

Macro-Prudential Regulation: Motivation, Framework, Objectives and Other Economic Policies

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Մակրոպրուդենցիալ կարգավորում. ինստիտուցիոնալ շրջանակը և փոխադրեցությունը այլ տնտեսական քաղաքականությունների հետ

Գասպարյան Ռ.Լ.

Տնտեսագիտության և բիզնեսի ինստիտուտ, Ռուս-հայկական (սլավոնական) համալսարան
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Ամփոփում: 20-րդ դարի վերջին տասնամյակների ընթացքում և 21-րդի սկիզբին համաշխարհային ֆինանսական համակարգին հատուկ են գլոբալացման և ինտեգրման, ֆինանսական ազատականացման և տեխնոլոգիական զարգացման գործընթացները: Այսպիսով՝ երկրում ֆինանսական հաստատությունների և տարբեր երկրների ֆինանսական համակարգերի աճող փոխկախվածությունը դարձել է ռիսկի հիմնական աղբյուրներից մեկը: Ֆինանսական ազատականացումը մեծացրել է հնարավոր ճգնաժամերի հաճախականությունը: Միևնույն ժամանակ, տեխնոլոգիական զարգացումը և ֆինանսական գործիքների կատարելագործումը արագացրել են ճգնաժամային դրվագների զարգացումը և ընդլայնել ճգնաժամի ազդեցությունը:

Թեև գիտական հանրությունը տեղյակ էր համակարգային ռիսկերի ընդհանրացված գնահատելու անհրաժեշտության մասին, և կարգավորողները քննարկում էին մակրոպրուդենցիալ քաղաքականության մեխանիզմների կիրառմամբ ավելի հուսալի և արդյունավետ վերահսկման համակարգի տարբեր ասպեկտները՝ միայն համաշխարհային ֆինանսական ճգնաժամը սկսվելուց հետո գործնական քայլեր ձեռնարկվեցին մակրոպրուդենցիալ կարգավորման համակարգի ստեղծման և նախագծման ուղղությամբ: Այս հետազոտությունը ձևակերպում և ամփոփում է մակրոտնտեսական կարգավորման անհրաժեշտություն, նպատակները, շրջանակը ու ցիկլերը՝ նպատակ ունենալով այն ներդաշնակեցնել ընդհանուր տնտեսական կարգավորմանը: Առանձնացնելով դերը և խնդիրները, գործողությունների պլանը մենք մատնանշում ենք մակրոտնտեսական կարգավորման և համակարգված այլ տնտեսական քաղաքականությունների իրականացման համար արդյունավետ ինստիտուցիոնալ հիմքերի ստեղծման ուղիները:

Վճռորոշ բառեր՝ մակրոպրուդենցիալ, կարգավորում, ինստիտուտներ, կայունություն, համակարգային ռիսկ

Макропруденциальное регулирование: мотивация, структура, цели и другие экономические политики

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Резюме: В течение последних десятилетий 20-го века и начала 21-ого для глобальной финансовой системы были характерны процессы глобализации и интеграции, финансовой либерализации и технологическое развитие. Таким образом, увеличение взаимозависимости как финансовых институтов внутри страны, так и финансовых систем разных стран стало одним из основных источников риска. Финансовая либерализация увеличила частоту возможных кризисов. В то же время технологическое развитие и изощрённость финансовых продуктов ускорили развитие кризисных эпизодов и расширили масштабы последствий кризиса.

Хотя научно-академическая общественность была осведомлена о необходимости рассматривать риски по для системы в целом, и регуляторы обсуждали различные аспекты более надёжной и эффективной инфраструктуры регулирования с инструментами макропруденциальной политики, практические шаги по созданию и оформлению рамок макропруденциального регулирования были сделаны только после наступления глобального финансового кризиса. В настоящем документе сформулированы мотивация, цели, рамки и циклы макропруден-

циального регулирования, гармонизирующие его с общим экономическим регулированием. Различная роль и задачи, уточняя плана действий, мы указываем на пути создания эффективной институциональной основы для реализации макропруденциального регулирования и координации с другими экономическими политиками.
Ключевые слова: макропруденциальное, финансовая стабильность, институты, стабильность, системный риск, регулирование

Relevance and research topic

During the last 40 years the frequency and the extent of economic crises have increased. According to the survey of 21 countries conducted by Bordo et al., (2000) between 1945 and 1970 only 1 banking crisis have been observed, while 19 banking crises between 1970 and 2000 occurred. These developments have propelled the discussions that current financial architecture and markets are unable to prevent the collapses in the financial markets.

The inclination of financial markets to accumulate vulnerability by fostering strong credit growth was experienced both during the Asian banking crisis in the 1990s and in the countries of Eastern Europe in mid 2000s. The most frequent conclusion from the history was that a standard combination of macroeconomic and micro prudential policy instruments is not effective firstly in identifying and, secondly, in ensuring financial and macroeconomic stability.

The prevailing ideological underpinning behind the prudential regulation policy was that by ensuring the healthy operation of every financial institution separately the prudential regulation bodies, usually Central Banks, are able to provide sound and highly stable banking and financial sector as a whole, frequently neglecting the existence of systemic risk.

The paper is divided into 3 main sections. First section briefly presents the roots and events that have illustrated the importance of a macro-prudential approach to analyzing financial systems. It also discusses where macro-prudential instruments can fill the "gap" of economic regulation.

The second part includes overview of different definitions of systemic risks and financial stability, that serve as the basis for understanding the purpose and concepts of macro-prudential policy and stages of the policy cycles.

And the last section describes macro-prudential policy infrastructure, mandate and relationships with the other economic policies.

The paper ends with a conclusion, which summarizes the main features of macro-prudential policy, stresses the importance of maintaining financial stability, and points to some outstanding issues that could serve as a basis for further research.

1. Motivation to regulate the financial system

Currently, it is not possible to imagine the global, or any kind of detached financial system

without tough regulatory underpinnings. However the efficiency and necessity of regulation in the economy and in the financial system does not seem too obvious. With the recent financial crisis, inefficient use of regulation and with more complicated and regulatory rules it is high time of thinking deeper into the following questions: Why to regulate? What to regulate and how to regulate?

1.1. Why regulation is needed.

One key reason for the regulation of financial markets is the asymmetry that exist between the sellers and the buyers of financial products. Markets perform their self regulatory function relatively well when there is a repetitive buy-sell practice of familiar goods, the quality of which is relatively easily and quickly evaluated and switching from a poor quality product is possible or does not require too high transactions costs.

For example in the local food market will function very well. But in the financial markets buyers purchase a limited number of products – life-insurance, mortgage, business credit, investment in bonds, deposits or equities, they choose the pension fund and the product. The majority of these products can have a life changing and lifelong impact on both buyers and sellers. And the poor or good quality of the product is usually identified long after the original transaction has occurred. And usually it is hard or impossible to change anything with it.

Thus, a financial regulation can help in balancing the interests of unsophisticated consumers of financial products and their sophisticated sellers. The regulation that is directed to protection of consumers is usually carried out through setting rules on product selling practice, prerequisites for obtaining the right to sell and, sometimes set prerequisites on the products available in the market.

Second major reason why financial regulation is necessary is the presence of social externalities.

Social externalities occur when as a result of the economic activity by those involved may have negative or positive consequence on those not involved in this activity. A classic social externality is emission of CO₂ by the production units and products. The car manufacturer or car drivers might not directly face costs of air pollution around the factory or in big cities. And they are more prone to raise the level of production and car usage above levels that would be optimal for the society. So the costs of society are higher then only those who are involved in the economic activity. A classic

Pigouvian response is to internalize the externality costs through taxes, fines additional charges. Even a market for the “pollution right” has been created, so as the car manufacturer or driver pay taxes proportional to the level of pollution they produce. With the help of these instruments a system of stimulus is created to decrease the level of air pollution and use the money for rehabilitation of the environment or providing compensation to those suffering from pollution.

A unique aspect of the financial market is that banks lend to banks, while car manufacturer does not borrow from the car manufacturer. While the failure of one car manufacturer means that the other market players will gain opportunity to expand their market share, the failure of a financial institution puts high level of pressure on the financial condition of the other financial institutions. This also result in a panic from by savers and consumers of general financial products thus plummeting the value of the assets under management of other financial institutions. So a failure of one financial institution can lead to a failure of the whole financial system, even though this financial institution might not even have even a significant market power.

So, the costs in the case of financial system failure are in excess of the costs that the shareholders would incur in the case their financial institution fails.

Given the existence of this social externality, the investors of the financial institutions would underinvest in the institution’s safety from the systemic perspective. The policy response to this social externality is to increase the level of financial condition of the institutions to protect consumers of their products. By providing government insurance for depositors, of deposit insurance, by requiring banks have a professional risk management environment or to hold more capital regulator can increase the resilience of individual institutions to crisis episodes. Rather the addressing the interconnectedness directly, this response has an intention to secure individual elements in the system separately. We argue that this neglects the endogenous risks, that arise as a result of the collective behavior of banks. On the other hand the regulator can also internalize the social costs for financial institutions by requiring the requiring the banks to hold greater capital or reserves, adjust their profit measures based on the expected future costs incurred not only by themselves but also by the society. So as to be able to measure the social costs of externalities a generally acceptable understanding of systemic risk is needed. Respectively, what is financial stability and how it can be disturbed by the realization of systemic risks.

1.2. Financial Stability and Systemic Risks – Definitions, Dimensions.

The conceptions of financial stability and systemic risk are not comprehensively defined. The objective reason for this is the extreme complexity of the concepts, that are actually very difficult to uniformly define, given the high level of subjectivity in the perception of such phenomena as risk and stability. It is expected that the definitions of the concepts are going to remain a subject to intense debate, despite progress made in the academic literature. This discussion serves as a conceptual basis for understanding the concepts and purpose of macro-prudential policy.

Financial Stability

The simplest definition of financial stability is a negation, i.e. it is the absence of financial instability. Another definition of a negation type states that the financial stability is the absence of crisis episodes, excessive volatility in the financial system. Besides being very short these definitions does not properly capture importance of stability in the financial system to overall economic performance. It underestimates the importance of maintaining stability for a long period (Gadanez and Jayaram, Irving Fisher Committee Bulletin, 2009).

To bring a clearer understanding of the phenomenon a broader definition has been used in recent years. The financial stability is described as a condition characterized by the smooth and efficient functioning of the whole financial system, including financial institutions, markets and financial infrastructure, in the resource allocation and reallocation process, risk assessment and management, payments execution, as well as the resilience of the system to sudden shocks (Houben *et al.*, 2004). Financial stability definition of the European Central Bank (ECB) that is overwhelmingly used in the EU, states that it is a condition in which the financial system – comprising financial intermediaries, markets and market infrastructures – is capable of withstanding shocks and the unravelling of financial imbalances, thereby mitigating the likelihood of disruptions in the financial intermediation process which are severe enough to significantly impair the allocation of savings to profitable investment opportunities¹.

The US Fed considers a financial system stable when financial institutions (banks, savings and loans, and other financial product and service providers) and financial markets are able to provide households, communities, and businesses with the resources, services, and products they need to

¹ <https://www.ecb.europa.eu/home/glossary/html/act4f.en.html>

invest, grow, and participate in a well-functioning economy².

The general consensus regarding the financial stability comes to state that as an integral part of the economy, financial system is essential to ensure normal operating of the economy and its other components, and while upward and downward shifts are the integral part of every economy and correspondingly of the financial system, so long as the efficient allocation of the resources among economics players and markets sustained for a substantive period of time financial stability is maintained.

The existence and materialization of all kinds of risks both in the financial system and the entire economy are sustainable, unless they add up to a level that might hinder the sustainable operation of financial system. Financial system can have a significant role in absorption of real and financial shocks by external factors as well as internal imbalances to maintain financial stability.

To enhance the ability of financial system to absorb shocks and defend financial stability three pillars are needed: preventive action, increase in system resilience to prevent systemic risk and crisis management in the case of materialization to minimize social costs (Žugić and Fabris, 2010).

Systemic risk

The term systemic risk was coined at the onset of the Latin American debt crisis in the early 1980s by the economist William Cline (Ozgöde, 2011). According to his definition, systemic risk is a threat that disturbances in the financial system will have serious adverse effects on the entire financial market and the real economy. The financial system is characterized with a process of accumulation of a certain level of systemic risk over time. The materialization of this risk threatens the with a disruption in the process of financial intermediation. This case is referred to as acute episode of financial instability or a systemic event. A clear differentiation between systemic events in the broad and narrow sense is provided by De Bandt and Hartmann (2000). sense as an event, where the release of "bad news" about a financial institution, or even its failure, or the crash of a financial market leads in a sequential fashion to considerable adverse effects on one or several other financial institutions or markets, e.g. their failure or crash. Systemic events in the broad sense include simultaneous adverse effects on a large number of institutions or markets as a consequence of severe and widespread shocks.

Systemic risk is thus defined as the risk of systemic events with strong adverse effects being experienced, which may through various channels disrupt the process of providing financial services or lead to a strong increase in their prices, impair a well-functioning of a large part of the financial system, and prevent effective financial intermediation.

The source of systemic risk is usually endogenous. Risks inside the financial system are usually rooted in its the institutional design. Usual ways of its expression is the accumulation of financial and operational risks, market and infrastructure risks. But at the same time exogenous risks such as macroeconomic disturbances, environmental and political shocks can give rise to global imbalances. Financial risks in the usually represented by the credit risk is the most frequent source of systemic risk in banking, is usually expressed in the probability of bank losses due to the deterioration of financial position of the debtors and their inability to return credit. The amount of expected losses depends on the value and liquidity of collateral pledges. Market risk in banks and financial institutions can be realized due to shocks in asset prices, exchange rates and prices of securities. Liquidity risk has become increasingly important due to the heavier reliance of banks on financing through financial markets. An extreme case of illiquidity in the interbank money market may result in a substantial fall in turnover, protection against risk may become too expensive or even impossible, while prices of various forms of financial assets may plummet and lose their ground in actual indicators. Contagion risk implies the danger of spillover of shocks across financial institutions, market segments or countries. Operational risk refers to potential disturbances in work processes, inadequate management and organizational structures and potential technical and information system difficulties. In addition to business processes within financial institutions, operational risk is closely related to infrastructure risk, in particular in payment and clearing systems that ensure technical support in financial market transactions. Depending on their organization, they also determine the scope of financial shocks and the degree of spillover of such shocks across financial institutions (De Bandt and Hartmann, 2000).

2. Filling the "gap" of economic regulation: a major intellectual shift.

2.1. Objectives of macro-prudential regulation.

IMF data show that the number of countries applying macro-prudential measures and instruments grew strongly at the beginning of the last decade (Lim et al., 2013). Emerging economies have primarily been active in implementing the

² <https://www.federalreserve.gov/faqs/what-is-financial-stability.htm>

macro-prudential policy frameworks. But a more intense use of MPP in the advanced economies started only after the escalation of global financial crisis in 2008.

The importance of MPP is also visible in the activity of the leading global organizations, such as the G-20 group of the world's most advanced economies, its Financial Stability Board, EU institutions and the Bank for International Settlements (BIS), as well as the Basel Committee on Banking Supervision (BCBS). They share an orientation towards establishing an effective framework for MPP implementation and the development of measures necessary to regulate systemically important financial institutions, macro-prudential supervision and strengthening the supervision of "the shadow banking system" (Financial Stability Board, IMF and BIS, 2011).

Parallely, an intensive action towards developing and analyzing a set of instruments that might be effective in attaining macro-prudential policy objectives is being done. So as to put in place an effective macro-prudential policy framework The European Systemic Risk Board (ESRB) was established in 2010. The primary goal of this institution is identification, prevention, mitigation of systemic risks at the EU level. The ESRB also works towards strengthening of system resilience to financial shocks, as a general consensus is emerging that financial stability was seen as the main prerequisite for ensuring employment and economic growth. The ESRB is responsible for monitoring and assessing systemic risk in normal times to prevent and mitigate any future disturbance in the financial system that could have serious negative consequences for both the financial system and the real economy, as well as to enhance the financial system's resilience to sudden shocks.

Recent discussions of the "regulatory gap" suggest 4 reasons of inability of current regulatory framework to sustain financial stability. Firstly, there is no institution responsible for the monitoring of systemic risk in the financial sector as a whole. Secondly, supervision of individual institutions is a huge and time consuming task for the regulators and requires highly efficient and professional auditing work. Thus, it is costly and usually inefficient for identifying vulnerabilities everywhere. (Cheang and Choy, 2011), Thirdly, cyclical character of the behavior of markets implies periodical occurrence of crisis episodes. (Angelini, Neri and Panetta, 2011). Fourthly, the global financial system have become so concentrated that single financial institutions can influence the entire financial infrastructure. So single financial institution or a small group of them may embody the whole financial system. Thus, the vulnerability on the

micro level might be equivalent to the vulnerability on the macro level. And finally, but most importantly, the pro-cyclical character of the former regulatory framework has added to the scale and intensity of the crises, while risks to financial stability may also arise from behavior of the system as a whole. The pro-cyclical behavior of the existing regulatory system had negative effect both during the pre-crisis and post-crisis periods of global financial crisis between 2007 and 2009. Expansionary monetary and micro-prudential policy during the pre-crisis period intensified, if not fostered the accumulation of vulnerabilities in the financial sector. On the other side, when the crises hit markets, the immediate regulatory response was the contractionary action that limited the ability of the financial institutions free up resources for the recovery.

One major advance is the central role for the countercyclical characteristic of the regulation in the macro-prudential framework. Macro-prudential economic policy mainly deals with the financial system. It studies the process of mobilizing and allocating financial resources through financial markets. Thus, the relationship between financial institutions and real sector of the economy is in the center of macro-prudential research.

According to the Bank of England the main objective of macro-prudential economic policy is to ensure the resilience of the financial system as a whole in order to maintain a stable supply of financial intermediation services across the credit cycle. In general, macro-prudential policy is aimed at identifying, preventing or mitigating systemic risks and reducing the probability of occurrence of adverse shocks through financial institutions, markets, infrastructure and instruments that might threaten the stability of the financial system.

Within the scope of macro-prudential regulation the policy makers identify weaknesses in the financial system, by primarily measuring a range of indicators in order to obtain understanding of the degree of financial stability. Correspondingly, in the good times they detect the risks that could threaten financial stability in the future. In the bad times, when the financial distress has already happened, they develop policy implications to return stability to financial system and minimize adverse effects on the real economy.

Macro-prudential policy has three important dimensions – structural, time and regulatory.

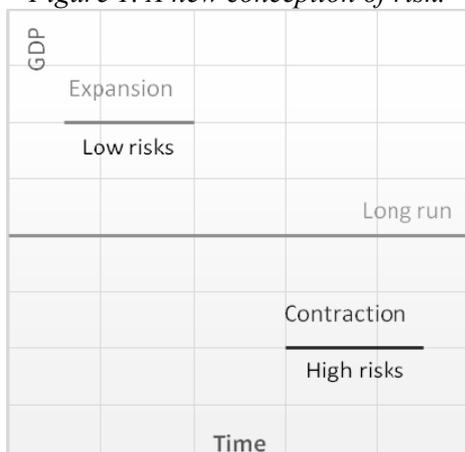
The structural dimension is referred the systemic risks that arise in an institution, a group of institution or in the whole financial system because of interconnectedness or high level of concentration in the individual financial services. The time dimension detects the risks that may arise from the

phase of economic and financial cycles. For example, in the phase of economic expansion, the primary goal of MPP should be to stimulate institutions to build up capital buffers and reserves, sustain excess liquidity to strengthen the resilience of the system to both expected and unexpected shocks and limit overexpansion of the economic phase. On the contrary, during the phase of recession in the economy MPP should stimulate freeing up reserves and decreasing the level of contractions and regulatory underpinnings.

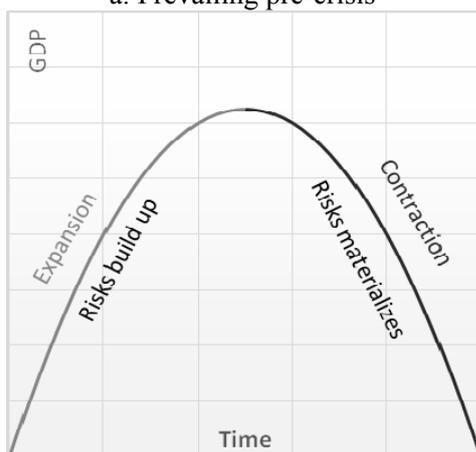
By establishing a resilient regulatory environment, MPP is aimed at reducing the possibility of transferring the operations to unregulated environment and performing regulatory arbitrage.

2.2. Financial, business and macro-prudential policy cycles.

Figure 1. A new conception of risk.



a. Prevailing pre-crisis



b. Macro-prudential

Source: (Borio, 2018)

Stages of macro-prudential policy cycle are described with the intention to fit into the development of business and financial cycles to minimize the build-up of vulnerabilities and avoid financial distress. Thus, the characteristic and differences of business and financial cycles have

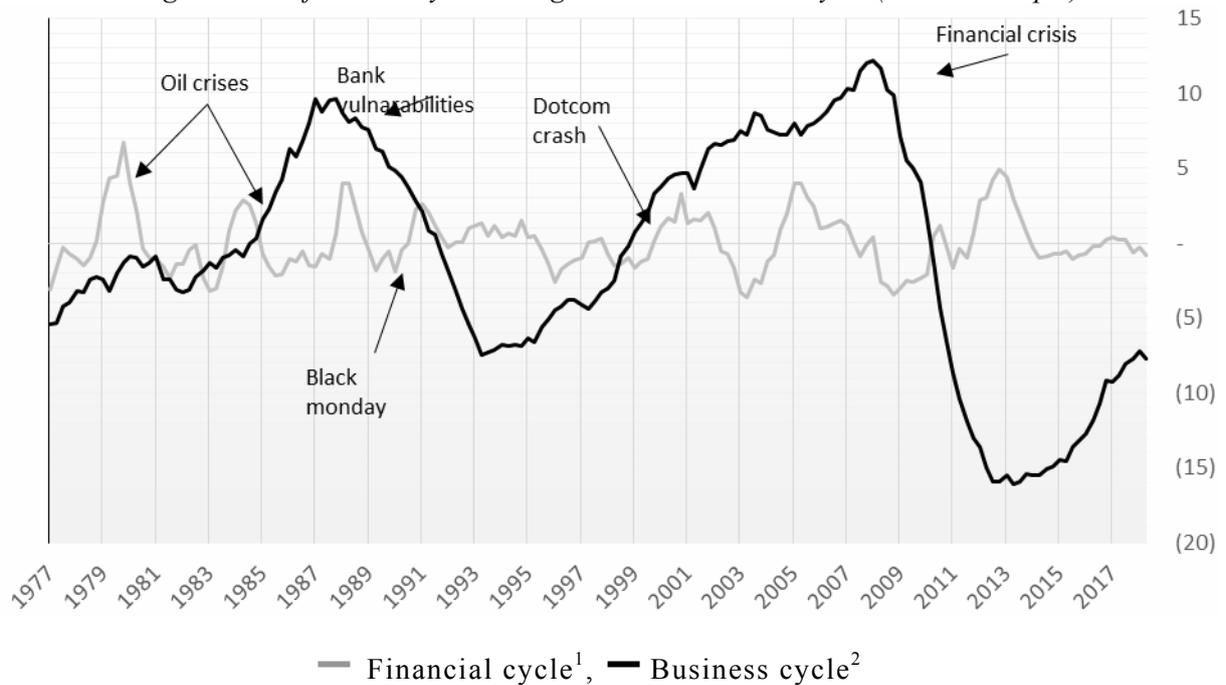
been formalized. A fundamental difference in the current macro-prudential approach from the prevailing pre-crisis approach is the conceptions of risk. It was generally accepted that risks are low in a boom and high in a bust as described in the Figure 1a. The way it is illustrated in the Figure 1b macro-prudential approach turned this understanding on its head, stating that risks are building up in a boom and materializes in the bust. The dynamic approach of regulation rooted in the macro-prudential approach of regulation suggest contractionary policy actions in the period of risk build-up, while it suggests a stimulating policy on the stage of risk materialization.

Understanding the characteristics of the financial and business cycle is key to measure the build-up financial instability in the financial sector. First, financial cycles are much longer than business cycles. Thus, for the analyses of financial cycle a longer-term perspective is required. Second, peaks in financial cycles often resemble with systemic banking crises or serious financial distress. Financial booms with usually accompanied by rapid growth in credit and asset prices often coupled with accommodative monetary and financial conditions leave the financial system vulnerable in the face of even modest shocks, that arising in certain sectors, can be amplified into a systemic event. Third, financial cycles are synchronised across economies. Mobile external capital and liquidity conditions tend to amplify movements in credit aggregates within an economy, but monetary conditions also have a strong cross-border spillover effect. Fourth, financial cycles are more useful to detect risks of financial distress with a good lead time. It is possible to measure the build-up of systemic financial risks in real time with a reasonable level of accuracy (Gadanecz and Jayaram, 2015).

While the business cycle is measured based on the fluctuations in the real GDP, the financial cycle is measured by the frequency of credit-to-GDP ratio and prices for housing. Taking into account that financial cycles are much longer than business cycles and the peaks of the cycle usually coincide with serious financial distress, the financial cycles has implications for the design and limitations of macro-prudential frameworks.

During the 1st stage – risk identification and assessment the policy maker should detect in good time the build-up of the vulnerabilities associated with a certain type of financial instruments, market segment, institutions or infrastructure, and assess the likelihood of a systemic event and its consequences, this cycle should begin with systemic risk identification and assessment.

Figure 2. The financial cycle is longer than the business cycle (the US example)

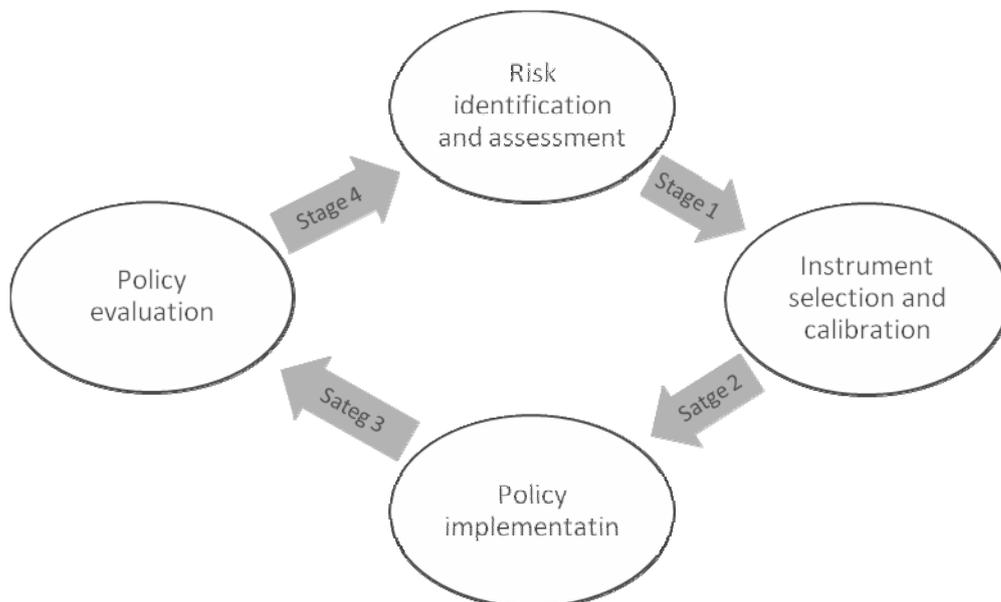


¹ The financial cycle as measured by Hodrick-Prescot filter capturing medium-term cycles in the credit-to-GDP ratio.

² The business cycle as measured by a Hodrick-Prescot filter capturing fluctuations in real GDP.

Source: Own calculations based on data from ²FRED and ¹BIS.

Figure 3. Four stages of macro-prudential policy cycle



Source: European Systemic Risk Board (2014)

On the 2nd stage of instrument selection and calibration the analytical tools, such as particular stress tests and early warning models might be used.

Stage 3 is the actual implementation of policy in the case the risks have emerged to threaten the stable functioning of the whole financial system. IMF recommends to build up additional buffers to

enhance the resilience of the system, correspondingly reducing pro-cyclical behavior financial (IMF, 2011).

In the final stage of the cycle, the effectiveness of individual measures and instruments and of overall MPP in the attainment of the set objectives is assessed.

3. Infrastructure, Mandate, Dimensions, Instruments and Tools

The formation and development of efficient macro-prudential regulation framework, adequate institutional foundations need to be formed. One advantage of macro-prudential regulation is the availability of a variety available tools for the use. Institutional arrangements and correspondingly the policy frameworks can be adjusted to specific country needs and period of economic development, without a need for a "one-size-fits-all" approach for all. However, the international experience suggest that for the effective conduct of macro-prudential policies relevant authorities should be obliged with measurable and attainable responsibilities and mandated with clear sets of powers, to achieve both short-term and long term objectives. The policy makers around the world have sought to ensure they have the ability to act in the face of evolving systemic threats. They have all been working to promote effective cooperation in risk identification and mitigations, having a precondition that they preserve autonomy in policy decision making (Stefan Ingves, 2011; IMF, 2013; CGFS, 2012).

3.1. Institutional models for macro-prudential policymaking.

The international experience show that prior choices of regulatory architecture influence the also the current institutional framework. While there is no uniformly accepted way of organizing the macro-prudential regulation framework, there has been a more frequent assignment of macro-prudential regulation mandate to well-identified authority, a committee within this authority or an interagency unit. Central Banks have taken the most of the responsibility while an independent committee or the Ministry of Finance also took the whole or wide range of responsibilities. The typology of models is presented below:

Each of the presented models has its advantages and disadvantages, each of the model can be supported with additional mechanisms and safeguards. Nevertheless, it is quite clear that the central banks around the world are most frequently awarded the role of the main safeguard of financial stability.

▪ **Model 1:** So in the majority of the cases the *central bank*, in the face of its Board or Governor are the main institution responsible for making macro-prudential decisions. Czech Republic, Ireland, New Zealand, Armenia and Singapore are among countries with such a model. The central banks in these countries already concentrates the relevant supervisory and regulatory powers. In some countries, where

supervisory and regulatory authorities are established not inside the central bank, coordination mechanism is established. For example, in Portugal and Estonia the central bank is chairing the external committee. In Switzerland and Norway, central banks are authorized to issue recommendations to other bodies, responsible for the macro-prudential regulation, or at least information sharing agreement exists between them.

▪ **Model 2:** A separate *committee within the central bank* takes the main macro-prudential mandate. This approach used in Malaysia and the UK has created dedicated objectives and separated decision-making structures for monetary policy and macro-prudential policy. Being under the common roof of the central bank can be useful in countering the potential risks of dual mandates for the central bank (IMF, 2013a), although such risks will still exist. This can foster an open discussion of trade-offs that brings to bear a range of perspectives and helps discipline the powers assigned to the central bank (IMF-FSB-BIS, 2016).

▪ **Model 3:** An interagency *committee* is assigned the main macro-prudential mandate. Here central bank as well as other macroeconomic policy makers such as ministry of finance can be involved in the decision making board. In France, Germany, Mexico, and the United States such committees foster information sharing within main macroregulators, and brings in a more efficient discussion over systemic risks. This model with a stronger role of the ministry of finance can be useful to create political legitimacy and enable decision makers to consider policy choices in other fields, e.g. when cooperation of the fiscal authority is needed to mitigate systemic risk.

▪ **Model 4:** While not included here as separate models, some other jurisdictions such as Sweden central banks play far lesser role in the macro-prudential policy making. In Canada the mandate the mandate is distributed across several authorities. In Australia and Japan prudential authorities has the main macro-prudential mandate and this enables them to entirely concentrate on the singled out issues of financial stability and use prudential tools to achieve macroeconomic stability objectives.

Macro-prudential Policy Institutional Frameworks		Table 1
Central Bank		
Model 1 (Board or Governor)	Central Banks mandated	<i>Albania, Argentina, Armenia, Belgium, Cyprus, Czech Republic, Georgia, Hungary, Indonesia, Ireland, Israel, Kazakhstan, Lebanon, Lithuania, Malaysia, New Zealand, Oman, Philippines, Portugal, Qatar, Romania, Russia, Singapore, Slovakia and Switzerland.</i> Note1
	Additional council including other supervisors (e.g. financial market authorities or insurance supervisory authorities)	<i>Brazil, Estonia, Hong Kong (SAR), Italy, Netherlands, Portugal.</i>
Model 2 (Internal Committee)	Council is chaired by the central bank	<i>Algeria, Malaysia, Morocco, Saudi Arabia, South Africa, Thailand, and the UK.</i>
1In Norway and Switzerland, the central bank is mandated to issue recommendations on the countercyclical capital buffer (CCyB), with ultimate decisions on the buffer rate made by the Ministry of Finance and the Swiss Federal Council, respectively.		
Separate Committee		
Model 3	Council is chaired by the central bank	<i>Austria, Chile, France, Germany, Iceland, Korea, Mexico, Norway, Slovenia, Uruguay and the US.</i>
	Council is chaired by the government minister (usually the Minister of Finance)	<i>Denmark, India, Malta, Poland, Romania and Turkey.</i>
Other Models		
Model 4	Separate prudential authorities	<i>Japan and Australia</i>
	Distributed mandate	<i>Finland, Sweden and Canada</i>

The international practice shows a more inclination toward incorporating macro-prudential mandate into the responsibilities of central banks. However, a separate committee within the central bank would allow a better segregation of objectives and duties. While it is clearly evident that a coordination mechanism with the fiscal authorities, particularly, will be useful in sharing experience and finding the whole bunch off opportunities, provided by the macroprudential policy.

There are several practical ways of assigning the mandate for macro-prudential policy development and the power to use macro-prudential instruments into the legal system. Either a separate law on macro-prudential regulation and supervision is issued, or the existing (usually) law on financial/banking supervision is complemented with the new regulatory underpinnings.

On the practical side of the implementation, though usually depends on the interaction of the macroprudential policy with other economic policies.

3.2. Relationship between macro-prudential policy and other economic policies

Knowledge and experience about the (causal) effects of macro-prudential policies actions on the economy is limited. Macro-prudential policy making takes place under a high degree of uncertainty, both with regard to the triggers of policy actions and the effects of measures taken.

Besides macro-prudential policy, financial stability is also strongly affected by other economic policies, such as monetary and fiscal policies. Micro prudential economic policies also strongly influence the economic environment, nevertheless the positive effect of the whole system is under fierce debate. Each type of economic policy/regulation influences

both real and financial sectors and the financial system as a whole. Thus the inter-relation between the policies also determines the choice of macro-prudential policy tools and instruments. One of the main issues in the development and implementation economic policies is that the fact that sometimes the objectives of different economic policies diverge. Correspondingly, it is vital to establish an effective national and international institutional framework for the macro-prudential policy implementation and coordination of the policy with other economic policies. We would thus resolve successfully any possible conflicts that might arise (Nier et al., 2011). The text below provides an overview of the most important policies from the standpoint of macroeconomic policy.

3.3. Relationship between macro-prudential and monetary policy

Price stability of goods and services is the main objective of the monetary policy in most countries, as this is a precondition to prevent increase in unemployment, economic downturn, instability of interest rates and exchange rates, etc.

The objectives of monetary policy defined as above, by implementing monetary policy the corresponding institution that is usually a central bank is responsible for providing a stable macroeconomic environment, so as to ensure a stable economic growth. Meanwhile, the macro-prudential policy intends to contribute to the stability of the whole financial system to prevent and mitigate systemic risks, thus preventing downturn in the real economy.

The instabilities in the financial system usually result in macroeconomic costs, thus within the scope of national and international monetary policy the central banks and regulatory bodies besides the monetary policy tools and instruments use micro-prudential and macro-prudential analyses and instruments in practice, despite the absence of the formal basis. Besides the conventional and unconventional monetary policy the central banks and regulatory bodies have identified, monitored and analyzed systemic risks, tested the resistance of the system to stresses, assessed risks of different sectors of the economy.

Financial stability have usually been addressed by the central banks by providing financial infrastructure, supervising big financial institutions that are systematically important for the economy and serving as the lenders of last resort. The relationship between financial stability and the monetary policy has been oversimplified in the past. It has been assumed that if the government institutions incl. Central banks and other regulatory bodies ensure the existence of efficient and developed financial markets, stability of prices

would be sufficient in achieving the stability in the whole financial sector. The crisis showed that such views were too narrow (Galati and Moessner, 2011). Today, a sound and functional financial system is seen as a prerequisite for an effective monetary policy, while an effective monetary policy is a prerequisite for maintaining financial stability successfully (Borio and Shim, 2008).

With the recent developments in the regulatory infrastructure, the central banks and supervising bodies in a number of countries have been mandated with the corresponding role and responsibility. Maintaining the price stability has traditionally been the ultimate goal the central banks have been pursuing. In recent years central banks have become also directly responsible for achieving and maintaining also financial stability and mandated by the law to implement macro-prudential policies. In some occasions the price stability has been considered as part of a more general financial stability, but in the majority of cases the financial stability has been considered a phenomenon different from the price stability. Thus, the mandate for the implementation of macro-prudential policies in some, especially in some advanced countries have been given to not the central banks, but other regulatory institutions.

According to the IMF's analysis, central banks are directly or indirectly involved in MPP implementation in 89% of European countries, while this share exceeds 93% in other parts of the world (Brockmeijer, 2014).

It can not be expected that monetary policy alone can achieve financial stability. Particularly, the monetary policy is not usually directed to obtain stable interest rates and liquidity in the system as a whole. Neither is the monetary policy armed with tools to mitigate the effects of certain types of financial distortions or stabilize the vulnerabilities in specified sectors of the economy (see Figure 4). In small, open economies, an increase in interest rates, which may be necessary to contain inflationary pressures, may attract capital inflows and spur the accumulation of systemic risks and external imbalances (Lim. et. al, 2013). Similarly, macro-prudential policies can have side effects on the aggregate macroeconomic parameters that are primarily in the scope of interests of monetary policy. For example, limiting general credit growth intending to mitigate the financial instability may be too harmful for the economic activity level.

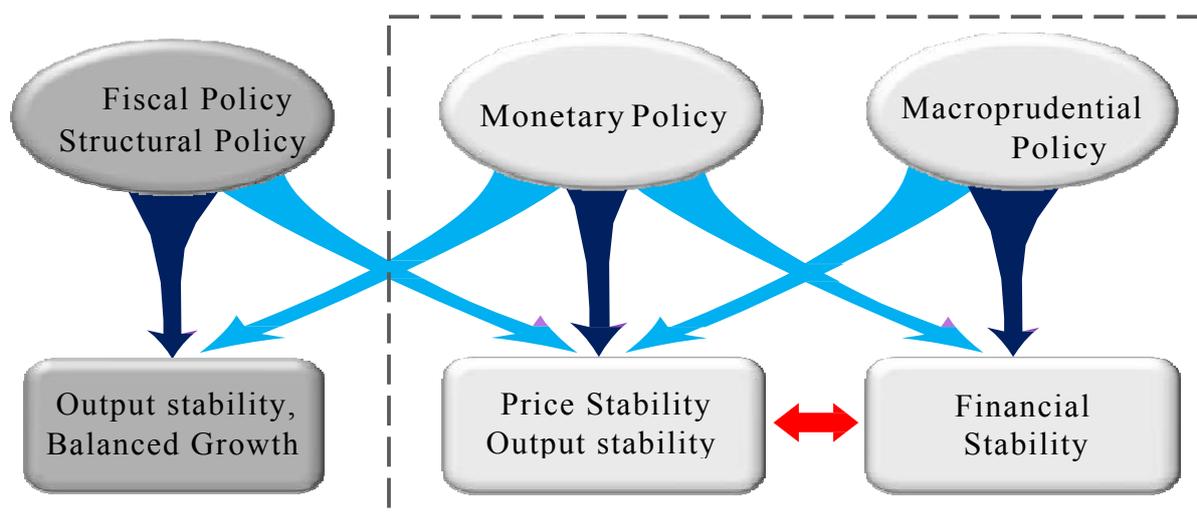


Figure 4. Interactions between economic policies

Monetary policy, however, does affect financial stability: by shaping ex-ante risk-taking incentives of individual agents, affecting leverage and short-term or foreign-currency borrowing or by affecting ex-post the tightness of borrowing constraints, possibly exacerbating asset price and related externalities and leverage cycles. Similarly, macroprudential policies can affect overall output by constraining borrowing and hence expenditures in one or more sectors.

Most research papers to date have come to a consensus, that side effects exist, however they do not have major implications on both policies, when the policies operate efficiently. In particular, most Dynamic Stochastic General Equilibrium (DSGE) models suggest that monetary policy not to change markedly when macro-prudential policies are also used, even when different types of shocks are considered. But the picture may change when either monetary or macro-prudential policies work imperfectly. In the real economy policies do not operate perfectly, and, especially macro-prudential policy can be the most prone to political pressures and time inconsistency issues. Thus, conduct of both policies better be coordinated and adjusted to consider the weaknesses in the other.

When the effective monetary stance gives rise to macroeconomic imbalances or excessively strong overall risk-taking incentives, national macroprudential policies may need to be used, especially when other policies are imperfectly coordinated internationally (e.g., as when foreign lenders are not constrained from lending to the country).

Conclusion

This research leaves the analyses of the macroprudential policy instruments and the efficiency of their use for further research making it

clear that current monetary, microprudential and fiscal regulatory framework needs to be

complemented firstly on the institutional level. By segregation of roles and objectives, clarifying the action plan, it points on the directions of establishing an effective institutional framework for the macro prudential policy implementation and coordination of the policy with other economic policies.

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