Smith, R. and Tuckett, D. (2014) "News and Narratives in Financial Systems: Exploiting Big Data for Systemic Risk Assessment", mimeo.

that as long as cost of equity is not too high and not too insensitive to the riskiness of equity itself, this condition will not hold. Higher capital requirements will increase banks' resilience but may add little to the cost of loans. In an environment of exuberant expectations of house price appreciation, such measures may therefore do little to restrain excessive credit demand. Quantitative limits such as the LTV/DTI ratio are cruder and therefore more likely to work as long as there are many borrowers who will be affected by them. I will discuss these two types of measures in turn.

Capital-based instruments

In the Basel III framework, the CCB is the main counter-cyclical tool. It is designed to increase banks' resilience by making them set aside capital in good times and draw it down in bad times. If a release of the buffer in the downturn fosters bank lending in recessions, the CCB will also have a countercyclical effect. Of course the CCB can also lean against the financial cycle in the upswing phase. However, I see two limitations of the CCB.

First, given the relatively long lags in its implementation and impact, the CCB might not have a timely influence on the financial cycle. The CCB should be activated relatively early in the cycle to give it time to display its effects. This increases the possibility of false alarms, which in turn will most likely lead to setting it at relatively low levels to mitigate the effect of a potential false alarm. In such a scenario though, the CCB runs the risk of being ineffective.

Second, such a tool could also be subject to so-called "waterbed effects" or "leakages". Macro-prudential policies are no exception to the usual search for *regulatory arbitrage*. Affected financial intermediaries may have incentives to circumvent regulation by moving activities outside the regulatory perimeter. By pushing financial intermediation towards the "shadow banking" sector, this could make the policy less effective (if no less desirable) as Bengui and Bianchi (2014)[19] will show at the conference tomorrow.

Another possibility concerns the leakages towards branches of foreign institutions from countries which do not use reciprocation. There is convincing evidence of such leakages in the work of Aiyar, Calomiris and Wieladek (2013)[20] which draws on recent UK experience. For example, for certain risks, e.g. by buoyant credit markets, the CCB can be set above 2.5%. In this case the recognition of the higher buffer rate by other designated authorities is voluntary. This lack of reciprocity might generate substitution effects towards branches of foreign banks thus mitigating the intent of the buffer itself. Therefore, in order to make an effective use of the CCB, international cooperation will be very important. In the Euro Area, the SSM framework helps internalizing some issues. For example, the ECB can take action in the case of reciprocation if needed.

Such leakages may explain why, in practice, macro-prudential policies, at times, seem to have had mixed results, that vary widely across countries. Most of the evidence on the effectiveness of those policies comes from experiences in emerging market economies. Borio and Shim (2007),[21] for example, argue that these measures have, in some cases, slowed down credit expansion temporarily and restrained imprudent practices. It seems therefore possible, under certain conditions, to control financial developments in order to avoid the boom-and-bust cycle.

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[19] Bengui, J. and Bianchi, J. (2014), "Macro-prudential Capital Controls and the Shadow Economy", mimeo.

[20] Aiyar, S., Calomiris, C. and Wieladek, T. (2013), "Does Macro-Pru Leak? Evidence from a UK Policy Experiment", NBER Working Papers 17822.

[21] Borio, C. and I. Shim: "What can (macro-)prudential policy do to support monetary policy?", BIS Working Papers No 242, 2007.

LTV/DTI instruments

The main weakness of capital instruments, such as the CCB or sectoral capital requirements is that they have their impact on the evolution of the cycle mainly through their effect on the cost/price of credit. In an exuberant financial market, this may not be enough to offset the prospects of gain that seem readily available when every asset price is going up. Instruments with quantitative limits like the LTV/DTIs can be more effective in dealing with housing booms because they restrict borrowing in a more direct way. Of course these instruments are not perfect. Ono et. al. (2013)[22] (which will be presented here later today) presents a cautionary tale in this respect based on the Japanese experience. The paper shows that LTV ratios in small business lending voluntarily declined during booms even in the absence of regulation, casting doubt on whether an LTV ratio cap will really bind and help to restrain the boom. Kuttner and Shim (2013)[23] also argue that LTV ratios are relatively less effective at dampening housing price volatility compared to DTI limits.

An interesting MaRs paper (Gelain, Lansing and Mendicino (2013)[24] which was presented at last year's MaRs conference) may provide a convincing explanation for these empirical findings. The paper finds that a generalised borrowing limit that includes elements of both LTV and DTI is the best way to restrain housing booms. LTV limits may be ineffective during periods of rapid house price appreciation because leveraged borrowers experience large increases in wealth and the down-payment constraint becomes less important. Tightening LTV limits further may then have a rather limited impact on house prices and leverage. DTI limits, in contrast, tighten by definition whenever housing values expand faster than incomes.[25] They begin to bind for an increasing number of borrowers helping to exert a counter-cyclical influence. The simulation results in Gelain et. al. (2013) show that the strong counter-cyclical properties of the DTI cap helps to moderate the financial cycle.

My take on this evidence is that LTVs/DTIs need to be used aggressively and it may be necessary to use several instruments at the same time. Two telling practical examples are Singapore and China. Singapore has been a pioneer in the use of macro-prudential policies to moderate financial stability risks arising from the housing market. Since 2009, a series of measures targeting housing has been implemented, with a tightening of the LTV ratio for individual borrowers from 90% in 2009 to 40% in 2013. The cumulative impact of these measures has been slow, and residential property prices stabilised only recently. In China, the introduction of an 80% LTV ceiling in 2001 did not have much of a bite until it was complemented with 50% DTI limits in 2005–06. But even then, the combination of the two measures was credited with reducing mortgage credit growth by only 2 percentage points of GDP over 2004–08. This is a sobering fact when one notes that LTV/DTIs seem so far the most effective type of macro-prudential instruments.

To summarise, macro-prudential policy has to be pre-emptive, deployed timely and in a bold fashion. We may doubt that capital instruments, such as the CCB with a maximum of 2.5 percentage points, can be sufficiently effective to achieve more than merely building up the resilience of banks. Quantitative instruments such as the LTV/DTI ratio limit can work better but even these instruments may need to be used boldly in order to have a significant dampening impact on housing booms.

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[22] Ono, T, Uchida, H, Udell, G. and Uesugi, I. (2013), "Lending Pro-cyclicality and Macro-prudential Policy: Evidence from Japanese LTV Ratios", mimeo.

[23] Kuttner, K. and Shim, I., 2013. "Can Non-Interest Rate Policies Stabilize Housing Markets? Evidence from a Panel of 57 Economies", NBER WP 19723.

[24] Gelain, P. Lansing, K. and Mendicino, C. (2013), "House prices, credit growth and excess volatility: implications for monetary and macro-prudential policy", *International Journal of Central Banking*.

[25] Equally, the limit endogenously loosens whenever housing prices decline relative to incomes.

Macro-prudential tools in the EU are governed by two legal texts: the CRR and CRD IV. The appropriate analytical underpinning needs to be gathered for the adequate design and calibration of tools at the disposal of macro-prudential authorities. At the same time, the range of tools might need to be expanded. The Countercyclical Capital Buffer (Art. 130, 135–140), Systemic Risk Buffer (Art. 133–134) and Capital surcharge on systemically important institutions (Art. 131) fall under the CRD IV. The CRR includes (under Art. 458): minimum Capital Requirements, Large Exposure limits, the Capital Conservation Buffer, Sectoral Risk Weights (in the residential and commercial property sectors) and Intra-financial Sector Exposures whereby higher risk weights can be set vis-à-vis financial sector exposures. Furthermore, it includes the Liquidity Requirements (LCR and NSFR) and requirements on Public Disclosure aimed at enhancing market discipline and mitigating informational asymmetries. While ***the range of tools*** might appear quite broad, it ***would gain in being enlarged with some instruments less dependent on cost/incentives and more on quantitative limits***, like for instance large exposures limits by sector and not just by clients. Other possible toolkit extensions to consider are the LTVs or DTIs ratios or the loans to deposit ratio.

A final consideration relates to the fact that the cyclical behaviour of the parts of the financial sector which fall outside of the scope of regulation and supervision, need to be influenced by other policies, possibly by monetary policy. To a large extent, this is because the macro-prudential tools assigned to EU authorities (and the ECB) concern primarily, of not exclusively, the banking sector. For a central bank with macro-prudential responsibilities, the link between macro-prudential and monetary policies is therefore of particular relevance. It is this point that I will turn to next.

Interactions with monetary policy

The fact that the financial crisis led to large disruptions in the economy is a strong reason to make the financial cycle a subject of stabilisation policies.[26] Monetary policy has traditionally been defined in terms of the business cycle. The financial cycle, while not disconnected from the business cycle, has larger amplitude and is at least twice as long as the business cycle. Its dynamics are driven more directly by credit and property price developments.

As part of its monetary policy strategy, the ECB already assigns a prominent role to financial developments, by taking into account the medium-term effects of booming credit and asset markets for the assessment of risks to price stability. Nonetheless, standard monetary policy may not be the most appropriate tool to address all the underlying forces driving the financial cycle. This view is supported by the findings of a number of MaRs studies (see for example Angelini, Neri and Panetta (2012),[27] Beau, Clerc and Mojon (2012)[28] and Lambertini, Mendicino and Punzi (2013).[29]

First, it is not clear what would be the appropriate magnitude of changes in the policy rate to curb excessive developments in asset prices and credit. While monetary policy

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[26] See, for example, Borio, C., "The financial cycle and macroeconomics: What have we learnt?", Working Paper Series, No 395, Bank for International Settlements, 2012; Aikman, D., Haldane, A. and Nelson, B., "Curbing the credit cycle", Economic Journal, forthcoming; and Claessens, S., Kose, M.A. and Terrones, M.E., "Financial Cycles: What? How? When?", IMF Working Papers, No 11/76, International Monetary Fund, 2011.

[27] Angelini, P., Neri, S. and Panetta, F. (2012), "Monetary and Macro-prudential Policies" ECB Working Paper 1449.

[28] Cahn, C., Beau, D., Clerc, L. and Mojon, B. (2012), "Macro-prudential policy and the conduct of monetary policy", Proceedings of the Central Bank of Chile 2012 Annual Conference.

[29] Mendicino, C., Lambertini, L. and Punzi, M. (2012), "Leaning against boom and bust cycles in credit and housing prices: monetary and macro-prudential policies", Journal of Economic Dynamics and Control.

could be a powerful instrument in a boom that is driven by increasing leverage[30] the financial cycle differs from the business cycle in its amplitude, which could at times require much larger shifts in the policy rate than would be warranted by the outlook for inflation.[31]

Second, financial cycles across euro area countries are still heterogeneous, while monetary policy is the same across the board. The ECB's monetary policy is responsible for ensuring medium-term price stability in the euro area as whole. Tailoring monetary policy decisions to specific sectoral or regional differences in credit or asset price developments might have inappropriate side effects in other areas.

These considerations suggest that two different objectives warrant the use of two different sets of instruments, in the spirit of Tinbergen. The objective of monetary policy remains the safeguarding of medium-term price stability. As I have mentioned earlier, the main task of macro-prudential policy is to address risks to financial stability and to ultimately curb the financial cycle, so that the risk of financial crises occurring is reduced and real economic effects of financial crises are dampened. This separation is also consistent with the "principle of effective market classification", according to which policies should be linked to those objectives on which they have the strongest impact.[32]

Whether the two different policy functions give rise to friction depends on the degree of complementarity of the respective policy objectives. Most of the time, there is no trade-off between price stability and financial stability. Price stability contributes to financial stability by eliminating inflation-related distortions in financial markets. At the same time, financial stability facilitates the central bank's task of maintaining price stability by contributing to a stable monetary transmission mechanism – a precondition for a central bank to be able to discharge its task – and by avoiding that risks to price stability emanate from financial instability. Therefore, in those cases, the respective objectives of macro-prudential policy and monetary policy are mutually reinforcing.

However in certain situations, the two policies may have different directions, one restricting while the other is expanding, without this implying that they are in conflict but rather that they are being complementary. That is precisely what happened during the time of the so-called "great moderation" and in the present moment. Right now, the low nominal growth requires low interest rates and this creates the possibility of activating the "the risk-taking channel"[33] and search for yield and restrictive macro-prudential measures become necessary. ***In general, the two policy areas interact, and their effects on each other have to be considered***. Macro-prudential policy influences credit conditions, and thereby also feeds back into the overall economy and, hence, the outlook for price stability. Monetary policy can, in the pursuit of price stability, affect systemic risk via a number of transmission channels.

The interaction effects of monetary policy and macro-prudential policy suggest that coordination between the two policy functions is beneficial. The need for coordination and the fact that both monetary policy and macro-prudential policy take a macroeconomic perspective provide a strong motivation for integrating the two policy functions within one

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[30] See, for example, Adrian, T. and Shin, H.-S., "The Changing Nature of Financial Intermediation and the Financial Crisis of 2007–09", Staff Reports, No 439, Federal Reserve Bank of New York, March 2010.

[31] See, for example, Bean, C., Paustian, M., Penalver, A. and Taylor, T., "Monetary Policy after the Fall", Macroeconomic Challenges: The Decade Ahead, Federal Reserve Bank of Kansas City, 2011.

[32] See also Mundell (1962) who discussed this question in the context of monetary and fiscal policy.

[33] The risk-taking channel suggests that monetary policy affects risk premia via lenders' or investors' willingness to take risk, e.g. via sticky return targets or an inherent counter-cyclicality of investor risk aversion. See Borio, C. and Zhu, H., "Capital regulation, risk-taking and monetary policy: a missing link in the transmission mechanism?", BIS Working Papers, No. 268, December 2008; and the references therein.

institution, the central bank, an entity with broad knowledge of markets, financial stability and the independence to take bold decisions when needed.

It has therefore been decided that the Governing Council will have a prominent role to play in matters related to macro-prudential policy. Regular joint meetings will be held with the Supervisory Board of the SSM to assess the relevant financial stability situation in the euro area and in each of its member countries. Following the assessment of risks and vulnerabilities to financial system stability and possible remedial action, discussions may conclude on the need for the activation of a specific macro-prudential tool. Robust analysis is needed to contradict possible inaction bias on the timing of intervention as well as on the design and implementation features of such tools. The Governing Council also needs to be alert to leakages and issues of coordination of macro-prudential actions where measures are addressed to a specific country. Detailed procedures for the activation of macro-prudential policy tools have also been spelled out, along challenging timelines, in line with the SSM regulation, whereby the ultimate responsibility lies with the Governing Council.

Conclusion

Impressive progress has been made in understanding transmission mechanisms of macro-prudential policy instruments but this is the beginning of a long journey, as we prepare the analytical toolkit for this new policy area. I am encouraged by the wide range of empirical and theoretical modelling approaches of financial instability which are being presented here at the MaRs conference.

For the decisions we have to take in the near term, we will have to rely more on incompletely tested theories and sometimes precarious econometric evidence. This means that we have to accept uncertainty and cautious experimentation when we decide what is necessary to stabilise the financial system. As I mentioned recently: "Macro-prudential policy faces a major test going forward: will there be determination and boldness to try to smooth the financial cycle, or will the authorities just take refuge in building buffers and strengthening financial institutions?"[34]

This would imply that significant reliance on monetary policy would remain to address a posteriori the regrettable results of the boom/bust feature of the financial system. Only time will tell, but the answer to that question will depend, in my view, whether the central banks will be given or not a predominant role in macro-prudential policy decision-making.

Let me conclude.

Many policies in history have been developed through trial and error. It is rare that a perfect theory or academic paradigm is established before at the time when a new policy needs to be used for the first time. But it is important that once the policy community has realised that a new policy is indispensable and starts "field experiments", the analytical foundations are developed in parallel. And, I would argue that we, in the ECB and the European System of Central Banks, have made a major and timely step through MaRs. I hope that the presentation of the final MaRs report after my speech and the papers in the conference programme today and tomorrow will testify this. Other authorities, like the BIS or the IMF as well as a part of the academic community have taken similar steps. Many of the people involved are represented here at the concluding MaRs conference.

But this is only a start. As I tried to illustrate, policy-makers need well-established foundations for their actions. They also know that in order to be effective, these actions will have to be bold. Many years of experience across countries and a variety of instruments need to be

[34] "Making macro-prudential policy work", speech by Vítor Constâncio, Vice-President of the ECB, at the high-level seminar organised by De Nederlandsche Bank, 10 June 2014.

acquired. The macro-prudential policy area needs to become part of the regular economics curriculum. Seminal papers which can be referred to when such policies are addressed need to be written. Furthermore, a large body of research, from which university teachers distil the main principles, institutional features, policy instruments and transmission mechanisms needs to be built. This would enable equipping students with the basic, policy-relevant knowledge.

In the macro-prudential field we are still very far from this ideal situation. More experience in the application of macro-prudential tools and in the use of new frameworks for the assessment of macro-prudential regulatory instruments needs to be acquired. More research work along the lines of MaRs and related initiatives needs to be pursued. We invite all researchers from outside the ESCB, whether at other policy authorities or academia, to join forces with us and pursue this goal.

I am now at your disposal for questions, if you wish. Thank you for attention.