



The Case for Macroprudential Policies: A Brief Review

by

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Biographical note

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With the present dissertation, he aims to conclude his master studies in Economics.

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Abstract

Macroprudential policies have been on the spotlight at least since the last financial crisis. With this work, we aim to tell a short story of what these are, what have been the thoughts and developments around them, and where these are heading. This is mainly a synthetic work, with the aim of providing readers with sufficient understanding to comfortably discuss this subject and potentially awaken further discussion.

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Keywords: Macroprudential Policies, Financial Regulation

Resumo

As políticas macroprudenciais têm estado na agenda pelo menos desde a última crise financeira. Com este trabalho pretende-se contar uma curta história explicando o que estas são, o que se tem discutido a seu respeito e qual é o rumo que estão a tomar. No fundo, pretende-se disponibilizar aos eventuais leitores um trabalho sintético que lhes permita uma reflexão crítica sobre este tema.

Códigos-JEL: E58, G28

Palavras-chave: Políticas Macroprudenciais, Regulação Financeira

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1. Introduction

After the recent global financial crisis, macroprudential policies have increasingly become an important subject when discussing the future of regulation and its role in countering financial imbalances that arise from the normal functioning of an economy and its financial system. The lessons that economic agents, be them regulators, supervisory authorities, central banks, financial institutions and all other participants in our economic system, have to learn from this past crisis are essential for the future betterment of our institutions and economic relations. The notion that a better regulatory framework, or even a more effective application of the existing regulations, might have helped in preventing, or at least smoothen, the crisis and all of its nefarious consequences is understandably deeply ingrained in our society and academia.

In the past few years, there have been consistent attempts to legitimate this notion further. Partly because one of the first reactions to crisis is a tendency to assign blame and look for responsible parties, but mostly because there is a clear conscience that some of these negative effects of the crisis might have been reduced or even entirely avoided. The prevention of these negative effects in the next crisis is of the utmost importance. This next crisis might still be far down the road but the lessons we learn, not only from this financial crisis and our reaction to it, but also from the different policies we enacted to counteract the effects and how we adjusted them to the mounting evidence of their success measures, will determine the degree in which we will be prepared or not to deal with the next crisis. *Black swan* events are by definition improbable and always unexpected. Being fully prepared for the unexpected is not possible because we can never know where the next crisis will come from. But we can definitely take steps to ensure that we have a more solid system, that will be able to accommodate shifts and shocks, and in which a crisis will have far less negative consequences.

A new policy framework has been repeatedly asked for, namely one placing macroprudential policy at an intermediary level between monetary policy and microprudential policy, such as the framework neatly laid out by Schoenmaker and Wiertz (2011). Knowing that monetary policy focuses on attaining a stable price level and fostering economic growth, whereas microprudential regulation policies are engineered to assure the stability of individual financial institutions, macroprudential regulation policies are needed to close the gap between these two approaches. Therefore, as a complement to the more traditional policy levels, macroprudential policies pose one of the possible ways we have available to strengthen the stability of our system.

This macroprudential focus is spurred by the acknowledgement that microprudential regulation, even though very necessary, is on its own insufficient to effectively counter systemic risk. This type of regulation mainly regards financial institutions in isolation, trying to ensure its individual solvability, as was clearly patent in the first and second Basel accords. Not diminishing the importance of this kind of regulations, which are indeed very necessary to assure that individual institutions are solvent, these are not sufficient to assure the stability of the whole financial system, in need of a clearly styled coordinated approach.

Macroprudential regulation has been differently defined in the existing literature, and there are different interpretations of what the meaning of the word macroprudential actually is. There is a growing literature on the subject, be it from a policy perspective or from an implementation one, which has been significantly enriched over the past few years, and which greatly benefitted the discussion not only in academia but also in the intricacies of policy and law makers, regulators and regulated entities. In spite of this growing literature and discussion, there still seems to be some lack of knowledge about this matter and macroprudential regulation is often used, with the ground of its apparent complexity, as a kind of black box to which all new regulatory ideas are assigned to, which contributes to a lack of transparency and common ground regarding macroprudential regulation.

We find we can contribute to the existing literature with a clarification and simplification of what macroprudential regulation is and with a synthesis of where the state of the art of

macroprudential regulation stands. The purpose of this dissertation is then to simplify, structure and synthesize the apparently opaque and difficult to understand issue of macroprudential regulation.

This will be done through a review of the existing literature and, where possible, an attempt to go even further. We aim to tell a clear story of where we stand and where we should be heading. First, in defining what macroprudential regulation stands for, we wish to set a clear common ground of what these policies encompass. Second, we will dive deeper in the motivations for these policies, followed by a review of current available macroprudential policies and instruments. From there, we will address the issue of the existing frameworks for the implementation of the macroprudential policies and their effectiveness in real scenarios. Finally, we will discuss the institutional context of these policies and review proposals for new approaches and put our own ideas forward.

We find that there are still many improvements to be made to the policy frameworks currently in place and await the new Basel accord to have a significant impact in changing this landscape. We also defend the separation of retail banking from investment banking and other risky activities in banks, which we find will reduce systemic risks. Mostly, we think that this work helps in mapping out past developments around macroprudential policies and regulation, and provides readers with a summary of essentials around this topic.

2. Defining Macroprudential Regulation

Knowing that potentially fruitful exchanges of ideas are often crippled by the absence of a common understanding of basilar terms (Crockett, 2000), it is thus essential to start by clarifying these terms' meanings. The word 'prudential' derives from the word 'prudent', an adjective, defined in the Oxford English Dictionary as "sensible and careful when making decisions; avoiding unnecessary risks". Prudential regulation, as can be ascertained from the original word's meaning, stands for ex-ante regulation designed to prevent certain risks. This kind of financial regulation has commonly been divided into microprudential and macroprudential regulation. The first one includes the kind of prudential policies aimed at ensuring the stability and solvability of individual financial institutions, while the second looks at the stability of the whole system. The word 'macroprudential' is defined by the Cambridge Business English Dictionary as being 'used to describe laws, rules and conditions for banks and financial organizations which are intended to protect the whole financial system from risk'. This incremental approach to the understanding of the concept is rather enlightening, but we should also base our analysis upon the existing definitions in the literature.

In recent years the term has been widely used, mainly because of the global financial crisis, but according to Clement (2010) its usage traces back to 1979, first referred to in a meeting of the Cooke Committee, the precursor of the Basel Committee on Banking Supervision (BCBS). A more common usage of the term started in the 1980's, becoming more frequent since the Asian crisis of 1997. This kind of policy is described as one promoting a safe and sound financial system and payments mechanism. The Bank of International Settlements (BIS) referred to macroprudential policy as the usage of prudential tools enacted with the clear goal of promoting a stable financial system in its entirety, and not necessarily of each individual institution within it contained when looked at in isolation. Anyhow, the term macroprudential has always concerned the stability of the financial system and its linkage to the general economic environment, even though this concerns focus has evolved over time. From focusing on excessive lending in developing countries, it shifted towards developments in capital markets and financial innovations, the impact of regulation on the

procyclical behavior of the financial system and the consequences stemming from the potential failure of the so called systemically important financial institutions (SIFI's) (Clement, 2010).

Macroprudential policies were defined by Crockett (2000) as policies that have as an objective the limitation of the economic costs of financial distress. He also focused on defining the term by distinguishing the micro- and macroprudential perspectives on financial stability, much more by regarding its objectives than the used instruments per se, since the microprudential objective is clearly to limit the likelihood of an individual institutions failure, without accounting for correlation or interconnections between the institutions and in the market. An instrument like the solvency standard, would be the same for each institution in a micro perspective, but would be subjected to an additional calibration if looked at from a macro perspective, to take into account the systemic importance of each institution. In De Nicòlo, Favara and Ratnovski (2012) this point is interestingly complemented upon reminder that most macroprudential instruments considered in literature are effectively equal to tools traditionally used in microprudential regulation, their macroprudential taste being given by the objective they are designed to pursue.

Hanson et al. (2011) also take a cost approach and characterize macroprudential regulation as being tasked with controlling and preventing the social costs arising from the consequences of common shock to financial institutions.

In a more complete analysis, Claessens (2014) has defined them as policies aimed at reducing systemic risks, which arise from financial procyclicality in excess and from interconnections and other cross-sectional factors. He also explains that the motivations for macroprudential policies are derived from market failures and externalities, which arise even in a scenario where other monetary policy or microprudential supervision tools are enacted in an effective manner, justifying the inclusion of macroprudential policies in the permanent recipe book for an effective supervision of the financial system.

Borio (2003) systematized all this in an early essay where he contrasted the macro and microprudential perspectives in terms of objectives and risk models, which is reflected in Table 1 (below):

Table 1: The macro- and microprudential perspectives compared		
	Microprudential	Macroprudential
Proximate objective	Limit distress of individual institutions	Limit financial system-wide distress
Ultimate objective	Consumer (investor/depositor) protection	Avoid output (GDP) costs
Correlations and common exposures across institutions	Irrelevant	Important
Calibration of prudential controls	In terms of risks of individual institutions; bottom-up	In terms of system-wide distress; top-down
Model of Risk	Exogenous	(in part) endogenous

Source: Borio (2003)

The endogenous nature of risk, with respect to the financial system’s behavior in the model, allows the conception of a situation in which an action that would be desirable for an individual institution could produce unwanted aggregate results (Borio, 2003), because otherwise if risk were exogenous in the model, the impact of an action by an individual institution would not be significant to overall systemic risk, which is something the macroprudential perspective relies on. On this point lies one of the significant innovations of the macroprudential approach, being the foundation for the mentioned top-down approach. This framework was summed up by Borio (2011), defining macroprudential as a

perspective or orientation of supervisory or regulatory arrangements, calibrated not from an individual institution's perspective but from an integrated systemic view. This author also warns against too broad definitions that might make the term redundant and therefore lacking a rich meaning, such as understanding macroprudential policies as including all financial stability policies, because almost any policy can have financial stability effects. Nonetheless he warns that the term's usage might evolve over time to include a wider range of policy instruments.

Financial instability can be seen as the main cause for macroprudential policies, as it has many negative consequences and it is therefore of interest to avoid it and enact stability policies which prevent the occurrence of these imbalances.

Microprudential policies were, along with monetary and fiscal policy, the first response to counter financial instability. The microprudential perspective focused on regulating individual institutions in order to prevent the generation of imbalances. By limiting the risk positions that could be assumed by individual financial institutions, it was assumed that these institutions would be equally limited in their risk behaviors when taken into account on an aggregate level.

However, this approach disregarded the connections between individual financial institutions and how they interact in the economy. Due to many different "macro-financial linkages" (Claessens, 2014), to which recent literature has drawn attention, there is a need to address all causes collectively and in a coordinated manner, in addition to the individual approach that is enacted through microprudential policies.

The importance of microprudential supervision and its concrete policies should not be downplayed, for these are very important to the stability of the system as a whole as well. By implementing policies that avoid the creation of imbalances that could put the systems stability at risk, we are creating conditions for other policies to be more efficient and produce desired outcomes.

3. Motivation – Market Failures / Externalities

By laying out the most important sources of market failures that call for the use of a macroprudential regulatory approach, De Nicòlo, Favara and Ratnovski (2012), explain how a financial intermediary's activities can lead to systemic risk and why these require specifically addressed policies to mitigate these risks. They argue that these regulatory policies are justified by the need to correct market failures, instead of simply attributing their existence to the financial system's fragility. Therefore, instead of focusing on the smoothening of the cycles, they suggest directing that focus towards the externalities that market failures create and tailoring regulation to the correction of those externalities.

The externalities that lead to these risks are divided in three categories: (i) The ones related to strategic complementarities, which arising from the strategic interactions of banks and other financial institutions and agents, cause vulnerabilities to build-up during the expansionary phase of the financial cycle. (ii) The ones related to fire sales and credit crunches, arising from a generalized asset sell-off, cause a decline in asset prices and thus a worsening balance sheet situation for investors and other intermediaries, which lead to a contraction of financing, a situation especially damaging in the contractionary phase of the business cycle. (iii) And the ones related to interconnectedness, which facilitate the propagation of systemic institution shocks to the overall financial system, this contagion made possible by the interconnections in financial markets and other financial networks.

This externalities perspective serves as a good frame of reference for what the motivations to conduct macroprudential policies are. The enacting of policies to correct these externalities will mitigate systemic risk and can also be regarded as intermediate macroprudential policy targets. A further lesson of the crisis was the suitability of microprudential policies with regard to addressing systemic risk, where it became apparent that in some cases, the stability of an individual institution might act as a destabilizer to the whole system. A good example of this can be the asset fire sales that occur during a downturn. Even though this behavior is logical and sound from an individual institutions' point of view, it may be catastrophic when looked at from an integrated perspective, for it

leads to a generalized depreciation of the market value of the asset in question, causing a significant fall in its price (Shleifer and Vishny, 2011).

This first category of externalities, the one related to strategic complementarities, has its place because financial institutions have a historical tendency to assume similar credit and liquidity risk exposure in the upswing of the business cycle, thereby positively reinforcing these cycles and so accentuating the volatility of asset prices. This conscious choice to incur in correlated risks is justified and sustained by the fact that if more agents invest in the same strategy, the payoff from that specific strategy will increase. This payoff increase happens because the market will evaluate a bank incurring in losses at the same time as all other banks more leniently. Additionally, bank managers are subject to the same reasoning in regards to their accountability to the board. Another source of this first category of externalities is the increase in market competition in these boom times, which gives rise to a degradation of the standards through which banks evaluate the potential recipients of the funds they have available for lending. This behavior will result in a growth of lending because of the lowering standards and on average decrease the quality of the outstanding credit loan portfolio, a behavior that will naturally be corrected in the contractionary phase of the business cycle, because the worse borrowers will fail and thus be cleared from the portfolio. A further source of strategic complementarities could derive from the bank managers' incentive structure and other reputational concerns, which reduce the risk of coordinating one's actions with other banks'. This emerges because banking performance is normally evaluated in regard to the market and therefore the risks and costs associated with pursuing a different strategy, even if this strategy might be less risky and cause the bank to be more resilient to an eventual future shock, are logically very high. Actually, there is evidence that in order to maximize the likelihood that in the event of a failure, it is a generalized failure, banks may find themselves incentivized to strive for correlated risks (Farhi and Tirole, 2012). As an example, a bank manager predicting a meltdown of some complex derivatives markets in the years building up to the great financial crisis of 2007, who refused to invest in that specific risky derivatives class, would quite certainly be out of a job long before he would be given reason or recognized merit for his bold decision.

The second category of externalities that we already referred to in the previous example on fire sales is paradigmatic because it describes a behavior that although logical in an isolated perspective, loses sense when thought about in an aggregated perspective. Because they take place in a downturn environment, scenario in which the potential asset buyers are also in need to conduct sales themselves, these so called fire sales can lead to increased financial system fragility. A fire sale may cause a significant drop in an asset's market price and consequently in the perceived value of similar assets owned by other market participants, which in accordance to some microprudential rules will force them to review their own accounting valuations of the assets in question, leading them to possible financial difficulties. This process causes an individual institution's risk to become systemic, with severe consequences to financial stability (Shleifer and Vishny, 2011). Another consequence is the crunch in credit these fire sales will lead to, because when confronted with the need to review the valuation of their balance sheet's items, the affected banks will freeze or severely constrain lending due to lack of capital.

The third externality category we enumerated were the ones related to interconnectedness. Since banks operated in a highly intertwined system, any potential failure will impact other institutions in the same network. This contagion risk between banks cannot be eliminated because the shape of this interbank interconnectedness is beyond an individual bank's control and because this interconnectedness may be derived from diversification and mutual hedging motives.

In line with these externalities related to interconnectedness, we now refer to two different but nonetheless related aspects, namely systemically important financial institutions (SIFI) and the in the literature recently appearing application of Network Theory to the subject of macroprudential regulation.

Haldane (2015) refers to the recent tendency to use financial networks theory to make sense of the financial system's behavior in stress times. Attention has also been directed at the overall layout of public policy, for example at the addition of the new policy layer of macroprudential regulation to contribute to a safer financial system as a whole (Hanson et

al., 2011). Complex interconnectedness in the system requires an appropriate analytical approach.

The externalities related to interconnectedness are particularly significant for SIFI's because of their complexity, their international footprint and their basilar role in sustaining the global financial system. Their impact in terms of systemic risk is so significant that most interventions in SIFI's were bailouts in all aspects but denomination, in order to protect shareholders, creditors and other agents in the market from the consequences of a SIFI failure. This implicit bailout guarantee that an institution acquires when it achieves a too big to fail degree of systemic importance, acts as a subsidy and as an incentive to risk-taking by that institution.

While in the past the size of a financial institution was the main aspect in defining the systemic importance, after the recent crisis, the interconnections of financial institutions have gained an increment in attention. The notion that a smaller but highly interconnected institution poses a potentially higher risk to financial stability than a bigger but less connected institution has gained traction in recent years. This may have influenced the criteria for designating systemic institutions. Nonetheless, after studying the significant variations between standalone and systemic risks of large banks during the recent financial crisis, Laeven et al. (2016) found that systemic risk grows with bank size and is inversely related to bank capital. Their results joined recent studies in discussing the imposition of tighter capital requirements on banks based on their systemic risk position in addition to the already existing restrictions. Beck et al. (2016) find capital regulation to have a positive impact on improving the banks' incentives to monitor their borrowers and consequently to lower their individual credit risk. The new Basel accord goes in the right direction as it also takes into account the macro effects of capital regulation. Basel III also reviews the role of risk-weights in the computation of capital requirements in that it now tries to force banks into holding more adequate capital buffers for their risk-weighted assets. This new rules also take into account the systemic risks by enacting specific liquidity surcharges for SIFI's. A fourth Basel accord is on the way and its impact will be significant for banks in areas such as the calculation of risk-weighted assets and possibly regulatory capital floors

(Schneider et al., 2017). These kinds of changes have different potential implications for banks and are to be closely watched by interested parties.

Anyhow, the current tools available are grouped in similar categories, as we will in Table 3 when we present the macroprudential toolkit available, but also structured in function of the externalities they address. The following table summarizes the externalities presented earlier in this section and lays out the type of policies that can be used to address these externalities.

Table 2: Externalities and Macroprudential Policies				
Externalities due to:	Can be addressed by:			
	Capital Requirements (surcharges)	Liquidity Requirements	Restrictions on activities, assets or liabilities	Taxation
Strategic Complementarities	X		X	
Fire sales	X	X		X
Interconnectedness	X		X	X

Source: De Nicòlo, Favara and Ratnovski (2012)

As such, macroprudential policies emerge as a way to complement existing policies in trying to assure financial stability. Also, in order to help its analysis, the approach can be thought of as having two dimensions, namely a time-dimension and a cross-sectional dimension (Borio, 2011).

In the following section we will elaborate on these instruments used to conduct macroprudential policies and their corresponding effectiveness.

4. Macroprudential Policy Instruments and their Effectiveness

Knowing that the ultimate objective of macroprudential policies is to promote financial stability, there is nonetheless the need to define intermediate objectives that make the policies more easily applicable. The definition of these intermediate objectives is a process under constant review, for the determinants that contribute for these objectives to be selected are themselves subject to change and thus to be updated over time. This said, these intermediate objectives are seen as important variables or indicators of whether the ultimate objective is being worked towards or not. They serve as a means to make policy making more transparent and its application more operationally viable. These intermediate policy objectives could be the mitigation and prevention of an excessive growth of credit and leverage by banks, and this could be addressed by using macroprudential policy instruments such as Countercyclical Capital Buffers (CCB), Loan-to-value (LTV) ratio limits, caps on the loan-to-income (LTI) ratio or a limit on the debt service-to-income (DSTI) ratio. As a means of illustration, an LTV restriction would reduce the amount that a bank could loan to a certain borrower in proportion to the loans collateral. In the case of a house financing, an LTV of 75% would mean that the bank could only concede up to 75% of the house's value to the customer. This acts as a restriction on borrowers since it prevents otherwise willing borrowers from lending the desired amounts, with the ultimate objective of protecting the financial institution against collateral value variations in the case the borrower becomes unable to service the loan and the collateral is transferred to the bank.

These instruments have typically been grouped into five categories: (i) quantitative restrictions on borrowers, instruments or activities; (ii) capital requirements and dynamic provisioning; (iii) other quantitative restrictions on the balance sheets of financial institutions; (iv) Taxation on certain activities or certain balance-sheet compositions; (v) other measures such as accounting changes, changes to compensation and incentive packages, among others (Cerutti et al., 2015).

The first category of instruments, already mentioned above, is identifiable in that it is composed of concrete limits or rules, which are directed at very specific imbalances such as excessive indebtedness or low-quality loan making by financial institutions, by establishing certain thresholds which have to be respected. The second category aims at countering the imbalances that might arise in the financial sector's balance sheets and are thus very concerned with the reserve capital requirements, liquidity limits or financial exposures by the institutions. The third category is endemically connected to countercyclical behavior in that it follows the macroeconomic policy of moderating the variations of the economic cycle by deploying measures that act as contrary forces, such as countercyclical capital requirements, which rise in an upward cycle and fall in a downward cycle, thus being adaptive to serve its purpose. The fourth category relies on using taxes to conduct directed macroprudential policies. Finally, all other tools such as governance, accounting standards or institutional infrastructure are included in the fifth category.

In the expansionary phase, with the purpose of enhancing resilience, the adequate policy tools are considered to be the restrictions related to the borrower or the restrictions on balance sheet composition in the financial sector. With the purpose of dampening the cycle, the usage of capital requirements and dynamic provisioning is favored. Taxation and levies are enacted with the purpose of dispelling the gestation of the cycle. In the contractionary phase, characterized by fire-sales and a generalized credit crunch, the tools that are aimed at dampening the cycle are also of a restrictive nature, namely by adjusting to specific loan-loss provisioning, margins or haircuts. With regard to enhancing resilience, the establishment of liquidity limits, such as the Net Stable Funding Ratio, the Liquidity Coverage ratio, or countercyclical capital requirements are encouraged. Finally, taxing non-core liabilities is also a tool with the purpose of dispelling the gestation of the cycle.

In the table displayed below, we uncover the Macroprudential Toolkit available, in the way presented by Claessens et al. (2013). The tools are divided as being applicable to three different categories, namely the expansionary phase, the contractionary phase and a third phase to address problems of contagion or shock propagation from SIFI's or Networks.

Table 3: The Macroprudential Toolkit					
	Restrictions related to borrower, instrument, or activity	Restrictions on financial sector balance sheets (assets, liabilities)	Capital requirements, provisioning, surcharges	Taxation, levies	Other (including institutional infrastructure)
Expansionary Phase	Time varying caps/limits/rules on: - DTI, LTI, LTV - margins, hair-cuts - lending to sectors - credit growth	Time varying caps/limits on: - mismatches (FX, interest rate) - reserve requirements	Countercyclical capital requirements, leverage restrictions, general (dynamic) provisioning	Levy/tax on specific assets and/or liabilities	- Accounting (e.g., varying rules on mark to market) - Changes to compensation, market discipline, governance
Contractionary Phase: fire-sales, credit crunch	Adjustment to specific loan-loss provisioning, margins or hair-cuts (e.g., through the cycle, dynamic)	Liquidity limits (e.g., Net Stable Funding Ratio, Liquidity Coverage Ratio)	Countercyclical capital requirements, general (dynamic) provisioning	Levy/tax (e.g., on non- core liabilities)	-Standardized products -OTC vs. on exchange -Safety net (Central Bank/Treasury liquidity, fiscal support)
Contagion, or shock propagation from SIFI's or networks	Varying restrictions on asset composition, activities (e.g., Volcker, Vickers)	Institution-specific limits on (bilateral) financial exposures, other balance sheet measures	Capital surcharges linked to systemic risk	Tax/levy varying by externality (size, network)	- Institutional infrastructure (e.g., CCPs) - Resolution (e.g., living wills) - Varying information, disclosure

Source: Claessens, Ghosh and Mihet (2013)

Bruno et al. (2017) studied the interaction between monetary policy and macroprudential policies in 12 Asia-Pacific economies and their findings suggested macroprudential policies to be more effective when complementing monetary policies in reinforcing those objectives than when acting in opposite directions.

In fact, with regard to the effectiveness of macroprudential policies, it is still quite difficult to evaluate regulatory actions. The absence of clear metrics to quantify the impact of some specific policy is one of the main challenges in current macroprudential policy (Kohn, 2016). Another aspect in the assessment of this impact is the difficulty in setting a counterfactual scenario, i.e. what would have happened without the implementation of the specific macroprudential policy under evaluation (Bruno et al., 2017).

Cerutti et al. (2015) document that the usage of macroprudential policies is more frequent in emerging economies, especially policies related to foreign exchange. In more advanced economies borrower based policies such as limits on LTV or DTI ratios tend to be more used, especially in more recent times. Both emerging and advanced economies use some policies aimed at reducing systemic risks that arise within the financial system, including interconnections between banks, and some of these policies have been associated with lower credit growth rates. The borrower based policies and the financial sector balance sheet policies seem to be significantly effective in achieving their goals, more so on booms than on busts. In more open economies with more sophisticated financial systems, macroprudential policies tend to have weaker effects thus implying that the markets circumvent some of these policies.

5. Policy implementation

The changes to regulatory supervision regarding the banking system that emerged after the great financial crisis have established new authorities as responsible for macroprudential policies. Haldane (2015) structures the different levels of regulatory resolution as microscopic, macroscopic and telescopic. The microscopic layer focuses on individual entities and therefore on the microprudential dimension. The macroscopic layer focuses on the national economies and financial systems, the macroprudential and monetary policy perspectives. Lastly, the telescopic layer regards the global financial and economic system, being thus the global financial architecture regulatory dimension. These layers are both complex and likely to interact, which makes the system as a whole more complex as well.

This higher level of complexity requires an adequate theoretical framework to support the implementation of policies. Schoenmaker & Wiertz (2016) propose a new policy framework by placing macroprudential policy between microprudential supervision and monetary policy. Macroprudential policies are thus operating at the financial system level and are aimed at promoting stability by addressing the impact that specific imbalances have on the economy in general.

The significant policy framework changes after the recent crisis follow the Tinbergen Rule, according to which every policy layer needs a corresponding set of tools available (Haldane, 2015), much as is laid out in the following Table.

Table 4: Policy framework for the financial and economic system		
Policy (typical instrument)	Objective	Ultimate goal (level of impact)
Monetary Policy (short-term interest rate)	Price stability	Stable and Non-inflationary growth (economic system)
Macroprudential (LTV ratios, countercyclical buffers)	Financial stability	
Microprudential (capital ratios)	Soundness of financial institutions	Protection of consumers (individual institutions)

Source: Schoenmaker and Wierts (2016)

The challenges posed in the implementation of macroprudential policies were addressed in Kohn (2016) where he systematized them in four categories: (i) identification and monitoring of risks; (ii) determination of the systemic aspects of risks that are identified, externalities calling for macroprudential action; (iii) design of policies to address systemic risks and enhancing the UK's financial system resilience, also conducting a cost-benefit analysis of every policy option; (iv) effective communication of policies and their inherent rationality and motivation.

Being risk identification the foundation for macroprudential action, its main challenges are related to the fact that regulators mostly have to be looking for unlikely events with potentially damaging systemic effects, be them events such as the UK Referendum on EU membership delivered an unexpected result. There still lacks a clear idea of this events'

potential repercussions to financial stability. On another level, this risk identification also consists in identifying tendencies that may be arising in certain markets, which can gradually bring changes that give rise to systemic risks, an example of this were the impacts of eased access to credit to buy residential real estate before the crisis. In order to assist with this risk identification, macroprudential regulation authorities have at their disposal a certain number of indicators, and its usage needs to be careful.

The point concerning policy design focuses on the criterion of benefits exceeding costs and thus on finding the instruments that most adequately fulfill this premise. There are difficulties both in estimating the benefits and the costs of policies. The marginal benefits of a particular policy choice are highly dependent on other policies in action and thus very hard to measure. On the cost side, measuring difficulties are also abundant because in addition to direct costs that institutions bear, there are also indirect costs that are sometimes both unintended and deferred in time, thus making it impossible to correctly account for them. Beyond these costs, there are also the expected output changes that are to some degree attributable to macroprudential policies and thus impacted by them (Kohn, 2016).

Finally, the last aspect focused on, is adequately communicating and explaining the rationale behind macroprudential policies. This means that after identifying the risk and the externality, and the policy to address it decided upon, it is of the uttermost importance to publicly communicate the decisions, as well as its expected consequences and impact, in the name of transparency, but also to appease the general public and the interested parties. Political and public support is indeed critical because effective macroprudential policy will be countercyclical and thus highly unpopular in boom times, where some moderation will be needed to allow for stimuli in the bust times that will follow them. Preemptive and countercyclical policies always leave plenty of room for misinterpretation and therefore an effective, transparent communication policy is very necessary to avoid a lack of public support, which will likely bring set the ground for political interference in policy making. Clear communication strategies are regarded as essential ingredients for successful macroprudential regimes because they contribute for the accountability and efficacy of policymakers, by shaping and anchoring the expectations of stakeholders.

A clear communication allows for policies to be predictable and transparent, and thus find more support among stakeholders, which trust the macroprudential authorities discretion and exercised judgment, even when the implemented long-term measures don't immediately have a positive impact (Skingsley, 2016). Actually, as we can see from the example given in Kohn (2016), the absence of an adverse public reaction to a set of recommendations issued by the Bank of England was directly attributed to the communication strategy followed by the institution. The fact that they were transparent in communicating their intentions, rationale and expected results well ahead of time appeased the public and justified the quiet acceptance. Schoemaker and Wierts (2011) defend that macroprudential policy authorities should be accountable to the general public as well as to the political and judicial power in a way that minimizes their vulnerability to pressures. The fact that regulated financial institutions may always appeal decisions by regulators is seen as positively contributing to a fair balance in the accountability of the regulatory process.

6. The importance of institutional design

One of the most determining aspects of the impact of macroprudential policies is related with the way its institutional arrangements are designed. Hereby we mean that the institutions that are responsible for the design of these policies need to fulfill certain criteria for independence and resistance to pressures, as well as be in close contact with monetary authorities and also to possess a great deal of technical know-how to conduct the policy making per se. These organs need to be accountable and therefore their action highly transparent. Schoenmaker and Wiertz (2011) argue that the policy mandate for macroprudential policies be given to a single authority so that efficient and timely decision-making is fostered. They also defend that this authority should be the central bank, because both its mandates for price and for financial stability are directed at steering the overall economy, even though with different objectives.

At a European level, the 2009 de Larosière report issued a recommendation that an independent, decentralized, supervisory system be created. This recommendation prompted the creation of the European System of Financial Supervision (ESFS), which resulted in a binary system of national and European supervision with different assignments being distributed between the entities, namely with distinctions between microprudential and macroprudential regulatory responsibilities.

The macroprudential oversight of the financial system has been attributed to the European Systemic Risk Board (ESRB), which has been established as the agency tasked with preventing and mitigating systemic risks to financial stability in the European Union. Even though this is an independent agency, it has been established under the umbrella of the European Central Bank (ECB) and its Chairman is Mario Draghi, the ECB's president.

In Portugal, the designated authority for macroprudential supervision is the national central bank, Banco de Portugal. Its concrete mandate of conducting macroprudential policy consists of “identifying, monitoring and assessing systemic risk, and [by] proposing and adopting measures to prevent, mitigate or reduce such risks in order to strengthen the resilience of the financial sector” (Banco de Portugal, 2015).

In the UK, the responsibility for conducting macroprudential policy falls upon the Financial Policy Committee at the Bank of England. Its mandate is to achieve the Financial Stability Objective of the Bank, by recognizing, monitoring and actively reduce or remove, the systemic risks, with the objective of protecting and reinforcing the UK Financial System (Tucker et al., 2013).

In the US there is no agency with the sole responsibility of assuring financial system stability being this incumbency divided between different agencies. Nonetheless, according to Haltom & Weinberg (2017), some of these financial stability responsibilities have been progressively shifted towards the Fed, after the great financial crisis of 2007-08, namely because of the 2010 Dodd-Frank Wall Street Reform and Consumer Protection Act, giving the Fed a unique role in financial regulation. The Dodd-Frank Act required financial stability to be taken into account in the course of regulatory actions, but most importantly, it created the Financial Stability Oversight Board (FSOC), with the mandate to identify risks to financial stability, to promote market discipline by reducing the expectation of government bailouts and to respond to threats to the financial system. However, the FSOC is not the agency responsible for financial stability but a convening board of all regulatory agencies. It also falls within the mandate of the FSOC the identification of systemically important financial institutions (SIFI's), which can put the financial system's stability at risk upon failure or distress. The Fed plays an outsized role because of its primary mandate to conduct monetary policy, operate the payments system and supervise banks, which consequently forces it to play a more significant role in the pursuit of policies that contribute to the stability of the financial system (Haltom & Weinberg, 2017).

As we have highlighted in the previous section, a clear communication strategy is essential to enact certain policies in an effective way. Nier et al. (2011) have made an interesting study of the ideal macroprudential policy arrangements, diving into issues of institutional structures, policy-making, effectiveness and accountability, from which we highlight the following Box, providing us with a systematization, and where needed a brief explanation, of the key desirables for macroprudential policy arrangements:

Box 1. Key Desirables for Macroprudential Policy Arrangements

General

1. The central bank should play an important role in macroprudential policymaking, because of the available expertise and to coordinate with other central bank functions such as monetary policy or regulatory oversight.
2. Complex and fragmented regulatory structures are unlikely to be conducive to successful mitigation of systemic risk and should therefore be avoided, because fragmentation reduces the effectiveness of risk identification and introduces frictions due to dispersed decision-making.
3. Participation of the treasury (ministry of finance) in the policy process is useful, because it can provide a bridge with the legislative authorities and assist in policy coordination. But a leading role poses risks of delaying action and compromising the institutional independency of policies.
4. Systemic risk prevention and crisis management are different policy functions that should be supported by separate organizational arrangements.
5. Macroprudential policy frameworks should not become a vehicle to compromise the autonomy of other established policies.
6. Chosen institutional arrangements need to take account of country-specific circumstances.

Provide for effective identification, analysis, and monitoring of systemic risk

7. Mechanisms for effective sharing of all information needed to assess systemic risks should be in place, by allowing authorities to collect, centralize and share relevant data.
8. At least one institution involved in assessing systemic risk should have access to all relevant data and information. It should be the one that disposes of the best existing expertise to assess systemic risk.

Provide for timely and effective use of macroprudential policy tools

9. A lead macroprudential authority should be identified and be provided with a clear mandate and powers, in a manner that harnesses incentives of existing institutions to mitigate systemic risk. Its mandate needs to be matched by sufficient powers, including to initiate the use of prudential tools to address systemic risk. Mechanisms should be established to expand powers when needed.
10. Institutional mechanisms should support willingness to act against the buildup of systemic risk and reduce the risk of delay in policy actions.
11. The mandate should give primacy to the mitigation of systemic risk, but include secondary objectives to ensure that the policymaker takes into account costs and trade-offs.
12. Proper accountability and transparency need to be put in place, without unduly compromising the effectiveness of macroprudential policy, to guard against overly restrictive or inadequate policy.

Provide for effective coordination across policies to address systemic risk

13. Institutional integration of financial regulatory functions within the central bank can support effective coordination of macroprudential policy with monetary as well as microprudential policy, but also requires safeguards such as separate accountability mechanisms.
14. Where institutional separation of policy decisions and control over policy tools cannot be avoided, the legal framework needs to assign formal powers to recommend or direct action of other policymakers.
15. Where there is distributed decision making among several agencies, establishing a coordinating committee is useful, but may not necessarily be sufficient to overcome collective action and accountability problems.

Source: Nier et al. (2011)

7. Proposing new approaches

A review of current regulatory practices is needed in the near future. Even though most seem to be effective, we lack the knowledge that these will be effective in the case of an extreme shock. Multiple claims have been put forward to favor a simplification of regulation, namely the legal documents that set the framework for regulatory practices and also the used instruments per se. More transparent practices, easier to follow and understand, are therefore called for, not only by banks and other regulated financial institutions, but also by regulators themselves, who are increasingly overwhelmed with the oversight of numerous regulations and can hardly keep up with the detail into which these have evolved to.

We propose two different courses of action to be taken.

First, we strongly defend the separation of commercial banking activities that consist of simple deposit taking and credit concession, from the remaining financial markets oriented activities, such as Derivatives, Bonds and other more complex financing forms, and from the investment banking activities. These should be separated into distinct legal entities, much in the line of what was the spirit of the 1933 Glass-Steagall act in the US, that have actually no relationships among them, apart from the ones that occur in the market, transparent and easily controlled by the regulators.

Alternatively, as a complement to the first proposal, we argue that a *ring fencing* of the risk-bearing activities of banks and other financial institutions from the remaining “simpler” activities should exist, even if this does not mean a total separation into two distinct entities. These would be separated inside the banks and would be run by different people. Deposit insurance would cover one part of the balance sheet, but not the other. Riskless, dull, deposits would have more stringent rules to prevent their usage for lending and would be ensured by the global deposit insurance. Other riskier activities would be not insured and would therefore be the responsibility of their owners. In the UK, the Banking Reform Act of 2013 recommended the effective separation of investment banking from core retail banking activities by January 1st, 2019 (Parliament, U. K., 2013).

Second, either as a complement to the first proposition or in addition to the present framework, we defend the simplification of the whole process. Knowing that the simple banking activities consist of the so-called maturity transformations, i.e. collecting short-term deposits and lending to long-term credit seekers. This poses a risk, because the former are necessarily liquid assets and the latter are illiquid assets to which the banks will not be able to recur in case liquidity is needed. As such, we argue that there should be a higher, more even, non-discriminatory, capital requirement, that forces the banks to conduct a more thorough examination of the credit risk determinants, and thus diminish the default rate on their outstanding loans. A clear definition of responsibilities in case of a failure has to be on place. There has been recent talk about “living wills” by banks, which we don’t see as practicable. A simpler approach is needed, and these past developments have shown that we are on the right track.

A last thought devoted to the future challenges, inspired by Borio (2011), who reminds us that financial instability can also come from the public sector and that as such, this might be an aspect to be taken into account in future adjustments to the macroprudential approach.

8. Conclusion

It is clear that we have the means, and the obligation, to create a more resilient system, by putting into practice the different preventive policies that we have described. This brief essay on macroprudential policies and the way these interact with regulation cannot but end with a laudatory note on the developments that have occurred since the last crisis. It is well accepted by almost everybody, alas it was one of the great lessons from this last crisis, that more crises will occur and that some are unpreventable. Nonetheless, this difficulty in preparing for the unknown does not mean we are without means to resist.

After introducing the subject and its main aspects, we derived to the instruments of macroprudential policies in themselves, and also their effectiveness. We discussed its positioning among other kind of policies and detailed the institutional settings that involve them. We therefore conclude that some studies are indeed still necessary but the most important developments will come from the concrete application of many of these theoretical concepts.

One of the motivating characteristics of macroprudential policies is that these are relatively easy to adapt and to fine-tune. On the other side, one of the downsides is the difficulty to measure their impact. But anyhow, we argue for a simplification of the whole process, with less intervention from regulators and a higher involvement of the regulated entities in all phases of the process.

Steps have been taken in the right direction but more is needed. There are many aspects to be improved and contribute to a better, safer, more resistant financial system that fulfills its primary role of service to the economy.

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