**BABEŞ-BOLYAI UNIVERSITY**

**FACULTY OF ECONOMICS AND BUSINESS ADMINISTRATION**

**CLUJ-NAPOCA**

**DOCTORAL SCHOOL**

# PH. D. Thesis

## Summary

# Macroprudential banking supervision
## *- objectives, means and specific techniques*

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**Key words:** macroprudential banking supervision, banking regulation, systemic risk, financial stability, macroprudential tools

## Introduction

Banking has a long history, being the lifeblood of any modern economy. About 40-50 years ago banking was much simpler than today. The traditional banking model assumed the taking of the companies and individuals savings by banks and allocated it to other companies and individuals who needed loans for financing different acquisitions and investment projects.

During the period between the Great Depression and the recent financial crisis, there were many changes in the banking activity and the regulations and supervision had an important role in the trend of the banking. Deregulation has led to the development of financial imbalances and banking regulations have been adopted most often in response to inappropriate developments in banking.

The wrenching financial crisis from 1933, when in the United States of America more than 9,000 banks went to bankruptcy, led to the adoption of the famous Glass Steagall Act which provided the separation of investment banking from the commercial one in order to limit the risks to which banks are exposed.

Separation has enabled the operation of the banks in terms of stability until the 1970s, after which it began major changes in banks' activities, changes that were not correlated with corresponding adjustments of the banking supervision.

Deregulation has continued, being considered that funds had to be allocated to those who were able to use them with a maximum efficiency, no matter of the geographic region. Central banks have dropped gradually to excessive control of the interest rates and the credit growth, allowing the combination of banking activities with the insurance and capital market investments and allowing also the commercial banks to own non-banking institutions that provided financial services.

Wellink believes that regulation and banking supervision in its attempt to limit bank imbalances has some disadvantages such as bearing the additional cost of the commercial banks (such as the imposition of a minimum capital reserves higher than the level considered sufficient by commercial banks), increasing the bureaucracy because commercial banks must complete multiple forms and must send the surveillance authority more supervisory data, the submission of additional effort to meet the prudential requirements which could have negative effects, such as limiting access to markets that cause damage to the competitive environment, limiting financial innovations due to the need to respect the strict prudential requirements (Wellink, 2009).

We agree with these statements, but as we will see in the thesis, the global financial system exploded during the 2000s, and deregulation and supervisory deficiencies have led to the explosion of financial innovation, integration of the markets and investors in a global market.

This development has been done with the price of not understanding the risks, the markets, the interconnected products, particularly complex, also not understanding the activities of the financial conglomerates due to their complexity and the price of financings based on the market innovations, which led to bank disintermediation.

Macroprudential supervision is intended to reduce the negative externalities of banking on the economy. Permission of the banking developments characterized by a high appetite for risk in order to obtain high profits at the expense of bank stability proves the existence of an ineffective banking supervision. The result of inadequate banking supervision is translated into enormous social and economic costs caused by the recent financial crisis and also into that the increasing volume and complexity of the global financial system have not led to the proportional development of the world's economy.

The financial crisis of 2007-2008 started as a liquidity crisis. Then several countries have begun to deal with the sovereign debt crisis (Spain and Greece). But the effects of the bank imbalances, developed over time do not stop there. Proof is the banking crisis in Cyprus where at a level of GDP by 17 billion registered in 2011 amounted to bank deposits of 79 billion euros worth. The deposits exceed of 4 times the country's GDP, a large portion of these being made up of non-residents due to tax advantages. The situation in Cyprus is a fine example of inadequate banking supervision, about a disagreement between banking situation and the macroeconomic situation of a country.

First official steps in a macro level supervision have been made at European level through the setting up and operation from January 1, 2011 of the European System of Financial Supervisors under the two pillars: microprudential supervision and macroprudential supervision.

Another step towards it tends at EU level is the establishment of the Banking Union, which through its four components, the single rulebook, single supervisory mechanism, common deposit protection and a single bank resolution mechanisms will have as a whole, significant effects on the stability of the banking system.

Studies and research regarding the macroprudential supervision abound. However we believe that this task is in the training course. There is a need to clarify certain aspects of the definition and formulation of the objectives of this activity, to those institutions that are entrusted with this task as well as the indicators and instruments that should be used.

***The motivation of choosing this research topic*** results from the newness and also the uncertainty of this macroprudential supervision in banking, as well as from the importance of this activity in order to ensure the stability of the banking system in particular and the financial system as a whole. On the one hand, systemic risk management requires orientation of supervision to monitor the situation and evolution of national banking systems as a whole combined with the monitoring of monetary policies and the microprudential supervision of banks. On the other hand, the real system interacts heavily with the banking system which generates repercussions on the banking and financial stability.

***The purpose of this study*** is to analyze and deepen theoretical and methodological aspects of macroprudential supervision of banking systems in order to ensure financial stability. Given the newness of this domain, we wanted to examine first of all the structural and institutional problems in performing the macroprudential supervision. Secondly, we wanted to identify and analyze the practices of macroprudential supervision of banks at a national and international level including the means used for this purpose at a global level. Thirdly, the theoretical and methodological aspects are complemented by empirical research which highlights the implications of macroeconomic evolutions on the banking systems. The ultimate goal of the research is geared toward highlighting the need for implementation at a national and European level of a framework for efficient and effective macroprudential supervision.

*The specific objectives* set for the achievement of this research purpose are:

- the analysis of the definitions of the basic concepts related to macroprudential supervision and also the differences between them;
- the identification of the dimensions and the sources of bank systemic risk;
- the analysis of how the banking activity has changed over time, and also the effects of these changes on the banks and on national economies;
- the analysis of the typology and characteristics of the financial crises and their consequences on the economic and financial stability;
- the analysis and identification of the macroprudential supervision objectives;
- to identify and to analyze the networking of the macroprudential policy with other policies;
- to identify the problems related to the development of institutions that should be responsible for macroprudential supervision;
- to analyze and evaluate the European and international institutions' role in ensuring financial stability, including those from Romania;

- to study the typology and the role of the macroprudential instruments in ensuring the financial stability;
- to identify the risk signals and the banking vulnerabilities in countries from East and Central Europe;
- to research how several factors of the real economy and a series of macroprudential bank indicators interact.

***Research methodology;*** The theoretical and scientific support of the research can be found in the literature published by researchers and specialists, Romanians and foreigners, in the banking and finance area, more specific in the professional works published by researchers of big organisms and financial institutions involved in monitoring systemic risks and in ensuring the financial stability, among which we name: the works published by the IMF, the World Bank, the Bank for International Settlements and the committees which operate within including Basel Committee on Banking Supervision, works published by central banks and financial, banking supervisory authorities in the world, including those published by the European Central Bank. Also, in the aim of research, in the first three chapters, we used the main research methods such as the analysis and synthesis methods, induction, deduction, analogy, after which in the fourth chapter in order to build the empirical study, were added as research methods the factorial and comparative analysis methods, statistical and mathematical methods. In order to achieve the econometric study, there were used macroprudential banking data and macroeconomic data compiled from two sources: the World Bank and Eurostat. The empirical analysis was made with the panel regression technique with fixed effects using the method of the least squares.

*The work is structured in four chapters*, an introductory part and a part dedicated to the conclusions drawn from the research.

## Summary of Chapter 1

### MACROPRUDENTIAL BANKING SUPERVISION – CURRENT THEORETICAL APPROACHES

In the first chapter we analyzed the basic terminology used in banking supervision. In the economic literature, particularly those written in English, the terms *"banking regulation"* and *"banking supervision"* are sometimes overlapped or used for the same purpose.

Etymologically, the English term "regulation" is an extension of the Latin word *rule* whose translation is "rules". In every country, governments shall develop rules that define what officially a bank is, what kind of operations can or cannot carry, how and where banks may or may not conduct their activity, what are the reciprocal rights and obligations of the banks and of the regulatory authorities (Barth, Caprio and Levine 2006).

*Banking regulation* is a set of rules of conduct in banking, issued by state authorities, compliance with which can be ensured by compulsion. *Banking supervision* is defined as the action to carefully observe, guard, with authority the respecting of all rules in banking, as well as the results of this action. Banking regulation may be classified according to the reasoning of the regulatory banking in social regulatory and economic regulatory. The *economic regulations* are in fact instruments of restraining the power tools on the market. *Social regulation,* the so-called safety regulation and of the banking soundness, in a general sense relates to consumer protection (Majone 1996).

Another approach presented by Llewellyn (1999a) identifies two general types of banking regulations: the prudential regulation and the business conduct regulation. *Prudential regulation* is aimed to ensure the safety and soundness of the banking system, focusing on both financial stability and protection of the depositors. The *conduct of business regulation* aims to establish the rules of good practice and business management of banks in relation to their customers. There is also a third category of regulations, namely *protective regulations* (Cranston) which sets out a policy framework for intervention and rescue of banks, methods of resolution in a more or less explicit way, especially in times of crisis.

In English, the prudential regulation, in a broad sense refers to the proposal of standards or substantial norms, to their monitoring and implementation. In a narrow sense, prudential regulation refers only to the substantial rules, while supervision refers to the effective monitoring and implementation of prudential standards (Dragomir, 2010).

Macroprudential supervision has an overwhelming role in ensuring financial stability. Financial stability does not have a universally accepted definition; however, Borio and Drehmann

(2009b) in a study published by the Bank for International Settlements examine the ways of defining financial stability, identifying three common elements of these definitions:

- first of all, these definitions refer to the financial system as a whole at the expense of individual institutions;
- secondly, they don't take into consideration the financial system in isolation, but they measure the benefits and economic costs (economic well-being) in terms of "real economy" (economic activity);
- and thirdly, the definitions refer explicitly to the financial instability, the opposite of stability, what is more concrete and more observable.

Also, there is no universally accepted definition of systemic risk. In O. de Bandt and P. Hartmann ‘s (2000) opinion, systemic risk in a general sense, is a phenomenon of the economy and the financial system. The two researchers define the systemic risk based on three concepts: the systemic event, the systemic shock and the propagation mechanism. Systemic risk has a structural dimension (how it is distributed in the financial system at a time) and a temporal dimension (the way the risk evolves in time).

The Economic literature contains a number of studies related to the sources of systemic risk, with two main sources: the major and large scale shocks, the accumulation of large scale imbalances, such as boom loans. Among those who have studied the sources of systemic risk are Allen and Gale (1998, 2000, 2004), Cassola, et al (2008), De Bandt, Hartmann and Peydro (2012), Diamond and Rajan (2005), Duffie and Lando (2001), Gorton (1988), Hartmann, Straetmans and De Vries (2004), h. p. Minsky (1977, 1982), Tirole (2008).

Taking into consideration the fact that the banking systems are part of a larger system, more precisely the financial system, we analyzed the typology of financial supervisory activities, which can be: sectorial, functional, integrated and depending on the objectives.

## Summary of Chapter 2

### OBJECTIVES AND POLICIES OF THE MACROPRUDENTIAL BANKING SUPERVISION

In the second chapter, we analyzed the global evolution of the banking activity by highlighting the transformations occurred in the activities of banks, in the bank products and in the bank financing mode. The purpose of this analysis is to identify the consequences of these evolutions, which in our opinion are due to inadequate banking supervision and regulation.

According to data published by the IMF in the Global Financial Stability Report from October 2012, it was noticed an increase in the nominal value of the size of the global financial system, but at the same time a decrease as share in the total world economy. This denotes that the increase in the volume of the global financial system, as general and of the volume of the financial innovations as particular, actually did not lead to a proportional increase of the world's economic development.

Thus, the nonbanking intermediation increased a lot, aspect which we can't say that it would be necessarily bad, just that there are a number of deficiencies of market-based finance which had to be removed. These deficiencies are:

- risks are not well understood or are not clear, in particular the risks related to the interconnections between products and between markets;
- non-disclosure of data or publishing a relatively small volume of data related to the operations made out by non-banking institutions;
- reduced capitalization of non-banking institutions providing funding;
- the great complexity of the financial intermediaries.

Considering the emergence of financial and banking crisis as one of the causes that gave rise to the macroprudential supervision, there were examined and identified three types of financial crises: the currency crisis, the banking crisis and the sovereign debt crisis. The economic and social implications of these are enormous. Theoretical and empirical studies (e.g., Bordo, et al (2001), Laeven and Valencia (2008), Kaminsky and Reinhart (1999)) have shown that the boundaries between different types of financial crisis are difficult to perform, they co-exist under the form of twin crises under the form of combined currency crises - banking crisis (crises in Asia – 1997, Russia – 1998, Turkey – 2000), currency crisis-fiscal crisis (Brazil – 1999), the currency crisis-the crisis of foreign debt (Mexico-1994, Argentina-2001), or even the triple crisis in the form of a combination of the three types of crises (banking, foreign exchange and debts).

Financial crises are manifested at the level of the financial institutions, which can be banks, insurance companies, financial brokerage firms or financial conglomerates. However, the banks have a starring role in the triggering, transmission and resolving of the financial crises.

Knowing in depth the defining elements of the macroprudential supervision, identifying the effects of an inadequate banking supervision over the banking system and the real economy, the objectives of the macroprudential supervision in comparison to those of the microprudential supervision can be outlined as follows:

**Table nr. 1 Specific objectives of macroprudential supervision versus microprudential supervision**

| | **Macroprudential supervision** | **Microprudential supervision** |
|---|---|---|
| **Proximate objective** | limit financial system-wide distress | limit distress of individual institutions |
| **Ultimate objective** | avoid output (GDP) costs linked to financial instability | consumer (investor/depositor) protection |
| **Characterisation of risk** | Seen as dependent on collective behaviour ("endogenous") | Seen as independent of individual agents' behaviour ("exogenous") |
| **Correlations and common exposures across institutions** | important | irrelevant |
| **Calibration of prudential controls** | in terms of system-wide risk; top-down | in terms of risks of individual institutions; bottom-up |
| **Focus of supervision** | (A) A greater weight given to banks and larger and more complex institutions;<br>(B) Market supervision;<br>(C) Countercyclical orientation | Protection of individual institutions |

Source: Crockett (2000), Borio (2003) and Chul (2006)

Until the outbreak of the recent financial crisis, there were a few solutions that assumed the insurance of the financial stability as a whole, namely:

- it was believed that the financial system as a whole could be managed by combining the monetary policy with microprudential regulation and supervision;
- it takes an independent instrument for achieving the objectives of each policy;
- the supervision of each component of the financial system is sufficient to monitor the entire system.

In reality, the macroprudential policy interacts with the two objectives: monetary policy and microprudential supervision. This interaction is necessary because the objective of the monetary policy is the price stability, on the basis of which it is ensured the economic development, and microprudential supervision ensures the stability of each institution. Between these two policies can be developed certain imbalances, which cannot be observed, nor properly administered neither by the monetary policy, nor by the microprudential supervision. These imbalances are the target of the macroprudential supervision to which the other two policies should interact.

## Summary of Chapter 3

### MODELS AND MEANS OF ACHIEVEMENT OF THE MACROPRUDENTIAL BANKING SUPERVISION IN THE EUROPEAN CONTEXT

In chapter three we have outlined the necessary elements for macroprudential supervision based on the maximum efficiency and effectiveness. The elaboration of a uniform framework for macroprudential supervision is the main concern of many international financial institutions and authorities, such as: the International Monetary Fund, The Financial Stability Board, The Bank for International Settlements (BIS). These institutions are concerned with the development of a macroprudential supervision framework because the financial stability and the set of policies that contribute to maintaining financial stability are the main components in ensuring the internal and external stability for the member countries of the financial institutions. The macroprudential policy is complementary to the microprudential policy and it interacts with the monetary policy, aspect which has an impact on the systemic financial stability. The fiscal policy also has influence on the financial stability, but its purpose is to contribute to the macroeconomic stabilization, to influence the allocation of the resources and the redistribution of income.

Trying to outline the institutional framework for the macroprudential supervision we have identified some problems concerning the: mandate, powers and instruments, accountability and transparency of the mechanisms, composition of the decision-making organism and mechanisms for coordination of the national policies. Thus, the macroprudential mandate must be expressed clearly and explicitly. Formal mandate can improve the clarity in decision-making, it can eliminate the passivity and paralysis in decision-making, especially when the opinions differ. The institution tasked with macroprudential supervision must have the competence to collect data and make decisions, as well as the competence to use and adjust itself the macroprudential instruments. It is particularly important to establish the organism responsible for decision-making, and the transparency and clarity in communicating the macroprudential policy decisions are important elements of responsibility. It requires an exact establishment of the macroprudential policy management organism, in which the central banks play an important role. Also, coherence is needed in the implementation of policies which relate to the reduction of systemic risk, especially due to its serious consequences.

In a study conducted by the IMF, Erlend et al (2011) observed seven types of institutional arrangements models for the implementation of the macroprudential policy. These models are different depending on the degree of institutional integration of the central bank and the supervisory authorities, on the holder of the macroprudential supervision policy mandate, on the role of the

minister of finance or the treasury, on the institutional separation between policy decision-making and control of the instruments, on the existence of a separate organism for coordination between different policies.

In the financial system of the European Union the macroprudential supervision is allocated to the European Systemic Risk Board. Also at European level in order to strengthen the Economic and Monetary Union and also as a remedy to the nowadays crisis, the European Commission proposed in September 2012 the formation of the Bank Union that would contain four pillars: the single rulebook, single supervisory mechanism, common deposit protection and a single bank resolution mechanisms. In Romania the financial supervision is made by the National Financial Stability Committee starting with 31'st of July 2007.

The necessary means for macroprudential supervision are:

- valid statistical data (from the banking system and the macroeconomic environment);
- indicators and quantitative methods for identifying, measuring, monitoring and forecasting the systemic risk;
- instruments used for reducing the macroprudential risks (macroprudential policy instruments).

It was found the need for improving the quality of information and data collection structures in order to help authorities for a better understanding of the interconnections between financial system and common exposures to shocks which can lead to systemic risks and understanding the links between the financial system and real economy.

Macroprudential supervision supposes the existence of some indicators that can be used for analyzing the nowadays safety and stability of the financial system. At international level, researchers have not yet reached a consensus on a set of indicators that would be necessary and sufficient for monitoring the financial system as a whole. The economic literature contains a wide range of theories regarding the possibilities of measuring the "financial in/stability". However, the empirical analyses are limited in terms of the effectiveness of the used macroprudential instruments, which makes it difficult to design a single framework of these instruments. However, these indicators can be classified into four groups (Borio & Drehmann, 2009b):

a) Indicators of Financial Distress;
b) Early Warning Indicators;
c) Vector Autoregression Models – VARs;
d) Multiple-module measures: macro stress tests.

Other ways for ensuring the macroprudential supervision are made through macroprudential tools. Macroprudential policy tools can be defined broadly as a set of measures used for monitoring, prevention and treatment of systemic risks and also to lower the costs of systemic crises (Delgado and Meza Dec. 2011).

Studies regarding the macroprudential tools were undertaken by several authors such as: Galati and Moessner (2011), Lim, et al (October 2011), Borio (2010), Crockett (2000), Borio Drehmann, et al (2010), Elsinger, Lehar and Summer (2006), Goodhart and Segoviano (2009). The approaches for the macroprudential instruments' classification are different, not being a standard taxonomy.

The macroprudential tools can be divided into two categories:

1) tools used to reduce threats that result from the excessive growth of the credit;
2) tools used to reduce the structural vulnerabilities and the key mechanisms of amplification of the systemic risk.

The main tools used globally are summarized in the table below:

**Table nr. 2 Macroprudential policy tools applied in the banking supervision**

| | **Tools to address threats from excessive credit expansion** | **Tools to address structural vulnerabilities and key amplification mechanisms of systemic risk** |
|---|---|---|
| Capital-related | Time-varying/countercyclical capital requirements or risk weights<br>Time-varying/dynamic provisions | Additional loss absorbency related to systemic importance<br>Levy on non-core funding |
| Credit-related | Ceilings on credit or credit growth<br>Time-varying caps on loan-to-value (LTV) or debt service-to-income (DTI) ratios<br>Dynamic haircut-setting and margining | Limits on counterparty concentration risk |
| Liquidity-related | Minimum reserve requirements<br>Time-varying minimum margin requirements | Caps on foreign currency lending<br>Limits on net open currency positions or mismatches<br>Limits on maturity mismatches |
| Structural | | Resolution requirements for SIFIs<br>Disclosure policy for markets and institutions targeting systemic risk |

Source: (FSB, IMF, BIS October 2011) and(Weistroffer 2012)

## Summary of Chapter 4

**USING RELEVANT INDICATORS FOR MACROPRUDENTIAL SUPERVISION OF THE CENTRAL AND EASTERN EUROPEAN BANKING SYSTEMS. AN EMPIRICAL STUDY**

In chapter four we underlined, based on econometric methods, the need for the existence of an effective macroprudential supervision activity. The purpose of this study is to identify the banking imbalances registred by the banking systems of 10 countries in Central and Eastern Europe, members of the European Union (Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia). At the same time, it wished to investigate the influence of different macroeconomic variables on the main macroprudential banking indicators, more precisely the relationship between the banking system and the real economy. Also we wanted to examine the trends in the economies and banking systems of the analyzed countries, which represents one of the objectives of the macroprudential supervision.

The data contained in the study are related to the period 2000-2010, being compiled from three databases: two databases of the World Bank (World Development Indicators - WDI and Global Financial Development - GFD) and Eurostat. In the study are included 18 indicators, like: macroprudential banking indicators, macroeconomics, monetary, market and structural indicators.

**Table nr. 3 Indicators used in the empirical study**

| Indicator | Type | Source | Symbol |
|---|---|---|---|
| Bank capital to assets ratio (%) | Financial Soundness Indicator | WDI | capa |
| Bank liquid reserves to bank assets ratio (%) | Financial Soundness Indicator | WDI | liqu |
| Bank nonperforming loans to total gross loans (%) | Financial Soundness Indicator | WDI | nper |
| Return on assets – ROA (%) | Financial Soundness Indicator | GFD | roa |
| Return on equity – ROE (%) | Financial Soundness Indicator | GFD | roe |
| GDP per capita (constant 2000 US$) | Macroeconomic | WDI | gdpc |
| Inflation, GDP deflator (annual %) | Macroeconomic | WDI | gdpd |
| GDP growth (annual %) | Macroeconomic | WDI | gdpg |
| Government deficit/surplus, debt and associated data (%) | Macroeconomic | Eurostat | gov |
| Money and quasi money (M2) to total reserves ratio | Monetary | WDI | mqm |
| Domestic credit to private sector (% of GDP) | Macroeconomic | WDI | prvt |

| Indicator | Type | Source | Symbol |
|---|---|---|---|
| Trade (% of GDP) | Macroeconomic | WDI | trd |
| Unemployment rate, annual average (%) | Macroeconomic | Eurostat | unr |
| Interest rate spread (lending rate minus deposit rate, %) | Market | WDI | inrs |
| Nominal Effective Exchange Rate - 27 trading partners (%) | Market | Eurostat | neer |
| Real interest rate (%) | Market | WDI | rinr |
| Risk premium on lending (lending rate minus treasury bill rate, %) | Market | WDI | risk |
| Bank concentration (%) | Structural | GFD | bco |

The econometric study is based mainly on the work of Schou-Zibell, Albert and Song, A Macroprudential Framework for Monitoring and Examining Financial Soundness, published in March 2010 by the Asian Development Bank in the series of works dedicated to Regional Economic Integration. In order to elaborate this empirical research we have also guided after the work done by Babihuga Rita, Macroeconomic and Financial Soundness Indicators: An Empirical Investigation, published in 2007 and after the study of Demirgüc-Kunt Asli and Detragiache Enrica, The Determinants of Banking Crises in the Developing And Developed Countries, published in 1998.

In the economic literature there are many studies that prove the fact that evolutions of certain macroeconomic indicators may be associated with the appereance of the banking crises. Thus, the decrease of the GDP, the excessively high real interest rates and a high inflation can significantly increase the possibility of a systemic banking crisis. Also, the negative shocks or evolutions in the international trade activity can increase the likelihood of the occurrence of problems, even though the evidences in this regard are not significant (Demirgüc-Kunt and Detragiache 1999).

Our study was turned on by checking the volatility of each macroprudential banking indicator based on the methodology described by Schou-Zibell, Albert and Song (2010) with the difference that the vulnerability level has been set at ± 1.5 instead of 2. Signals of financial vulnerability are illustrated by values beyond ± 1.5 for the estimated

$$Z_t = \frac{\left(X_t - \widehat{\mu_{t;5}}\right)}{\widehat{\sigma_{t;5}}}$$

standardized unit of each financial soundness indicator X at year t, using an estimated mean and standard deviation, $\hat{\mu}_{X;t;5}$ şi $\hat{\sigma}_{X;t;5}$, generated from a moving span of 5 years. This benchmarking exercise has singled out a number of risk signals in the evolution of the macroprudential banking indicators analyzed.

The analysis of the empirical relation between the macroprudential indicators at the level of the analyzed sample and the macroeconomic variables specific for each country was achieved through the technique of panel regression, using the method of least squares. Thus, the panel regression model allows us to identify the macroeconomic variables that underlie the evolution of the macroprudential banking indicators and it estimates their influence. The panel is made up of 10 corresponding sections of Central and Eastern European banking systems and 12 corresponding periods during 2000-2011.

To capture the specifics of each analyzed banking system we have introduced fixed-effects for sections. The use of the fixed effects regression it ensures the control of omitted macroeconomic variables or which differ between different countries, but they are constant over time. In order to build the regression equations, was taken into consideration to avoid multicollinearity, meaning a situation in which a group of independent variables are highly correlated with each other.

In our work, panel regression with fixed effects will take the following form:

$$IMacroP_{it} = \alpha_0 + \alpha_1 MacroI_{it} + \alpha_2 X_{it} + \theta_i + \varepsilon_{it}$$

where $IMacroP_{it}$ represents the macro prudential indicators, categorized as financial soundness indicators (FSI) of the $i$ banking system at time $t$. $\alpha$ is the constant of the regression equation. *MacroIit* represents the $i^{th}$ country-specific macroeconomic indicators at time t, $X_{it}$ is a set of control variables for the banking system $i$ at time $t$, $\theta_i$ is the fixed effect for the banking system $i$ and $\varepsilon_{it}$ is the error term.

Macroprudential indicators will be expressed one by one with one of the following variables indicators: bank capital to assets ratio (capa), bank liquid reserves to bank assets ratio (liqu), bank nonperforming loans to total gross loans (nper), return on assets (roa) and return on equity (roe).
As a general estimation strategy, for each of the five dependent variables analyzed, we started from a basic regression which contained the main determinants of the banking systems' macroprudential soundness, to which were added additional factors which can exercise significant influence on the prudential banking indicators. Thus, we analyzed a total of 25 regression equations from which in 3 regression equations we analyzed the bank capital to assets ratio as dependent variable, in 4 equations regression we analyzed the bank liquid reserves to bank assets ratio as dependent

variable, in 7 equations we analyzed the bank nonperforming loans to total gross loans as dependent variable, in 5 equations we analyzed the return on assets ratio as dependent variable and in 6 equations we analyzed the return on equity ratio as dependent variable.

The results of the regression estimations can be summarized as follows:

- the business cycle proxied by the GDP growth generates significant influence on all 4 macroprudential indicators. This means that during economic booms' the banking capital is depreciated because of the increasing bank assets in these periods, however, it is registered the growth of banking liquidity and the decrease of the nonperforming loans. At the same time the increasing economic activity is associated with a higher level of bank profitability;
- higher inflation causes the increase of bank liquid reserves and the bank profitability, but at the same time it contributes to the growth of outstanding loans;
- in addition to the GDP growth and inflation, the bank capital to assets ratio is negatively influenced by the evolution of the domestic credit to private sector in GDP ratio and in the positive sense by the evolution of a country's international trade activity;
- an increasing real interest rate leads to increased liquid reserves of the banking system in relation to the bank's assets, and increasing the ratio of the money and quasi money (M2) to total reserves generates a significant reduction of the bank liquid reserves in the total bank's assets;
- the increase of the unemployment rate captures the economic cycles leading to an increase of the nonperforming loans rate, as well as being considered an indicator of major economic imbalance and contributing to the rise of banking vulnerabilities. Also we found significant positive influences by the real interest rate and significant negative influences by the nominal exchange rate over the rate of nonperforming loans in the total gross loans;
- the banking profitability is influenced in a direct positive way by the evolution of economic activity, the inflation and as anticipated is adversely influenced by the rate of nonperforming loans, the real interest rate and rising unemployment. Also, the negative influence of the domestic credit to private sector over ROA signals lower returns in the case of the private sector loans.

## Conclusions and research perspectives

In this work we analyzed the components of the macroprudential supervision framework and we tried to demonstrate the necessity of implementing and developing at national and European level an efficient and effective macroprudential supervision system. A first result of the study reveals that the term macroprudential has become increasingly trendy with the onset of the 2007-2008 crisis, but shy references at that time were made as early as the 1970s. However, there are a multitude of unknowns elements, uncertainties regarding the definition of macroprudential banking supervision, the institutions that should be entrusted with this task, the most efficient and effective tools to use in order to avoid for the future the banking disasters which have serious macroeconomic repercussions.

Currently, the definitions and the objectives of the macroprudential supervision are expressed in general terms, not being consecrated clear, concise definitions. We believe that to achieve the effectiveness of banking macroprudential supervision it is needed in the first place, the precise and determined knowledge of the scope of this activity. There are uncertainties regarding the demarcation between the purpose of the macroprudential and microprudential supervision. In our opinion, one thing is certain. The two activities complement each other and contribute to the ensuring of the financial stability. However, it should be exactly defined the area and the attributions of these two activities as well as how to interact between each other. In order to this, it has been done remarkable progress at EU level by establishing a European financial supervisory framework. The opinions are fragmented, and this is why we believe that further studies and research are required in defining and establishing clear objectives, but in our opinion the regulatory and supervisory authorities shall decide on the definition of accurate notions regarding macroprudential supervision, even if they aren't perfect, they can be improved later.

The developments in the banking activity, the consequences of the financial crisis, have flagged us first of all the need for the macroprudential supervision activity and secondly, the need for this work to be efficient and effective in order to limit losses incurred by national banking systems in the event of a financial crisis with economic and financial repercussions. We make this statement because we was observed a high diversification of banking activity, the international expansion of banking without borders, integration of the banking markets, investors and borrowers in a global financial market, the increase of the market – based finance (mainly through securities and derivatives) at the expense of traditional financing based on deposits, exaggerated development of financial conglomerates which combined traditional banking activities with investment activities, insurance, the emergence and development of non-bank institutions engaged in financial

intermediation. All these things have caught on the wrong foot the banking supervisory authorities, which have always been overshadowed by the evolutions in banking, without monitoring at overall level the banking developments and the implications of these developments on the national economies. We believe that the market will always be one step ahead of the supervisory authorities but they must adapt quickly to evolutions in banking and as a result of monitoring activity to allow the development of prudential rules in order to fade negative externalities of banking activity, to allow for adequate supervision of financial innovation, to reduce the systemic risk both in the temporal and structural dimension.

Until a few years ago it was thought wrongly that it is sufficient to combine monetary policy with bank macroprudential supervision for ensuring financial stability, however, it was proved that a link is missing, namely the macroprudential supervision. Although the surveillance work at the macro level involves monitoring the overall banking system, the macroprudential policy is not alone. It interacts with both monetary policy and microprudential supervision. Thus, the insurance of the financial stability requires price stability, soundness of individual banking institutions and the soundness of the banking system as a whole. Another conclusion would be that for each policy is needed a separate tool, but not in a independent way, but in a complementary one. Regarding the macroprudential supervision is essential to establish the coordination ways of macroprudential policy decisions with the decisions taken by the authorities responsible for conducting monetary policy and microprudential supervision. As regards the interaction between macroprudential policy and the other policies it is necessary to establish clear policy coordination mode, mode of decision-making, consultation between the authorities, as well as how to use the macroprudential tools.

In this thesis we have identified a number of issues related to the institutional framework of the banking macroprudential supervision activity. These issues relate to: the mandate, competence and instruments, responsibility and transparency of the mechanisms, the composition of the decision-making organism and the mechanisms of the intern policy coordination.

In addition to the need for an institutional framework for macroprudential supervision there are required a set of means to achieve this activity. The means identified to achieve this task are: statistical data, the macroprudential indicators and macroprudential tools. From the research and in an attempt to achieve an empirical study linked to macroprudential supervision we found that the statistical data do not have the expected quality, because they have a low degree of detail, some of them are not public, and some data are missing entirely or are published with a delay. Thus, we recommend the improve the quality of the published data and information as they are paramount, not only to the supervising authorities but also to the researchers from academia for the improvement of the evaluation methods and reduction of systemic risk methods, in order to

understand the links between the banking system and the real economy. Therefore, we consider that the timeliness, quality and the opportunity of statistical data are fundamental and should be based on analysis.

Another problem is the lack of a standard set of indicators which should be used to carry out the macroprudential analyses. Theories in this area abound, but at an international level there is no consensus on the indicators that should be used for macroprudential supervision of the banking system. However, we consider to be pertinent the classification of the indicators, made by Borio and Drehmann (2009b) in four major groups: indicators of financial imbalances, early warning indicators, indicators based on VAR models and macro stress tests. The first group of indicators allow us to analyze and evaluate the past situation from the banking system, the second group allow us to identify the risks based on certain evolution of the indicators and also to forecast some financial crisis, those in the third group allows us to create the econometric modeling of the economic activity and also to identify causal relationships between the banking and the economic activity, and the fourth group allows us to check the resistance of the banking system to possible macroeconomic shocks. Even though this classification is quite clear, there is still a problem related to the variety of methods and indicators used in identifying, evaluating, monitoring and predicting future systemic risk and banking issues.

Just as in the case of indicators, macroprudential policy tools are varied, at a global level being used several combinations of these instruments. The macroprudential tool represents a set of measures or actions taken for monitoring, preventing and treatment of the systemic risks. Most research in this field are made by international financial institutions. One of the results of this research relates to the formulation by the Basel Committee of the Basel III Agreement recommendations. Even if Basel III essentially contains recommendations regarding more microprudential supervision, though some of them have macroprudential implications such as: capital conservation buffers, countercyclical buffers, additional charges of systemic importance financial institutions (SIFIs).

The econometric study showed the existence of significant influence of certain macroeconomic variables on the macroprudential indicators included in the analysis. So it was looked at correlations between a number of macroeconomic variables and the four basic elements of any banking system: the adequacy of bank capital, bank liquidity, asset quality, the banking profitability. The results of the analysis have registered, in the case of some countries, the existence of high-risk periods in terms of macroprudential indicators' evolutions proving to be a greater vulnerability of national banking systems. We believe that the early identification of these signals of risk and the appropriate use of the macroprudential tools through the existence of an effective

macroprudential supervision activity allow the reduce of the vulnerabilities in the banking system, as well as prevention and reduction of systemic risk.

The regression empirical study confirms us the high level of interdependence of the real sector with the financial-banking sector. Consequently, we reiterate the need for each of the countries of an effective macroprudential supervision which enables to the supervisory authorities an adequate control of macroprudential indicators depending on the macroeconomic evolutions and appropriate decision making at the right time on the appropriate macroprudential policy in order to avoid financial crises.

Social and economic costs of financial crises highlighted in this thesis are high. All of this indicates the need for an effective macroprudential supervision activity. Accordingly, we believe that the effectiveness of macroprudential supervision translates into the reducing of the adverse effects and the economic and social costs driven by imbalances through the macroprudential supervision of banking systems in conjunction with macroeconomic developments and also using the proper time and proper calibration of the instruments.

Finally, as a general conclusion, we believe that a better knowledge and understanding of the components of the macroprudential supervision framework combined with the existence of a certain degree of standardization of the macroprudential tools and indicators can significantly improve the ability of the banking supervisory authorities to forecast the systemic risk and to avoid or reduce the consequences of the banking crisis.

This study, the importance and complexity of the macroprudential supervision make us to open new **perspectives** for research studies related to the design of an early warning system of the banking imbalances at national level, for macro stress test the resistance of the national banking systems to macroeconomic shocks.

## Bibliography – selection

### Books – selection


1. Badea, L., Socol, A., Drăgoi, V., & Drigă, I. (2010). Managementul riscului bancar. Bucureşti: Editura Economică.
2. Barth, J., Caprio, G., & Levine, R. (2006). Rethinking Bank Regulation: Till Angels Govern. New York: Cambridge University Press.
3. Bliss, R. R. (2007). Multiple regulators and insolvency regimes: obstacles to efficient supervision and resolution. În D. G. Mayes, & G. E. Wood, The Structure of Financial Regulation (pg. 132-154). Routledge.
4. Calomiris, C. W. (2011). Banking crises and the rules of the game. În G. Wood, T. C. Mills, & N. Crafts, Monetray and banking History. Essays in honour of Forrest Capie (pg. 117-123). Routledge.
5. Cerna, S. (2009). Economie monetară. Ed. Universității de Vest.
6. Cerna, S., Donath, L., Şeulean, V., Bărglăzan, D., Albulescu, C., & Boldea, B. (2008). Stabilitatea financiară. Timişoara: Editura Universității de Vest.
7. Cranston, R. (1997). Principles of Banking Law. Oxford: Clarendon Press.
8. Dănilă, N., Anghel, L., & Dănilă, M. (2002). Managementul lichidității bancare. Bucureşti: Ed. Economică.
9. Dardac, N., & Barbu, T. (2005). Monedă, bănci şi politici monetare. Bucuresti: Ed. Didactică şi Pedagogică.
10. De Bandt, O., Hartmann, P., & Peydro, J. L. (2012). Systemic Risk in Banking. An Update. În A. N. Berger, P. Molyneux, & J. O. Wilson, The Oxford Handbook of Banking (pg. 650-654). New York: Oxford University Press.
11. Dragomir, L. (2010). European Prudential Banking Regulation and Supervision. The legal dimension. Routledge.
12. Eisenbeis, R. A., & Kaufman, G. G. (2012). Deposit Insurance. În A. N. Berger, P. Molyneux, & J. O. Wilson, The Oxford Handbook of Banking (pg. 339-356). New York: Oxford University Press.
13. Foot, M. (2009). The Future of the Single Regulator Model. În D. Mayes, R. Pringle, & M. Taylor, The Structure of Financial Regulation (pg. 479-486). London: Central Banking Publications.
14. Gardener, E. (1986). UK Banking Supervision. Evolution, Practice and Issues. London: Allen & Unwin.
15. Gastineau, G., & Kritzman, M. (1999). Dictionary of Financial Risk Management. Jon Wiley and Sons, third edition.
16. Goodhart, C. A. (2007). Financial supervision from an historical perspective. Was the development of such supervision designed, or largely accidental? În D. G. Mayes, & G. E. Wood, The Structure of Financial Regulation (pg. 43-64). Routledge.
17. Gujarati, D. N. (2004). Basic Econometrics. The McGraw–Hill Companies.
18. Herring, R., & Carmassi, J. (2012). The Corporate Structure of International Financial Conglomerates. Complexity and Its Implications for Safety and Soundness. În A. N. Berger, P. Molyneux, & J. O. Wilson, The Oxford Handbook of Banking (pg. 195-200). Oxford University Press.
19. Hubbard, G. R., & O'Brien, A. P. (2012). Money, Banking, and The Financial System. Pearson Education, Inc.
20. Huerta de Soto, J. (2010). Moneda, creditul bancar şi ciclurile economice. Iaşi: Editura Universității "Al. I. Cuza".
21. Kane, E. J. (2012). Regulation and Supervision. An Ethical Perspective. În A. N. Berger, P. Molyneux, & J. O. Wilson, The Oxforf Handbook of Banking (pg. 315-338). New York: Oxford University Press.
22. Kindleberger, C. P. (1996). Manias, Panics and Crashes. A History of Financial Crises. London: Macmillan.
23. Krugman, P. (2009). Întoarcerea economiei declinului şi criza din 2008. Publica.
24. Llewellyn, D. (1999a). Introduction: The Institutional Structure of Regulatory Agencies. În N. Courtis, How Countries Supervise Their Banks, Insurer and Securities Markets. London: Central Bank Publications.
25. Llewellyn, D. T. (2009). The new banking and financial system. În D. Mayes, R. Pringle, & M. Taylor, Towards a New Framework for Financial Stability (pg. 52-54). London: Central Banking Publications Ltd.
26. Lybeck, J. A. (2012). Istoria globală a crizei financiare (2007-2010). Ed. Polirom.
27. Majone, G. (1996). Regulating Europe. London: Routledge.
28. Masciandaro, D. (2007). Comment: Allocating Financial Regulatory Powers: The Twin Views. În D. G. Mayes, & G. E. Wood, The Structure of Financial Regulation (pg. 213-226). Routledge.
29. Miles, D., Scott, A., & Breedon, F. (2012). Macroeconomics. Understanding the global economy. John Wiley & Sons Ltd.
30. Minsky, H. P. (1977). A Theory of Systemic Fragility. În E. I. Altman, & A. W. Sametz, Financial Crises (pg. 138-52). New York: Wiley.

31. Minsky, H. P. (1982). The Financial-Instability Hypothesis: Capitalist Processes and the Behaviour of the Economy. În C. Kindleberger, & J. P. Laffargue, Financial Crises: Theory, History and Policy (pg. 13-39). Cambridge: UK, Cambridge University Press.
32. Mutu, S. (2012). Contagiunea pe piața bancară. Cluj Napoca: Casa Cărții de Știință.
33. Santos, J. A., & Kahn, C. M. (2007). Intitutional allocation of bank regulation: a review. În D. G. Mayes, & G. E. Wood, The Structure of Financial Regulation (pg. 185-204). Routledge.
34. Schinasi, J. G. (2006). Safeguarding financial stability. Theory and practice. Washington, D.C.: International Monetary Fund.
35. Schoenmaker, D. (2010). The ECB, Financial Supervision and Financial Stability Management. În J. De Haan, & H. Berger, The European Central Bank at Ten. Heidelberg: Springer.
36. Schoenmaker, D., & Oosterloo, S. (2007). Cross-border issues in European financial supervision. În D. G. Mayes, & G. E. Wood, The structure of Financial Regulation (pg. 266-269). Routledge.
37. Schooner, H. M., & Taylor, M. W. (2010). Global Bank Regulation. Principles and Policies. London: Elsevier.
38. Shin, H. S. (2010b). Macroprudential Policies Beyond Basel III. Princeton University.
39. Tinbergen, J. (1952). On the Theory of Economic Policy. Amsterdam: North-Holland Publishing Company.
40. Trenca, I. (2006). Metode şi tehnici bancare - principii, reglementări, experiențe. Cluj Napoca: Casa Cărții de Știință.
41. Trenca, I., & Mutu, S. (2012). Managementul riscurilor bancare - soluții econometrice. Cluj - Napoca: Ed. Casa Cărții de Știință.
42. Wellink, A. (2009). The preparation of prudential regulation for the near future. În D. Mayes, R. Pringle, & M. Taylor, Towards a New Framework for Financial Stability. London: Central Banking Publications.

## Articles, papers – selection

43. Aghion, P., Bacchetta, P., & Banerjee, A. (2001). Currency crises and monetary policy in an economy with credit constraints. European Economic Review 45(7), 1121-1150.
44. Akerlof, G. (1970). The Market for "Lemons": Quality Uncertainty and The MArket Mechanism. Quarterly Journal of Economics 84 (3), 488-500.
45. Alessi, L., & Detken, C. (2009). Real time early warning indicators for costly asset price boom/bust Cycles: A role for global liquidity. ECB.
46. Allen, F., & Gale, D. (2004). Financial Fragility, Liquidity and Asset Prices. Journal of the European Economic Association 2 , 1015-48.
47. Angelini, P., Neri, S., & Panetta, F. (2011). Monetary and Macroprudential Policies. Rome: Banca d'Italia.
48. Apostolik, R., Donohue, C., & Went, P. (2009). Foundation of Banking Risk: An Overview of Banking, and Risk-Based Banking Regulation. New Jersey: John Wiley & Sons Inc.
49. Babihuga, R. (2007). Macroeconomic and Financial Soundness Indicators: An Empirical Investigation. IMF.
50. Balla, E., & McKenna, A. (2009). Dynamic Provisioning: A Countercyclical Tool for Loan Loss Reserves. Federal Reserve Bank of Richmond Economic Quarterly Vol. 95, pp. 383-418.
51. **Balogh, Péter** (2009). Banking Supervision in Romania - New Perspectives. International Conference "Financial Trends in the Global Economy" (p. pg. 169). Cluj Napoca: Faculty of Economics and Business Administration, Babes-Bolyai University.
52. **Balogh, Péter**. (2012). Macroprudential Tools in the European Banking System. International Conference Emerging Markets Queries in Finance and Business, Petru Maior University of Tîrgu-Mures, ROMANIA, October 24th - 27th, 2012. 3, pg. pg. 642-647. Tg Mures: Procedia Economics and Finance – Elsevier, indexed in ISI Web of Knowledge - Thomson Reuters. Preluat de pe http://dx.doi.org/10.1016/S2212-5671(12)00208-0
53. **Balogh, Péter**, & Bolocan, M. (2010). The Management Of Credit Risk According To Internal Ratings-Based Approach. Analele Universitatii din Oradea,fascicula Stiinte Economice, TOM XIX, 2nd issue Decembrie 2010, pp. 665-671.
54. **Balogh, Péter**, & Tocu, N. (2012). The Financial Safety Net – A Necessity In A Turbulent Financial World. Economics and Applied Informatics 2012/2, pp. 23-30.
55. **Balogh, Péter**, Bolocan, M., & Mutu, S. (2010). Central Banks' Responsability in Monetary Policy Communication. International conference Geba 2010 - Globalization and Higher Education in Economics and Business Administration. Iasi: Faculty of Economics and Business Administration, Alexandru Ioan Cuza University of Iasi.
56. Benston, G. (2000). Is Government Regulation of Banks Necessary? Journal of Financial Research 18 (2/3).
57. Bernanke, B. S. (2011). Implementing a Macroprudential Approach to Supervision and Regulation. Chicago, Illinois.
58. Bichi, C. (2009). Reglementare şi supraveghere bancară. Note de curs master. Bucureşti: ASE, Facultatea de Finanțe, Asigurări, Bănci şi Burse de Valori.
59. Bini Smaghi, L. (2009). Macro-prudential supervision. Venice: BIS.

60. Bolocan, M. D., & **Balogh, Péter**. (2010). Possibilities of Improving the Methods and Techniques Used in the Surveillance of Credit Risk Management. International Conference "European Integration - New Challenges 6th Edition (p. 79). Oradea: Faculty of Economic Sciences Oradea, Romania.
61. Bolocan, M., & **Balogh, Péter**. (2010). Mutations in the Romanian Banking System in the Context of Globalization and European Integration. International conference GEBA 2010 - Globalization and Higher Education in Economics and Business Administration. Faculty of Economics and Business Administration Alexandru Ioan Cuza, University of Iasi.
62. Bordo, M., Eichengreen, B., Kliengbiel, D., & Martinez-Peria, M. (2001). Financial crisis: lessons from the last 120 years. Economic Policy, 53-82.
63. Borio, C. (2003). Towards a macroprudential framework for financial supervision and regulation? BIS.
64. Borio, C. (2011). Rediscovering the macroeconomic roots of financial stability policy: journey, challenges and a way forward. BIS Monetary and Economic Department.
65. Borio, C., & Disyatat, P. (2011). Global imbalances and the financial crisis: Link or no link? Basel: BIS.
66. Borio, C., & Drehmann, M. (2009a). Assessing the risk of banking crises – revisited. BIS.
67. Borio, C., & Drehmann, M. (2009b). Towards an operational framework for financial stability: “fuzzy” measurement and its consequences. BIS.
68. Boutin-Dufresne, F., Pena, S., Williams, O., & Zwisza, T. A. (2013). Benchmarking Banking Sector Efficiency Across Regional Blocks in Sub-Saharan Africa:What Room for Policy. IMF.
69. Brouwer, H. (2010). Challenges in the design of macroprudential tools. Amsterdam: DNB.
70. Brunnermeier, M., Crockett, A., Goodhart, C., Persaud, A., & Shin, H. (2009). The Fundamental Principles of Financial Regulation. Geneva Report on the World Economy 11, ICBM, Geneva and CEPR, London.
71. Calvo, G. A. (1996). Capital Flows and Macroeconomic Management: Tequila Lessons. International Journal of Finance and Economics.
72. Caprio, G., & Klingebiel, D. (1996). Dealing with Bank Insolvencies: Cross Country Experiences. Washington: World Bank.
73. Caprio, G., & Klingebiel, D. (2003). Episodes of Systemic and Borderline Financial Crises. World Bank http://go.worldbank.org/5DYGICS7B0.
74. Carney, M. (2010, June 10). The G-20's core agenda to reduce systemic risk, remarks by Mark Carney, Governer of the Bank of Canada. International Organization of Securities Commissions Meeting. Montreal.
75. Cecchetti, S. G., Kohler, M., & Upper, C. (2009). Financial Crises and Economic Activity. "Financial Stability and Macroeconomic Policy," a symposium sponsored by the Federal Reserve Bank of Kansas City, at Jackson Hole, Wyoming, 20-22 August 2009.
76. Chang, R., & Velasco, A. (2001). A model of currency crises in emerging markets. Quarterly Journal of Economics 116(2), 489-517.
77. Chul, P. Y. (2006). A Macroprudential Approach to Financial Supervision And Regulation: Conceptual And Operational Issues. IMF.
78. Clement, P. (2010). The term "macroprudential": origins and evolution. BIS.
79. Constâncio, V. (2012). How fit are statistics for use in macro-prudential oversight? Frankfurt am Main: ECB.
80. Craig, S., & Hua, C. (2011). Determinants of Property Prices in Hong Kong SAR: Implications for Policy. IMF.
81. Crockett, A. (2000, September 21). Marrying the micro- and macro-prudential dimensions of financial stability. Financial Stability Forum. Basel: BIS.
82. Dardac, N., & Moinescu, B. (2007). Politici monetare şi tehnici bancare. Bucureşti: Facultatea de finanțe, asigurări, bănci şi burse de valori - Catedra de monedă.
83. De Bandt, O., & Hartmann, P. (2000). Systemic Risk: A Survey. ECB.
84. de Larosière, J., Balcerowicz, L., Issing, O., Masera, R., Mc Carthy, C., Nyberg, L., . . . Ruding, O. (2009). Report of the High-Level Group on Financial Supervision in the EU. The de Larosière Group.
85. Delgado, F. L., & Meza, M. (2011). Developments in Financial Supervision and the Use of Macroprudential Measures in Central America. International Monetary Fund/dec. 2011.
86. Demirgüc-Kunt, A., & Detragiache, E. (1997). The Determinants of Banking Crises: Evidence from Industrial and Developing Countries. World Bank.
87. Demirgüc-Kunt, A., & Detragiache, E. (1998). The Determinants of Banking Crises in Developing And Developed Countries. International Monetary Fund.
88. Demirgüc-Kunt, A., Detragiache, E., & Gupta, P. (2000). Inside the Crisis - An empirical Analysis of Banking Systems in Distress. World Bank.
89. Diamond, D. V., & Rajan, R. (2005). Liquidity Shortages and Banking Crises. Journal of Finance 60, 615-47.
90. Diamond, D., & Rajan, R. (2006). Money in a Theory of Banking. American Economic Review 96, 30-53.
91. Diaz-Alejandro, C. (1985). Good-bye financial repression, hello financial crash. Journal of Development Economics 19 North Holland, 1-24.

92. Dierick, F., Lennartsdotter, P., & Del Favero, P. (2012). The ESRB at work – its role, organisation and functioning. European Systemic Risk Board.
93. Eichengreen, B., Rose, A., & Wyplosz, C. (1995). Exchange Market Mayhem: The Antecedents and Aftermath of Speculative Attacks. Economic Policy.
94. Erlend, W. N., Osinski, J., Jacome, L. I., & Madrid, P. (2011). Institutional Models for Macroprudential Policy. IMF.
95. Evans, O., Leone, A. M., Mahinder, G., & Hilbers, P. (2000). Macroprudential Indicators of Financial System Soundness. Washington DC: International Monetary Fund.
96. Galati, G., & Moessner, R. (2011). Macroprudential policy – a literature review. BIS.
97. Gavin, M., & Hausmann, R. (1998). The Roots of Banking Crises: The Macroeconomic Context in Banking Crises in Latin America. Washington DC: Inter-American Development Bank.
98. Glick, R., & Hutchison, M. (2011). Currency Crises. Federal Reserve Bank of San Francisco.
99. Glocker, C., & Towbin, P. (2012). Reserve Requirements for Price and Financial Stability: When Are They Effective. International Journal of Central Banking, Vol. 8 (1), pp. 65-113.
100. Gorton, G. (1988). Banking Panics and Business Cycles. Oxford Economic Papers 40, 751-781.
101. Gramlich, D., Miller, G. L., Oet, M. V., & Ong, S. J. (2010). Early warning systems for systemic banking risk: critical review and modeling implications. Banks and Bank Systems.
102. Hartmann, P., Straetmans, S., & De Vries, C. (2004). Asset Market Linkages in Crisis Periods'. Review of Economics and Statistics 86, 313-26.
103. Holopainen, H. (2007). Integration of financial supervision. Discussion Papers 12: Bank of Finland Research.
104. Isărescu, M. (2006). Stabilitatea preţurilor şi stabilitatea financiară. BNR.
105. Isărescu, M. (2011). Macroprudenţialitatea. Reglementarea, crizele financiare şi politica monetară. BNR.
106. Isărescu, M. (2012). The Future of the International Banking System. Bucharest: National Bank of Romania and the Romanian Association for the Club of Rome.
107. Krugman, P. (1979). A model of balance-of-payments crises. Journal of Money, Credit and Banking, Vol. 11, No. 3, pp. 311-325.
108. Laeven, L., & Valencia, F. (2012). Systemic Banking Crises: An Update. IMF.
109. Lahiri, A., & Vegh, C. (2003). Delaying the inevitable: optimal interest rate policy and BOP. Journal of Political Economy 111(2), 404-424.
110. Levy-Yeyati, E. L., & Panizza, U. (2011). The Elusive Costs of Sovereign Defaults. Journal of Development Economics 94(1), 95–105.
111. Lim, C. H., Columba, F., Costa, A., Kongsamut, P., Otani, A., Saiyid, M., Wu, X. (2011). Macroprudential Policy: What Instruments and How Are They Used? IMF.
112. Lindgren, C., Garcia, G., & Saal, I. M. (1996). Bank Soundness and Macroeconomic Policy. IMF.
113. Llewellyn, D. (1999b). The Economic Rationale for Financial Regulation. Financial Services Authority.
114. Marquez-Diez-Canedo, J., Martinez-Jaramillo, S., & Perez-Perez, O. (2009). A network model of systemic risk. Journal of Intelligent Systems in Accounting, Finance & Mangement 16.
115. Martínez-Jaramillo, S., Castañón, C. L., Pérez, O. P., Embriz, F. A., & Gallo D, F. L. (2010). Systemic risk, stress testing and financial contagion: Their interaction and measurement. BIS CCA Conference on "Systemic risk, bank behaviour and regulation over the business cycle" 18–19 March 2010. Buenos Aires: BIS.
116. Melecky, M., & Podpiera, A. M. (2010). Macroprudential Stress-Testing Practices of Central Banks in Central and South Eastern Europe. An Overview and Challenges Ahead. The World Bank.
117. Mendoza, E., & Terrones, M. (2008). An Anatomy of Credit Booms: Evidence from Macro Aggregates and Micro Data. Cambridge: National Bureau of Economic Research.
118. Mimir, Y., Sunel, E., & Taskin, T. (2012). Required Reserves as a Credit Policy Tool. Midwest Macroeconomics Meetings, 16th Annual International Conference on Macroeconomic Analysis and International Finance. Central Bank of the Republic of Turkey.
119. Montoro, C., & Moreno, R. (March 2011). The Use of Reserve Requirements as a Policy Instrument in Latin America. BIS Quarterly Review, 53-65.
120. Morris, F., Dorfman, M., Ortiz, J. P., & Franco, M. C. (1990). Latin America's Banking Systems in the 1980s: A Cross-Country Comparison. World Bank.
121. Mutu, S., **Balogh, Péter**., & Moldovan, D. (2010). Using Value at Risk Models for Decision Fundamentation on Central and Eastern Europe Stock Markets. În E. W.-9.-4.-2.-0. Press (Ed.), Proceedings of the NAUN/IEEEAM Conferences - Development, Energy, Environment, Economics (DEEE'10): Modelling and Simulation Session, 30 Nov. - 2 Dec. 2010, (pg. pg. 382 - 387). Puerto de la Cruz, Tenerife.
122. Mutu, S., **Balogh, Péter**., & Moldovan, D. (2011). The Efficiency of Value at Risk Models on Central and Eastern European Stock Markets. International Journal of Mathematics and Computers in Simulation, Issue 2, Volume 5/2011, pp. 110-117.
123. Nagy, A. (2013). Importanţa deciziilor de politică monetară din punct de vedere al trinităţii imposibile. Prezentare în cadrul proiectului educational BNR "Academica", Sinaia, 12 feb. 2013.

124. Nijathaworn, B. (2009). Rethinking procyclicality – what is it now and what can be done? Tokyo: BIS.
125. Padoa-Schioppa, T. (2003). Central Banks and Financial Stability: Exploring the land in between. The transformation of the European Financial System. Frankfurt am Main: European Central Bank.
126. Peydró-Alcalde, J., Jiménez, G., Ongena, S., & Saurina, J. (2011). Macroprudential policy, countercyclical bank capital buffers and credit supply: evidence from the Spanish dynamic provisioning experiments. Working Paper CEPR/Banca d'Italia.
127. Podpiera, R. (2006). Does Compliance with Basel Core Principles Bring Any Measurable Benefits? IMF.
128. Reinhart, C. M., & Rogoff, K. S. (2008). Banking crises: an equal opportunity menace. NBER.
129. Reinhart, C. M., & Rogoff, K. S. (2009). The Aftermath of Financial Crises. NBER.
130. Reinhart, C. M., & Rogoff, K. S. (2011). From Financial Crash to Debt Crisis. American Economic Review 101(5), 1676–1706.
131. Repullo, R., & Saurina, J. (2011). The Countercyclical Capital Buffer of BASEL III: a Critical Assessment. CEMFI June 2011.
132. Schinasi, G. J. (2004). Defining Financial Stability. IMF.
133. Schou-Zibell, L., Albert, J. R., & Song, L. L. (2010). A Macroprudential Framework for Monitoring and Examining Financial Soundness. Asian Development Bank.
134. Shin, H. S. (2010a). Non-Core Liabilities Tax as a Tool for Prudential Regulation. Policy Memo 19 February 2010.
135. Shirakawa, M. (2009). Macroprudence and the central bank. Tokyo: Seminar of the Securities Analysts Association of Japan.
136. Stracca, L. (2005). Liquidity and Real Equilibrium Interest Rates. A Framework of Analysis. ECB.
137. Tocu, N., & **Balogh, Péter**. (2011). Return To Roots: The Origins Of Money And The Current Financial Crisis. XII Th Annual International Conference Risk In Contemporary Economy, 2011, "Dunarea de Jos" University of Galati. Galati: Faculty of Economics and Business Administration.
138. Trichet, J. (2009). Systemic Risk. ECB; Presentation at Clare College, University of Cambridge, 10 December 2009.
139. Tumpel-Gugerell, G. (2009). The road less travelled: exploring the nexus of macroprudential and monetary policy. Rome: BIS.
140. Velasco, A. (1987). Financial Crises and Balance of Payments Crises: A Simple Model of the Southern Cone Experience. Journal of Development Economics 27 (1–2), 263–83.
141. Weistroffer, C. (2012). Macroprudential supervision. In search of an appropriate response to systemic risk. Deutsche Bank Research.
142. Wezel, T., Chan-Lau, J. A., & Columba, F. (2012). Dynamic Loan Loss Provisioning: Simulations on Effectiveness and Guide to Implementation. IMF.

## Research reports and regulations – selection

143. Banca Națională a României. (2011). O nouă arhitectură de supraveghere financiară a UE - Comitetul European pentru Risc Sistemic. Buletin de relații internaționale.
144. Banca Națională a României. (2012). Regulament nr. 17 din 12.12.2012 privind unele condiții de creditare.
145. Bank of England. (2009). The role of macroprudential policy. Discussion paper.
146. Press releases and documents of the European Commission.
147. Deutsche Bank Research. (2011). OTC derivates markets. Update on current regulatory initiatives. Deutsche Bank.
148. European Banking Authority. (2012). Follow-up review of banks' transparency in their 2011 Pillar 3 reports . EBA.
149. European Central Bank. (2012). Financial Stability Review dec. 2012. ECB.
150. European Systemic Risk Board. (2011). Recommendation of the European Systemic Risk Board of 21 September 2011 on lending in foreign currencies ESRB/2011/1.
151. European Systemic Risk Board. (2013). Benefits of a Standardised Reporting of Pillar 3 Information. ESRB.
152. Financial Services Authority.(2009). The Turner Review: A Regulatory Response to the Global Banking Crisis. Financial Services Authority.
153. Financial Stability Board. (2009). Guidance to assess the systemic importance of financial institutions, markets and instruments: initial considerations. FSB, IMF, BIS.
154. Financial Stability Board. (2011). FSB announces policy measures to address systemically important financial institutions (SIFIs) and names initial group of global SIFIs . Press release 4 November 2011.
155. Financial Stability Board. (2012). Recovery and Resolution Planning: Making the Key Attributes Requirements Operational. FSB.
156. FSB, IMF, BIS. (October 2011). Macroprudential Policy Tools and Frameworks; Progress Report to G20. IMF.

157.FSB; BIS; IMF. (14 febr 2011). Macroprudential policy tools and frameworks. Update to G20 Finance Ministers and Central Bank Governors.
158.Group of Thirty. (2010). Enhancing Financial Stability and Resilience. Macroprudential Policy, Tools, and Systems for the Future. Washington: Group of Thirty.
159.Group of Twenty. (2009). Leaders' Statement: The Pittsburgh Summit. 24-25 septembrie 2009.
160.Hong Kong Monetary Authority. (2011). Loan-to-value ratio as a macroprudential tool - Hong Kong SAR's experience and cross-country evidence. BIS.
161.International Banking Federation. (2010). Preliminary Considerations for a Macro-Prudential Supervisory Framework. International Banking Federation Working Group on Macro-Prudential Supervision.
162.Parlamentul European şi Comisia. (2010).Regulament (EU) No 1092, Articolul 2.
163.Reports and papers of the Bank for International Settlements.
164.Reports and papers of the Basel Committee on Banking Supervision.
165.Reports and papers of the Committee on the Global Financial System.
166.Reports and papers of the International Monetary Fund.
167.Working Group on Macroprudential Policy. (2010). Enhancing Financial Stability and Resilience Macroprudential Policy, Tools, and Systems for the Future. Washington, October 2010: The Group of Thirty.

## Websites

168.*** http://europa.eu/efc/index_en.htm
169.*** http://www.bnro.ro/
170.*** http://www.fhlbanks.com.
171.*** http://www.iadi.org/.
172.*** http://www.isi-web.org/about-isi.
173.*** www.bis.org
174.*** www.cnvmr.ro
175.*** www.ecb.int
176.*** www.financialstabilityboard.org.
177.*** www.imf.org