



Interaction between monetary policy and bank regulation: Theory and European practice

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Abstract

The European Union has pursued a number of initiatives to create a safer and sounder financial sector for the single market. In parallel, bold unconventional monetary policies have been implemented in order to combat low inflation, foster risk taking and, ultimately, reinvigorate growth. But monetary and macro-prudential policies interact with each other and thus may enhance or diminish the effectiveness of the other. Monetary policy affects financial stability by shaping, for instance, leverage and borrowing. Equally, macro-prudential policies constrain borrowing, which in turn have side-effects on output and prices, and therefore on monetary policy. When both monetary and macroprudential functions are housed within the central bank, coordination is improved, but safeguards are needed to counter the risks from dual objectives. Against this background, this paper outlines the theoretical and empirical underpinnings of macro-prudential policy, and discusses the way it interacts with monetary policy. We identify advantages as well as risks from cooperating in the two policy areas, and provide suggestions in terms of institutional design on how to contain those risks. Against this backdrop, we evaluate the recent European practice.

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Abstract

The European Union has pursued a number of initiatives to create a safer and sounder financial sector for the single market. In parallel, bold unconventional monetary policies have been implemented in order to combat low inflation, foster risk taking and, ultimately, reinvigorate growth. But monetary and macro-prudential policies interact with each other and thus may enhance or diminish the effectiveness of the other. Monetary policy affects financial stability by shaping, for instance, leverage and borrowing. Equally, macro-prudential policies constrain borrowing, which in turn have side-effects on output and prices, and therefore on monetary policy. When both monetary and macro-prudential functions are housed within the central bank, coordination is improved, but safeguards are needed to counter the risks from dual objectives. Against this background, this paper outlines the theoretical and empirical underpinnings of macro-prudential policy, and discusses the way it interacts with monetary policy. We identify advantages as well as risks from cooperating in the two policy areas, and provide suggestions in terms of institutional design on how to contain those risks. Against this backdrop, we evaluate the recent European practice.

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1. WHAT HAS CHANGED IN MODERN CENTRAL BANK POLICY CONDUCT?

Before the financial meltdown in 2008, there was a broad consensus that monetary policy was about maintaining price stability. Decades of experimentation with different targets and instruments had shown the best target to be the price stability one, as it was correctly anchoring the expectations of (financial) agents towards a clearly measurable and time-consistent objective. The experience also suggested that the best performing instrument was the nominal policy rate, as its transmission to other segments of the financial market was direct and relatively smooth (see also Gerba and Macchiarelli, 2015a). Based on the separation principle of Tinbergen (i.e. the idea that each goal should be pursued with a separate and dedicated tool), it was argued indeed that the one monetary policy objective of price stability should be pursued with one instrument. In this way, the information noise regarding monetary policy actions was minimized because agents understand the aim of a specific interest rate rise / drop.¹ Further down the line, it was shown that the best way to ensure financial stability was to maintain price stability, and any other objective or action would lead to sub-optimal outcomes.² In other words, financial stability would be a byproduct of price stability.

Previously unimaginable events that materialized following the financial market meltdown in 2008 brought this consensus into question. Financial stability had not been ensured, and more importantly the link between (economic) price-level and financial market activity had been misunderstood. At that point, bolder actions against the unraveling effects from the meltdown were needed and additional tools required. Under these circumstances, a new consensus was born regarding the objectives of a central bank. Not only should a monetary authority prevent adverse financial developments, but it should also care about financial stability as much as it does about price-level stability. The question was only whether the additional financial stability objective should be pursued in conjunction with the price-level objective, or whether these two objectives should be kept separate. In other words, should the newly created macro-prudential targets be conducted in accordance with the monetary policy target, or should they be conducted independently? At the core of the debate is the fundamental issue of the degree of interaction between the two policy targets: “How connected are these two policies?”

In this paper, we will explore these interactions and outline the various (and sometimes diverging) point of views in the literature thus far. Against, this backdrop the European practice is examined. Lately, we aim at providing some recommendations on how optimal policy interaction can be achieved, and what policy combinations should be avoided. The experience with macro-prudential policy is, however, very short and the amount of studies examining the interactions very few yet. Therefore, the suggestions should be taken as preliminary and indicative rather than prescriptive since the optimal strategy will become clearer by “learning by doing” and gaining experience in macro-prudential policy-making.

¹ Remember that the (financial) agents can only observe interest rate movements and not the transmission. Therefore, knowing the explicit objective of a central bank, they are able to deduce what end a specific interest rate rise/drop is having. Hence we minimize the information noise with respect to their actions.

² In a seminal paper, Bernanke and Gertler (2001) show that the best way to maintain macroeconomic (and financial) stability was to have a reaction function that responds heavily to changes in inflation and output, albeit with the smaller weight on the latter. Any reaction function that included explicit response to a financial market variable, such as a change in the asset price, would result in a sub-optimal social welfare outcome generated for the entire economy. This paper, presented in Kansas City 2000 shaped the mind-set of many central bankers and academics at the time, and possible reactions to financial market developments were not questioned anymore.

2. MACRO VS. MICRO-PRUDENTIAL POLICY-MAKING

One of the key lessons from the financial downturn in 2008 was that micro-prudential supervision alone is not sufficient to guarantee the stability of the financial system. It ignores the externalities of individual actions and the constraints within on the entire financial system, or even the stability of the macroeconomy.

Micro-prudential rules (and supervision) concentrate on the institution-level financial ratios, or in its widest form, on the developments in a financial market segment. For instance, micro-prudential rules set the capital buffer that a bank must hold, the leverage ratio of a financial firm, or the type of capital that is accepted as a cushion depending on the shocks that it faces (Tier 1, Tier 2, etc). An example of rules under this category is the Basel accords (i.e. Basel III is the most recent), or the Insolvency regulation (Insolvency II the most recent) for insurance companies. Supervisors check that individual institutions adhere to these rules, as well as monitor their market practices. In cases of violations of standard market practices in a particular market segment, the supervisors can sanction the institutions involved. But the aggregate is not always the sum of individuals. What became evident during 2008 was that ensuring individual institutions' solvency individually does not assure full market soundness, or prevent a systemic financial crash. The size of the institutions vary, as well as their contribution to total systemic risk, their importance for the health of the financial system, or the way in which they are linked to other market actors on the financial market. Only a macro-prudential policy can tackle these issues from a systemic perspective. Thus, the latter has become a policy objective by its own right.

Table 1: Key Macro-prudential Instruments in the EMU

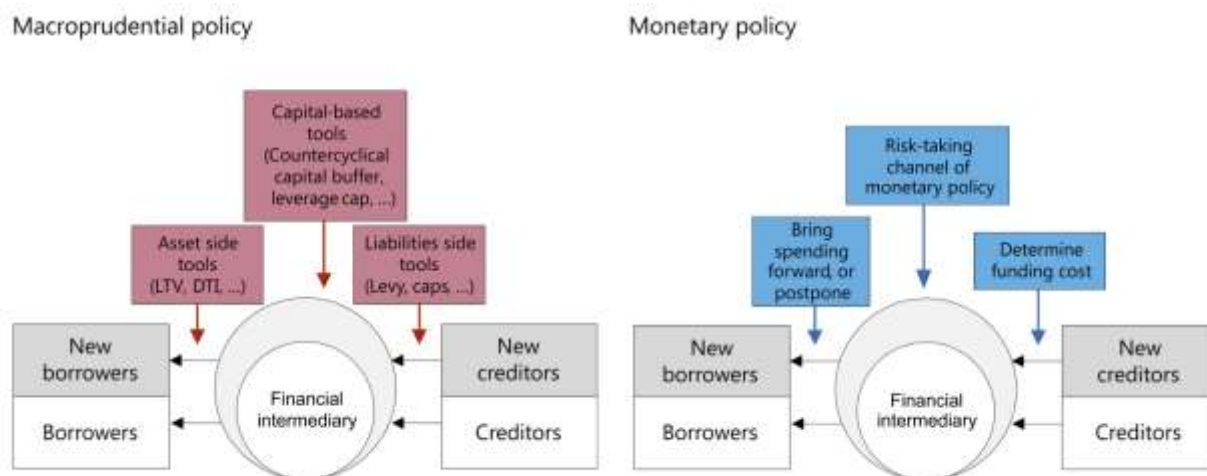
CRD IV	
Countercyclical capital buffers	Article 124
Systemic Risk buffers	Article 124d
SIFI capital surcharge	Article 124a
Sectoral capital requirements and risk weights	Article 119
CRR	
Leverage ratios	As of 2009
Liquidity Coverage Ratio	As of 2015
Net Stable Funding Ratio	As of 2019
Sectoral capital requirements and risk weights	Article 160, 443
Large exposure limits	Article 443a
Increased disclosure requirements	Article 443a
Outside Legal Texts	
Margin and haircut requirements	
Loan-to-value ratio caps	
Levy on non-stable funding	
Loan-to-income ratios	
Loan-to-deposit ratio caps	

Source: Carboni et al (2013).

Ideally, macro-prudential policy works in two ways. First, it helps curb incentives for excessive *ex-ante* risk-taking by making the individual institutions preventively aware of the contribution of their actions to the systemic stability, or financial stability of the system as a whole. Second, macro-prudential instruments should increase the financial system's resilience, thereby reducing its vulnerability to shocks. In other words, the key aim of macro-prudential policy is that of moderating

the pro-cyclicality of the system, by influencing the financial intermediation process, operating on the side of assets, liabilities and the leverage of financial institutions. In this sense, macro-prudential policy and monetary policy have much in common (see Figure 1).

Figure 1: Comparison of macroprudential policy with monetary policy



Source: Shin (2015).

Since there are many different kinds of distortions and misaligned incentives in different areas, the macro-prudential policy area requires its own set of instruments. The type of instruments that have so far been developed are countercyclical capital buffers for banks, capital surcharges for systemically important financial institutions (SIFI), sectoral capital requirements / risk weights, loan-to-value ratios for mortgage loans, liquidity ratios for financial institutions, reserve requirements for banks, or loan-loss provisions that reduce the amount of loanable funds by financial intermediaries and increase credit spreads.³ Table 1 summarizes the measures and the legal texts within which they are contained for the EMU.

In a perfect (and frictionless) world, a well-communicated and well-measured use of macro-prudential tools contributes to macroeconomic stability, and therefore makes monetary policy conduct smoother. The two policies complement each other. The need to cut interest rates to their lower bound, as well as the need to engage in non-standard monetary measures in the event of a crisis should be minimized. However, in reality, to understand this we need to analyze the way the two policies interact, and what their economic effects are. In addition, we need to specify how much of these results rely on the assumption of a perfect world, and under what circumstances these policies can be conflicting.⁴

3. THE INTERFACE BETWEEN MONETARY AND MACRO-PRUDENTIAL POLICY

3.1. HOW DO THEY INTERACT?

There is a general consensus that price stability and financial stability are complementary over the long run. However, over the short / medium term, the two objectives can clash. As an example, during quantitative easing (QE) programs, macro-prudential instruments designed to contain financial market leverage can run counter to monetary policy measures. While expansive monetary measures, such as

³ Carboni et al (2013).

⁴ There is an additional level of complexity of analysis that relates to the interactions between micro-prudential and macro-prudential policy. While outside the scope of the current paper, we will briefly mention the way these two interact, and under which circumstances these two can be conflicting.

quantitative or credit easing, aim to increase borrowing and spending in the economy, macro-prudential policy aimed at limiting the loan-to-value ratio of banks can instead decrease the amount of loans supplied by banks. These two objectives are clearly conflicting. Therefore aligning the two policies is important. But, aligning them too much can also be dangerous as it might lead to financial dominance of policies, or damage the reputation of the central bank.⁵ Therefore it is not clear how much of alignment of the two policies there should be in order to achieve price and financial stability. There is neither a consensus about it. We will therefore outline the three perspectives currently being discussed: the *neutral*, *extended*, and *integrated* perspectives. The key difference lies in the degree of separation assumed between the two objectives and policy transmissions.⁶

Neutral (or separated) perspective

The neutral perspective assumes that monetary policy should remain focused on price stability.⁷ Macro-prudential policy, *per sé*, should stick to financial stability and use its own (and separated) toolkit to achieve its goals. Hence, the only difference with the pre-crisis consensus is the establishment of an effective and credible macro-prudential policy.

The underlying assumption of this approach is that each policy area is capable of reducing the key problem in its own area accurately and effectively. Monetary policy does not make any considerable contribution to the financial imbalances, which means that the risk-taking channel (of monetary policy) is viewed as insignificant.⁸ If, at any point, the monetary policy was to be responsible for both price and financial stability, this would result in a conflict of objectives and it would create the danger that financial stability objective takes over the price stability one, according to proponents of this view.⁹ This is largely the perspective of the Bundesbank, among others. One could also claim that the current institutional set-up of the ECB follows the logic of this perspective.

Extended perspective

Although the supporters of this view believe that monetary policy should fundamentally be geared towards a clearly defined objective of price stability, they also believed that monetary policy should not focus too narrowly on achieving a short-term inflation target. Proponents of this view believe that the cost of exclusively pursuing the price stability objective is that monetary policy will not be able to combat the longer-term financial imbalances (for instances high debt accumulation) which would ultimately be at odds with price stability itself over the medium to long term.¹⁰ Even under this view, it remains that macro-prudential policy should be the one that is broadly in charge of financial stability. The difference with the *neutral* perspective, however, is that it is assumed that it is impossible to eliminate an excessively pronounced financial cycle exclusively relying on macro-prudential policy tools.¹¹ Under this perspective, monetary policy can contribute to the build-up of financial imbalances. This is the case as the monetary policy stance impacts on risk appetite of financial intermediaries, which, in turn, affects the health and stability of the financial sector, hence, the outlook for price stability.

⁵ More on this in the section on disadvantages from incorporating macro-prudential policy in monetary policy conduct.

⁶ Bundesbank (2015).

⁷ Bundesbank (2015) calls this the *ideal perspective*. However, to avoid normative denominations, our definition is based on the assumption of neutrality of one policy with respect to the other.

⁸ Bundesbank (2015).

⁹ See Ueda and Valencia (2014) for a theoretical underpinning of this perspective.

¹⁰ See Borio (2014) for the analytical fundamentals of this view.

¹¹ See Borio (2014), Feroli *et al.* (2014), Goodhart (2014), Stein (2014), and Woodford (2012), amongst others, for a discussion on the limitations of macro-prudential tools, and the difficulty of conceptualizing financial stability.

The ideal set-up would be that of having a countercyclical monetary policy, which is stricter during upswings, even in the absence of inflationary pressures, and is aggressively eased *in the short term* during marked contractions. Even if, in the short run, the monetary policy stance was to cause the target variables (i.e. inflation) to differ from their desired values, this would be justified by the possibility of avoiding future (larger) deviations, such as the likelihood of a crisis. In saying so, however, one should also recognize the limitations that monetary policy faces, in particular with respect to eliminating the debt overhang that is typical of a financial downturn.

Therefore, the extended perspective stresses the risk of overloading monetary policy by attaching targets under (financial) crises times that are not reasonable to achieve. Hence, rather than using monetary policy as a crisis combat tool, the latter should be used preventively in order to avoid an overloading later on. The preventive nature of monetary policy is regarded as necessary in order to protect credibility regarding its price stability objective. The monetary policy is regarded as effective in at least containing *ex ante* risks to financial stability, even if this objective can be attained only in conjunction with a solid macro-prudential policy.¹²

The Bank of International Settlements (BIS) largely endorses this perspective. The current institutional set-up of the FED pursues this logic. In addition, there are signs that the ECB is slowly moving in this direction.

Integrated perspective

The proponents of the final perspective, i.e. the integrated one, argue that even the extended perspective calls for an excessively strict, and inappropriate, separation of the two policy areas, i.e. price and financial stability. The underlying assumption is that it is very difficult to separate price stability from financial stability, as well as it is hard to split the instruments and transmission mechanism of monetary policy from that of macro-prudential policy. As a result, it is highly ineffective for the monetary policy to solely focus on price stability. For instance, securities purchase programs, one of the unconventional policy measures adopted recently by the ECB, does not only have direct intended monetary policy effects, but also, through recapitalization of ailing financial intermediaries, impact on financial stability, which in turn feeds back directly into price stability.¹³ In a similar way, macro-prudential tools that affect quantity of lending (a financial stability objective) impacts on money creation and, thus, on price stability.

Hence, this view advocates using simultaneously monetary policy (standard and non-standard) and macro-prudential instruments in order to ensure financial stability and price stability at the same time. Therefore a strict separation of tools by target areas is, according to them, counterproductive. Instead both policy areas should cooperate closely. Moreover, financial market events should always be part of monetary policy considerations.

In cases where a crisis outbreaks – despite the joint efforts an integrated perspective would call for – a “bottleneck approach” should be taken. The sectors that suffer the most from a debt overhang, and whose balance sheets were hit the hardest, should be primarily supported. Without such policy efforts, the contraction in some sectors could easily result in a broader liquidity spiral and fire sales of assets, which in turn could lead to self-reinforcing deflationary spirals and sudden stops.¹⁴ This view is in line with the actions taken by the Bank of Japan since the Asian crisis and several of the emerging economies’ central banks at the time.

¹² Bundesbank (2015).

¹³ See Stein (2013) for a discussion of this feed-back loop.

¹⁴ See Mendoza (2010) for the theoretical foundations of this mechanism, and Buiter and Sibert (2008) for a discussion on the need for a ‘market-maker of last resort’ in such cases.

An argument supporting the case of a strong coordination between the monetary and macro-prudential policies in the euro area, for instance, is the fact that the effectiveness of the policy interest rate as an instrument to prevent financial stability risks is likely to be limited, owing to the lack of synchronicity of credit and liquidity cycles in the currency area.¹⁵ We will develop this argument further in Section 4.2.

3.2. ARE THERE ANY DISADVANTAGES FROM POLICY INTERACTIONS IN THEORY?

Having discussed the possible interactions, it should be borne in mind that such interactions do not, however, come without a cost. It is therefore important to do a full cost-benefit analysis when deciding how integrated the two policies should be, and what the “optimal” institutional design is in order to achieve in order to safeguard the smooth functioning of both policies. In this section we focus on the costs, being the latter less obvious.

Talking about risks, the first hazard identified in the literature is the risk of *time inconsistency* arising from multiple objectives. If monetary policy is responsible for both price stability and financial stability, and the latter is influenced by private-sector debt, the two objectives might become conflicting. Initially, it may be desirable for monetary policy to pursue a low inflation rate. However, following a (negative) financial shock that results in a high level of private-sector debt, for instance, monetary policy makers could decide to reduce the real debt burden by allowing a higher inflation. The result is not only a conflict of objectives, but a time inconsistency in (monetary) policy actions, since the announced rise in interest rate to dampen inflation is rapidly followed by a fall of the policy rate, in order to reduce the debt burden.

Second, a monetary policy’s independence could be questioned if it focuses too heavily on financial stability. Gearing monetary policy solely towards the goal of price stability facilitates the political acceptance of central bank independence, as the inflation target as the associated instrument can be clearly defined and assessed. For financial stability objective, on the contrary, several targets exist (credit growth, debt, asset prices, etc) and the desired levels *a priori* are difficult to determine. In addition, by having to get involved in solvency issues of private economic agents or countries, while trying to achieve the financial stability objective, monetary policy will move closer to the domain of (quasi) fiscal activities. Therefore, the independence of the central bank is not anymore granted, as redistributive issues would also arise.

Third, there could easily be a situation where the financial gains from an expansion dominate the mindset of policy-makers during an upswing, the so-called *financial dominance*. *Ex ante* macro-prudential policies may succumb to political and industry pressures not to lean too much *against* the wind (or the boom), and rely instead on monetary policy to clean the ground or anyway solve any remaining problems arising from a boom-bust cycle.

4. FROM THEORY TO PRACTICE: MONETARY AND MACRO-PRUDENTIAL POLICIES IN THE EMU

Talking about the EMU practice, the Commission has, since the crisis, proposed nearly 30 sets of rules for better regulation and supervision of the financial sector. As discussed previously, the ensuing Eurozone crisis added an extra dimension. It highlighted the potentially vicious circle between banks and sovereigns, highlighting in turn the limits of supervision that mainly focused on micro-prudential

¹⁵ Bundesbank (2015).

aspects and individual monetary and financial institutions without taking into account the financial system as a whole. This is why the EU Heads of State and Government committed to the implementation of a consistent framework that rests on a multi-level institutional approach, with a Single Supervisory Mechanism (SSM), as a part of a broader Banking Union for the euro area, and a European Systemic Risk Board (ESRB) for the EU as a whole.

This was coupled by the introduction of rules on capital requirements (Capital requirements regulation and directive – CRR/CRD IV), which entered into force on 16 July 2013 (and applied from 1 January 2014), transposing the Basel III agreement into EU legislation.

In the next two sections, we discuss the governance of these policies in details and the possible interactions with the ECB's monetary policy. While there is obviously an international governance dimension to consider, the latter is not discussed for sake of brevity (for an overview see Figure 2).

4.1 THE GOVERNANCE OF MONETARY AND MACRO-PRUDENTIAL POLICIES: COORDINATION AT THE EUROPEAN LEVEL

The ECB took over macro-prudential supervision by becoming a key participant in the **European Systemic Risk Board (ESRB)**, created at the end of 2010 as a part of a new two-pillar system of financial supervision, the European System of Financial Supervision (ESFS). The ESRB represents the macro-prudential pillar at the European level, going hand-in-hand with three European Supervisory Authorities (ESAs) to cover micro-prudential supervision; representing the second pillar.¹⁶

The ESRB, according to its mandate, “*shall be responsible for the macro-prudential oversight of the financial system within the Union in order to contribute to the prevention or mitigation of systemic risks to financial stability [...] that arise from developments within the financial system and taking into account macro-economic developments, so as to avoid periods of widespread financial distress*” (ESRB legislation).

The ESRB was not given any legally binding authority, albeit it has the power to issue warnings and recommendations, including both admonitions calling for the attention of the addressees to identified systemic risks, or recommendations advising on policy actions to be taken to mitigate the identified risks. Addressees of the ESRB's warnings and recommendations can be the European Union, individual EU Member States and the three ESAs, as well as national supervisory authorities in the EU or the European Commission (the latter, mainly as concerns the relevant EU legislation).

Given the ESRB's General Board composition, the process leading to the adoption of warnings and recommendations and their communication involves collective consideration by a set of important bodies and institutions, including the President and Vice-President of the ECB, which makes it difficult for the addressees to simply ignore them.¹⁷ Moreover, the addressees are subject to an “act or explain” mechanism, implying that addressees have to report to the ESRB on the actions taken to comply with the recommendations, or explain, if not action is taken, why. The ESRB's Board composition and its functioning thus result into a “peer-pressure” mechanism on the addressees, albeit no sanctions can be formally applied (Dierick *et al.*, 2012).

¹⁶ The three ESAs were not created *ex novo* but resulted from upgrading the 3 Level Lamfalussy (3L3) Committee of European Financial Supervisors and transforming them into authorities with legal personality and enhanced competencies. This new financial supervision system was established following a European Commission proposal, at the back of the results contained in the De Larosière report, supporting a new European supervisory structure.

¹⁷ The ESRB board brings together the central bank governors and high-level representatives of the financial supervisory authorities from all 28 EU Member States, as well as the President and Vice-President of the ECB, a member of the European Commission and the chairs of three ESAs.

Beyond the European Systemic Risk Board, the European supervisory tasks are related to the **Single Supervisory Mechanism** (SSM), the first element of the European Banking Union to be. The SSM also relates to the micro-prudential dimension of the banking system, being grounded into bank-specific assessment and supervision. The SSM, in its final composition, is composed of the ECB and national supervisory authorities.¹⁸ The EU Council agreement appropriately conferred broad investigatory and supervisory powers to the ECB,¹⁹ which is responsible for the effective and consistent functioning of the SSM, starting from Nov. 2104.²⁰ National authorities remain responsible for the banks remaining under their direct supervision.

Guidance on the design of an effective mechanism is provided in the Basel Core Principles – part of the wider international effort to impose stricter regulation on the financial system.²¹ According to these principles, a number of preconditions and prerequisites must be met at the euro area level, including: (i) the implementation of coherent and sound macroeconomic policies; (ii) an established framework for financial stability policy; (iii) a well-developed public infrastructure; (iv) an effective crisis management, recovery and resolution framework to deal with bank failures; (v) an adequate safety net to deal with confidence crisis and guarantee systemic protection; and (vi) effective market discipline. On the other hand, as underlined by IMF (2013), prerequisites to establish a sound basis for the SSM include: (i) operational independence of the SSM; (ii) clear objectives and mandates; (iii) legal protection of supervisors; (iv) transparent processes, sound governance and adequate resources; and (v) accountability.

The relevant regulation seems to meet these prerequisites, albeit the risks of the SSM/ECB being trapped in a fiscal dominance game are potentially high. For instance, the ECB, in its role of lender of last resort for banks (i.e. monetary policy), could have incentives, *ex ante*, to minimize liquidity operations that constitute a risk to its balance sheet, while, in its SSM role, advocate larger European Stability Mechanism (ESM) interventions than what a “neutral” supervisor would do (Begg *et al.*, 2014).

As a part of the SSM role, and in order to facilitate identification and action on systemic risks, including the internalization of cross-border externalities, shift in macro-prudential mandates and tools have been considered, away from member states and toward the ECB.

Differently from the ESRB’s macro-prudential oversight role, with the SSM the ECB is given binding powers to be able to use macro-prudential instruments, by “digging” into banks’ balance sheets. Importantly, Article 15 of Regulation No. 7776/1/13 gives the ECB the possibility to impose administrative sanctions “[i]n accordance with Article 132(3) TFEU and Council Regulation (EC) No. 2532/98 of 23 November 1998”. In particular, “in order to enable the ECB to effectively carry out its tasks relating to the enforcement of supervisory rules set out in directly applicable Union law, the

¹⁸ The SSM final legislation consists of: (i) Regulation No. 7776/1/13, adopted on 19 March 2013, conferring specific tasks (Art 4 of the same Regulation) on the ECB concerning policies relating to the prudential supervision of credit institutions; (ii) Regulation No. 7775/13 amending Regulation No. 1093/2010 establishing the EBA.

¹⁹ The legal basis for the ECB’s supervisory authority is provided by the TFEU stating that “[t]he ESCB shall contribute to the smooth conduct of policies pursued by the competent authorities relating to the prudential supervision of credit institutions and the stability of the financial system” (Art. 127(5) TFEU). Further, “[t]he Council, acting by means of regulations in accordance with a special legislative procedure, may unanimously, and after consulting the European Parliament and the European Central Bank, confer specific tasks upon the European Central Bank concerning policies relating to the prudential supervision of credit institutions and other financial institutions with the exception of insurance undertakings” (Art. 127(6) TFEU).

²⁰ The ECB would directly supervise banks accounting for about 80 percent of euro-area banking assets, including banks with over €30 billion in assets or 20 percent of national GDP, or if otherwise deemed systemic (e.g., given cross-border reach).

²¹ The so-called “Core Principles for Effective Banking Supervision”, Sept. 2012 <http://www.bis.org/publ/bcbs213.pdf>.

ECB should be empowered to impose pecuniary sanctions on credit institutions, financial holding companies and mixed financial holding companies for breaches of such rules.”

While this is very different from the ESRB, Art 18(2) anyway clarifies that the tasks conferred upon the ECB by Regulation 7776/1/13 “*shall [...] not interfere with its tasks in relation to the European Systemic Risk Board or any other tasks.*”

Finally, the “*ECB may require the competent authorities of the participating Member States [...] to provide all relevant information for the ECB to carry out a comprehensive assessment, including a balance-sheet assessment, of the credit institutions of the participating Member State*” (Art. 27(4) Regulation No. 7776/1/13).

While necessary for conducting its supervisory role, balance-sheets assessments are likely to result into a conflict of interest / institutional bias especially when the ECB acts in its liquidity provision role (i.e. lender of last resorts for banks). Hence communication between different parties and a clear mandate, prioritising objectives, should be ensured in order to reduce the intersection of responsibilities, and align preferences at the same time (see also Angelini *et al.*, 2011; Bennani *et al.*, 2014).

4.2 SYSTEMIC RISKS AND THE CASE FOR A MONETARY UNION

With different degrees of integration (see Section 3), an international consensus has emerged for central banks to play a leading role in the conduct of macro-prudential policy (see Figure 2), provided that the independence of central bank is preserved.

We discussed previously that where monetary policy is constrained (i.e. for instance countries that are members of a monetary union), the demand on coordination of monetary policy with macro-prudential policy will be greater. Indeed, in the euro area, because of a single monetary policy, it will be up to macro-prudential policy to counteract the adverse side effects of (a “one size fits all”) monetary policy on financial stability, as the recent Spanish and Irish experience have shown. We should bear in mind, however, that while coordination is essential at the different governance levels, macro-prudential policies should not be overstrained, and it should rather be complemented by fiscal and structural policies (IMF, 2013), as a comprehensive toolkit against macroeconomic and systemic risk.

From a European governance point of view, the ECB certainly has a comparative advantage, as well as the technical expertise and reputation, to perform its macro-prudential role. The existence of an explicit mandate for the ECB/SSM can remove ambiguities concerning the legitimacy of the macro-prudential authority’s actions, by placing macro-prudential policy in a clear statutory framework. At the same time, the mandate will be a guarantee against the bias of inaction, as it would also give the ECB/SSM adequate powers to appropriately perform the required tasks. Nevertheless, coordination with national supervisors and macro-prudential authorities will be crucial. This is what we will discuss in the next section.

Before we turn to coordination issues between European and national levels, we wish to discuss the idea of systemic risk and how this affects the governance of monetary and macro-prudential policies in a monetary union, like the EMU.

It is well understood that systemic risk is characterised by both a cross-sectional (static) and a time (dynamic) dimension, summarized here in Table 2. The cross-sectional dimension represents a snapshot of a given point in time, capturing how risks are distributed and correlated across actors at large. The time dimension captures instead the evolution of systemic risk over time, due to dynamic

effects in financial market conditions, including the potential build-up of imbalances, such as credit market or asset bubbles.

The Table below delivers the message that a broad set of indicators must be employed not only to capture the different extents of systemic risk (i.e. there is no such as thing as a “one-size-fits-all” policy), but also to avoid Type I (too much emphasis on financial stability) and Type II (too much control, or “crying wolf”; see IMF, 2013) errors. This once again calls for the discussion in the next section.

Table 2: Examples of systemic risk indicators

Category	Time dimension indicator	Cross-sectional dimension indicator
Macroeconomic risk	Real GDP growth Current account balance-to-GDP ratio Unemployment rate General government debt-to-GDP ratio General government deficit-to-GDP ratio	Foreign exchange (currency mismatch)
Credit risk	Credit-to-GDP gap (Drehmann et al., 2010; Drehmann et al., 2011) Debt service ratio (Drehmann et al., 2012, 2013) Aggregate real credit growth Banks' charge-off rates Ratio of non-performing to total loans Aggregate gross losses of banks Credit conditions (Bank Lending Surveys)	Overall asset quality (haircut, losses, non-performing loans, VaR, lending spreads) Government (loans to governments, CDS spreads, debt-to-GDP, ratings) Real estate (mortgage credit growth, price-to-rent ratios, down payments, residential property or commercial real estate prices) Households (indebtedness ratio, interest repayments over disposable income)
Market risk	Real asset price gaps (Borio and Drehmann, 2009) Price-to-book ratios Global risk aversion indicators/volatilities	Global risk aversion indicator (risk appetite survey, VSTOXX) (Market) Liquidity index
Financial soundness	Ratio of non-core liabilities over deposits (Hahn et al., 2012)	Liquidity (loan-to-deposit ratios, liquid assets to total assets, LCR, NSFR) Funding (credit and CDS spreads, bid-ask spreads, ratings, central bank funding) Profitability (ROA, ROE, lending standards, margins) Solvency (Tier 1 ratio, Z-score, distance-to-default)
Interlinkages, contagion and concentration risks		MES (Acharya et al., 2010) SRISK (Acharya et al., 2012) CoVaR (Adrian and Brunnermeier, 2008) BSI (Segoviano and Goodhart, 2008) JPoD (Segoviano and Goodhart, 2008) DiDe (Segoviano and Goodhart, 2008) Network analysis (static and dynamic) Interbank (net position, reserves, spreads) Top 5 MFIs' market share MFIs' exposure to domestic government sector over total credit Banking sector size over domestic GDP Share of G-SIFIs' assets over financial systems total assets

Source: Bennani et al., (2014).

The key question here is, however, that the definition of systemic risk in a currency union adds several dimensions in a setting where the central bank's (i.e. the ECB) and macro-prudential policy interact.

Members of a monetary union are thought to face a tougher budget constraint (De Grauwe, 2014) owing to the fact that financial markets will price-in the absence of a sovereigns' lender of last resort (e.g., De Grauwe and Ji, 2013). This was the case at least before the launch of the Outright Monetary Transactions (OMTs). This intrinsic "fragility" (De Grauwe, 2014) has important consequences on the extent to which particular instruments can be tailored to specific risks and address systemic issues.

As underlined by Panetta (2014), for instance, there seem to be a consensus nowadays that bank capital ratios are essentially the "only weapon in the [...] macro-prudential policy toolbox". Higher capital requirements would certainly be the right (macro-prudential) answer in case of a heightened credit risk in the market, resulting into a liquidity dry-up. Overall, however, if a liquidity dry-up depends instead on high funding costs for banks, regardless of their individual situation (as observed recently, because of the poor condition of their sovereign), raising capital charges might work, but it would clearly be far from optimal. The ECB's monetary policy has in fact proven quite effective by using unconventional measures that affected banks' funding more directly - the Long Term Refinancing Operations, LTROs, among others. This calls not only for a clear understanding of the routing causes of financial distress, but also, in a monetary union, for clear coordination and mandates. In this scenario, it is believed national macro-prudential authorities should internalise any tensions between monetary and macro-prudential policies. This is the case, especially in the European context, being the European Banking Union not fully operational and the sovereigns-banks doom-loop still in place (Macchiarelli, 2013). A separation principle should then be a useful guide in establishing a well-defined order between macro and micro prudential policy objectives (Panetta, 2014), hence facilitating coordination with monetary policy.

4.2.1. Macroeconomic risk and the MIP

"Macroeconomic risk", as a part of systemic risk, involves monitoring macro aggregates. Of all the measures of the European governance framework recently implemented, the **Macroeconomic Imbalances Procedure** (MIP) is the one that comes closest to addressing the underlying political economy concerns posed by correction patterns *within* the currency union.²²

The ECB plays actually a role in surveillance missions within the MIP (Article 121(6) of the TFEU), in the context of the legislative package agreed between the EU Council and the Parliament (the "Six Pack", entered into force in December 2011), hence making macroeconomic risks liable of possible interactions with monetary policy.

The Pack limits the discretion of national authorities, backed up by sanctions (as contained in the Excessive Deficit Procedure). Article 9 of Regulation No. 1176/2011 on the "prevention and correction of macroeconomic imbalances" in particular says that "[t]he Commission may carry out enhanced surveillance missions to the Member State concerned, in order to monitor the implementation of the corrective action plan, in liaison with the ECB when those missions concern Member States whose currency is the euro [...]". Article 13(3) further clarifies the role of the ECB in these surveillance missions saying that "[...] the Commission may, if appropriate, invite representatives of the European Central Bank to participate in surveillance missions" directly.²³ The results of such in-depth reviews (also with the participation with the ECB) shall be made public, albeit the ECB will not publish its own independent assessment. As for other macroeconomic surveillance roles, the ECB is hence given under the MIP a "low profile" function (Darvas and Merler, 2013).

This implies that, even if such tension may exist in the interaction with the ECB's monetary policy stance, they should be presumably of little relevance for the moment.

²² Herzberg and Watson (2014) identify this dimension as well, even if in a dynamic setting.

²³ Regulation (EU) No 1176/2011 of the European Parliament and of the Council of 16 November 2011.

4.3 THE GOVERNANCE OF MONETARY AND MACRO-PRUDENTIAL POLICIES: COORDINATION BETWEEN EUROPEAN AND NATIONAL LEVELS

Macro-prudential policy is normally thought to operate mainly through the banking sector. This is key in the euro area, given that the latter relies greatly on bank finance.

Another distinctive feature of the euro area is the heterogeneity among member states – particularly, between core and periphery – and the fragmentation of European financial markets – at the micro level. Many European banks work generally at the retail level, and the degree of cross-border penetration has always been fairly squat in Europe (Panetta, 2014). This has placed severe strains on the monetary policy transmission mechanism. With business cycles **not** being generally synchronized and the recent evidence of monetary policy impulses not transmitting symmetrically, the safekeeping of relevant macro-prudential policy tools must involve a national dimension.

In this environment, country-specific macro-prudential policies can be used not only with a financial stability objective in mind, but also to prevent financial and real imbalances stemming from the one-size-doesn't-fit-all problem (Panetta, 2014). In this respect, the interaction between monetary policy and macro-prudential tools is a key constituent in the euro area design.

Related to the above mentioned problem of fragmentation, is the level of concentration of the European banking sector. One important finding of the literature on the interaction between monetary and macro-prudential policies is that the latter are significantly overlapping and the interaction between monetary and macro-prudential policies is weaker the more concentrated is the market (Panetta, 2014). Concentration makes banks' lending decisions less dependent on the monetary policy stance (see, e.g., Kashyap and Stein, 2000), as banks with high liquidity and diversified portfolios will be able to adjust their credit supply more gradually to changes in the monetary policy stance (see, e.g., Brunnermeier and Pedersen, 2009; Adrian and Shin, 2010). A high level of concentration, with credit markets dominated by a few large and liquid actors, would make it harder for monetary policy to affect the banking sector. In this scenario, liquid and diversified banks may be more reactive to macro-prudential policies. All the above, suggests a role for coordinated European and national macro-prudential decision-making in the euro area.

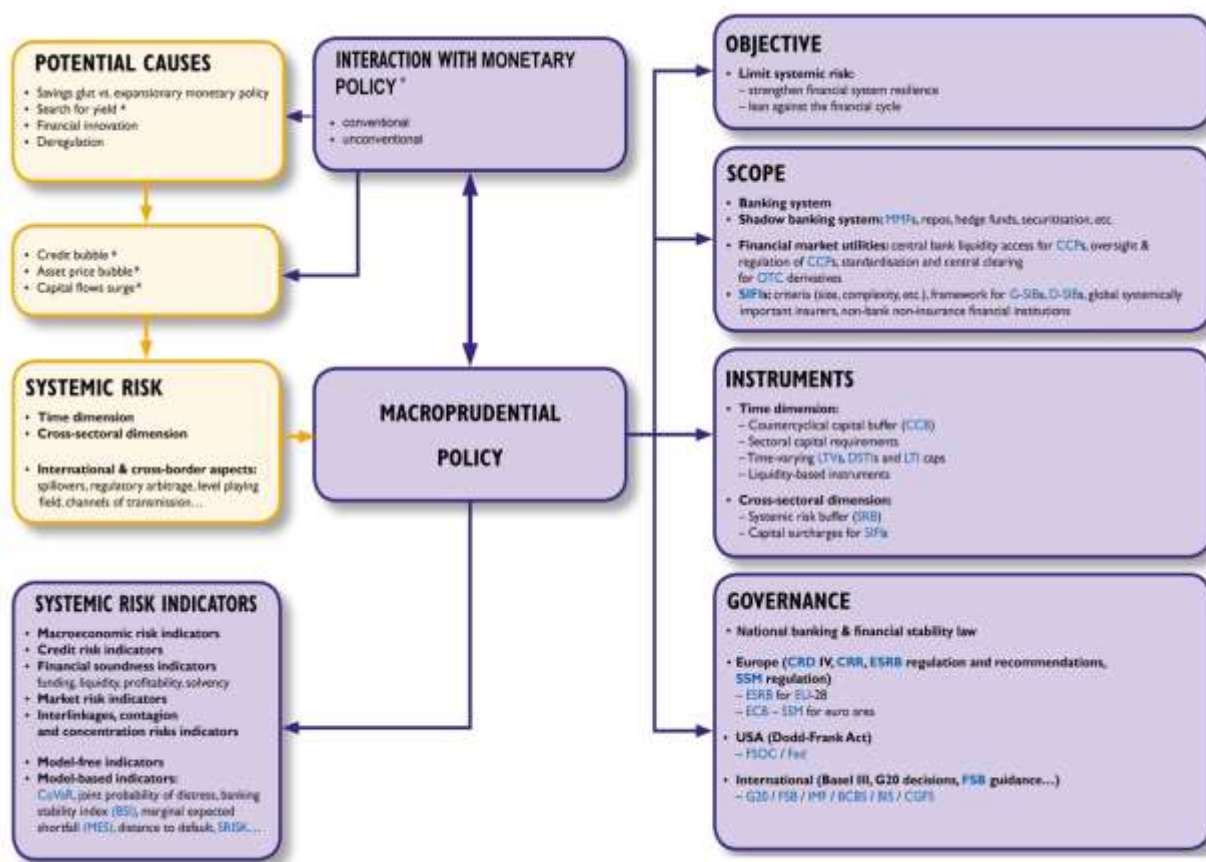
Of course, there are other channels through which monetary policy can affect financial stability and, indirectly, banks' lending decisions, such as the risk taking channel (e.g. Borio and Zhu, 2012; ECB, 2011). In a previous note we discussed how QE programs are in fact tailored to stimulate the economy at the zero lower bound. Hence, a certain amount of risk taking is involved (e.g. Gerba and Macchiarelli, 2015b). Nowadays monetary accommodation remains critical in supporting the recovery by encouraging real spending investment and hiring decisions by firms. However, (ultra) accommodative monetary policies face indeed a trade-off between the upside economic benefits of the recovery and the downside financial stability risks, i.e. financial risk taking. We summarized the possible feedback loop between monetary policy and macro-prudential regulation in Figure 1. Some of these effects are uncertain yet, that's why the picture should be interpreted with care (some of these relationships are more straightforward and we denoted them with an *, along the lines of what discussed in Gerba and Macchiarelli, 2015b).

In Figure 2, having QE programs in mind, we linked monetary policy to the search for yields, or the possibility of credit, asset price and capital flow surges.

In this framework, while we believe macro-prudential policy should be lessened to allow the effects of QE to display their effects, particularly to facilitate credit transmission, one should not forget that financial excesses should be anyway addressed through well-designed macro-prudential measures (see also Section 2), allowing an even bank balance sheet repair, and reducing the above mentioned fragmentation between the core and periphery in the euro zone. This view is also shared by IMF

(2014). The design of both European supranational and national macro-prudential (and micro-prudential) policy measures address, in principle, these concerns.

Figure 2: The macro-prudential framework and the interaction with monetary policy



Source: Adapted from Bennani *et al.*, (2014). For a definition of systemic risks indicators see Table 2.

The governance structure in the euro area might strike the right balance between macro- / micro-prudential at both European and national level. What is crucial is that the ECB will be able to retain both micro-prudential responsibilities (i.e. balance sheet assessment, through the Single Supervisory Mechanism), and, in coordination with the European Systemic Risk Board, direct macro-prudential competences to “guide” the policy stance of individual national authorities (through the CRR/CRD IV). The ECB/SSM should therefore be able to internalise any tensions between macro- vs. micro-prudential policies and establish a well-defined hierarchy between them.

At the same time, it should be borne in mind that macro-prudential measures depend on (IMF, 2014): (i) data availability to monitor the build-up of financial stability risks, (ii) analytical ability, and (iii) statutory right to use the macro-prudential policy tools, even when measures are highly unpopular (i.e. the above mentioned fiscal dominance issue, see Section 3.2). Hence, given the aforementioned concentration and fragmentation of the euro area banking system, as well as the danger of accountability gaps, the latter should be a good news for the euro area as it would place national macro-prudential authorities in a privilege position to internalise possible conflicts between macro-prudential policies and monetary policy (Panetta, 2014), as we discussed.

Effective and balanced communication of the measures undertaken between the different parties involved, both European (SSM and ESRB) and national, will be essential. In fact, political economy considerations may get in the way macro-prudential policy works. For instance, national authorities

may be driven by skewed incentives, with potential adverse spillovers for financial stability in other markets.

The European financial architecture with the ECB/SSM topping up national measures on the euro area banking sector, and the ESRB, screening individual initiatives at the EU level, certainly limit the scope for strategic choices by individual countries, and partially address political economy concerns of this type. There remain, however, considerations on the feasibility of these measures in practice, together with a limited role for European banking resolution. The latter considerations underscore other risks, such as the interaction of macro-prudential and fiscal policies (see Section 3.2). These considerations go behind the scope of this paper, and many of those will be anyway clarified with the unravelling of time and “learning by doing” (see also Panetta, 2014).

5. WHEN IS INCLUDING MACRO-PRUDENTIAL POLICY BENEFICIAL? EVIDENCE FROM THE LITERATURE

The specific literature on this issue is at its infancy. A common thread among recent studies on interactions seems to be that macro-prudential and monetary policies are, in many instances, complementary and support each other. However, there is also a potential for trade-offs, or even conflicts of interest between them. While the exact type of trade-offs will depend on the specific model assumptions, there are some general lessons to be learned based on the (selected) literature review below.²⁴

Angelini *et al.* (2014) find that in ‘normal times’, when the economic cycle is driven by supply shocks, macro-prudential policy yields negligible benefits relative to a ‘monetary policy-only’ scenario, even if the two authorities cooperate. Furthermore, if both policies are finally implemented, the economy is better off when the two cooperate, as that will prevent any conflict of interest in aims. Yet, the benefits of macro-prudential policy become more sizeable when economic fluctuations are driven by financial or property market shocks that in turn affect the supply of loans. Once again the benefits increase when the two authorities cooperate closely.

In the same vein, Quint and Rabanal (2013) show that introducing macro-prudential policies is largely welfare improving, but that there are also winners and losers from including these instruments. Under property price or risk shocks, these measures reduce the volatility of real variables by offsetting the propagation effects triggered by these shocks. However, when technology (or supply) shocks hit the economy, macro-prudential policies have the opposite effect and magnify the countercyclical behavior of the lending-deposit spread. This imposes larger fluctuations in consumption, housing investment, and hours worked for borrowers. Hence, in such circumstances, introducing macro-prudential policy would increase the welfare of savers, but reduce that of borrowers.

Similar considerations apply for an aggregate demand shock. A monetary policy response alone is optimal if it durably stabilizes output AND inflation. When stabilizing inflation comes at the cost of lower output, and when lending imposes a systemic risk externality, there is some scope for using macro-prudential policy alongside monetary policy so as to limit systemic risk stemming from the expansion in leverage.

Gelain and Ilbas (2014), on the other hand, show that the successfulness of a monetary-macro-prudential policy mix depends on how responsive macro-prudential policy is to changes in the business cycle (or output). There are considerable gains from coordination if the macro-prudential

²⁴ In the same manner, there could be conflict of interests between micro-prudential and macro-prudential policies. In such cases, according to Noyer (2014), macro-prudential policy should prevail since the latter will ensure overall macro-welfare of the economy, and guarantee the smooth financing of the economy.

regulator has a similar response to the business cycle as the monetary policy, i.e. it has been assigned a sufficiently high weight on output gap stabilization. If, on the other hand, the main focus of the macro-prudential mandate is on credit growth, then this can reach better outcomes in the absence of coordination, even if the central bank does worse. This trade-off in coordination gains is equally present in a situation characterized by high real and financial volatility, such as experienced during the recent financial turmoil, and their results are robust to numerous definitions of financial stability.

Taking a different stance, Claessens et al (2013) argues that while interactions can enhance or reduce the effectiveness of each policy in achieving its objectives, there is no great need for coordination in most cases. However, there are exceptions, in particular when monetary and macro-prudential policies are constrained. An example of such constraint is a monetary union where individual countries do not have authority over monetary policy. In such cases, the burden on the other policy (in this case macro-prudential) increases and additional distortions can give rise to coordination issues. In such a (second best) scenario, the conducts of both policies need to be adjusted to consider the weaknesses in the other.²⁵ Also, some considerations need to be addressed to exchange rate/international trade policies, which will affect financial stability and macro-prudential measures via the international financial flow channel.

Antipa and Matheron (2014) discuss the importance of macro-prudential policy as fiscal measures, and the effects on monetary policy conduct. An effective macro-prudential supervisor might have to impose levy tax or sanctions. These actions, however, are of fiscal nature and embedded into national democratic legislations. The systemic supervisors will thus have to closely engage with governments in order for sanctions and taxes to be implemented.²⁶ But this might lead to potential risks. Central banks or political interference from governments could result in pressures to continue lending to weak banks for fear that winding them up would trigger losses, or to avoid costly bank restructurings.²⁷ The only way to safeguard from such risks is to clearly separate supervisory and macro-prudential policies from resolution authorities. Such an outside mechanism alleviates the risk of *fiscal dominance*, contributing further to the central bank's credibility and independence.

6. CONCLUSIONS

The European Union has pursued a number of initiatives to create a safer and sounder financial sector for the single market. In parallel, bold unconventional monetary policies have been implemented in order to combat low inflation, foster risk taking and, ultimately, reinvigorate growth.

But monetary and macro-prudential policies interact with each other and thus may enhance or diminish the effectiveness of the other. Monetary policy affects financial stability by shaping, for instance, leverage and borrowing. Equally, macro-prudential policies constrain borrowing, which in turn have side-effects on output and prices, and therefore on monetary policy. When both monetary and macro-prudential functions are housed within the central bank, coordination is improved, but safeguards are needed to counter the risks from dual objectives.

Against this background, this paper outlined the theoretical and empirical underpinnings of macro-prudential policy, and discussed the way it interacts with monetary policy. We identified advantages

²⁵ There are many reasons why macro-prudential policies may not operate perfectly. Financial stability concerns are hard to capture in practice, making it difficult to determine when macro-prudential policies need to be loosened or tightened. More generally, models are still poor at capturing financial stability considerations as these often arise from nonlinear effects that are hard to model. The limits of models make for limited scope to know how to adjust either policy optimally.

²⁶ Goodhart (2011).

²⁷ Brunnermeier and Gersbach (2012).

as well as risks from cooperating in the two policy areas, and provided suggestions in terms of institutional design on how to contain those risks. Against this backdrop, we evaluate the recent European practice.

We conclude that the governance structure in the euro area might strike the right balance between macro- / micro- prudential at both European and national level. What is crucial is that the ECB will be able to retain both micro-prudential responsibilities (i.e. balance sheet assessment, through the Single Supervisory Mechanism), and, in coordination with the European Systemic Risk Board, direct macro-prudential competences to “guide” the policy stance of individual national authorities (through the CRR/CRD IV). The ECB/SSM should therefore be able to internalise any tensions between macro- vs. micro-prudential policies and establish a well-defined hierarchy between them.

Some of the new ECB competences are certainly likely to result into a conflict of interest / institutional bias especially when the ECB acts in its liquidity provision role (i.e. lender of last resorts for banks). Hence communication between different parties and a clear mandate, prioritising objectives, should be ensured in order to reduce the intersection of responsibilities, and align preferences at the same time.

Here, coordination with national macro-prudential authorities will be essential. National macro-prudential authorities should internalise any tensions between monetary and macro-prudential policies.

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