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The role of macro-prudential policy in the prevention and correction of divergences in the euro area

External authors: Jézabel Couppey-Soubeyran
Université Paris 1, Centre d'économie de la Sorbonne & CEPII,
Salim Dehmej
Bank Al-Maghrib

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Economic and Monetary Affairs Committee

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Salim Dehmej
Bank Al-Maghrib]

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Abstract

The euro area suffers from economic and financial imbalances between its members. Macro-prudential policy can help remedy this in as much as it can be deployed both at euro area level and Member State level. A macro-prudential policy framework to regulate financial cycles at Member State level and improve the resilience of systemic groups at euro area level would improve the economic and financial stability of the euro area and each of its members. Drawing on an inventory of the current practices and the teachings of recent academic work, we have formulated 15 proposals which aim to identify effective macro-prudential instruments to achieve this stability and, in a context of institutional transformation (Banking Union, Brexit, etc.) likely to facilitate changes, to streamline the institutional framework.

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AUTHOR(S)

Jézabel Coupey-Soubeyran, Université Paris 1 Panthéon-Sorbonne, Centre d'économie de la Sorbonne & CEPII

Salim Dehmej, Bank Al-Maghrib (Central Bank of Morocco), Research Department

RESPONSIBLE ADMINISTRATOR(S)

Alienor Anne Claire DUVILLET-MARGERIT

Economic Governance Support Unit

Directorate for Economic and Scientific Policies

Directorate-General for the Internal Policies of the Union

European Parliament

B-1047 Brussels

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ABOUT THE EDITOR

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E-mail: egov@ep.europa.eu

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LIST OF ABBREVIATIONS

ASC	Advisory Scientific Committee
ECB	European Central Bank
CCB	Countercyclical buffers
CET1	Common Equity Tier 1
CRD IV	Capital Requirements Directive
CRR	Capital Requirements Regulation
DSTI	Debt services to income
EBA	European Banking Authority
EIOPA	European Insurance, Occupational Pensions Authority
ESMA	European Securities and Markets Authority
ESRB	European Systemic Risk Board
G-SIB	Global systemically important banks
LGD	Loss given default
LTI	Loan to income
LTV	Loan to value
SIFI	Systemically important financial institutions
SRB	Systemic risk buffer
SSM	Single supervisory mechanism

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EXECUTIVE SUMMARY

The euro area is heterogeneous and suffers from economic and financial imbalances between its members. The single monetary policy is not set up to manage this heterogeneity and address divergences. This does not mean that the single monetary policy must be abandoned, but certainly monetary policy needs to be accompanied by additional measures to guarantee the cyclical adjustments needed in euro areas countries. We show that macro-prudential policy has a dual role to play, especially given the lack of instruments for fiscal and tax adjustments.

First and foremost, macro-prudential policy provides financial stability through the prevention of systemic risk. Two dimensions are involved. The first, which is countercyclical, aims to moderate excesses in the financial cycle during upturns and lessen financial restrictions and brake the falling price of assets (real estate, share prices, etc.) during downturns. The second, which is horizontal (sometimes called structural or cross-sectional), aims to improve the resilience of banking groups, which, due to their size, their interconnectedness and their market power, contribute to systemic risk. Macro-prudential policy can however also become a macro-economic policy instrument adjusting to the economic cycle. There are at least two reasons for this. The first is that, in contrast to monetary policy, macro-prudential policy is modular, or more precisely can be activated at different levels: that of the euro area, that of each country and even that of different sectors (real estate, for example). The second is that economic and financial cycles interact. Indeed the economic divergences, which became accentuated within the euro area after 1999, were fuelled by financial imbalances and vice-versa. If allowing these financial imbalances to come about led to divergences, remedying them through macro-prudential measures can encourage adjustment and convergence.

Specifically, within a heterogeneous monetary area, the question arises as to what level the two types of macro-prudential policy should be taken at: euro area or Member State? Naturally, each type of policy should be taken at the level at which it is most effective. Economic and financial divergences go hand in hand with largely asynchronous economic and financial cycles. However, the effectiveness of countercyclical macro-prudential action is fundamentally dependent on the synchronicity of financial cycles within the euro area. If there is not enough synchronicity and not one single euro area financial cycle but rather several asynchronous cycles within the area, countercyclical macro-prudential measures must then be taken at the level of each Member State. And it is precisely through its corrective action with regard to national financial imbalances that macro-prudential policy can bring about macro-cyclical adjustments at national level. However, horizontal macro-prudential policy must *at the very least* be conducted at euro area level in as much as it targets cross-border groups whose contribution to systemic risk cannot be alleviated simply by imposing national level restrictions.

One of our main proposals is therefore to take countercyclical macro-prudential measures at the level of each Member State, conferring their coordination on a supranational authority such as the ESRB (European Systemic Risk Board) and to take horizontal macro-prudential measures, focusing on the resilience of systemic groups, at euro area level, under the authority of the ECB.

The macro-prudential instruments that have begun to emerge have for the most part been borrowed from micro-prudential supervision and have been recalibrated to take account of the financial cycle (countercyclical buffer) or the systemic nature of banking groups (systemic surcharge).

Regarding countercyclical instruments, we draw attention to other macro-prudential instruments (*loan to value* and *loan to income* ratios, etc.) which have been demonstrated to be effective in regulating the credit cycle and are fully complementary with the above-mentioned instruments in as much as they target borrowers (rather than lenders) and have an impact on flows of exposures (rather than stocks). Various authorities are currently responsible for these instruments depending on the country concerned; this responsibility should therefore be transferred to macro-prudential authorities.

All macro-prudential instruments must be made available to macro-prudential authorities, be defined by them and coordinated at euro area level, whatever their level of application (euro area, national, sectoral etc.).

The diversity of the macro-prudential instruments available reflects that of the sources of financial fragility, which are variable between countries and over time. It is important to identify these sources, but this process must not lead to a mushrooming in the number of instruments and indicators which would make the framework too heterogeneous and complex. Therefore, a balance needs to be struck between identifying the many different sources by country in the euro area and the implementation of a sufficiently homogeneous and legible prudential framework. This is the case for all the instruments, but particularly the countercyclical measures. In this respect, three main, though not necessarily mutually exclusive, approaches are, a priori, sufficient to identify the sources of fragility and focus the countercyclical macro-prudential measures on the regulation of the corresponding cycles: 'real estate', 'credit' and 'asset prices'.

With regard to the instruments corresponding to the horizontal dimension of macro-prudential policy, given the number and significance of the systemic groups in Europe (15 out of 30 groups listed by the Financial Stability Board are European in the broad sense of the term, of which 13 are in the EU and 8 in the euro area), we recommend that surcharges or systemic capital buffers be defined as percentages of the total assets of these groups. In concrete terms, this means that the ratio required would no longer bring too-easily manipulable risk weightings into play as part of the internal models used by these big groups. The adjustments proposed by the European Commission with regard to the leverage ratio proposed in the CRR2 package does not provide for this. Moreover, the determination of systemic capital surcharge for euro area institutions would fall under the aegis of the ECB and no longer national authorities (as is the case today). The existing framework of horizontal macro-prudential policy would be greatly simplified as a result and its governance would become more understandable.

Moreover, the rapid growth in *shadow banking* implies the need for macro-prudential action, which does not only apply to systemic banking groups or which, at the very least, helps monitor closely and reduce the links that these groups have with shadow banking entities (hedge funds, investment funds, etc.), as these links are vectors of systemic risk transmission.

Two major institutional changes will influence the institutional design of macro-prudential policy: the Banking Union which began to function on 4 November 2014 and the Brexit decision following the vote of 23 June 2016. To a certain extent, banking union already puts the basics of horizontal macro-prudential policy into place by conferring the supervision of large groups on the ECB and in allocating specific macro-prudential responsibilities to it, alongside national authorities. Secondly, the Brexit decision will call for institutional changes, starting with the relocation of the EBA (European Banking Authority), which may lead to a redefinition of the scope of action of the ESRB and the EBA by removing any overlap between these two institutions as far as possible, if not by merging them. Whatever the case may be, these two changes are an opportunity not to be missed to simplify the institutional framework for macro-prudential policy and to clarify the distribution of tasks between the ECB and the ESRB. These two institutions must be the two institutional pillars of macro-prudential action within the euro area: the ECB in charge of horizontal macro-prudential policy led at euro area level (namely instruments applicable to systemic financial institutions); the ESRB in charge of coordinating countercyclical action of national macro-prudential authorities (namely instruments applicable to exposures and calibrated according to the financial cycle). This clearer architecture would limit overlap, the duplication of tasks, the multiplication of notifications and the inaction bias that these problems tend to promote. It will however require a strengthening of the ESRB's statutes in order to confer binding powers on it.

Finally, the coordination between the ECB and the ESRB and the national macro-prudential authorities should not exclude links, which are today insufficient, with the authorities responsible for competition, because the concentration of the European banking sector constitutes a source of systemic risk, the attentive monitoring of which falls fully within the framework of macro-prudential policy.

1. INTRODUCTION

This paper was requested by the European Parliament under the supervision of its Economic Governance Support Unit.

There has been a consensus on the need for macro-prudential policy since the financial crisis of 2007-2008. It aims to act on systemic risk preventively by both limiting its deployment in time, throughout the financial cycle, and its distribution among financial groups, whether banking groups or not. These are the two dimensions of macro-prudential policy: one countercyclical and the other horizontal. In this regard, it can neither be assimilated to financial stability policy in the broad sense of the term, because financial stability policy also includes micro-prudential policy, which macro-prudential policy supports but does not replace, nor to policies targeting institutions that contribute to systemic risk because it also has a countercyclical dimension.

Instruments have been developed and an institutional framework is emerging, but their modalities are still being studied. In particular in the euro area, where divergences have been accentuated since the introduction of the single currency and make the conduct of economic policy more problematic, decisions taken on the basis of the euro area average are particularly unlikely to be appropriate to the financial and economic situation of all the members. These divergences seriously complicate the conduct of monetary policy. Designed to be adjusted to developments in the euro area average, the single monetary policy cannot be adjusted to divergent macro-cyclical situations. Fatally, these divergences have been accentuated in the absence of complementary adjustment instruments. Do they also make the conduct of macro-prudential policy problematic? Or do they represent an opportunity to change its role, its instruments and its architecture in a context particularly marked by major institutional changes with the Brexit decision and the implementation of banking union?

To answer these questions, we highlight the importance of properly differentiating between the two dimensions of macro-prudential policy.

In its horizontal dimension, macro-prudential policy has the vocation to strengthen the resilience of systemic banking or financial groups, namely their capacity to withstand a shock to prevent the transmission of their difficulties. Generally with a presence in several dozen countries (BNP Paribas operates in 62 countries, Deutsche Bank in 55, Santander in 33, etc. (Oxfam, 2017)), the large European banking groups operate at a volume and scale of activity that fully justify supervision organised at euro area level at the very least and that more extensive requirements be applied to them at this same level than are applied to smaller groups. This horizontal dimension of macro-prudential policy conducted at euro area level is fundamental to preserving the financial stability of the euro area. The implementation of banking union and the key role that the European Central Bank (ECB) plays in this in supervising large banks in the euro area is conducive to making the ECB the principal institutional pillar for horizontal macro-prudential policy. And the instruments of this horizontal action ought therefore to be conferred on the ECB.

National divergences do not prevent transversal action at euro area level. Nevertheless, the rapid growth in shadow banking, hardly slowed by the crisis, could reduce its effectiveness. This would seem to call for extended horizontal action beyond banking groups, or at least include the tight monitoring of their links with shadow banking entities.

It can seem more difficult to implement countercyclical macro-prudential policy within a monetary area that is marked by divergences that are not only economic but also financial. In other words, in a heterogeneous monetary area, it is not only economic cycles that are divergent, but also, and perhaps to an even greater degree, financial cycles. The success of the countercyclical macro-prudential measures with regard to *the* financial cycle of the euro area cannot therefore be guaranteed any more than the success of the single monetary policy can be with regard to *the* economic cycle, for the simple

reason that there is neither *one* uniform economic cycle nor *one* uniform financial cycle but rather many, more or less synchronous, economic and financial cycles.

However, this is where there is a particularly interesting potential for intervention. In effect, macro-prudential policy possesses a characteristic that monetary policy does not have: it is ‘modular’, namely it can be rolled out at national level or even at a more granular scale, including at sectoral level. Adjusted at national level, macro-prudential policy can act on national financial imbalances and therefore regulate the financial cycle at this level. Yet the repercussions of the financial cycle on the economic cycle and their interaction both during upturns and downturns largely explain the economic divergences that the euro area suffers from. By correcting national financial imbalances, macro-prudential policy can also promote macro-cyclical adjustments within the euro area.

At national level, countercyclical macro-prudential policy becomes the additional macro-cyclical adjustment instrument that monetary policy needs. This application of countercyclical macro-prudential policies at national level does not mean leaving each national authority to define its objectives and instruments itself. These instruments and objectives must be defined jointly and in close coordination in order to prevent the risk of circumvention of the regulations and arbitrages that would surely come about if each national authority were left to define its action on its own. Instruments must be defined jointly. The European systemic risk board (ESRB) would seem to be the best adapted institution to define this common framework and to coordinate with national authorities to fix, in close cooperation with each of them, the appropriate calibration for the various instruments depending on national financial cycles. The ESRB could, in this sense, become the second major institutional pillar for macro-prudential policy as regards its countercyclical dimension.

Out of this dual dimension of macro-prudential policy, firstly at euro area level for horizontal action and secondly at national level for countercyclical action, a simpler institutional organisation would result than that currently in place, which is marked by a lack of clarity in the sharing of tasks and which overlaps between the ECB, the ESRB, the European Commission, national macro-prudential authorities, the national treasury in some countries, etc. Countercyclical action and the instruments relating to it would fall under the responsibility of the ESRB in cooperation with national authorities, while horizontal action and its related instruments would fall under the remit of the ECB.

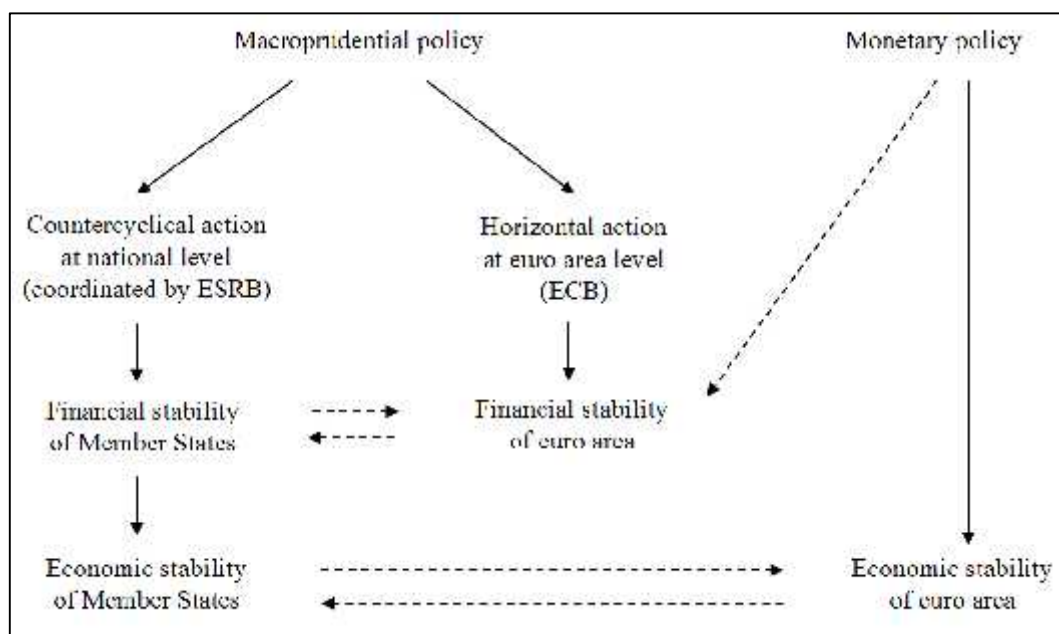
The rest of this document is organised as follows: Chapter 2 sets out this dual application of macro-prudential policy, horizontal at euro area level and countercyclical at national level. Chapter 3 offers an inventory of the instruments used or that could be used and the numerous institutions more or less extensively involved in macro-prudential policy. Chapter 4 formulates fifteen proposals for improving the instruments and institutional architecture .

2. THE REQUIREMENT FOR A DUAL APPLICATION OF MACRO-PRUDENTIAL POLICY

In his theory of optimal currency areas (1961), the economist Robert Mundell insisted on the necessity, within a currency area, of having the means to adjust to asymmetric shocks. In order to do so, he insisted on mobility of the labour's factor. Subsequently, others have highlighted other possible adjustment instruments, such as in particular fiscal transfers between countries (Kenen, 1969). No instrument of this type exists in the euro area: labour mobility is still limited and there are no fiscal transfers per se. Yet the euro area suffers from economic and financial divergences between its member countries. Economic divergences grow out of financial imbalances linked to the heterogeneity of financial cycles, in particular property cycles, which the single monetary policy can exacerbate.

In this chapter, we show that macro-prudential policy can be an instrument for macro-cyclical adjustment by making corrections in the financial system and as a result of its ability to act at various levels. Its contribution to economic and financial stability, in addition to the single monetary policy, implies application at two levels: that of the euro area to increase the resilience of systemic groups (horizontal macro-prudential policy) and that of each Member State to regulate the financial cycle (countercyclical macro-prudential policy) and reduce economic and financial divergences (figure 1).

Figure 1: Application of monetary policy/macro-prudential policy at two levels



Source: authors

2.1 The euro area has suffered from the lack of a policy mix between the single monetary policy and macro-prudential policy/policies.

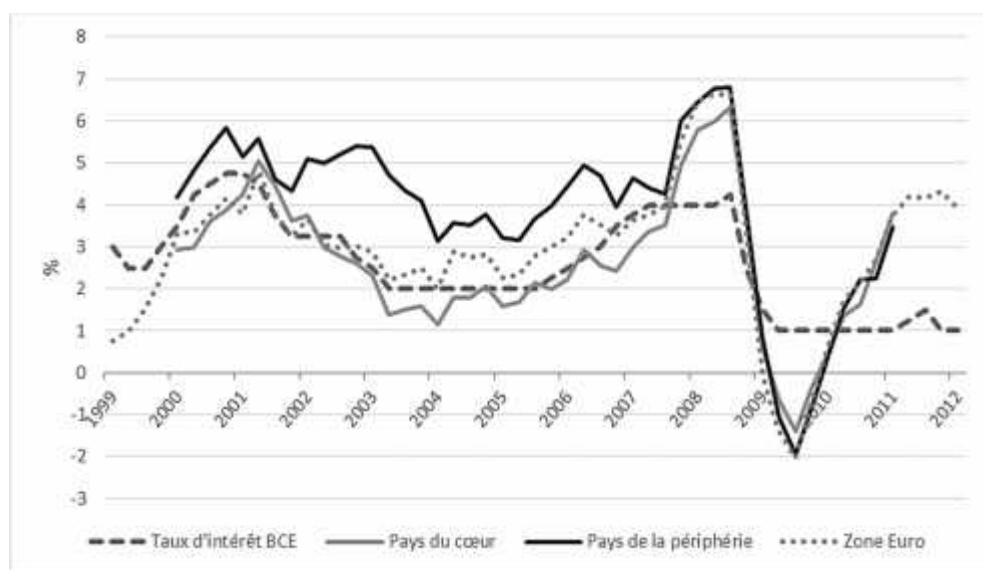
The euro area suffers fundamentally from the lack of 'policy-mix'. The single monetary policy carries the entire weight of macro-cyclical adjustments in the euro area. However, the heterogeneity of the euro area calls for differentiated macro-cyclical adjustments that the single monetary policy cannot, by definition, provide.

2.1.1 Imbalances that the single monetary policy cannot correct

The differences noted between the countries in the euro area in terms of current account or fiscal imbalances, which did not attract much concern before the 2007-2008 crisis because they were perceived as being the manifestation of a process of convergence in living conditions of the poorest countries towards those of the richer countries in the euro area¹, are today seen as divergences that need to be corrected. The single monetary policy cannot correct divergences and can even accentuate them if it is not accompanied by macro-cyclical adjustments designed to supplement it.

Monetary policy is in effect designed for the euro area average and not for each Member State individually. The macro-cyclical adjustments sought for the euro area average by the European Central Bank (ECB) over the decade preceding the 2007-2008 crisis is quite close to that prescribed by a standard Taylor rule²: the ECB observed differences with regard to its target inflation rate (2%) and the output gap in order to set its reference rate. A simple counterfactual exercise³ allows us to verify this and at the same time to evaluate the degree of adjustment of the single monetary policy to the varying situations of the countries in the euro area. This exercise consists in calculating the gap between the reference interest rate observed over the period under consideration (here 1999-2012 but focusing on the period before the crisis) and the interest rate that would have corresponded to a standard Taylor rule ('Taylor gaps') defined 1) for the area as a whole 2) for the core countries (Germany, Austria, Finland, France and the Netherlands) 3) for peripheral countries (Spain, Greece, Ireland, Italy and Portugal) - figure 2.

Figure 2: The ECB reference rate and the Taylor rate calculated for the whole euro area, core and peripheral countries



Source: Coupepy-Soubeyran and Dehmej (2016), op. cit.

These gaps clearly illustrate that, up until the financial crisis of 2007-2008, the ECB's monetary policy worked quite well for the 'core' countries (Germany and the Netherlands), but was too accommodating for the peripheral countries (Spain, Portugal, Italy and Ireland). At the very least, the

¹ See 'La zone euro a-t-elle perdu l'équilibre?', *Questions à Sophie Piton*, L'économie internationale en campagne (dir. Isabelle Bensidoun & Jézabel Coupepy-Soubeyran), CEPPII, January-April 2017.

² Introduced by the economist John B. Taylor in his empirical work about the US Federal Reserve monetary policy (See 'Discretion Versus Policy Rules in Practice', *Carnegie-Rochester Conference Series on Public Policy*, 1993, n°39).

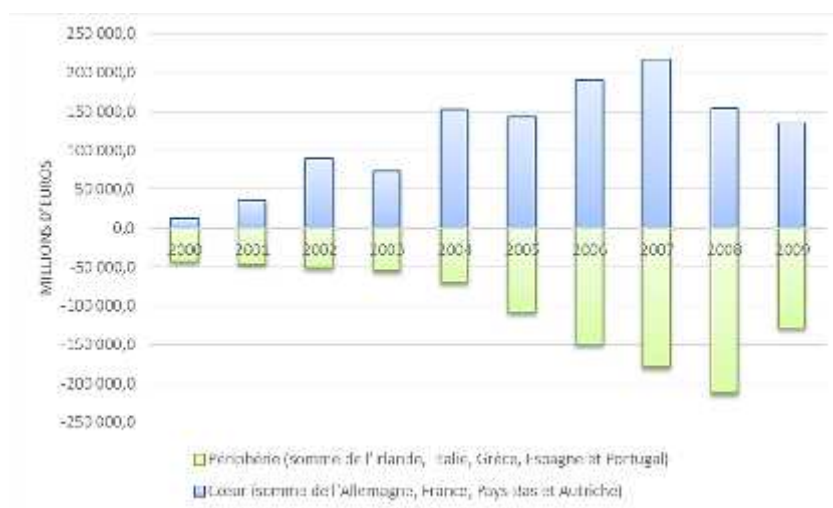
³ See J. Coupepy-Soubeyran and S. Dehmej, 'Pour une combinaison politique monétaire / politique macroprudentielle au service de la stabilité économique et financière de la zone euro', *Revue d'économie politique*, 2016/1 (Vol. 126).

single monetary policy over this period did not correspond to the macro-cyclical adjustments that a standard Taylor rule would have targeted for each sub-group.

2.1.2 ... that it can even increase, if it is not associated with any other measures

The imbalance between the single interest rate and the macro-cyclical situation had a major impact on financial imbalances in peripheral countries. Too low interest rates for the peripheral countries seem to have encouraged excessive credit in these countries, financed by capital from the core countries, and the resultant development of a property bubble. This thesis is put forward by economists such as Paul Krugman (2012). A comparison of the net investment positions of the core countries with those of the peripheral countries confirms this observation of capital flows within the euro area from the core countries to the peripheral countries (Figure 3). This credit boom led to sustained growth in bank balance sheets up to the financial crisis of 2007-2008⁴. We should recall that the recent economic literature sees excessive growth in credit as one of the best early indicators of crises and periods of financial turbulence (Gourinchas and Obstfeld (2012); Schularick and Taylor (2012)).

Figure 3: Net indebtedness in the euro area



Source: Couppey-Soubeyran and Dehmej (2016), op. cit.

Changing the reference rate according to these financial imbalances would probably not have resolved the problem because here again, the adjustment would have been sought for the euro area average and not for each country taken individually. The imbalance between the average interest rate in the area and that reflecting the macro-cyclical and financial situation in a given country was often accentuated. In any case this is what our counterfactual exercise would seem to indicate (see Annex 1).

As Mario Draghi, the ECB President, explained at the meeting in Jackson Hole in August 2014 monetary policy can't do everything ! Put in another way, monetary policy needs support, both to correct financial imbalances within the area as a whole and to reduce macro-economic and financial divergences between euro area countries.

⁴ Commercial banks' assets went from 197 to 268% of GDP for the whole euro area between 2002 and 2009 (see note of CAE No 3, April (2013)).

2.1.3 What additional macro-cyclical adjustment instruments are needed?

We cannot expect the single monetary policy to do what it was not designed to do. Designed for the whole area, i.e. for the average, it does not enable convergent macro-cyclical adjustments unless convergence already exists. It is not an instrument for adjustment to asymmetric shocks which, however, do come about within a heterogeneous area. Moreover, there is no mechanism for fiscal transfers to manage asymmetric shocks within the euro area, nor a sufficiently strong mobility of factors of production to absorb them. Supposing that a fiscal union does come about and fiscal adjustments can be made according to the economic cycle of the area as a whole and its Member States, it will nevertheless take some time and is still meeting resistance from some of the Member States.

The question therefore arises, in the absence of fiscal adjustment instruments and without putting the area on hold while waiting for the implementation of budgetary union, as to what can be done to supplement the single monetary policy in order to produce a macro-cyclical adjustment for the whole of the area and for each of the Member States?

As we have already seen, the imbalances that have been resulted in divergences between countries in the euro area result from have, a significant financial aspect: at the beginning of the 2000s the inadequate level of the Central bank's interest rate for some countries promoted financial excesses, which could not have been directly contained using fiscal instruments (without putting into place specific tax measures), but which could have been more so with macro-prudential instruments. By correcting national financial imbalances, macro-prudential policy can contribute to macro-cyclical adjustments at the level of each Member State and reduce the divergences within the euro area.

Most often presented as a financial stability instrument, macro-prudential policy can therefore also be envisaged in terms of economic stabilisation (inflation and production gaps), in particular in the absence of fiscal mechanisms, particularly as some of its transmission channels are the same as those used for monetary policy (in particular, the risk-taking channel). Moreover, by influencing the financial conditions which economic agents face, it necessarily has an impact on the amount of money in circulation, inflation, investment and growth.

2.1.4 Financial stability in the light of macro-prudential policy

In the light of macro-prudential policy, the prevention of individual risks is insufficient and financial stability endogenous, which is to say inherent to the functioning of the financial system and the behaviours of its actors. It is systemic risk, which cannot be reduced to a sum of individual risks, that must be prevented by understanding it in both of its aspects: dynamic (how systemic risk evolves over time) and horizontal (how systemic risk is distributed within the financial system on a given date).

A source of systemic financial disruption corresponds to each of these aspects (Borio, 2011): the dynamic dimension applies to the procyclicality of the financial system, the financial cycle and the relationships between the financial and business cycles. The horizontal dimension applies to financial entities which due to their size, the complexity of their activities and their interconnectedness are 'systemic', namely they contribute to the systemic risk. The Financial Stability Board and the Basel Committee qualify these entities as 'global systemically important banks (G-SIBs)' (see Annex 2).

Preventing the dynamic aspect of systemic risk presupposes the ability to reduce the procyclicality of the financial system and, more broadly, to regulate the financial cycle. This takes place through a countercyclical policy using instruments promoting the constitution of buffers during upturns (boom) so as to be able to draw on them during downturns (bust), after the risk has materialised. Countercyclical capital buffers of this type have been introduced in the framework of the Basel 3

agreement (see Chapter 3), transposed in Europe through the CRD IV/CRR package. Micro-prudential instruments do not have this countercyclical dimension and can even, if they are not combined with a countercyclical buffer, have a procyclical impact, i.e. they can reinforce the cycle trend (financial excesses during upturns and financial tightening during the downturns).

Preventing the systemic risk in its horizontal dimension presupposes the ability to reduce the contribution of each institution to systemic risk and to adjust the prudential requirement of this by levying a surcharge from contributors in proportion to their contribution. Systemic surcharges, defined in the framework of the Basel 3 agreements and the systemic buffers, introduced in CRDIV, have been designed with this in mind.

2.2 A ‘horizontal macro-prudential policy’ at euro area level for financial stability

If the objective of macro-prudential policy is the financial stability of the euro area, what aspect(s) of systemic risk can it act on at euro area level? How can its action be articulated with the ECB’s monetary policy? Does this preclude also orientating the monetary policy towards financial stability?

2.2.1 How can systemic risk be apprehended within a heterogeneous monetary area?

Preventing systemic risk within a monetary area specifically poses the question of knowing whether the two dimensions of systemic risk (horizontal and dynamic) can be apprehended at the same level: that of the area? that of each of its members? both?

The countercyclical macro-prudential policy has much less chance of bearing fruit at euro area level if national financial cycles are not greatly synchronous, which we will show. It can, however, be led at the level of Member States, counter to national financial cycles and thus contribute to macro-cyclical adjustment (see 2.3).

It is completely the opposite at the horizontal level: the euro area is the right level at which to prevent the systemic risk comported by G-SIBs or SIFIs, while the national level is insufficient for apprehending these systemic institutions in terms of the full extent of their activities. In effect, it is through their size, their cross-border activities, their complexity and their interconnectedness that these institutions contribute to systemic risk. Most systemic institutions have a presence in dozens of countries outside of their country of origin (BNP Paribas operates in 62 countries, Deutsche Bank in 55, Santander in 33, etc. (Oxfam, 2017)). The level of the euro zone constitutes the smallest level at which control and reinforcement of the resilience of these institutions can be carried out.

At the euro area level, macro-prudential policy must focus on the horizontal dimension of systemic risk.

2.2.2 What combination is needed between monetary policy and horizontal macro-prudential policy?

Highlighting macro-prudential policy has not necessarily, at least up until now, brought about any progress in the ‘clean’ versus ‘lean’ debate⁵ with regard to the strategic orientation of monetary

⁵ Pre-crisis monetary policies, of both the Fed and the ECB, were reproached with not taking financial stability into account in the setting of interest rates and ignoring the fact that the low level at which they maintained rates at the beginning of the 2000s could promote risk-taking and financial instability. Shouldn’t monetary policy rather have been used to counter the financial cycle (‘leaning against the wind’ strategy, see Cecchetti et al. (2000)) than to clear up the damage after the event? Shouldn’t central banks take account of the movements in and scale of the financial cycle when they vary their reference rate of interest? It was in order to respond to this type of question that academic studies were carried out on the broadening of the Taylor rule to include a financial target allowing the reference interest rate to react to financial tensions (Christiano et al, 2010; Curdia and Woodford, 2010; Issing, 2011). The financial crisis seemed to

policy. It may even have done the opposite. In effect, presented as an effective instrument in the fight against financial instability, macro-prudential policy may lead to re-establishing the consensus that prevailed before the crisis whereby interest rates are not the right instrument to fight against financial instability and once again the standard Taylor rule becomes the priority option along with inflation targeting and finally, responsibility for financial stability is given over to macro-prudential policy. If, in effect, as many studies suggest, the macro-prudential instrument has more impact on financial stability than interest rates (Goodhart et al., 2010), we could be tempted to conclude that macro-prudential policy should be used to bring about financial stability and the monetary policy instrument, interest rates, be used to bring about monetary stability (Svensson, 2017) in accordance with the Mundell Principle (which recommends allocating each instrument to the objective for which it is the most effective). Isn't it however to overestimate the effectiveness of macro-prudential policy, the instruments of which are still relatively new, to consider that it alone can act on the many aspects of financial stability? Isn't it a mistake to set the interest rates independently of financial imbalances when it is one of the main determinants of the financial cycle?

These points are not clear cut. One worthwhile solution seems to us however to lie in the idea that monetary policy and macro-prudential policy should be combined. Financial stability is first of all a matter for macro-prudential policy, but as interest rates are one of its determinants, it is dangerous to ignore it entirely in setting them. Thus, even if interest rates remain principally a monetary stability instrument, it is best not to exclude them as a supplement to macro-prudential policy action, either when national imbalances become widespread at Member State level and lead to a financial bubble (or on the contrary to a contraction) at euro area level, or to envisage, for example, modulating refinancing conditions of systemic banking groups according to their systemic score.

Above all, failing to consider this complementarity and returning to the pre-crisis principle of separation that held monetary policy apart from financial stability policy, would amount to denying the impact of interest rates on risk-taking, in particular for systemic institutions and therefore on overall financial stability at the same time, as even the monetary policy transmission channel of the beginning of the 2000s has been revealed as having most impact up to the *subprime* crisis. In concrete terms, interest rates should not be set by the ECB independently of an assessment of financial stability and more especially the level of risk-taking of systemic institutions. Otherwise monetary policy would compromise the effectiveness of horizontal macro-prudential action, or at least would make it more difficult to carry out. In this respect, it should be noted that it is from the point of view of horizontal macro-prudential policy that the 'financial stability' dimension of monetary policy is most significant in the euro area because, from the point of view of countercyclical action, a single interest rate can only have an impact on convergent financial cycles and cannot remedy financial divergences in the euro area any more than its economic divergences, which is why the second level of combination between monetary policy and countercyclical macro-prudential policies is required in each Member State.

2.3 'Countercyclical macro-prudential policies' in each Member State to reduce divergences within the euro area

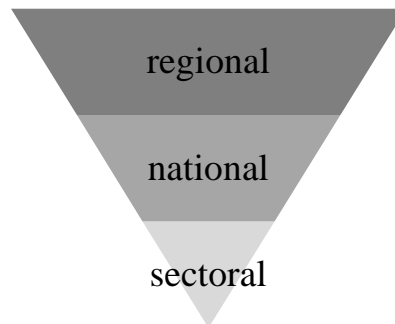
The 'monetary policy / countercyclical macro-prudential policy mix in each Member State' supplements the 'single monetary policy / horizontal macro-prudential policy mix at euro area level' in two ways. On one hand, it enables action to be taken with regard to the inaccessible temporal aspect of systemic risk at euro area level in the absence of a 'European financial cycle'. On the other, this corrective action in respect of national financial imbalances can boost national macro-cyclical adjustments.

have moved the lines and overturned strategic considerations relating to monetary policy: 'leaning against the wind' would become the new monetary policy horizon, unless macro-prudential policy be considered as more effective in achieving the goal of financial stability. From this point of view, macro-prudential policy was able to reinstate the idea that monetary policy be dedicated to economic and monetary stability without any additional financial stability objective.

2.3.1 Modular macro-prudential policies

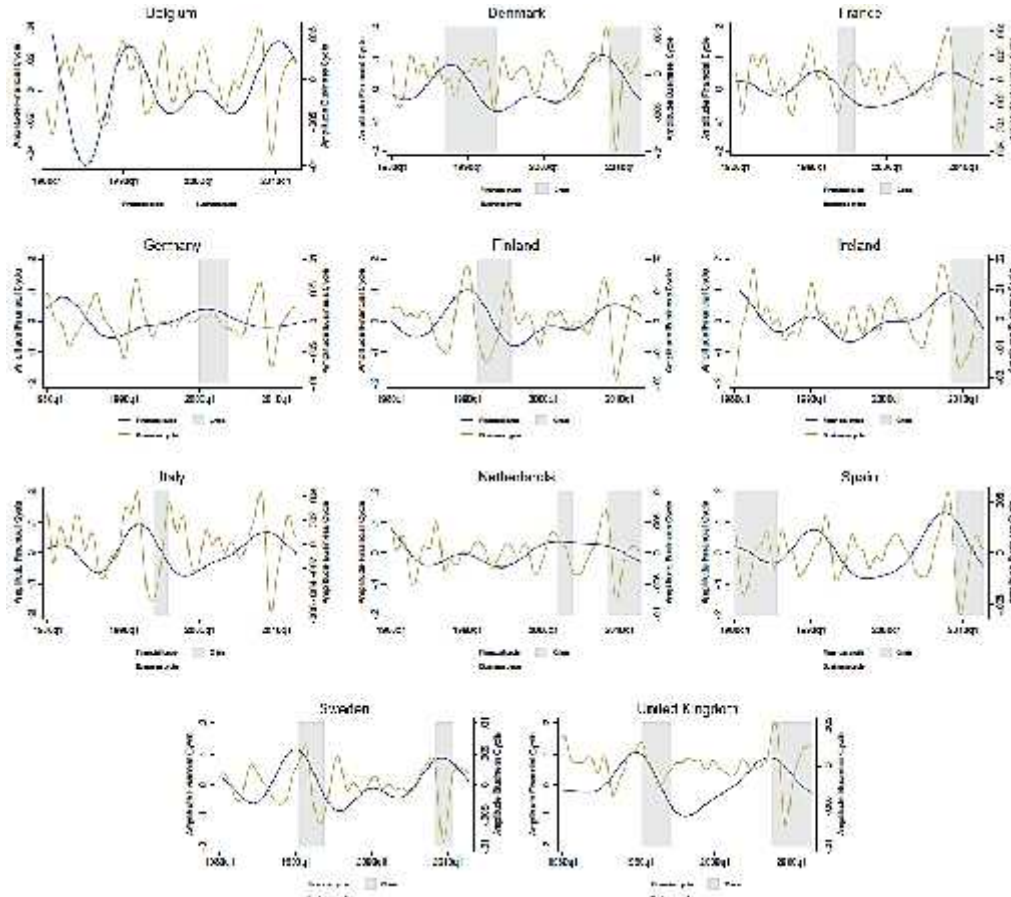
Unlike interest rates, which in the framework of the single monetary policy, can only be set at euro area level (and therefore for the Member State average), macro-prudential policy has the advantage of being modular at least at three levels (figure 4): regional (euro area as far as we are concerned), national and sectoral (real estate for example, see below).

Figure 4: The three possible levels of macro-prudential policy in the euro area



This makes countercyclical macro-prudential action (counter to the national financial cycle) possible at the level of each Member State. This would have little chance of bearing fruit if led at euro area level according to an average assessment of the financial cycle. This average assessment would in effect not reflect national financial cycles enough as these cycles are not strongly synchronous (Figure 5: Financial cycles in Europe): over the last three decades, there has been as much if not more of a gap between, for example, the financial cycles of Germany and Spain as between those of each of these two same countries and the United States (Aglietta and Brand, 2016).

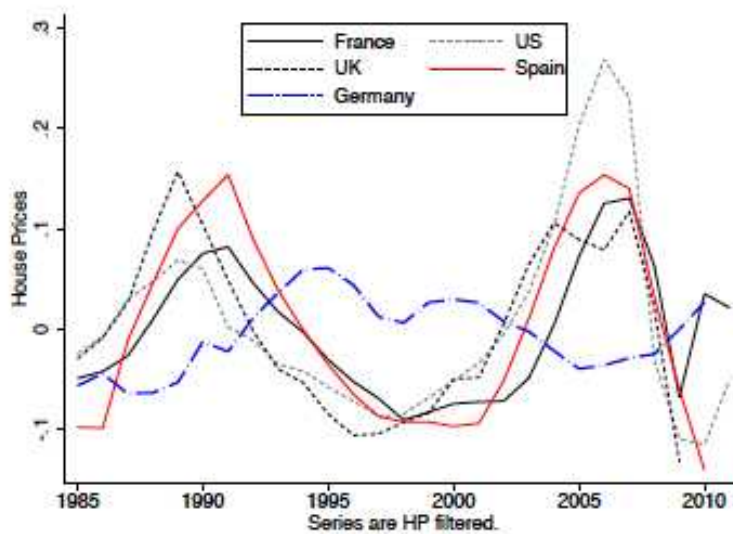
Figure 5: Financial cycles in Europe



Source: Stremmel (2015)

This lack of synchronisation can be seen at the level of the real estate cycle, where again a big gap can be observed between the German cycle and that of the other euro area countries (Figure 6). We note that while, the gap is not as big between these other countries, simply the lack of synchronisation of the German property or financial cycle is enough to be an obstacle to uniform countercyclical macro-prudential action at euro area level.

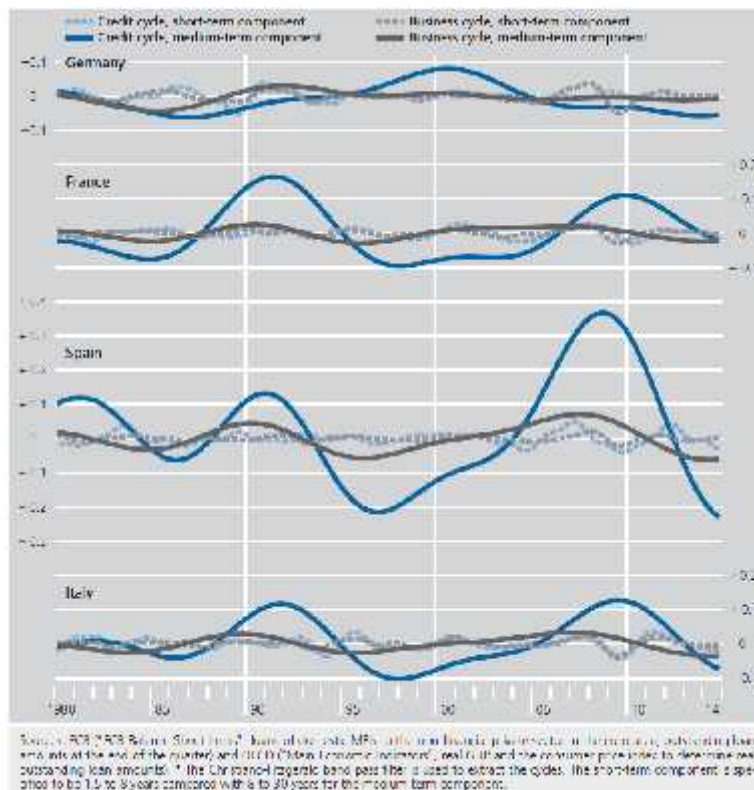
Figure 6: Lack of synchronisation with the German property cycle



Source: Grjebine (2015)

Lack of synchronisation with the German property cycle is also found in terms of credit and, at this level, a lack of synchronisation can also be noted between Germany, France, Italy and Spain (Figure 7).

Figure 7: Lack of synchronisation in credit cycles within the euro area



Source: Deutsche Bundesbank (2015)

Under these conditions, a monetary policy / macro-prudential policy mix, both defined solely at euro area level, would not, a priori, reduce national macro-cyclical divergences either. For this to change, in addition to perfect synchronisation in national financial cycles, the financial cycle of the euro area would also need to be the sole determinant of the business cycle, which is rather doubtful. Nevertheless, if countercyclical macro prudential policy led at the level of each Member State manages to correct or at least reduce national financial imbalances, it can, as a result, then promote national macro-cyclical adjustments, as long as there is a relationship between the financial cycle and the business cycle, which we are going to illustrate.

2.3.2 Acting on national financial cycles to promote macro-cyclical adjustment

In terms of the euro area, the potentially stabilising role of macro-prudential policy via its capacity to combat regional financial imbalances has already been highlighted. Countercyclical macro-prudential instruments can help implement a more homogeneous monetary policy in the euro area (Brzoza-Brzezina et al., 2013; Dehmej and Gambacorta, 2017), while the introduction of a national macro-prudential policy can reduce macro-economic volatility by partially reducing the impact of national monetary policies (Quint and Rabanal, 2014).

In this respect, a macro-prudential policy, modulated at the level of each country in the euro area, could, by reducing financial excesses during upturns of their respective financial cycles, contain the divergences that feed off this and stabilise the business cycle. This is the case in as much as there is

a relationship between the financial cycle⁶ and the business cycle. Work done by the Bank for International Settlements provides a reference framework in this respect (Borio, 2014, 2017).

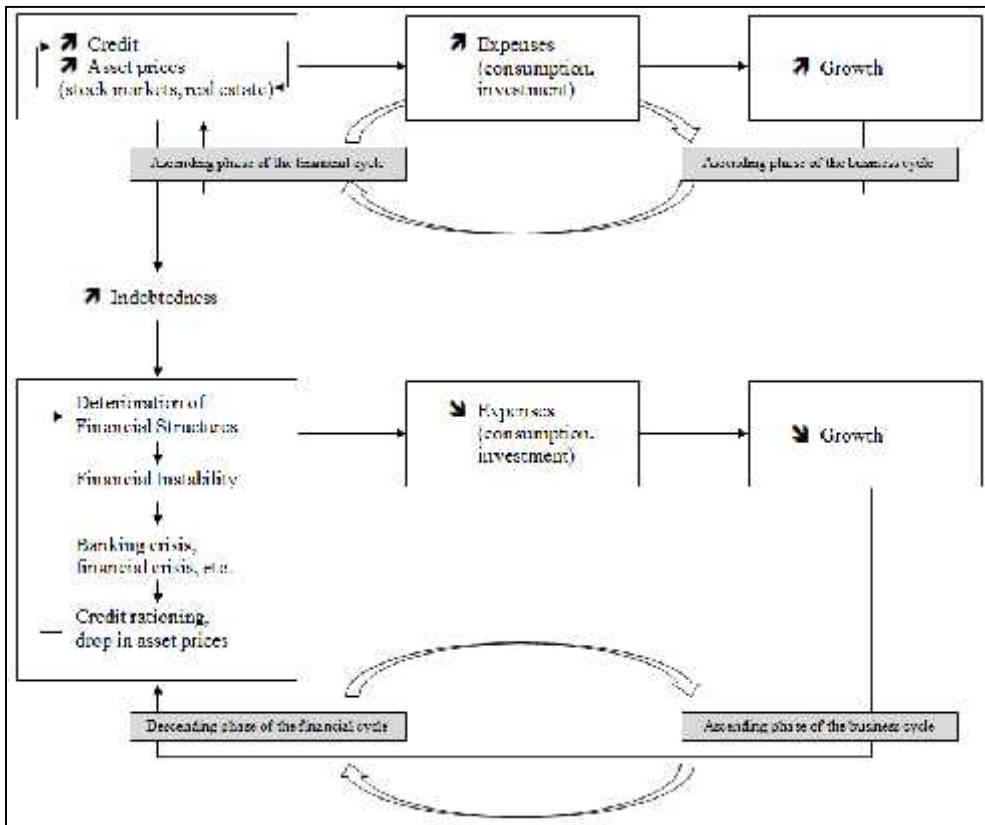
As our diagram (Figure 8) shows, the financial cycle has a direct influence on spending (investment and consumption) through changes in credit and prices of assets during both upturns and downturns and also, therefore, on the business cycle. During upturns in the financial cycle, the increase in borrowing and the price of assets facilitates the financing of investment projects and leads to positive wealth effects: spending increases. This has a positive impact on short-term growth and this confirms the initial increase in borrowing and the price of assets, which itself feeds back in through the positive impact of the increase in borrowing on the price of assets and vice versa. However, at the same time, debt increases and financial structures are gradually affected. In this way, financial instability increases throughout upturns in the financial cycle until a turnaround (the Minsky moment), which transpires through the triggering of banking crises, financial crises, etc. A contraction in financing (borrowing restrictions, fall in the price of assets, etc.) then follows, reducing spending and having a negative impact on growth, as well as potential growth, through the removal of jobs, production capacity and interruptions in terms of innovations and R&D.

Long term growth perspectives (potential growth) can also suffer upstream from poor distribution of resources which generally goes hand in hand with financial booms (boom in lending, property boom, etc.) and which reduce productivity growth (BRI, 2015).

To illustrate our point, let's take the example of Spain and Ireland before the 2007-2008 financial crisis, whereby the lending boom led to rapid growth, but where the turnaround was extremely damaging. By slowing the boom down, macro-prudential measures, beyond the simple dynamic provisioning experienced in Spain at this time, would have had less of a negative impact on financial structures and the distribution of resources, thus reducing divergence with other countries in the euro area. Ireland, which has seen strong economic growth since 2015, largely stimulated by a property boom, is showing itself to be more circumspect in this respect by applying macro-prudential measures since 2014, aiming to tighten borrowing in order to prevent a brutal turnaround over the coming years.

⁶ See Annex 3 for an analysis of the characteristics of the financial cycle.
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Figure 8: Interactions between the financial cycle and the business cycle



Source: authors

3. AN INVENTORY OF MACRO-PRUDENTIAL POLICY IN THE EURO AREA

Since the financial crisis, developments in macro-prudential policy instruments and institutions have been seen in Europe. The ESRB, national supervisory bodies, the ECB and other European bodies have been involved. Various tools have been implemented: some are part of the CRR/CRDIV and therefore harmonised at European level and others are at the discretion of States. By both clarifying what works and what poses a problem, the inventory provided in this chapter will constitute the basis of our proposals given in Chapter 4.

3.1 The institutions involved in macro-prudential policy in the euro area

3.1.1 The ESRB's role

After the financial crisis of 2008, the operational framework of macro-prudential policy has gradually seen the light of day in Europe, as it has in other countries (United States, United Kingdom, etc.). A new supranational authority, the European Systemic Risk Board (ESRB), was set up in 2010 in order to carry out macro-prudential oversight of the financial system, facilitate information sharing and coordination between countries at European level. At the same time, several entities were created at Member State level in order to monitor systemic risk and to implement macro-prudential policy at national level. Various organisational models co-exist. Macro-prudential tasks have been conferred either on a new macro-prudential entity within the central bank (Spain), or on the government (Denmark), or even on a financial authority (Germany) or to a committee (France⁷) (ESRB, 2014⁸). Table 1 provides an inventory of the institutional models used for macro-prudential policy in euro area countries and in the European Union more generally⁹. Central banks would however appear to be the favoured macro-prudential authority at national level, with 20 out of 28 of the Member States of the European Union (13 of which are in the euro area) designating their central bank for this purpose.

Table 1: Institutional models of the designated macro-prudential authority (number and %)

Model	1	2	3	4
Agency	Ministry of finance	Central bank	Financial authority	Committee
Euro area	0 (0%)	13 (68%)	5 (26%)	1 (5%)
Non-euro area	1 (9%)	7 (64%)	2 (18%)	1 (9%)
Total	1 (3%)	20 (67%)	7 (23%)	2 (7%)

Note: The table covers the 28 EU Member States and the banking union.
Source: Annex 2 of the ESRB response to the call for advice by the European Commission on macro-prudential rules in the CRD/CRD II (April 2014).

Note: The 'euro area' total includes the single supervisory mechanism (SSM).

Source: ESRB (2014)

⁷ In France, the "Haut Conseil de Stabilité Financière" is presided over by the Minister of Finance and includes the governor of the Bank of France, the president of the Prudential Control and Resolution Authority (ACPR), the president of the Financial Markets Authority (AMF), the president of the Accounting Standards Authority as well as three qualified professionals.

⁸ For an analysis of the advantages and disadvantages of each model, see: 'Allocating macro-prudential powers' ESRB, Reports of the Advisory Scientific Committee, No 5/November 2014.

⁹ Only the macro-prudential authorities designated under the CRDIV/CRR are taken into account here, namely the authorities that have been appointed by Member States as responsible for certain macro-prudential tools. The designated authority is not necessarily the authority with macro-prudential mandate at national level. Annex 4 details the institutional model for each country.

The ESRB has the task of providing an analytical framework for several macro-prudential instruments, in particular those provided for under CRR/CRDIV, but also of monitoring systemic risk in several countries and sectors in order to issue recommendations and even warnings in the event of potential or proven risk. In effect, the ESRB teams collect and analyse data and prioritise risks. The ESRB also plays a harmonising role by publishing recommendations and guides with regard to the calibration of macro-prudential instruments and their implementations. It has a non-binding power of recommendation (*comply or explain*)¹⁰.

In practice, the ESRB's contribution does have an impact on financial stability policy in Europe, at several levels:

- Monitoring of risks thanks to the quarterly publication of a risk dashboard.
- Publication of reports, guides on institutional design and the implementation/calibration of macro-prudential instruments (*guidelines, handbook, flagship or strategy reports*). The ESRB teams also publish academic studies on financial stability (*occasional and working papers*) or reports in partnership with members of the Advisory Scientific Committee (ASC).
- Issuing of recommendations¹¹ and warnings targeting sectors or countries. For example, for the first time on 22 September 2016, the ESRB addressed warnings on medium term vulnerabilities related to the property sector for eight countries in the Union, five of which in the euro area (Austria, Belgium, Finland, Luxembourg and the Netherlands)¹².
- Participation in the stress test exercise in collaboration with the ECB, the EBA, the ESMA and EIOPA¹³ by providing the severe stress scenario.

3.1.2 Coordination between the ESRB, national authorities and EU institutions

The ESRB is seen as the focal point for the design and implementation of macro-prudential measures in Europe, as well as for the collection of information on this subject. It maintains close relationships with the national authorities responsible for these measures in order to carry out all of its missions as well as possible. It centralises all the notifications from national authorities in relation to the implementation of macro-prudential instruments and ensures reciprocity¹⁴ in the application of certain measures when this is obligatory¹⁵, at the same time as encouraging them when optional in order to reduce negative externalities from one country to another and circumvention via loans between countries or branches of foreign institutions (recommendation ESRB/2015/02).

The notification mechanisms vary according to the instruments as specified in the CRR/CRDIV framework, in particular in terms of the EU institutions to be informed and the procedures and deadlines to be respected. As a general rule, the activation of any macro-prudential measure by

¹⁰ See Commission consultation (2016).

¹¹ See a recent briefing of the European Parliament (European Parliament-The European Systemic Risk Board: Output since inception-7 December 2016) for a summary of ESRB activity, including ten recommendations <https://www.esrb.europa.eu/mppa/recommendations/html/index.en.html>.

¹² <https://www.esrb.europa.eu/mppa/warnings/html/index.en.html>

¹³ European Banking Authority (EBA), European Insurance, Occupational Pensions Authority (EIOPA) and European Securities and Markets Authority (ESMA).

¹⁴ The principle of reciprocity consists in recognising the macro-prudential measures taken in other countries in order that domestic constraints also be applied to branches of foreign groups or to banks with cross-border exposures. This helps reduce the risk of circumvention of measures (Clerc, 2015).

¹⁵ Reciprocity is obligatory for measures in Articles 124 and 164 of the CRR, as well as for the countercyclical buffer when this buffer does not exceed 2.5%. However, it is voluntary when the countercyclical buffer is above 2.5% and for other measures like the SRB and measures provided for in Article 458 of the CRR (see below). Via a recommendation of December 2015, the ESRB has established a framework for the reciprocity of macro-prudential measures extending to all measures targeting exposures.

national authorities requires notification to the ESRB and sometimes to other institutions when the measure confers a wide margin of flexibility at national level. For example, the measures in Article 458 of the CRR as well as the systemic risk buffer (SRB) (see below), for which countries have great flexibility at their disposal, require a complex non-rejection procedure involving the Council and the Parliament, after consultation with the ESRB and/or the EBA. Finally, States also provide notification of non-harmonised measures at EU level, in an optional framework, which was not defined under CRDIV but that the ESRB has itself established to provide an overall view at European level.

3.1.3 Interaction with the ECB / SSM as part of banking union

Although the ESRB is considered as an independent entity, it does not have any legal personality or independent budget. The ESRB draws its financial, staffing, administrative, analytical and statistical resources from those of the ECB. Moreover, the ECB provides its secretariat and the ECB's governor chairs the *General Board* and represents the institution in international meetings. Indeed, the ECB's involvement in macro-prudential supervision is there for all to see. This involvement has been strengthened in the euro area, by conferring within the Banking Union the single supervisory role (single supervisory mechanism - SSM) on the ECB and giving it specific macro-prudential tasks that are shared with national authorities (Article 5 of the Regulation on the SSM).

Macro-prudential responsibilities are now shared between the ECB and national authorities. The ECB ensures the coordination of the macro-prudential framework within the banking union and all the national authorities must notify it of their measures in this matter (Article 5 of the Regulation on the SSM). Moreover, European law confers an asymmetric power on the ECB so that it can prevent potential inaction bias, in as much as it can require stricter measures than those applied in countries or, in the absence of measures, decide to apply them (topping up power). Finally, the SSM becomes the competent authority for the banks that it supervises (the ECB being considered the designated authority), which is not without incidence as part of the range of measures at the disposal of national authorities, which still exist, and therefore also on the degree of complexity of the European architecture.

3.2 The instruments used

3.2.1. The instruments under European law: CRR/CRD IV

European legislation has transposed several Basel Committee standards on banking supervision (see Table 2 below and Annex 5) into European law. These standards bring together several components of the Basel 3 agreement, which includes, among others, a new macro-prudential approach to balance sheet constraints. Thus, additional capital buffers partly vary with the economic cycle, and a specific capital surcharge applies to systemic institutions.

Table 2: Macro-prudential instruments in European law

<i>Instrument</i>	<i>Legal basis</i>	<i>Mandatory/Optional</i>	<i>Authority</i>
Adjusted Pillar 1 measures for real estate exposures	Articles 124 and 164 CRR	Optional	Competent Authority
Countercyclical capital buffer (CCB)	Articles 130, 135-140 CRD IV	Mandatory	Competent or Designated Authority
Capital conservation buffer*	Article 129 CRD IV	Mandatory	Competent or Designated Authority
Buffer for Globally Systemically Important Institutions (G-SII)	Article 131 CRD IV	Mandatory	Competent or Designated Authority
Buffer for Other Systemically Important Institutions (O-SII)	Article 131 CRD IV	Optional	Competent or Designated Authority
Macro-prudential use of Pillar 2 requirements	Articles 103 and 105 CRD IV	Optional	Competent Authority
Systemic Risk Buffer (SRB)	Articles 133 and 134 CRD IV	Optional	Competent or Designated Authority
Flexibility Measures	Article 458 CRR	Optional	Competent or Designated Authority

Source: Commission consultation (2016)

3.2.2. A macro-prudential perspective for micro-prudential tools

Macro-prudential policy reorientates several micro-prudential instruments to combat financial vulnerabilities and imbalances, which makes the division between the two approaches tenuous. Each micro-prudential instrument applied a) to systemic institutions or which targets specific sources of risk (horizontal dimension of systemic risk) or b) in a countercyclical manner (time-varying dimension of systemic risk) can be considered as macro-prudential. However, macro-prudential instruments are not all of micro-prudential origin.

The use of certain instruments provided for in the CRR/CRDIV framework to achieve a macro-prudential objective illustrate this. For example, Pillar 1 instruments adjusted to take real estate exposure into account, whether this be under Article 124 of the CRR which allows to increase the risk weights for real estate exposures to banks using the standard approach or under Article 164 which aims to increase a calculation parameter of risk weights (namely the *loss given* default LGD) for those using the internal approach, can be used to counter systemic risk relating to real estate exposures. Similarly, Pillar 2 constraints which, supplementing Pillar 1, give supervisory bodies a certain freedom of appreciation in monitoring risk specific to certain institutions, can be reorientated using a macro-prudential approach (Article 103 of the CRDIV), when several institutions are facing similar macro-prudential risks. The last banking package amending CRR/CRDIV proposed by the Commission in November 2016 nevertheless proposes putting an end to the use of Pillar 2 capital requirements for macro-prudential purposes. Finally, more flexible/discretionary measures (Article 458 of the CRR) can be mobilised in the same direction. These measures include liquidity measures, exposure limits, etc. The diversity of the instruments sometimes brings about a problem in terms of coordination and information sharing when the designated macro-prudential authorities and those

competent for activating measures in CRR/CRDIV are distinct (Germany, Austria and the Netherlands (Commission consultation 2016)).

However, other instruments, provided for under European law, have a clearer macro-prudential orientation, such as countercyclical buffers (CCB), surcharges for systemic institutions or the systemic risk buffer (SRB), provided for in Article 133 of the CRDIV, to respond to specific vulnerabilities in countries, whether structural or not covered by the other CRR instruments.

3.2.3. A hierarchical implementation of the instruments

The mechanisms of activation and notification to European bodies (EBA, ESRB, Commission, European Parliament and Council) differ according to the instruments, as well as the specific authorities responsible for implementing them (micro-prudential authority for the instruments that are part of Pillar 1 and 2). A certain order of activation must sometimes be respected and the insufficiency or ineffectiveness of measures at the top of the pecking order, which are generally the most harmonised and for which activation assistance indicators exist (CCB, G-SII), must sometimes be demonstrated. Thus, the activation of certain macro-prudential instruments requires having made prior use of micro-prudential instruments beforehand and demonstrating proof of their insufficiency.

This complex architecture reflects the dual desire to combine flexibility at national level, transparency and harmonisation at European level and correct functioning of the single market (Recital 15, Regulation (EU) No 575/2013).

3.2.4. Calibration and activation of instruments

The activation and calibration of macro-prudential measures are rarely guided by harmonised quantitative indicators at European level. Countercyclical buffers and systemic surcharges are exceptions to this. Countercyclical buffers are adjusted according to the overall evolution of credit (with respect to GDP) and activation is based on Basel Committee recommendations for banking supervision and follows a logic of discretion guided by quantitative indicators (*guided discretion*¹⁶). Systemic surcharges, of between 1% and 3.5%, are determined according to the risk score using the Basel Committee methodology¹⁷, which is also applied by the Financial Stability Board. For the other systemic institutions, the EBA has provided recommendations¹⁸ to identify them.

The majority of the other instruments are not guided by harmonised indicators and are either at the discretion of the authorities (Pillar 1 instruments linked to property risks), or subject to discretion accompanied by a complex validation mechanism (*non-rejection procedure*), as is the case for flexibility measures (Article 458 of the CRR) or for the SRB when the buffer exceeds 3%. Validation is provided by the Commission or the Council which takes the ESRB's opinions into account. These two types of instrument¹⁹, which have a complex notification and validation procedure, are designed for use as a last resort, after Pillar 1 and less discretionary measures have been used without success. Few countries have used them so far. Belgium applied a measure targeting real estate risk in 2014 under Article 458. This measure was extended in 2016. Finland also requested authorisation from the European authorities to adopt a similar measure, namely a minimum 10% risk weight for banks using the internal approach for evaluating real estate risk, which is applicable as of July 2017.

¹⁶ See The ESRB Handbook on Operationalising Macro-prudential Policy in the Banking Sector (2015).

¹⁷ This methodology includes several criteria: the size, interconnectedness, substitutability, complexity, cross-border activities.

¹⁸ Guidelines - On the criteria to determine the conditions of application of Article 131(3) of Directive 2013/36/EU (CRD) in relation to the assessment of other systemically important institutions (O-SIIs)-16-12-2014.

¹⁹ Their use is limited over time (2 years renewable) in contrast to the others.

3.2.5. Non-harmonised instruments at the disposal of national authorities

Besides the macro-prudential instruments linked to regulatory capital and harmonised at European level, there is another category of measures that introduces indebtedness limits for economic agents and which is generally focussed on real estate²⁰. Among these measures, we can mention the caps on countercyclical loan to value (LTV) or loan to income (LTI) ratios, debt services to income (DSTI) or even limits on the maturity of loans. Several academic studies have shown that these measures are all the more effective in that they are targeted (see Annex 7 for a literature review on the effectiveness of macro-prudential instruments). They are acutely modular and can be adjusted to the value of property, the financing currency, the type of owner (first-time buyers or second house), the type of housing (residential or commercial), the geography (region, town or neighbourhoods)²¹, etc. (Jacome and Mitra, 2015).

National authorities are responsible for the implementation of these instruments targeting borrowers and they are not harmonised at EU level. Furthermore, the authorities responsible for these instruments are not necessarily central banks or micro/macro-prudential regulators/supervisory bodies. The Treasury or the Government are sometimes the competent authority (the government in the Netherlands and the Ministry of Finance in Norway).

A consensus seems to be emerging in the economic literature on the fact that both categories of measures, those targeting lenders (surcharges and countercyclical buffers) and those targeting borrowers (LTV, LTI and DSTI) are complementary. Their joint use reinforces the effectiveness of macro-prudential policy and helps improve the stability of the financial system by reinforcing the resilience of lenders and, at the same time, preventing the financial imbalances that result from excessive indebtedness, in particular any real estate indebtedness of private borrowers (see Annex 7).

It is also important that complementarity exist between the different categories of macro-prudential measures (lenders / borrowers) in order to prevent circumvention, as well as to cover risks more broadly, because measures targeting lenders, such as the countercyclical buffer or sectoral weights cover the stock of exposures while instruments targeting borrowers cover the flow of exposures. Their combination can therefore vary according to the diagnosis of the risk, whether it is perceived as being imminent (action required on stock) or on the way (possible action on flows). The deployment of a battery of complementary instruments also helps better counter the same risk: in 2014, for example, Ireland jointly activated LTV and LTI measures targeting borrowers and a strengthening of capital for lenders exposed to real estate risk 'see Table 3). Of course, the intensity and timing of interventions are then determinant (Kelly et al, 2017).

²⁰ Annex 6 groups together the macro-prudential instruments in Europe related to the property sector

²¹ See the experiences from the beginning of the 1990s for Hong Kong (Ashvin and Malhar, 2013) or the 2000s for South Korea (Igan and Kang, 2012).

Table 3: Macro-prudential provisions relative to real estate risk in the euro area²²

Country	LTV	LTI	DSTI	Sectoral capital requirements
Belgium				2014
Cyprus	2013		2013/2016	
Estonia	2014		2014	
Finland	2014			2016
Ireland	2014	2014		2014
Latvia	2007/2014			
Lithuania	2011		2011/2015	
Luxembourg				2013
Malta	2014			
Netherlands	2012			
Slovenia	2016		2016	2016
Slovakia	2014/2016		2014/2017	2016

Source: adapted from the ESRB database (March 2017)

It should be noted that other types of measures can be activated to reduce real estate risks such as the taxation of transactions or extra over prices, the cap on tax relief on interest, etc. However, the application of these measures, as well as measures targeting lenders, is sometimes difficult to harmonise in view of possible political (access to housing), legal or fiscal constraints. Nevertheless, there does need to be a minimum of coordination.

3.3 Stress tests being incorporated into the macro-prudential arsenal

Among instruments that help evaluate the resistance of banking sectors to unfavourable macro-economic developments, stress tests have a role to play as part of the macro-prudential toolbox. However, the main criticisms made against the stress tests carried out by the ECB and the EBA have, apart from judging the severity of scenarios to be insufficient compared to US or British stress tests, pointed to the purely micro-prudential nature of these tests. By limiting themselves to exogenous shocks and ignoring second round effects, stress tests have, up until now, neglected the systemic dimension of risk.

Moreover, the scenarios have been designed as if the bank were isolated from the rest of the financial sector. However, the world financial crisis clearly demonstrated the extent of contagion effects on the liquidity market and through the massive sales of assets. Generally speaking, stress tests barely concerned themselves with vulnerabilities from the liabilities side of bank's balance sheets, particularly those concerning the structure of financing and the degree of liquidity of resources. An evaluation of the stability of banks' funding is necessary because dependency on financing by markets (wholesale funding), in particular short-term financing, has greatly increased and makes banks particularly vulnerable to liquidity shocks.

Furthermore, the number of banks involved in stress tests has been considerably reduced, from 130 banks supervised by the ECB in 2014 to 37 carried out by the EBA in 2016. The success and failure thresholds have been removed, at the risk of skewing assessments of the health of the European

²² Outside the euro area, Denmark, Norway, the United Kingdom and Sweden have also taken a series of specific measures to defuse the property bubble (ESRB, 2017).

banking system and reducing transparency in comparison to the stress tests carried out in 2014²³. As an illustration, no Portuguese banks were submitted to tests. Finally, the stress tests do not differentiate constraints according to how systemic banks are, as the Bank of England did in 2016.

Aware of the limitations of this process, the ECB has redoubled its efforts to develop analytical tools helping it to isolate the various sources of systemic risk and to lend them a macro-prudential aspect. Thus, so-called '*top down*' stress tests have been developed and are now carried out internally as a complement to the so-called '*bottom up*' tests the results and data of which have been given. The ECB detailed the progress made in this matter in February 2017²⁴. It will be noted that these internal ('*top down*') stress tests (a) are dynamic because they include the reaction of banks to scenarios (banks can carry out deleveraging, increase capital or re-optimize portfolios, etc.) and take account of the financial cycle, (b) now include interactions on the one hand between the different financial institutions themselves and on the other between the financial system and the real economy and (c) include an overall evaluation of liquidities.

The macro-prudential stress tests and the different models developed are useful in strengthening analytical capacity regarding systemic risks, evaluating the effectiveness of macro-prudential instruments and optimising their calibration. The progress made by the ECB in this matter is, in this respect, going in the right direction and will no doubt be further developed by new proposals. In, for example, taking into account the work of the Bank of England (2017), it would be possible to further develop the stress test exercises applied to countries in the euro area, (a) by varying the severity of scenarios according to the positioning of each country in the economic and financial cycles (cyclical scenario), and (b) by diversifying the scenarios from one exercise to another, or one country to another to cover the different sources of risk such as real estate, non-performing loans, cross-border activities, etc. (exploratory scenario). This would make the evaluation of risks more detailed and the calibration of macro-prudential instruments easier.

²³ For a critical reading of the 2014 tests, see Arnould and Dehmej (2016). For an analysis of the EBA tests in 2016, the reader can refer to the European Parliament briefing '*Bank stress testing: stock taking and challenges*' 22 September 2016.

²⁴ A non-technical presentation of this publication was published by the Vice-President of the ECB (Vitor Constâncio) in VoxEu (22 February 2017) <http://voxeu.org/article/macprudential-stress-tests-new-analytical-tool>

4. POSSIBLE CHANNELS FOR IMPROVEMENTS

An instrumental and institutional framework has started to emerge in Europe to allow the implementation of macro-prudential policy. This framework still needs to be improved, not just to correct any design failings revealed in practice but also to take account of a changing context of application. On one hand, the first component of banking union (SSM) giving the ECB supervision of large banks in the euro area as well as its own macro-prudential competences means that the ECB is emerging as one of the institutional pillars of macro-prudential policy. On the other, the Brexit decision will call for institutional changes (starting with the relocation of the EBA), which may lead to a redefinition of the scope of action of the ESRB and the EBA by, as far as possible, removing any overlap between these two institutions, if not merging them. It is, in any case, an opportunity not to be missed to simplify the institutional macro-prudential policy framework and to clarify the distribution of tasks between the ECB and the ESRB. This opportunity is all the more timely in as much as several public consultations have been launched by the European Commission making these changes possible: some of these have taken place recently (public consultation on the European macro-prudential framework in August 2016²⁵; public consultation on the capital markets union (CMU) in the first quarter of 2017²⁶), while others are underway (public consultation on the operations of European supervisory authorities from March to May 2017²⁷).

Moreover, the macro-prudential perspective involves monitoring risks beyond the banking sphere to prevent the circumvention and transfers that its implementation could lead to if the scope of measures taken is solely limited to the balance sheets of banking institutions. In particular, potentially systemic shadow banking entities, especially those with strong connections to banking groups, need to be prevented from reducing the impact of the framework put into place. Moreover, the ESRB is responsible for supervising the financial system *as a whole*²⁸.

On the basis of the analysis carried out in Chapter 2 and the inventory presented in Chapter 3, in this last chapter we now put forward possible channels for improvement both in terms of instruments (section 4.1) and the institutional framework (section 4.2) of macro-prudential policy, the deployment of which still remains to be pursued. Although the instrumental and institutional components are closely linked, we have preferred to disassociate them for reasons of clarity. In this respect we have come up with a series of proposals.

4.1 Instrumental proposals

The macro-prudential toolbox must both help regulate the financial cycle (especially the real estate and the credit cycles) and strengthen the resilience of systemic institutions, or in other words prevent their difficulties from being transformed into systemic shocks. In order to do this it must allow itself to be divided into two sub-groups of instruments:

- those acting on the financial cycle (cyclical dimension)
- and those acting on the resilience of systemic groups (horizontal dimension).

At euro area level, the effectiveness of the instruments in the first sub-group (countercyclical action) fundamentally depends on the degree of synchronicity of financial cycles of countries in the area.

²⁵ ‘Consultation document. Review of the EU Macro-prudential framework’ (August - October 2016): http://ec.europa.eu/finance/consultations/2016/macprudential-framework/docs/consultation-document_en.pdf

²⁶ ‘Public consultation on the capital markets union mid-term review 2017’: https://ec.europa.eu/info/finance-consultations-2017-cmu-mid-term-review_en

²⁷ ‘Public consultation on the operations of the European Supervisory Authorities’: https://ec.europa.eu/info/finance-consultations-2017-esas-operations_en

²⁸ In 2016, the ESRB published the first edition of the annual report focusing on monitoring shadow banking in Europe (*EU Shadow Banking Monitor, No 1, ESRB, July 2016*).

This is an aspect that will require the constant attention of the authorities involved in macro-prudential policy and will require the use of appropriate indicators. On the basis of a standard financial cycle computation, there is in fact no *single* financial cycle in the euro area but rather several non synchronous national financial cycles. Therefore, countercyclical instruments should be used to take macro-prudential measures at the level of each Member State but in a coordinated top down manner by a supranational authority such as the ESRB. The instruments in the second sub-group targeted at the resilience of systemic groups will, however, be all the more effective in that they will be applied at the level of the euro area. The implementation of macro-prudential policy in its two dimensions at two levels will also help to clarify its institutional architecture (see section 4.2).

Proposal 1: The instruments of macro-prudential action must be applied at the level at which they are most effective: the national level (with top down coordination) for those with a countercyclical impact in the absence of sufficient synchronisation of national financial cycles; euro zone level for those with a horizontal impact.

There is no homogeneous definition or coordinated application of instruments at European level for the national application of countercyclical macro-prudential action. However some of these instruments, particularly those considered as being the most promising in regulating the credit and real estate cycles (LTV, LTI and DSTI), currently fall under the responsibility of various authorities (central banks, micro/macro-prudential regulators/supervisory bodies, finance ministries, etc.). All the macro-prudential instruments that can be activated must fall under the control of macro-prudential authorities, or at least be coordinated with these authorities.

Proposal 2: All the instruments recognised as being capable of having a macro-prudential impact must be made available to macro-prudential authorities, be defined by them and coordinated at euro area level, whatever their level of application (euro area, national, sectoral, etc.).

Instruments with a horizontal impact necessarily target lenders and as it happens systemic banking groups. For these institutions, they already take the form of systemic buffers and surcharges which can be added to micro-prudential capital and liquidity requirements. There is a priori nothing to prevent designing the same type of surcharge for non-banking systemic groups as long as these entities are already subject to capital requirements (such as insurance companies, for example). At a minimum, it is the links that systemic banking groups have with shadow banking entities (hedge funds, investment funds, etc.) that need to be closely monitored because these links, in the form of equity participations, lines of credit or counterparties on the repo market, are so many drivers of the transmission of systemic risk (Abad et al., 2017).

Countercyclical instruments can and must target both lenders and borrowers to strengthen their impact and prevent circumvention. LTV²⁹, LTI and DSTI ratios are the most promising instruments for the regulation of credit by modulating the conditions required of borrowers, whatever the institutional nature of the financing provider, so as to regulate the evolution of credit, whether it comes from banks or non-banking entities, especially shadow banking entities. Some countries, such as the Netherlands and Finland already apply the LTV ratio to all household credit providers, including non-banking entities. In a recent report³⁰ focused on macro-prudential policy specific to shadow banking activities, the ESRB mentions an ongoing reflection, in collaboration with the FSB, on other macro-prudential instruments that are potentially applicable beyond the banking sphere (such as countercyclical margin calls in the framework of derivatives clearing, countercyclical haircuts in regard to financing involving collateral and restrictions on leverage and liquidity for investment funds, etc.)

²⁹ In terms of the LTV ratio specifically, it must be applied counter-cyclically so as to prevent the procyclicality of the constraint, as the denominator varies with the cycle.

³⁰ ESRB (2016b), 'Macroprudential policy beyond banking: an ESRB strategy paper', July 2016.

Proposal 3a: In as far as possible, macro-prudential instruments must have an impact both on the lenders' asset and the borrowers' liability, whatever the institutional nature of the lenders.

Proposal 3b: Macro-prudential instruments with a horizontal impact must be applicable to systemic groups without necessarily being limited to banking groups.

Proposal 3c: As transmission drivers of systemic risk, links between banks and shadow banks must be subject to constant examination by macro-prudential authorities.

In order to regulate the credit cycle, countercyclical macro-prudential instruments must act both on credit stock and flows. In this respect, LTV, LTI and DSTI ratios on one side and the countercyclical buffer on the other are complementary instruments, because LTV, LTI and DSTI ratios act on credit flows while the countercyclical buffer acts beyond flows on the stock of exposures. Depending on the risk diagnosis, the use of one instrument or another can be prioritised, according to whether the main risk factor seems to come from current exposures (stock) or their evolution (flows).

Proposal 4: As far as possible, macro-prudential instruments with a countercyclical impact used to regulate the credit cycle efficiently must act both on credit flows and stocks.

Given the magnitude of the financial cycle compared to the business cycle and their interaction, minimum capital requirements must include a countercyclical buffer drawing on that in the Basel 3 agreements but which is more responsive, more progressive and whose current 2.5% ceiling be revised upwards³¹. Currently, only three European countries (Norway, Sweden and the Czech Republic) have activated a countercyclical buffer; none of the euro area countries have yet used it (ESRB, 2017). The length of time needed to come out of the financial crisis and the sluggish recovery of the financial cycle may be a justification for this. However, property market vulnerabilities have been identified by the ESRB (ESRB, 2016a³²). Nevertheless, the indicator used (loan to GDP ratio) to decide on activation of the countercyclical buffer only covers a restricted aspect of the financial cycle, perhaps more pertinent for some countries than others but which as it happens only takes property market tensions into account very indirectly through the evolution of total credit. The financial cycle measure serving to activate the countercyclical buffer would be improved by better integrating information relative to the real estate cycle.

Proposal 5: Make the countercyclical capital buffer more responsive and more progressive with a higher ceiling; base its activation at national level on an appropriate financial cycle measure defined by the ESRB in collaboration with the national macro-prudential supervisory authorities responsible for applying it and giving notification of it.

There are potentially as many different macro-prudential instruments as there are sources of financial fragility. Systemic risk can in effect come from (ESRB, 2014):

- excessive credit expansion and leverage effect,
- an excessive mismatch between maturities and lack of market liquidities,
- a concentration of direct and indirect exposures,
- inappropriate incentives and moral hazards.

These sources of vulnerability can differ between countries and they therefore need to be identified for each country so that the most appropriate instruments can be allocated. This is an important

³¹ The current framework bases activation of the countercyclical buffer on an assessment of the gap between the ratio of loans to GDP and its historic trend: the buffer can be activated when this gap exceeds 2% and grows up to a maximum of 2.5% when the gap is higher than or equal to 10%. Moreover, currently activation is slow because banks are allowed a 12-month window in which to comply with this. At the Federal Council in 2014, the Swiss National Bank suggested reducing this activation window by varying it between 3 and 12 months according to the severity and dynamic of imbalances noted (Swiss National Bank, 2014).

³² The ESRB (2016a) report on real estate related vulnerabilities in Europe concludes that there is a high risk in 11 EU countries of which 8 have been subject to a public alert.

process but this identification must not lead to a mushrooming in the number of instruments and indicators which might make the framework too heterogeneous and complex. A balance therefore needs to be struck between identifying the many different sources by country in the euro area and the implementation of a sufficiently homogeneous and legible prudential framework. In this sense, a limited number of approaches should be sufficient to identify all potential sources of vulnerability without overly increasing the heterogeneity and complexity of the framework, which would likely be prejudicial to its effectiveness:

- the 'real estate' approach where the main source of financial fragility is identified as coming from the property cycle;
- the 'credit' approach where given a financing structure based mainly on banks or on sources of banking and non-banking credits (intra-group credit, inter-enterprise credit, credit from other non banking institutions), the main financial instability transmission channel is associated with the credit cycle;
- the 'asset price' approach (other than real estate assets) where the main source of financial fragility is associated with the cycle of asset prices on financial markets.

In concrete terms, here we can envisage capital reinforcement based on a sectoral approach, using financial cycle indicators that are appropriate for the 'real estate', 'credit' and/or 'asset price' approaches for each country. The countercyclical impact of the prudential framework can therefore be based, for example, on a countercyclical buffer specific to one sector: Switzerland thus implemented a countercyclical buffer, related to real estate exposure, of 1% in 2012, then raised to 2% in 2014 (Basten and Koch, 2015). Acting through countercyclical and sectoral risk weights could also be envisaged. During the property boom, this would amount to increasing the risk weighting associated with real estate loans, which would then be translated by an additional capital requirement. Articles 124 and 164 of the CRR, which concern respectively banks using the standard approach and the internal approach, already allow this type of sectoral targeting for real estate.

Proposal 6: The modularity of the macro-prudential framework allows for a sectoral definition of its instruments. Countercyclical macro-prudential action can thus introduce countercyclical and sectoral buffers or countercyclical and sectoral risk weights.

The cap on debt leverage, liquidity ratios and exposure restrictions can become macro-prudential instruments, as long as they are associated with a countercyclical component (countercyclical action) or a surcharge (horizontal action). Without this addition, these instruments are still of a micro-prudential nature and cannot effectively contribute to the prevention of systemic risk.

Proposal 7: The cap on debt leverage, liquidity ratios and exposure restrictions become macro-prudential instruments when they include a countercyclical buffer and/or a systemic surcharge.

When it comes to the leverage ratio, the experience of the UK can be seen as an example in as much as the ratio can go as high as 4.95% depending on the position in the cycle and the institution's systemic score. Other countries³³, such as the United States, Switzerland and the Netherlands have also recorded this ratio at a similar level but without including a countercyclical buffer (ESRB, 2015). In the European regulation framework, the leverage ratio has neither been recorded nor considered other than in a strictly micro-prudential respect: within the framework of the Regulation on CRR capital requirements, since 2015 EU banking institutions have been required to calculate and send

³³ In the United States, the leverage ratio for the largest American banks will be raised to 5% in 2018 and even 6% for banks participating in the deposit insurance system. Nevertheless, as the European accounting standards (IFRS) are more demanding than those in the United States (GAAP), the US 6% ratio is judged to be equivalent to a European ratio of 4%. From 2018, the Netherlands will apply a ratio of 4% for their 4 national systemic banks. Finally, Switzerland plans to introduce a requirement for a ratio of between 3.1% and 4.56% from 2019.

notification of their leverage ratio (category 1 capital to exposures); the ratio of at least 3% recommended in Basel 3 is not yet required and, moreover, it has not yet been envisaged to modulate this requirement according to the financial cycle.

Proposal 8: Returning to the macro-prudential toolbox, the leverage ratio must include a countercyclical buffer allowing it to be raised during financial upturns.

Beyond the risk of financial instability that they impose on the euro area, systemic banking groups reflect a structural problem in the European banking system that was already raised in the Liikanen report³⁴ and by the ESRB³⁵. Systemic surcharges, a function of the risk score defined by the Basel Committee and the Financial Stability Board in the framework of the list of global systemically important banks (G-SIBs), are applied to them. Systemic buffers are also defined at European level by authorities designated as competent to establish the list of other systemically important banks. In total, the surcharge cannot exceed the highest surcharge among those imposed for G-SIBs (up to a maximum of 3.5%) and those imposed for other systemically importance institutions (up to a maximum of 2%). Their implementation is progressive, programmed over 4 years from 2016 for full application in 2019. These additional capital requirements are defined on the basis of the CET1 ratio and make risk weighted assets a factor in the denominator of the ratio. Several studies have shown that the internal models used by the big banking groups that are found in the list of systemic banks allow the manipulation of weights (Mariathasan and Merrouche, 2014). Moreover, this is what lies behind the ongoing work in the Basel Committee in order to provide a better framework for the use of these models. To prevent these manipulations of risk measures we recommend that the surcharges or systemic buffers be established as a percentage of the asset total and no longer as a percentage of risk weighted assets. The adjustments proposed by the European Commission with regard to the leverage ratio used in the CRR2 package does not provide for this.

Proposal 9: Given the number and significance of the systemic groups in Europe (15 out of 30 groups listed by the Financial Stability Board are European, of which 13 are in the EU and 8 in the euro area), surcharges or systemic capital buffers should be defined as percentages of the total assets of these groups without recourse to risk weights.

4.2 Proposals relative to the institutional framework

The effectiveness of central banks as micro-prudential supervisory bodies remains open to debate. However, the ‘macro’ culture of these institutions acquired through the conduct of monetary policy makes them natural candidates to exercise a macro-prudential role. By conferring supervision of large banks in the euro area on the ECB, banking union makes it the best placed institution to carry out horizontal macro-prudential policy at this level. The ESRB which, since 1 January 2011, has been responsible for monitoring and analysing risks that have an impact on the stability of the financial system as a whole, could take on the activation of countercyclical measures, financial cycle measures by country and the implementation of indicators according to the chosen approaches (‘real estate’, ‘credit’ and ‘asset prices’) to enable this action to be rolled out at national level and best coordinate its implementation with the national macro-prudential authorities. This clear distribution of tasks (horizontal action conferred on the ECB; countercyclical action conferred on the coordinated combination of the ESRB and national macro-prudential authorities) seems to us to be likely to promote synergies between these two institutions and prevent the duplication of tasks. More generally, this dual pillar macro-prudential framework would simplify the architecture of financial supervision in Europe, would facilitate the coordination with national

³⁴ Group of high-level experts on structural reform in the EU banking sector, chaired by Erkki Liikanen http://ec.europa.eu/internal_market/bank/docs/high-level_expert_group/report_fr.pdf

³⁵ ESRB, ‘Is Europe Overbanked?’, Reports of the Advisory Scientific Committee, No 4/June 2014. https://www.esrb.europa.eu/pub/pdf/asc/Reports_ASC_4_1406.pdf

authorities and would rationalise resources by removing unjustified overlaps between several institutions (data collection, risk monitoring, development of analytical tools, centralisation of notifications, elaboration of stress tests and use of results, etc.).

Another option would be to confer macro-prudential policy action in both its dimensions (both horizontal and countercyclical) on the ECB, but this does not, however, seem the best solution given the volume of preparatory work involved in the countercyclical component. This requires regularly updated evaluations of the financial cycle and systemic risk which, if allocated to the ECB, could overload it with work. The preparatory work for the evaluation of assets (in autumn 2014) and stress tests illustrated this problem, forcing the ECB to mobilise the EBA staff and consultancy services in addition to its own staff. It would, therefore, be better to share the macro-prudential tasks by calling on the support of the existing organisational apparatus (the ECB is already responsible for the supervision of large institutions and the ESRB is already in close contact with national authorities because they are members of its board). There is also another aspect that should not be ignored, relating to objections concerning its democratic legitimacy that the ECB is sometimes subject to. Responding to this by investing it with ever more powers would expose it to the risk of fuelling these objections. Here again, it would be better to leverage the current set-up by clarifying the existing architecture.

Proposal 10: The ECB and the ESRB are the two institutional pillars of macro-prudential policy within the euro area. As the single supervisory body for large euro area banks, the ECB should be given responsibility for horizontal macro-prudential action carried out at euro area level. In taking responsibility for countercyclical measures carried out at national level, the ESRB would coordinate its action with that of the ECB and the national macro-prudential authorities.

The ESRB already plays an important role in the current macro-prudential framework. From a certain point of view, its mandate is seen as wider than the ECB's in both geographical terms (Europe versus the euro area) and in terms of the set of financial activities that it supervises (beyond the banking sector). However, it has less powers and resources. Nevertheless, it would be called on to increase its role if it were given specific responsibility for coordinating the countercyclical measures taken by national macro-prudential authorities. In this respect, its powers ought to be extended by making its decisions binding or by giving it a veto for macro-prudential decisions taken by Member States, as provided for the ECB for example, in Article 5 of the SSM. In addition, it needs to be provided with more staff and financial resources and even have transferred to it some of the prerogatives of other supranational institutions in charge of the macro-prudential component of financial stability (ECB or EBA): for example, in terms of stress tests, the collection of financial data needed for the evaluation of systemic risk and the writing of reports on financial stability, the ESRB would become more effective in having its powers reinforced, given its wide spectrum of supervision (beyond the euro area and the banking sector).

Proposal 11: Increase the powers of the ESRB and the financial and human resources at its disposal.

In the light of the institutional inventory made in section 3.1, several measures could be taken to strengthen the macro-prudential framework, simplify approaches and clarify the roles of each institution. In particular, this inventory helped us to highlight the need to clarify the objectives (micro/macro-prudential) assigned to each instrument in order to prevent two distinct authorities (competent/designated) from disputing who should have control over them. In terms of the flexibility and responsiveness of the framework, it is important that the macro-prudential authorities do indeed have responsibility for macro-prudential instruments. As an example, sectoral constraints such as those targeting real estate (Articles 124 and 164 of the CRR for lenders, and LTV and DTI for borrowers) should be reserved for macro-prudential action and made available to national macro-prudential authorities in consultation with the ESRB. Proposal 12 constitutes the institutional aspect of Proposal 2.

Proposal 12: macro-prudential authorities must have full responsibility for macro-prudential instruments.

One current provision seemed to us to be particularly prejudicial to the framework's responsiveness. This is the 'pecking order' order of prudential instruments, which consists in requiring designated authorities to prove the insufficiency of the micro-prudential instruments mobilised in order to trigger the macro-prudential measures.

Proposal 13: remove the concept of pecking order for prudential instruments in order to provide a more flexible, more responsive framework and avoid the inaction bias. It must, therefore, be possible for designated authorities to deploy macro-prudential instruments entirely independently without having to activate micro-prudential instruments beforehand.

The notification procedure is also essential to given coherence to the whole framework. However, it suffers, currently, from the fact that there are too many stakeholders. By increasing the weight of reporting tasks on the competent authorities and by exposing them to the risk of conflicting opinions, too complex a notification procedure can significantly reinforce inaction bias.

Proposal 14: Harmonise the notification procedure for instruments and reduce the number of stakeholders (Council, Commission, EBA, etc.) to benefit the ESRB.

Finally, there is a little discussed coordination aspect, which concerns the links that macro-prudential authorities should create with the authorities responsible for competition in order to carry out a regular examination of concentration in the banking sector and its evolution. Beyond a certain threshold, concentration becomes a factor of systemic risk and amounts to excessive market control taken by a small number of very large institutions. Indeed concentration increased in Europe at the end of the decade 1990-2000³⁶. The Liikanen report³⁷ (October 2012) and that of the ESRB's scientific committee³⁸ (June 2014) both cover this development and its dangers very well, without minimising the disparities between countries that was recently noted by the IMF in its *Global Financial Stability Report* in April 2017. As such, concentration in the European banking sector should be regularly assessed, for the area as a whole and by country, by the macro-prudential authorities and should prompt these authorities to seek out the point of view of the competition authorities. This does not mean that unbridled competition needs to be promoted, as this is untenable given that the high fixed costs involved in banking in any case quite naturally lead to a tendency towards concentration, and can also bring about its own form of instability, but rather highlight the fact that excessive concentration contributes to systemic risk and take account of it to calibrate buffers and systemic surcharges.

Proposal 15: Excessive concentration in the banking sector in several countries in the euro area is a factor of systemic risk. Coordination of the action of the authorities responsible for macro-prudential policy and those responsible for competition is needed to contain the extent of concentration at a level that does not increase systemic risk.

³⁶ See for example 'Big banks and macroeconomic outcomes' by Franziska Bremus, Claudia Buch, Katheryn Russ, Monika Schnitzer, 10 July 2013, voxeu.org: <http://voxeu.org/article/big-banks-and-macroeconomic-outcomes>.

³⁷ http://ec.europa.eu/internal_market/bank/docs/high-level_expert_group/report_fr.pdf

³⁸ http://www.esrb.europa.eu/pub/pdf/asc/Reports_ASC_4_1406.pdf?b79da0bca09225bdaec43427353ea326

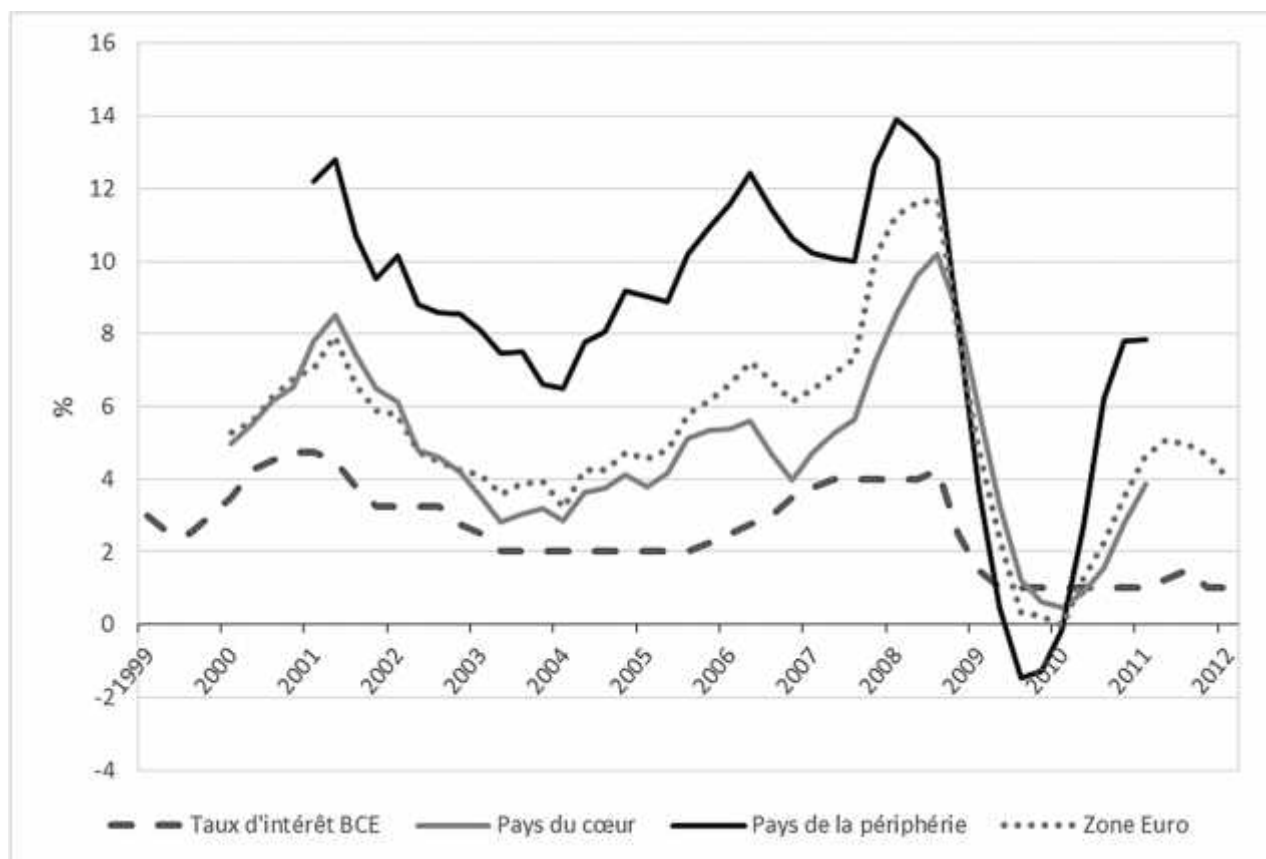
5. CONCLUSION

We expected a lot from the single monetary policy, no doubt too much. The ECB's monetary policy cannot shoulder alone all the weight of macro-economic adjustment in the euro area, especially when there are big, growing imbalances between the Member States. Nor should we expect too much from macro-prudential policy. It will not magically transform the euro area into an 'optimal monetary area' on its own. However, its implementation at the dual level, that of the euro area to strengthen the resilience of systemic groups (horizontal action) and that of the Members States to reduce the financial imbalances that form there and that fuel economic imbalances, could help to turn the euro area into a space with fewer divergences.

BIBLIOGRAPHY

- Abad J., D’Errico M., Killeen N., Luz V., Peltonen T., Portes and Urbano T. (2017) "Mapping the interconnectedness between EU banks and shadow banking entities" ESRB working paper, 2017-03.
- Aglietta M et Brand T. (2016), « La stagnation séculaire dans les cycles financiers de longue période », L’économie mondiale 2016, éd. La Découverte.
- Arnould and Dehmej (2016), « Is the European banking system robust? An evaluation through the lens of the ECB s Comprehensive Assessment », International Economics, Volume 147, October 2016.
- Ashvin A, and Malhar N. (2013), « Safeguarding Banks and Containing Property Booms: Cross-Country Evidence on Macroprudential Policies and Lessons from Hong Kong SAR » IMF working paper No. 11/284.
- Bank of England, (2017), " Stress testing the UK banking system: key elements of our 2017 stress tests", March 2017.
- Banque Nationale Suisse (2014) “Implementing the countercyclical capital buffer in Switzerland: concretising the Swiss National Bank’s role” BNS, February 2014.
- Basten and Koch, (2015) « Higher Bank Capital Requirements and Mortgage Pricing: Evidence from the Countercyclical Capital Buffer (CCB) », BIS Working Papers No 511.
- Blanchard O. (2012), « Monetary policy in the wake of the crisis », in Blanchard, O., Romer, D., Spence, M., Stiglitz, J. (eds.), In the Wake of the Crisis, Cambridge : MIT Press, p. 7-14.
- Borio C. (2011), « La mise en œuvre d’un cadre macroprudentiel : un juste équilibre entre audace et réalisme », Revue d’économie financière 2011/1 (N° 101 - Le risque systémique. 2. Repenser la supervision).
- Borio C. (2014) «The financial cycle and macroeconomics: What have we learnt? » Journal of Banking & Finance 45 (2014) 182–198.
- Borio C. (2017) « Secular stagnation or financial cycle drag? » Speech at the 33rd Annual NABE Economic Policy Conference 5-7 March 2017, Washington.
- BRI, (2015), « 85^{ème} rapport annuel juin 2015 ».
- Brzoza-Brzezina M., Kolasa M., Makarski K. (2013), « Macro-prudential Policy Instruments and Economic Imbalances in the Euro Area », ECB Working Paper Series no 1589, September.
- CAE (2013), « Compléter l’Euro », Note du Conseil d’Analyse Economique n°3, par Artus P., Bénassy-Quéré A., Boone L., Cailloux J. et Wolff G., Avril.
- Cecchetti, S., Genberg, H., Lipsky, J., Wadhvani, S. (2000), « Asset Prices and Central Bank Policy », Geneva Reports on the World Economy, No.2, International Center for Monetary and Banking Studies et CEPR.
- Claessens S., Ghosh S. and Mihet (2014), « Macro-Prudential Policies to Mitigate Financial System Vulnerabilities » IMF working paper, No. 14/155.
- Clerc L. (2015) "Penser Les Politiques Macroprudentielles Au Niveau Global" Revue d’Économie Financière, 2015/3 (n° 119).
- Couppey-Soubeyran J. et Dehmej S. (2016), « Pour une combinaison politique monétaire / politique macroprudentielle au service de la stabilité économique et financière de la zone euro », Revue d’économie politique, 2016/1 (Vol. 126).
- Christiano L., Ilut C. L., Motto R. and Rostagno M. (2010), « Monetary Policy and Stock Market Booms », NBER Working Papers 16402.
- Curdia, V., Woodford, M. (2010), « Credit spreads and Monetary Policy », Journal of Money, Credit and Banking, 42(S1): 3-35
- Dehmej S. and Gambacorta L. (2017), « Macroprudential Policy in a Monetary Union », forthcoming, working paper.
- Deutsche Bundesbank (2015), « The importance of macroprudential policy for monetary policy » Deutsche Bundesbank Monthly Report, March 2015, 39.

- ECB (2017), « STAMP€ Stress-Test Analytics for Macroprudential Purposes in the Euro Area », February 2017.
- ESRB (2014) « Allocating macro-prudential powers » Reports of the Advisory Scientific Committee, No 5/November 2014.
- ESRB (2015) « The ESRB Handbook on Operationalising Macroprudential Policy in the Banking Sector - Addendum: Macroprudential Leverage Ratios », ESRB.
- ESRB (2016a), « Vulnerabilities in the EU residential real estate sector », *November 2016*.
- ESRB (2016b), « Macroprudential policy beyond banking an ESRB strategy paper », June 2016.
- ESRB (2017) « Review of Macroprudential Policy in the EU in 2016 » ESRB, April 2017.
- European Commission (2016) « Consultation Document-Review Of The Eu Macro-Prudential Policy Framework ».
- FMI (2017), *Global Financial Stability Report*, April.
- Goodhart C., Osorio C., and D. Tsomocos (2010), 'The optimal monetary policy instrument, inflation versus asset price targeting, and financial stability', in Cobham D., Eitheim Ø., Gerlach S. (eds.), *Twenty Years of Inflation Targeting*, Cambridge University Press: Cambridge.
- Gourinchas P., Obstfeld M. (2012), « Stories of the Twentieth Century for the Twenty-First », *American Economic Journal: Macroeconomics*, 4(1), 226-265.
- Grjebine T. (2015) « Secular Stagnation : the housing remedy ? », présentation au Club du CEPII, 9 avril 2015
- Igan D. and Kang H. (2012), « Do Loan-to-Value and Debt-to-Income Limits Work? Evidence from Korea », IMF working paper No. 11/297.
- Issing O. (2011), « Lessons for monetary policy: What should the consensus be? », IMF Working paper No. 11/97.
- Jacome L. and Mitra S. (2015), « LTV and DTI Limits—Going Granular. », IMF wp, No.15/154.
- Kelly R., McCann F. and O'Toole C., (2017), « Credit conditions, macroprudential policy and house prices » ESRB working paper No 36.
- Krugman P. (2012), « Revenge of the Optimum Currency Area », Chapter in forthcoming NBER book *NBER Macroeconomics Annual*, Volume 27.
- Kuttner K. and Shim I. (2016) « Can Non-Interest Rate Policies Stabilise Housing Markets? Evidence From a Panel of 57 Economies » *Journal of Financial Stability*, Volume 26, October 2016.
- Mariathasan, M. and Merrouche O., (2014), “The manipulation of Basel risk-weights”, *Journal of Financial Intermediation*, 23, 300-21.
- Quint D. et Rabanal P., (2014), « Monetary and Macroprudential Policy in an Estimated DSGE Model of the Euro Area », *International Journal of Central Banking*, june 2014.
- Schularick M., Taylor A. (2012), « Credit Booms Gone Bust : Monetary Policy, Leverage Cycles, and Financial Crises, 1870-2008 », *The American Economic Review*, 102, 1029-1061.
- Stremmel H. (2015), « Capturing The Financial Cycle in Europe » ECB Working Paper Series, N°1811, juin 2015.
- Taylor J. B. (1993) « Discretion Versus Policy Rules in Practice », *Carnegie-Rochester Conference Series on Public Policy*, n°39.
- Svensson L. (2017) « How robust is the result that the cost of “leaning against the wind” exceeds the benefit? » ECB Working Paper No 2031.

Figure 9 : The ECB reference rate and the increased Taylor rate

Reference: Coupey-Soubeyran et Dehmej (2016), op. cit.

Note: The interest rate gap is calculated here at an increased Taylor rate for credit. The gap compared to the increased Taylor rate for real estate gives more or less the same result.

The counterfactual exercise presented in Chapter 2 can be extended by calculating the differences between the ECB rate and the rate resulting from a Taylor rule extended for a financial target. The reference rate set by the ECB up until the financial crisis did not take account of financial imbalances, which is the source of the gap in figure 4 between the ECB rate and the euro area 'extended Taylor rule' (larger than with the standard Taylor rate). This higher extended Taylor rate would no doubt have slowed average risk-taking in the euro area, but as figure 4 shows, it would not nevertheless have been suitable either for the peripheral or the core countries: it would have been too low for the peripheral countries up until the crisis and too high for most of the period for the core countries. The differences by country are even higher than compared to the standard Taylor rate. This is not surprising because the financial cycle (credit and the prices of assets such as real estate) varies from one country to another just as much, sometimes more, than the economic cycle.

ANNEX 2

Table 4 : List of global systemically important banks (G-SIBs) with the additional capital surcharges (November, 2016*)

Bucket**	G-SIBs in alphabetical order within each bucket
5 (3.5%)	(Empty)
4 (2.5%)	Citigroup JP Morgan Chase
3 (2.0%)	Bank of America BNP Paribas Deutsche Bank HSBC
2 (1.5%)	Barclays Credit Suisse Goldman Sachs Industrial and Commercial Bank of China Limited Mitsubishi UFJ FG Wells Fargo
1 (1.0%)	Agricultural Bank of China Bank of China Bank of New York Mellon China Construction Bank Groupe BPCE Groupe Crédit Agricole ING Bank Mizuho FG Morgan Stanley Nordea Royal Bank of Scotland Santander Société Générale Standard Chartered State Street Sumitomo Mitsui FG UBS Unicredit Group

*Compared with the list of G-SIBs published in 2015, the number and names of banks identified as G-SIBs remain the same. Four banks moved to a higher bucket: Citigroup moved from bucket 3 to 4, Bank of America moved from bucket 2 to 3, Industrial and Commercial Bank of China and Wells Fargo moved from bucket 1 to 2. Three banks moved to a lower bucket: HSBC moved from bucket 4 to 3, Barclays moved from bucket 3 to 2 and Morgan Stanley moved from bucket 2 to 1.

**The bucket approach is defined in Table 2 of the Basel Committee document *Global systemically important banks: updated assessment methodology and the higher loss absorbency requirement*, July 2013. The numbers in parentheses are the required level of additional common equity loss absorbency as a percentage of risk-weighted assets that applies to each G-SIB. Based on the implementation schedule, G-SIBs identified in this list will be required to hold in 2018 75% of the higher loss absorbency requirement applying to the bucket of systemic importance to which they have been allocated in the list published today.

Source: Financial Stability Board.

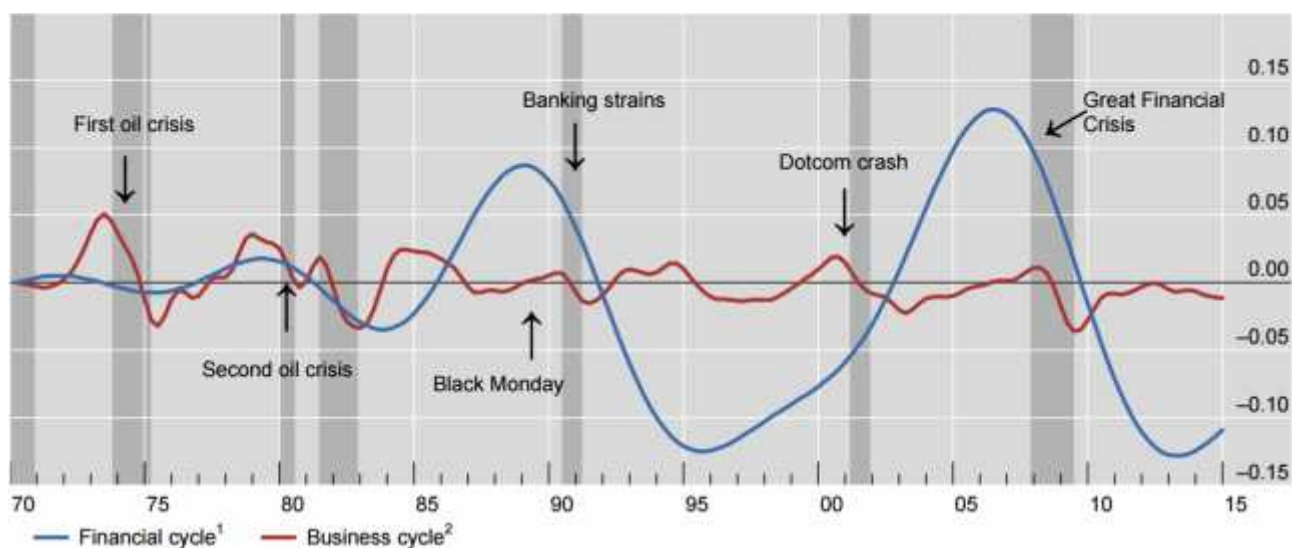
<http://www.fsb.org/wp-content/uploads/2016-list-of-global-systemically-important-banks-G-SIBs.pdf>

Annex 3

The 7 characteristics of the financial cycle according to Claudio Borio (BRI)

- 1/ the financial cycle is well summarised by the changes in credit and property prices
- 2/ it is longer than the business cycle: instead of going from peak to trough every 5-7 or 8 years, the financial cycle can stretch out over 16 to 20 years.
- 3/ the peaks generally coincide with major systemic financial crises. The recent financial crisis confirmed this.
- 4/ Observing the financial cycle can therefore help to identify financial and banking crisis risks: loan to GDP, property prices
- 5/ Observing the financial cycles can help to forecast potential GDP more accurately than simply observing/forecasting inflation (see Borio *et al* 2013 (graph. 5), BIS WP No 404). Potential GDP should therefore no longer be defined as ‘that which can be produced without leading to inflationary pressures’, but rather as what can be produced at the same time as avoiding the accumulation of financial imbalances.
- 6/ The magnitude and length of the financial cycle depends on the regime in which it is deployed: Financial liberalisation corresponds to fewer financial constraints and encourages financial bubbles
Monetary policy based on target inflation was blind to financial imbalances
Globalisation fuels the financial boom and reduces inflation
Clearly, liberalisation, stable inflation and globalisation fuelled the financial cycle.
- 7/ downturns in the financial cycle are generally accompanied by a ‘balance sheet recession’ (more serious than ordinary recessions): recoveries are slower than after classic recessions linked to the economic climate; production is also more strongly affected. Often, these losses are permanent - i.e. production rarely returns to its pre-crisis growth rate.

Figure 10 : Economic and financial cycles in the United States



¹ The financial cycle as measured by frequency-based (bandpass) filters capturing medium-term cycles in real credit, the credit-to-GDP ratio and real house prices. ² The business cycle as measured by a frequency-based (bandpass) filter capturing fluctuations in real GDP over a period from 1 to 8 years.

The graph compares the financial cycle with traditional measures of the business cycle. The picture would be similar based on other common methodologies (eg turning point (peak/trough) analysis).
Source: Drehmann *et al* (2012), updated.

Source : Borio, 2017

ANNEX 4

Table 5 : Macro-prudential authorities designated in Europe

Agency	Ministry of finance (MF)	Central bank (CB)	Financial Authority (FA)	Committee
Euro area	0	13	5	1
Austria			x	
Belgium		x		
Cyprus		x		
Estonia		x		
Finland			x	
France				x
Germany			x	
Greece		x		
Ireland		x		
Italy		x		
Latvia			x	
Luxembourg			x	
Malta		x		
Netherlands		x		
Portugal		x		
Slovakia		x		
Slovenia		x		
Spain		x		
Non-euro area	1	7	2	1
Bulgaria		x		
Croatia		x		
Czech Republic		x		
Denmark	x			
Hungary		x		
Lithuania		x		
Poland				x
Romania		x	x	
Sweden			x	
United Kingdom		x		
Total	1	20	7	2

Source : ESRB (2014)

Table 6 : Macro-prudential Instruments in the CRR/CRDIV

Instrument	Type	Focus	Activation/Identification	Authority	Reciprocity
Articles 124/164 CRR	Exposure-based Cyclical	<ul style="list-style-type: none"> ▪ Higher risk weights (124 CRR) for standardised approach or higher LGD (164 CRR) for the Internal Ratings Based (IRB) approach; ▪ Reference should be 'financial stability considerations' (in line with Regulatory Technical Standards (RTS)) 	<ul style="list-style-type: none"> ▪ Setting by national authorities in line with notification and consultation requirements with EBA 	Competent Authority	Mandatory
Countercyclical capital buffer (Articles 130, 135-140 CRD IV)	Exposure-based (system-wide) Cyclical	<ul style="list-style-type: none"> ▪ Additional capital buffer that is frequently adjusted over time (quarterly); ▪ Buffer is applicable to all domestic exposures 	<ul style="list-style-type: none"> ▪ Activation in line with the principle of "guided discretion"; common starting reference guide, principles and disclosure requirements as guidance for national authorities on buffer rates 	Designated Authority	Mandatory up to 2.5%; voluntary > 2.5%
Capital conservation buffer (Article 129 CRD IV)	No macro-prudential tool	<ul style="list-style-type: none"> ▪ Additional capital threshold of 2.5% of RWA (at consolidated level) for tighter replenishment obligations 	<ul style="list-style-type: none"> ▪ Mandatory phasing in between 2016-2018 	Competent or Designated Authority	Not applicable
G-SII buffer (Article 131 CRD IV)	Institution-specific Structural	<ul style="list-style-type: none"> ▪ Additional capital add-on (between 1-3.5% RWA) for global systemically important institutions (at consolidated level); ▪ Ceiling to combination with SRB 	<ul style="list-style-type: none"> ▪ Common methodology (RTS) for identification of G-SIIs reflecting size, interconnectedness, complexity, and cross-border linkages; allocation in 5 different sub-categories; ▪ Revision of identification annually 	Competent or Designated Authority	Not applicable

Source: European Parliament consultation, 2016

O-SII buffer (Article 131 CRD IV)	Institution-specific Structural	<ul style="list-style-type: none"> ▪ Additional capital add-on up to 2% RWA for other systemically important institutions (Sub-consolidated or consolidated level); ▪ Limitation for add-on of subsidiaries of G-SIIs; ▪ Ceiling to combination with SRB 	<ul style="list-style-type: none"> ▪ Common methodology (EBA guidelines) for identification of O-SIIs reflecting size, importance to the economy, cross-border linkages, and interconnectedness; ▪ Revision of identification at least annually 	Competent or Designated Authority	Not applicable
Pillar 2 measures (Articles 103 and 105 CRDIV)	Institution-specific/exposure-based Cyclical/structural	<ul style="list-style-type: none"> ▪ Considering 'systemic risks' in the SREP 	No specific activation procedures; measures are not public	Competent Authority	Not applicable/voluntary
Systemic Risk Buffer (Articles 133 and 134 CRD IV)	Institution-specific/(exposure-based) Structural	<ul style="list-style-type: none"> ▪ Additional capital buffer to cover long-term non-cyclical risks (at solo, sub-consolidated or consolidated level) with a minimum level of 1% RWA; ▪ Applicable to (all) domestic and/or foreign exposures (not clear to whether also applicable to a subset of exposures); ▪ Ceiling for combination with G-SII/O-SII buffer(s) 	<ul style="list-style-type: none"> ▪ Setting of SRB in line with notification requirements and only after other measures (except 458 CRR) have been employed; ▪ SRB between 3-5% RWA requires previous approval of COM, a SRB of greater than 5% RWA only applicable to domestic exposures; ▪ Revision at least every second year. 	Competent or Designated Authority	Voluntary; reciprocity might be difficult as introduction of SRB in national legal framework is not mandatory

Article 458 CRR	Institution-specific/exposure-based Cyclical/structural	<ul style="list-style-type: none"> ▪ National measures to address risks not covered by other EU instruments in the following areas: <ul style="list-style-type: none"> i. Additional (institution-specific) capital requirements; ii. Tighter requirements for large exposure limitations; iii. Further disclosure requirements; iv. Adjusting the level of the capital conservation buffer; v. Tighter liquidity requirements; vi. Adjustment in risk weights for residential and/or commercial real estate; vii. Intra financial exposures. 	<ul style="list-style-type: none"> ▪ Complex approval process including mandatory opinions from ESRB and EBA and non-objection from COM and Council; ▪ Only notification requirements for an increase in risk weights for real estate and intra financial sector exposures up to 25% and a tightening of large exposure limits by up to 15% for a period of up to 2 years (shorter if systemic risks ceases earlier); ▪ Measures only allowed up to 2 years (shorter if systemic risks ceases earlier); extension possible. 	Competent or Designated Authority	Voluntary
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ANNEX 6
Table 7 : Macroprudential measures regarding the real-estate risk in the EU (ESRB)

Country	Authority	Year	measure	Description of measure
Belgium	Banque Nationale de Belgique	2014	458 - risk weights for RRE and CRE	5 percentage point add-on to the risk weights applied by banks that use the IRB approach to mortgage loans to Belgian residents covered by residential real estate in Belgium. Continuation of a measure (but now under the CRD/CRR framework) that was already applicable from 8 December 2013 onwards.
Cyprus	Central Bank of Cyprus	2013	LTV	First version: 24 November 2003. LTV ratio (as amended in 2013) shall not exceed: (a) 80% in case the credit facility is granted for financing the primary permanent residence of the borrower. (b) 70% for all other property financing cases. (on 18 March 2016, the provisions on the LTV ratio were transferred from the CBC directive on loan origination to a CBC circular to banks, without any changes)
	Central Bank of Cyprus	2013	DSTI	The debt servicing amount shall be limited to either: (a) 35% of the borrower's "total monthly income" or, (b) the difference between the "total monthly income" and the "total monthly expenditure", whichever is lower. For high income borrowers, the debt servicing amount may exceed the above limit of 35%. This limit shall in any case not exceed the lower of either: (a) 60% of the borrowers' total monthly income, or (b) the difference between the "total monthly income" and the "total monthly expenditure".
	Central Bank of Cyprus	2016	DSTI	Amendment of previous DSTI measure. The debt servicing amount shall be limited to 80% of the borrower's "net disposable income". In case of loan in foreign currency, the total debt servicing amount should be limited to 65% of the "net disposable income".
Czech Republic	Česká národní banka	2015	LTV	Recommendation to have residential mortgage loans with an LTV > 90% for not more than 10% of the total amount of such loans in any given quarter. No residential mortgage loans with LTV > 100%.
	Česká národní banka	2016	LTV	1. The upper LTV limit of 100% will be reduced to 95% on 1 October 2016 and to 90% on 1 April 2017. 2. The limit of 10% for new loans in a particular quarter with an LTV of 90%–100% will change to a limit of 10% of new loans with an LTV of 85%–95% on 1 October 2016.
Denmark	Finanstilsynet	2015	Other	The share of interest only lending by mortgage credit institutions to private homeowners where the LTV exceeds 75% of the lending limit shall not exceed 10% of the total mortgage lending volume to private homeowners. Interest-only loans are to be counted regardless of the placement in the priority order.
	Finanstilsynet	2016	Other	Guidelines for banks and mortgage credit institutions to ensure caution in new lending for residential real estate in geographical areas with high price levels and high price increases compared to the rest of the country. The guideline includes 7 best practices including an LTI-rule (loan to gross income) that states: a) If LTI is between 4 and 5 households should have sufficient wealth (including properties but excluding pension schemes) so that net wealth is still positive in case of a decline in the value of the property by 10 percent b) If LTI is above 5 households should have sufficient wealth (including properties but excluding pension schemes) so that net wealth is still positive in case of a decline in the value of the property by 25 percent.
	Finanstilsynet	2015	LTV	Home buyers are generally required to make at least a 5 percent down payment (own financing) when purchasing a home.

Estonia	Eesti Pank	2014	LTV	All credit institutions operating in Estonia are subject to a LTV limit of 85% (90% if guaranteed by KredEx) for new housing loans. Up to 15% of the amount of new housing loans issued in a quarter are allowed to breach the limit(s).
	Eesti Pank	2014	DSTI	All credit institutions operating in Estonia are subject to a DSTI limit of not more than 50% of borrower's net income for new housing loans. The DSTI ratio is calculated using either the interest rate in the loan contract (base rate plus margin) plus 2 percentage points, or an annual rate of 6%, whichever is higher. Up to 15% of the amount of new housing loans issued in a quarter are allowed to breach the limit(s).
Finland	Finanssivalvonta	2016	458 - risk weights for RRE and CRE	Credit institution-specific minimum level of 10% for the average risk weight on housing loans of credit institutions that have adopted the Internal Ratings Based Approach. The minimum level would come into force on 1 July 2017 at the latest.
	Finanssivalvonta	2014	LTV	LTV of 90% (95% for first-time house buyers) by law. Cap can be tightened by 10 percentage points by Finanssivalvonta.
Ireland	Central Bank of Ireland	2014	Art 124 - Risk weights on CRE	Stricter criteria for preferential weighting residential mortgage loans: the property needs to be owner-occupied and the LTV must not exceed 75%. Minimum risk weight on commercial property lending increased from 50% to 100%. These are a continuation of previous policies in place since 2007.
	Central Bank of Ireland	2014	LTV	Proportionate LTV limits of: 80% for non-first time buyers (FTBs); 90% for FTBs of properties up to €220,000; a sliding LTV limit based on property value for FTBs over €220,000. To be exceed by no more than 15% of the value of new lending for primary home
	Central Bank of Ireland	2014	LTI	Proportionate LTI limit: new housing loans with LTI greater than 3.5 should not be more than 20% of aggregate value new housing loans.
Latvia	Latvias Banka	2007	LTV	LTV cap of 90% for residential mortgage lending. The LTV requirement is set in the Law on Consumers Rights' Protection, but Latvijas Banka can issue a recommendation on the appropriate LTV level.
	Latvias Banka	2014	LTV	LTV cap of 95% for loans supported by a state guarantee under the Law on Assistance in Resolution of Dwelling Issues.
Lithuania	Lietuvos bankas	2011	LTV	LTV of new housing loans cannot be more than 85%.
	Lietuvos bankas	2011	DSTI	DSTI of not more than 40% of borrower's net income.
	Lietuvos bankas	2015	DSTI	DSTI of not more than 40% of borrower's net income. A credit institution can apply a DSTI of more than 40% of the borrower's income, but overall capped at 60%, for the amount of housing loans that is not higher than 5% of the total value of new housing loans granted by that credit institution during the calendar year. (amendment of previously introduced measure)
Luxembourg	Commission de Surveillance du Secteur Financier	2013	Risk weights (other)	Institutions using the standardised approach for credit risk need to apply a risk weight of 75% to the part of the mortgage loan exceeding 80% of the value of the real estate object.
Malta	Malta Financial Services Authority	2014	LTV	Continuation of practice since 2008 for exposures secured by mortgages on residential property and attracting a risk-weight of 35% not to exceed 70% of the market value of that property. (based on Art 124)

Netherlands	Rijksoverheid (Dutch government)	2012	LTV	LTV limit for new mortgage loans decreases stepwise 1 percentage point per annum from 106% in 2012 to 100% in 2018.
Slovakia	Národná banka Slovenska	2014	LTV	Recommendation: LTV of new loans should not be more than 100%. The share of loans with an LTV ratio of between 90% and 100% should not exceed: a) 25%, until 30 June 2015; b) 20%, from 1 July 2015 to 31 March 2016; c) 15%, from 1 April 2016 to 31 December 20 16;
	Národná banka Slovenska	2016	LTV	LTV limits for housing loans (all three apply in parallel): a) LTV cannot exceed 100 % (measure transferred from existing recommendation) b) Share of new loans with LTV > 90 % cannot exceed 10 % (measure transferred from existing recommendation) c) Share of new loans with LTV > 80 % cannot exceed 40 % (new measure)
	Národná banka Slovenska	2014	DSTI	Recommendation: Bank's internal systems should include an indicator containing household income, standard household living costs, and total debt servicing requirements.
	Národná banka Slovenska	2016	DSTI	Tightening of the limit on debt-service-to-income ratio for housing loans. Loan instalments (for both new and existing loans, subject to assumed interest rate increase by 2 p.p., if interest rate is not fixed) cannot exceed 80 % of borrower's disposable income. Disposable income is defined as net income less the minimum subsistence amount (including the minimum subsistence amount for children and spouse, if applicable).
Slovenia	Banka Slovenije	2016	Art 124 - Risk weights on RRE	Applying stricter criteria than those set out in Article 125(2) CRR on exposures fully and completely secured by mortgages on residential property: for the purpose of Article 125(2d), the LTV ratio is set at 60%. Continuation of an existing measure,
	Banka Slovenije	2016	LTV	The recommended maximum level of the LTV ratio is 80%.
	Banka Slovenije	2016	DSTI	The recommended maximum level of the DSTI ratio is: (a) for borrowers with monthly income less than or equal to EUR 1,700: 50%; and (b) for borrowers with monthly income exceeding EUR 1,700: 50% for that portion of income up to EUR 1,700 inclusive, and 67% for that portion of income exceeding EUR 1,700. In the event of several borrowers, this provision applies to each borrower separately.

Source: adapted from ESRB macroprudential database - March 2017

ANNEX 7

Table 8 : Meta-table of empirical studies on macro-prudential policy

Study	Major results about the effectiveness of macro-prudential instruments (adapted from the authors or quotations)	Coverage
Aiyar, Calomiris, and Wieladek (2014)	It is found that regulated banks (UK-owned banks and resident foreign subsidiaries) reduce lending in response to tighter capital requirements. But unregulated banks (resident foreign branches) increase lending in response to tighter capital requirements on a relevant reference group of regulated banks.	United Kingdom
Akinci and Olmstead-Rumsey (2015)	Find that provisioning requirements and countercyclical capital requirements have significant effects on total bank credits, but not on mortgages. They also find that stricter mortgage caps and loan-to income caps can keep a lid on growth in total bank credit, mortgages and house prices.	57 countries
Ashvin and Malhar (2013)	Find that tightening LTV and DSTI together slow housing credit growth in Hong-Kong	Hong-Kong
Basten and Koch (2015).	Sectoral CCyBs, on mortgages, appear to have limited effects on loan growth, but succeed in shifting loan supply towards better-capitalised institutions,	Switzerland
Buchholz (2015)	Show that real credit grew after the crisis at considerably higher rates in countries which had implemented the leverage cap prior to the crisis. This amortization effect is more pronounced for countries in which banks had a higher pre-crisis capital ratio, which suggests that after the crisis, banks were able to draw on buffers built up prior to the crisis due to the regulation.	69 economies
Celeska, Gligorova, and Krstevska (2011)	Explain that a combination of MPP measures on capital, restricted foreign exchange lending, and tightened liquidity requirements, tempered the credit boom in Macedonia.	Macedonia
Cerutti, Claessens and Laeven (2017)	Find that borrower-based policies and financial-institutions-based policies are associated with lower growth in credit to households in emerging market economies. They find that macroprudential instruments can be effective in managing financial cycles, but less during busts.	119 countries
Claessens, Ghosh and Mihet (2014)	Using bank-level data, authors find that measures aimed at borrowers (LTV and DSTI), and at financial institutions (credit growth ceilings and foreign currency lending ceilings) are effective at reducing asset growth, and that countercyclical buffers are of little effectiveness through the cycle.	48 countries
Crowe, Dell’Ariccia, Igan, and Rabanal (2011)	Use case studies and find positive correlations between LTV limits and house price appreciation between 2000 and 2007; measures of dynamic provisioning are effective in strengthening a banking system against the effects of a bust, but do little to stop the boom itself; some experience.	Southeastern European countries
Dell’Ariccia et al. (2012)	Find that a stricter MPP stance (measured as a count of macroprudential instruments in use or as an aggregate indicator variable) reduces the incidence of credit booms and decrease the probability that booms end badly.	170 countries
Dimova et al, 2016	Our findings for the boom period are that: (1) binding marginal reserve requirements related to credit growth (“credit growth ceilings”) helped contain domestic credit growth; (2) strong sectoral capital measures and (3) the introduction of meaningful loan-to-value and debt-service-to income ceilings helped limit household credit growth...	4 Southeastern European countries
Drehmann and Gambacorta (2012)	They find that credit supply during the boom would have been around 18 per cent lower if countercyclical capital buffer was applied. But, it is very likely it would not have been able to significantly curb credit growth in Spain.	Spain
Gross and Población García (2016)	Simulation results for seven European countries suggest that both LTV and DSTI caps can help reduce PDs and LGDs and hence loss rates for the household sector.	7 EU countries
Guibourg and Lagerwall (2015)	The conclusion was that the primary effect of the stricter capital requirements would be stronger resilience in the Swedish banking system, which was the main purpose of the measures. But if the purpose of the macroprudential policy measures is to have a more tangible effect on household indebtedness, it may be more effective to instead introduce measures that are directly aimed at households’ demand for loans (Loan-limiting measures: The mortgage cap, the debt-to-income limit, the amortization requirements and the limits to discretionary income)	Sweden
Guibourg et al (2015)	In order to reduce household indebtedness, tools that directly target households are more effective, such as the mortgage cap and tax relief on mortgage interest. A conclusion from several studies is also that macroprudential tools, in particular tools directly targeting specific sectors, are more efficient than monetary policy in counteracting financial imbalances.	Sweden
Igan and Kang (2012)	Igan and Kang (2012) find that tightening LTV and DSTI together slow housing credit growth and transaction activity in Korea.	Korea

IMF (2012)	When investigating effects on house price appreciation rates we find statistically strong effects for limits on LTV ratios and capital requirements.	36 countries (21 emerging)
Jacome and Mitra (2015)	The evidence they review suggests that LTV limits were effective in reducing loan growth and improving borrower debt-servicing, and that targeting the tools towards the loan segment most at risk, (such as speculative properties, or specific regions), was more effective than aiming at overall credit or mortgage loans.	Emerging market economies
Jiménez et al. (2014)	They find that dynamic provisioning smoothed the credit supply cycle in Spain during 1999–2013.	Spain
Kelly et al (2017)	Our results suggest that macroprudential limits (LTV, LTI and DSR) would have had substantial impacts on house prices, and that both the level at which they are set and the timing of their introduction is a crucial determinant of their impact on housing values.	Ireland
Kraft and Galac (2011)	Find that while the credit growth ceilings did nothing to the growth of total non-financial corporations' debt, they did slow down the growth of total household debt.	Southeastern European countries
Kruszka and Kowalczyk (2011)	Explain how Poland avoided substantial economic and financial imbalances by deploying higher than the minimum Basel II capital requirements for new banks and differentiated eligibility rules by currency.	Poland
Krznar and Morsink (2014)	Find that the combined tools (mortgage cap and amortization requirements, the terms of mortgage insurance contracts) during 2010–2012 had significantly tightening effects on credit growth (and house prices according to a separate analysis).	Canada
Kuttner and Shim (2016)	Find that introductions or reductions in the maximum debt-service-to-income ratio, and increases in housing-related taxes, have significant negative effects on housing credit, with a typical tightening action lowering the real credit growth rate by 4–6 percentage points and by 3–4 percentage points, respectively, over the subsequent four quarters. Increases in housing-related taxes moderate house price growth, with a typical increase slowing real house price appreciation by 3–4 percentage points over the same horizon.	57 countries
Lim et al. (2011)	Find that several instruments—LTV cap, debt-service-to-income cap (DSTI), credit growth ceiling, foreign currency lending ceiling, reserve requirements, dynamic provisioning, and countercyclical capital requirements—captured by a set of dummy variables, reduce the procyclicality of credit and/or bank leverage. The effectiveness is sensitive to the type of shock facing the financial sector.	49 countries
Maddaloni and Peydro (2013)	Find some suggestive evidence of excessive risk-taking due to low interest rates for mortgage loans, but the impact is reduced by more stringent prudential policy on either bank capital or loan-to-value ratio.	Euro Area
McDonald (2015)	Finds that both the loan-to-income cap and the mortgage cap have significant tightening effects on how quickly mortgages rise, and that the tightening effect is greater in countries where house prices are high compared with household income. Also, mortgage caps have had a relatively greater effect on credit growth than loan-to income caps.	17 countries
Neagu, Tatarici, and Mihai (2015)	Discuss Romania's experience with DSTI and LTV in detail. They find that the introduction of these instruments in 2004 slowed down household credit growth.	Romania
Tressel and Zhang (2016)	We find instruments targeting the cost of bank capital most effective in slowing down mortgage credit growth, and that the impact is transmitted mainly through price margins, the same banking channel as monetary policy. Limits on loan-to-value ratios are also effective, especially when monetary policy is excessively loose.	13 euro area countries
Van den End (2016)	This paper maps the empirical features of the loan-to-deposit (LTD) ratio with an eye on using it in macroprudential policy to mitigate liquidity risk. We propose macroprudential policy to prevent an unsustainable level of the LTD ratio and policy measures to counter destabilizing cyclical developments.	11 euro area countries
Vandenbussche, Vogel, and Detragiache (2015)	Find that, in Central, Eastern, and Southeastern Europe, minimum capital adequacy ratios and non-standard liquidity measures had an impact on housing price inflation.	CESEE countries
Wong et al. (2011)	Empirical evidence suggests that LTV policy is effective in reducing systemic risk associated with boom-and-bust cycles (household leverage and credit growth) in property markets in Hong Kong.	Hong-Kong
Zhang et Zoli (2016)	The analysis suggests that housing-related macroprudential instruments- particularly loan-to-value ratio caps and housing tax measures—have helped curb housing price growth, credit growth, and bank leverage in Asia.	46 economies (13 in Asia)

