

THE SYSTEMIC RISK BUFFER – A CHALLENGING INSTRUMENT FOR ASSESSING SYSTEMIC RISK

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Abstract

The consequences of the global financial crisis have changed the orientation of the regulators from the micro towards the macroeconomic level, which encompasses the financial system as a whole, with its components as individual financial institutions. Needless to say that there is an inherent risk to which every participant to the market is exposed, the systemic risk. Therefore, this paper aims at presenting systemic risk in a clear manner, paying attention to and highlighting several approaches regarding systemic risk in literature and practice. Moreover, the mechanism of systemic risk transmission points out the channels through which systemic risk spreads and affects the real economy. There is also presented a new component of the macroprudential regulation, i.e. the systemic risk buffer (SRB), which is an important instrument to fight against systemic risk along with the other buffers stipulated in the Basel III standards. Hence, the subject dealt in this paper represents a realistic outlook upon the situation of the financial system at the moment, in its struggle to forecast a potential systemic threat and the instruments needed to counteract it in order to diminish its negative effects. In the last part of the paper there is presented evidence from a few countries that started to implement the SRB and G-SII or O-SII buffers or are phased for implementation to the extent of 2019. Tracking the vulnerabilities of the system as a whole, of each of its components and the transmission channels of systemic risk should be the first step to make before taking any measures against a monetary or financial phenomenon.

Keywords: *systemic risk, financial crisis, systemic risk buffer, Basel III, Systemically Important Financial Institutions*

JEL Classification : *G01, G21, G28*

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1. Introduction and the context of the study

One of the key lessons regarding policymaking from the global financial crisis has been the awareness of a more solid and better regulated approach with respect to the monetary policy and its fundamental objectives. The problems that generated from the epicentre of the US subprime mortgage market developed into a systemic crisis that involved financial institutions and markets around the world. Even though the interest in systemic risk analysis has been aroused by liberalization and financial innovation, there was needed a collapse of world-wide dimension in order to bring to attention the importance of systemic risk and the necessity of means of defence against it.

In the first part of the paper, ‘The concept of systemic risk’, I present a few clear and concise definitions of the systemic risk and what are the features of each approach, both quantitative and qualitative, micro and macroeconomic. The second part, ‘The sources and channels of transmission of systemic risk’ deal with externally and internally generated shocks that propagate across the whole system, and with the contagion phenomenon and its transmission channels, such as asset correlation, default and liquidity/illiquidity contagion.

Last but not least, the third part presents the systemic risk buffer among as an instrument that EU member states have at their disposal in order to address systemic risk and control its negative impact. The theoretical approach of the systemic risk buffer depicts the regulation assigned for it in the CRR and CRD IV and it is augmented by several examples from European states’ practice regarding the implementation of the macroprudential regulation provided by Basel III. This subject is of great importance for policymakers, specialists, researchers due to the phase-in arrangements of the Basel III, which is in process of implementation up to 2019 and especially to the timeline of SRB’s implementation, from 2016 for most of the countries willing to implement it.

2. The concept of systemic risk

On the one hand, the dimensions of systemic risk, both at the micro and macro level, are tackled from the theoretical and empirical point of view. On the other hand, measuring systemic risk is a more delicate problem, because it entails each financial's institution contribution to systemic risk.

The aftermath of the financial crisis that burst in 2007 also changes the orientation of the regulators in terms of prudential policy, having as a legal basis the ongoing Basel III Accord, with its wide range of requirements for the banks in order to strengthen the banking system's resilience to shocks. From this point of view, "macroprudential policy will be viewed as geared toward limiting systemic risk in order to minimize the costs of financial instability on the economy". [6] (Jin & Nadal de Simone, 2014)

Systemic risk can be defined in both qualitative and quantitative manner. Alternatively, systemic risk is viewed as endogenous and reflects the mutual interaction between the financial system and the real economy producing overextension during boom periods, which become the seed of subsequent downturns [4] (Borio et al., 2001). From a quantitative perspective, systemic risk refers to events in the financial system that result in high losses with a small probability of occurrence and potentially harm the real economy [5] (Drehmann & Tarashev, 2011).

Personally, I do not consider these definitions as throughgoing and, therefore, I highlight the forms taken by systemic risk in the banking sector and that encompass both definitions: a shock that affects the whole banking system and gets transmitted to the real economy or systematic risk; the outcome of an idiosyncratic shock to a financial institution that is propagated to the rest of the financial sector and ends up affecting the real economy and; third, as a slow build up of vulnerabilities in the banking system that may unravel in a disorderly manner and affect the real economy. [6] (Jin & Nadal de Simone, 2014)

Even though it is well known that systemic risk has an inherent meaning of wideness, it can also have a micro and macroeconomic dimension, as it follows: the micro-systemic risk connects the failure of an individual institution to the system as a whole (default of a SIFI), assessing the degree of 'pollution' of financial stability caused by negative externalities whereas the macro-systemic risk arises when the financial system becomes exposed to aggregate risk, that can result from the growth of correlated exposure. [9] (Smaga, 2014)

Nonetheless, experience points out that the disrapture of the whole financial system has been rarely generated by contagion or the failure of an individual institution, due to the imminence of its specific risks. In practice, the financial institutions did not take into account the business cycle in the economy, hastening for growth when they were actually promoting procyclical behaviour. During the boom cycle of the economy, the institutions tend to ignore risks, their risk weighted assets decrease while capital requirements loosen as well. During the depression cycle, the risk premia increases, the financial institutions deleverage due to higher risks, the lending process is blocked and, consequently, the economic downturn is exacerbated.

Irrespective of the micro or macro dimension of systemic risk, promoting sound and stable policies requires a solid regulation framework, that can identify as early as possible the build up of endogenous imbalances as well as of detecting in a timely manner the occurrence of exogenous shocks that after affecting banks' probabilities of default (PDs) get propagated across financial institutions and, eventually, to the real economy and back to the financial sector. [6] (Jin & Nadal de Simone, 2014)

Systemic risk can be characterized as a negative pecuniary externality exerted by financial institutions that are 'too interconnected-to-fail' and there are some legislative and regulatory attempts to control their contribution to it. The most important regulatory imperative refers to the buffers stated in the Basel III standards, which can be applied as a combined buffer as well, depending on the national authorities' decision in every country and the financial institution's systemic importance.

3. The sources and the transmission channels of systemic risk

3.1. The sources of systemic risk

There are several sources of systemic risk, widely accepted amongst researchers, regulators, specialists, including external shocks as natural disasters, but there are the internally generated shocks that need to be paid more attention to. The lending booms, that were not only undampened but backed by lax lending standards, the capital market shock that propagated through the derivatives are relevant examples of propagation of shocks across the markets, starting from an individual institution or a large number of institutions.

The Group of Ten (11 industrialized countries participating in the General Arrangements to Borrow, that meet annually to consult each other and cooperate on international financial matters: France, Germany, Belgium, Italy, Japan, the Netherlands, Sweden, the United Kingdom, the United States and Canada, with Switzerland playing a minor

role) acknowledged that, in some concentrated financial systems, the collapse of a single market or financial institution may itself constitute systemic disruption.[18]

There is enormous support for the idea that asset prices and the credit cycle have strong implications for systemic stability, and that there are limits to what inflation- focused monetary policy can achieve on its own.[3] (Blundell-Wignall&Roulet, 2014)

The main causes of systemic risk are financial institutions that engage in three broad activities: i) credit intermediation; ii) maturity transformation; and iii) leverage. These activities extend well beyond banks, to what has been referred to as the shadow banking system, including importantly: hedge funds, insurance companies, real estate investment trusts (REITS), exchange traded funds, OTC derivatives, etc.

The procyclical behaviour of the market participants has proved to be damaging for both the institutions engaged in risk-taking activities and the system that includes them. Under certain circumstances, investor exuberance can be self-propagating[19], because higher prices caused by risk-taking are not necessarily a sign of economic growth and a favourable trend for the real economy.

Another significant source of systemic risk is related to the leverage, that helps create both liquidity and systemic risk . ‘While higher bank leverage creates stronger creditor discipline at the individual bank level, it leads to greater systemic risk induced by contagious runs when creditors liquidate banks. This invites ex-post LOLR intervention to bail out “failing” banks from being liquidated by creditors and thereby to maintain the interim liquidity and continuity of banks.’[1] (Acharya, 2015)

Leverage plays a key role in many risk amplification processes; losses that less-leveraged entities could absorb may render more-leveraged ones unable to meet obligations to creditors.

3.2. The transmission channels of systemic risk

As far as the transmission channels of systemic risk are concerned, the most important takes the form of contagion. Whether we refer to default or liquidity contagion, each financial institution should not underestimate its exposures at another institution, because in case of one’s impairment, the other one will also suffer losses, due to chain reaction.

The linkages among the financial institutions bias the shock propagation, depending on the contribution of the individual institution triggering the shock and the multitude of interconnections in the financial system. These linkages form owing to operations among banks, under different circumstances and always prone to procyclicality. The procyclical behaviour can be summed up as the tendency of the institutions to follow the cycle and engage in excessive risk-taking activities during an expansion cycle, when competition is high.

In his paper, Hurd signalizes the features of 4 main transmission channels of systemic risk, including asset correlation, default contagion, liquidity contagion and market illiquidity and asset fire sales. [7](Hurd, 2015)

To begin with the asset correlation, this consists of banks’ tendency to build their portfolios with common assets, that expose them to correlated asset shocks. For instance, the evidence standing for this statement comes from the recent financial crisis, given the fact that in 2007, many large banks around the world ‘held significant positions in the US subprime mortgage market’. This channel of transmission of system risk impairs the health of the system, that becomes more vulnerable to other types of contagion. [7] (Hurd, 2015)

Second, the default contagion refers to interbank exposures, that can generate contagion in case one component is hit by a shock and the shock has the potential to propagate and cause a widespread one. Beyond the traditional interbank exposures, such as loans with maturities of one week or less and overnight loans, there is a wide range of interbank operations, including swaps, derivatives and other securitized assets. However, there was a widespread opinion before 2007 that securitization enhanced the ‘resilience of the financial system to shocks, by spreading the impact of defaults across a large number of diverse parties.’[2] (Adrian et al, 2008)

Before the crisis, there was a low volume of transactions on the interbank market and that has a major contribution to the global financial downturn. If a bank faces insolvency and it is not bailed out by government, its creditors, including other banks, will probably lose their exposure and experience severe losses given the debtor’s default.

Another channel for contagion is the liquidity contagion and can be characterized by the situation of a bank with insufficient liquid assets and access to short-term borrowing. Given their restrained access to other sources of financing their shortfall, they will head for ‘untapped sources of collateralized borrowing’ [7] (Hurd,2015). The collateralized borrowing is a market instrument used that has similar terms to a loan and it is an alternative for those who are not able to borrow in the interbank lending market.

Figure no.1 represents a simple model of contagion in the banking sector and it conveys the fact that the banks are all linked in terms of assets and liabilities and the impairment of one bank can trigger the domino effect upon the other banks in the system. For example, bank A has borrowed from bank B, bank B has borrowed from bank C and so on; if bank A defaults, then bank B’s probability of default increases as well, resulting in its incapacity of refunding its loan to bank C.

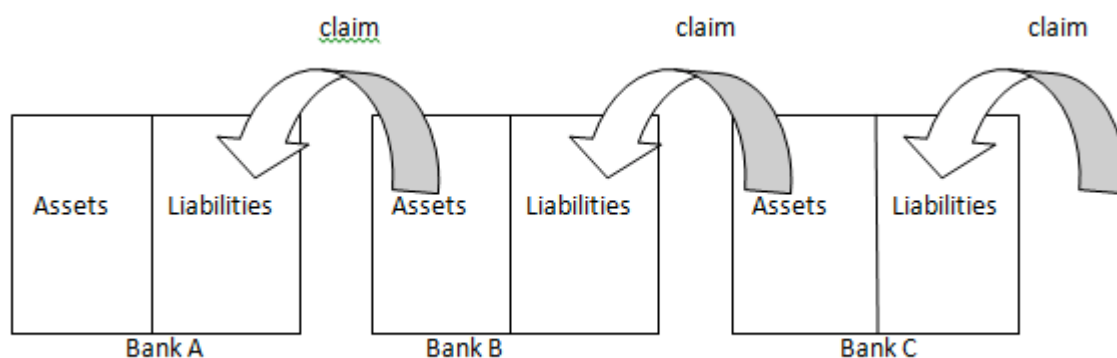


Figure no.1 : The representation of the domino model of contagion in the banking sector

Source: Adrian, T., Shin, H.S., *Liquidity and financial contagion*, 2008, p.2,

http://www.fednewyork.org/research/economists/adrian/Liquidity_Contagion_BdeF022008.pdf

Another transmission channel of systemic risk refers to market illiquidity and asset fire sales. In the context of the equity market, fire sales represent the trade of assets below their intrinsic value, due to the seller's distressed financial situation and the illiquidity of the market, because fire sales 'can occur only in illiquid markets' [8] (Kelly&LeRoy, 2004)

4. The Systemic Risk Buffer amongst Basel III requirements and its implementation in the EU member countries

4.1. The Systemic Risk Buffer – concept and application

The recent financial turmoil has renewed the debate on banking regulation, stressing out the necessity to consolidate the regulatory framework. In a highly interconnected system, when analysing the risk of a bank, the regulator should consider both its intrinsic risk and how its failure affects systemic stability.

One of shortcomings of the first two Basel Accords is that they approached the solvency of each institution independently. The recent crisis highlighted the additional 'systemic' risk that the failure of one large institution could cause the failure of one or more of its counterparties, which could trigger a chain reaction.[11]

Therefore, there are some measures supposed to enhance the capital quality, to raise the consistency and transparency of the core capital, in order to address systemic risk more effectively which can be referred to as buffers.

In Figure no.2 there are presented the levels of every buffer embedded in the Basel III requirements, i.e. the capital conservation buffer, the countercyclical capital buffer, the systemic risk buffer and the systemically important institution buffers, with their individual rates and their rules of application. Another important aspect that derives from systemic risk are the Systemically Important Financial Institutions (SIFI), which are subject to additional requirements, as presented in Figure no.2.

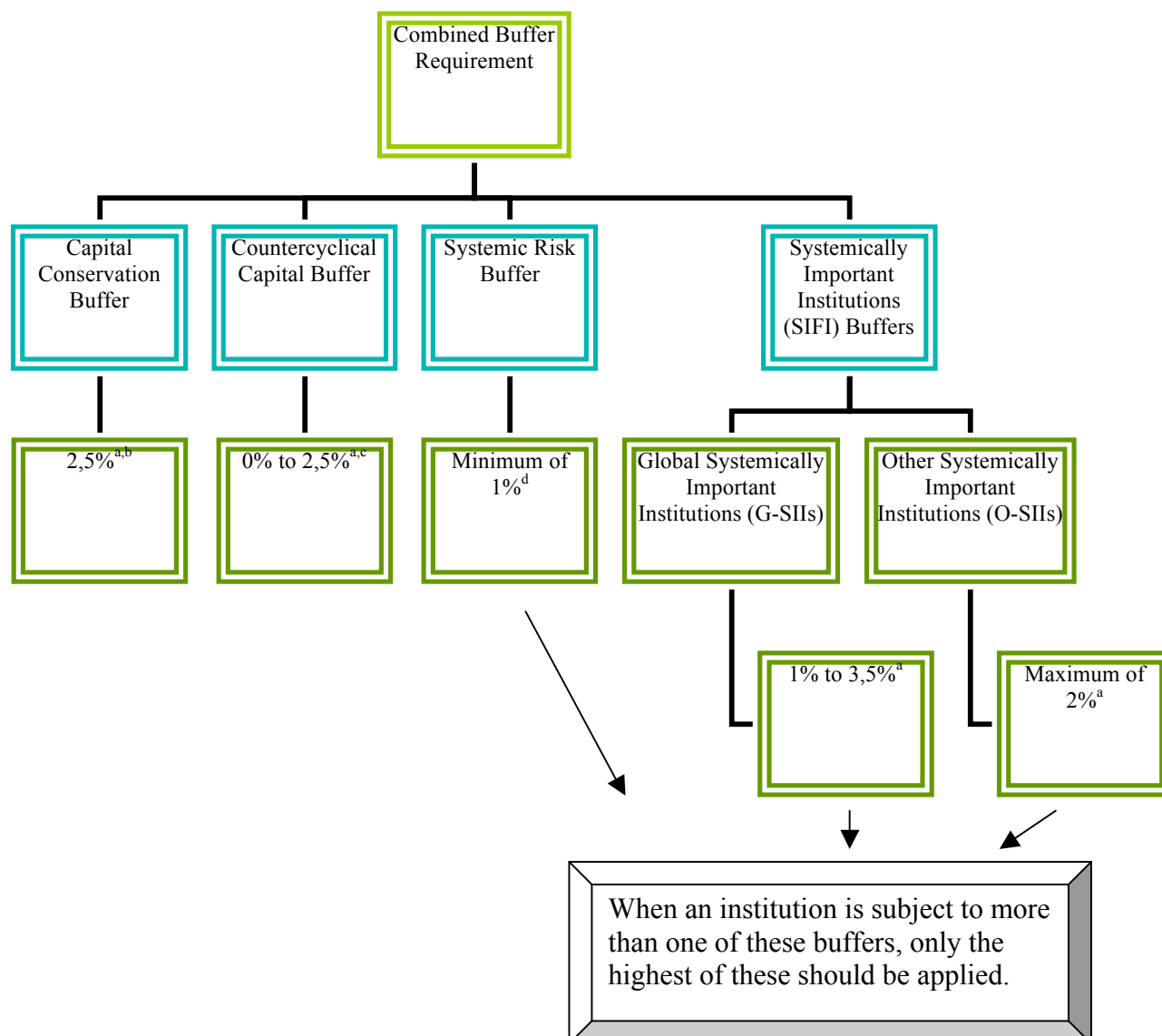
The Systemic risk buffer (SRB) is a macroprudential instrument which EU member states may implement in their law. It aims to address systemic risks of long-term, non-cyclical nature or risks not covered by the CRR. The SRB implies additional CET1 capital on all or a subset of exposures. CRD IV only requires that the application of the buffer does not entail disproportionate adverse effects on the whole financial system or on parts of it. There is no maximum limit for the SRB level, but notification to the Commission, the European Systemic Board (ESRB) and the EBA (European Banking Authority), and the approval procedure when needed, depend on the level of SRB rate (below 3%, from 3-5%, above 5%) and the scope of application (whether exposures in other member states and/or third countries are affected). [13] (OECD)

G-SIIs (global systemically important institutions) are from 1st of January 2016 subject to complementary requirements of CET1 capital ranging from 1% to 3,5% of risk-weighted assets, to cover the potential negative impact on the financial system, in case of distress. These institutions are categorized depending on their size, interconnectedness, substitutability of services or financial infrastructure and cross-border activity. [13] (OECD economic surveys – euro area 2014)

Besides the G-SIIs, there are other systemically important institutions (O-SII), which are also subject to capital surcharges and are classified accordingly taking into consideration 4 criteria: size; importance for the economy of the

EU or the relevant member states; significance of cross-border activities; interconnectedness of the institution or the group within the financial system. [17] (<https://www.eba.europa.eu/regulation-and-policy/single-rulebook/interactive-single-rulebook/-/interactive-single-rulebook/article-id/298>)

The buffer for the O-SIIs will be set at maximum 2% of CET1 and are not ‘legally binding’, unlike the regulatory standards for the G-SIIs buffer.



- a. As a percentage of the total exposure amount
- b. National authorities are entitled to increase this rate if necessary
- c. May be higher
- d. As a percentage of the risk-weighted exposure values of those risk exposures in respect of which the systemic risk buffer is imposed

Figure no.2 Capital buffers in Capital Requirements Directive IV(CRD IV)

Source: author’s projection based on the Deutsche Bundesbank Monthly Report, June 2013

4.2. Evidence of systemic risk buffer implementation from European countries

In Table. no.1 there is a clear picture of the requirements’ implementation phase in several countries, according to the study of Arion Banki from Iceland, in September 2014.

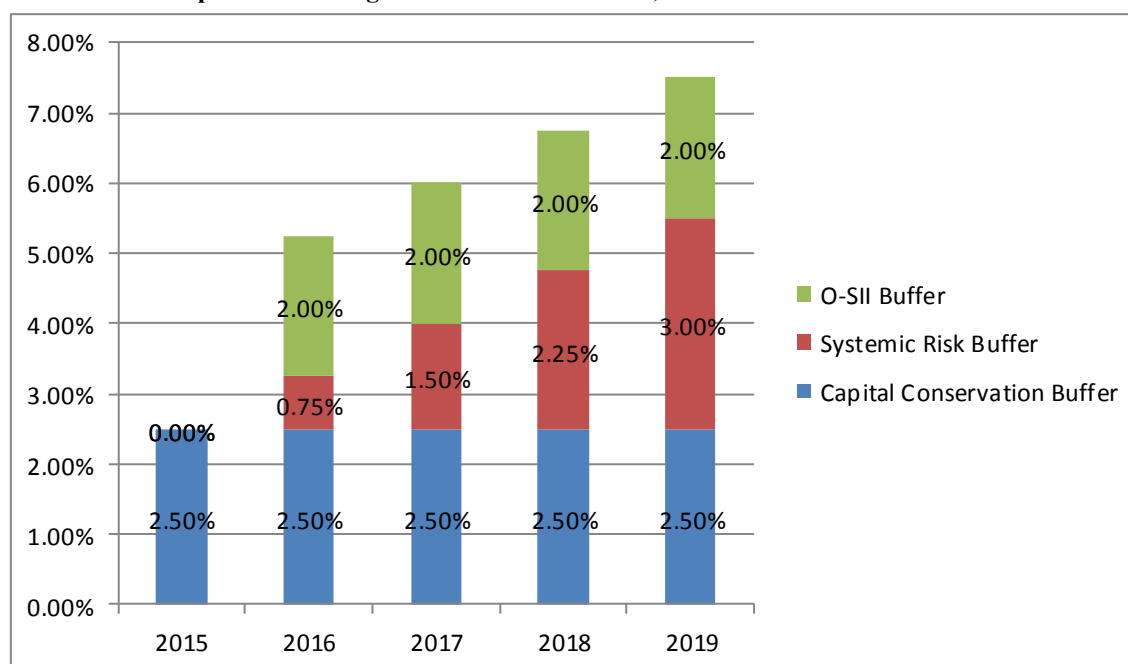
Table no. 1 : The stage of achievement of the buffers stated in CRD IV in EU member states in 2014

	Capital Conservation Buffer	Competent Authority	Countercyclical Capital Buffer	Competent Authority	Systemic Risk Buffer	Competent Authority	O-SIIs/G-SIIs
Iceland	Phased	Financial Supervisory Authority (FME)	0-2,5%	FME/Financial Stability Council	3%	FME	2% - FME
Austria	Phased	Financial Market Authority (FMA)	-	FMA	-	FMA	-
Belgium	Phased	National Bank of Belgium (NBB)	-	NBB	-	NBB	-
Croatia	No Phasing	National Bank	- (2015)	National Bank	1,5% to 3% (2014)	National Bank	-
Denmark	Phased	Financial Supervisory Authority (DFSA)	-	DFSA	3%(2014) 5%(2015)	DFSA	1%-3%
Estonia	No Phasing	Eesti Pank	-	Eesti Pank	2%(2014)	Eesti Pank	-
Germany	Phased	BaFin	-	FinMin/BaFin+ BundesBank	-	MinFin	-
Netherlands	Phased	De Nederlandsche Bank(DnB)	-	DnB	3%	DnB	1%
Norway	No Phasing	Financial Supervisory Authority (FSA)	1% from 2015	MinFin based on FSA input	3%(2014)	FSA	1% (2015) 2% (2016)
UK	Phased	Prudential Regulatory Authority (PRA)	-	Bank of England	Up to 3%	Her Majesty's Treasury	-

Source: author's projection based on the Survey of national implementations and the status in Iceland, Arion Banki, September 2014, http://sff.is/sites/default/files/capital_buffers_-_sept_2014_-_go.pdf

Moreover, in Chart no.1 there is presented the timeline of the systemic risk buffer, the O-SII buffer and the capital conservation buffer up to 2019, associated with the rates for each year of implementation, as the Financial Supervisory Authority (FME) in Iceland projected for the 2015-2019 horizon. Moreover, FME recommended a combined buffer value of 7,5% should be phased in 5 years, consisting of the buffers mentioned above; whilst CCB and O-SII buffer have constant values, the SRB gradually increases from 0% to 3% up to 2019.

Chart. no. 1 The phase-in arrangements for O-SII Buffer, SRB and CCB



Source: author's elaboration based on the data in the Survey of national implementations and the status in Iceland, Arion Banki, September 2014, http://sff.is/sites/default/files/capital_buffers_-_sept_2014_-go.pdf

The implementation of systemic buffer in UK

To begin with, the Prudential Regulation Authority (PRA) in UK made a few proposals regarding the implementation of the buffers, seen as 'add-ons' to the minimum capital requirements, as it follows:

[18] (<http://www.lexology.com/library/detail.aspx?g=51e73b3a-6511-4231-b8c5-64be7d4de4f1>)

- *The Countercyclical capital buffer (CCB)* must be held in the form of common equity to provide a 'buffer' of capital that can absorb losses during future periods of stress. The CCB requires implementation from 1 January 2016 (at a rate of 0-2.5% of RWAs, depending on national buffer rates, but the PRA plans to set no cap on this buffer for UK banks).
- *Capital conservation buffer* starts at a rate of 0.625% of risk-weighted assets (RWAs) from 1 January 2016, increasing to 2.5% by 1 January 2019.
- *G-SII/G-SIFI/G-SIB buffer* are additional capital buffers required to be held by "global systemically important firms/banks/institutions" (known as G-SIIs, G-SIBs or G-SIFIs). National regulators (i.e. the PRA in the UK) must set this buffer, which will be phased-in from 2016-2019.
- *O-SII buffer*: the PRA will be responsible for identifying "other systemically important institutions" (O-SIIs) from 1 January 2016. The PRA will consult on and set out its policy for identifying O-SIIs in 2015, but the authorities have decided that there are no O-SII subject to additional buffers.
- *Systemic risk buffer (SRB)*: this is a CRD IV-specific buffer (not referenced in Basel III) which is a temporary buffer, referred to in the UK as a "sectoral capital buffer" (SCB). The UK has been applying the SRB/SCB (of up to 3% of Common Equity Tier 1) from 1 January 2015 only in circumstances in which excess credit growth needs preventing - such as a "bubble" arising in the housing market.

Together, the countercyclical capital buffer, capital conservation buffer, G-SII buffer and the systemic risk buffer (if applicable) are to be combined and are referred to by the PRA as a banks' "combined buffer" (not all Member States will necessarily do this, so European banks will not all have to meet the same requirement(s) at the same time). [18]

The implementation of systemic risk buffer in Denmark

In Denmark, according to the 'Notification of the intended use of a systemic risk buffer', The systemic risk buffer is set within a range of 1,0 –3,0 per cent of RWA. The applicable buffer level for an institution depends on the

subcategory of systemic risk. There are five subcategories depending on the calculated level of systemic importance and the systemic importance is calculated as an average of the following factors:[21]

- The institution's total assets as a percentage of the total assets of Danish banks, mortgage credit institutions and investment companies;
- The institution's lending in Denmark as a percentage of the total lending by Danish banks and mortgage credit institutions in Denmark;
- The deposits held by the institution in Denmark as a percentage of the total deposits held by Danish banks in Denmark.

At the same time, the institutions covered by the systemic risk buffer are institutions categorized as O-SIIs, relying on the following criteria :

- 1. The institution's total assets are larger than 6,5 percent of domestic GDP,
- 2. The institution's Lending in Denmark is larger than 5 percent of the total lending by Danish banks and mortgage credit institutions in Denmark,
- 3. The Deposits held by the institution in Denmark are larger than 5 percent of the total deposits held by Danish banks in Denmark.

To sum up, Denmark's banking sector can be characterized as concentrated, with few very large and medium sized institutions, that can cause significant distress for the real economy. [20]

The implementation of systemic risk buffer in Estonia

From 1 August 2014 a 2% systemic risk buffer requirement applies for all banks and banking groups licensed in Estonia. The requirement is calculated in relation to total risk exposure, and credit institutions must meet it from common equity tier 1. [15]

There are two main reasons for setting a systemic risk buffer:

- the Estonian economy is vulnerable because it is small and open. As Estonia is undergoing economic convergence and still has a large need for investment, it is probable that the economy will continue to fluctuate more than those of many other European countries. Although the financial buffers of companies and households have increased, they are still relatively modest and are not necessarily sufficient to cope with unexpected external or domestic shocks;
- the Estonian financial system is vulnerable because of the importance of the banking sector in financing the economy and the high degree of concentration in banking. A large majority of the banking sector is exposed to the risks from the same group of countries and economic sectors.

The implementation of systemic risk buffer in Austria

In Austria, [16] regulators imposed the buffer on the country's biggest banks so as to preserve financial stability and protect the banks from riskful operations in eastern Europe. For instance, UniCredit Bank Austria AG, Raiffeisen Bank International AG and Erste Group Bank AG must have buffers of common equity Tier 1 capital equivalent to as much as three per cent of their risk-weighted assets.

The buffer would be introduced in two steps- two per cent by mid-2016 and three per cent a year later.

5. Conclusions

This paper represents an outlook on the systemic risk both as a concept and reality, being a matter of interest especially for policymakers, whose efforts converge to mitigating the systemic risk and procyclicality. The propagation of shocks across the whole financial system could generate its collapse through the transmission channels of systemic risk, as discussed above.

Therefore, the new framework of the macroprudential regulation is still highly debated and in course of implementation, and the tools for diminishing systemic risk are the buffers provided by the Basel III standards. Besides the well known capital conservation buffer and countercyclical capital buffer, there are several buffers which address not only to any financial institutions, but also to systemically important institutions, whose default would be a major shock by itself; additionally, the systemic risk buffer's implementation is subject to overheated debates at the moment.

However, there is no evidence that the 1-3% risk weighting will provide an adequate capital cushion to contain the systemic fallout [11] and a future research on the evolution of the buffers' implementation in the EU states would be of great interest.

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