„ALEXANDRU IOAN CUZA” UNIVERSITY OF IASI
DOCTORAL SCHOOL OF ECONOMICS AND BUSINESS ADMINISTRATION

SUMMARY OF DOCTORAL DISSERTATION

BANKING RISK – A SYSTEMIC APPROACH

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2013

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We would like to inform you that on **23rd of September 2013**, 10^{30}, in the Conference Room R 402, **Anamaria AVADANEI,** from Faculty of Economics and Business Administration, will publicly defend the thesis ***Banking Risk – A Systemic Approach,*** with the aim of conferring PH.D title to the author**.**

The defense commission has the following members:

President

- Professor **Dinu AIRINEI,** Dean of the Faculty of Economics and Business Administration, „Alexandru Ioan Cuza" University of Iași;

Members

- Professor **Vasile COCRIȘ**, *scientific supervisor*, Faculty of Economics and Business Administration, „Alexandru Ioan Cuza" University of Iași;
- Professor **Ioan BĂTRÂNCEA**, Faculty of Economics and Business Administration, Babeş-Bolyai University of Cluj-Napoca
- Professor **Marin OPRIŢESCU**, Faculty of Economics and Business Administration, University of Craiova
- Professor **Ovidiu STOICA**, Faculty of Economics and Business Administration, „Alexandru Ioan Cuza" University of Iași;

We hand over the summary of the thesis and we invite you to participate at the public defense of the thesis. The thesis can be consulted at the library of the Faculty of Economics and Business Administration.

SUMMARY

Key words: *systemic risk, banking crisis, credit risk, liquidity risk, bank regulation bank supervision, Basel III Agreement, Banking Union, vector autoregressive model, panel data regression.*

Manifestation of the global financial crisis has led to a repositioning of risk within the banking systems and on the priority list of the monetary authorities. The doctoral thesis „ The banking risk-a systemic approach” aims to highlight the impact of individual risks on systemic events, based on the study of interactions that could finally cause a bank failure in all of its forms. We explain the choice of the title - a systematic approach- by the focus on global elements, respectively an integrated approach of determinants (proxy for individual bank risks) of ultimate risk, considering recent developments, interconnections and the impact of simultaneous unfolding.

The present paper is structured on four chapters that contain fundamental theoretical aspects regarding credit risk, recent developments and implications for the banking industry, both from a micro perspective (of institutions) and from a macro perspective (systems, countries, geographical regions), coordinates of banking reform (projects implemented to address the negative effects of the turmoil), as well as case studies (econometric analyses) of the banking system of the euro area as a whole, and of the Romanian banking system.

The first chapter, „The nature and architecture of banking risk: concepts, theories and mutations” offering the framework for our research, presents and studies the typology of the banking risk from a traditional and modern stand point. Defined as the likelihood of a negative event, credit risk includes both a pessimistic component and an optimist component. In the light of the phenomena that have occurred in recent decades, credit risk takes on new meanings. Globalization, in terms of abundance and availability of banking products and services, technical and technological progress, as expansion of banking activities, financial innovation, leading to development and growth of welfare, financial integration as a process of standardization and gain have facilitated the global spread of the risk, horizontal and vertical.

In this context, risk management has to improve the monitoring, control and performance by applying practices and techniques based on accurate and reliable information, in a transparent manner, taking into account the interests of all participants. Manifestation of banking risks in a complex and dynamic context could lead to systemic risk. Thus, we included a structured review of the literature on three coordinates: systemic risk defined as a mechanism and process with a conceptual chronological manifestation, systemic risk as a result of individual bank risks in an interconnected network, and from the standpoint of monetary authority's actions, as a negative phenomenon potentially harmful for the real economy. We also highlighted the major trends in banking following the global turmoil, derived from solutions to prevent and limit credit risks. We noted the appearance of a new banking business model, amid a high level of risk within the banking industry, and a comprehensive process of institutional strategic and operational reconfiguration.

The second chapter, „Dynamics of banking risks under the current financial crisis" analyzes the impact of credit risk within the European banking sector. The geographical reach includes three major coordinated, namely the banking systems in Central and Eastern Europe, the so-called PIIGS countries (Portugal, Ireland, Italy, Greece and Spain) and the euro area as a whole. The rationale is that although the ex-ante crisis unfolding in the EU banking systems was similar (in terms of growth), there are differences that have emerged due to country specific factors such as national exposure, the sovereign debt values and risk management.

We note that the turmoil in summer 2007 was preceded by periods of upward trends in the asset prices, increases in the size of the banking sectors, development of structures and a low risk aversion. The presence of small shocks (financial failures on specific segments of the market), in the absence of inflationary pressures and economic changes have led to a series of credit risk events. We believe that reliance on short-term funding, high leverage and questionable quality of risk management have been the main vulnerabilities in the banking system prior to the manifestation of the international financial crisis.

In Central and Eastern Europe, the main drivers that destabilized the loan portfolio are the magnitude of national currency depreciation relative to the share of foreign currency loans, the severity of the economic downturn and rising unemployment. On average, non-performing loans (NPL) in Central and Eastern Europe reached a value of 10.1% at the end of 2012, reflecting the lower growth in lending and the continued deterioration of loans quality. In this area, the major challenge is to prevent a destructive process of reducing debt in the banking system and to promote an adequate flow of credit to the private sector. The European banking market dilemma is that tight credit is a solution to banking instability, but at the same time is an inconvenience to the real economy.

The banking systems of the PIIGS countries (Portugal, Ireland, Italy, Greece and Spain) distinguish by the severe impact of the crisis at the aggregate level. Between 1990 and 2007, these countries have experienced growth in lending, particularly in the housing market, increased financial depth and banking concentration.

The result of high sovereign debt translates into increased country risk, which is inversely related to country rating. Banks face the risk of downgrading amid rising debts and the negative effects reflect on the financing costs. In recent quarters, cross-border lending has decreased considerably. The trend is not a sign of improvement, but rather an indication of lower public confidence. We believe that the enlargement of sovereign debt crisis in the peripheral countries of Europe could further destabilize bond and derivatives markets, such as the credit default swaps (CDS), deepening the problems of the vulnerable and poorly capitalized banking systems.

Our contribution is related to an empirical analysis of the euro area that captures the systemic nature of lending based on a vector autoregressive model. In this regard, as independent variable, we use the growth rate of loans (%) and as dependent variable, we chose a sub-indicator of systemic risk for the banking market (developed by the ECB, part of the composite indicator of systemic stress).

The results show a direct relationship between the two variables, which indicates that an increase in the credit growth rate leads to a higher likelihood of systemic risk. The influence is 12%, but we believe that the percentage is statistically significantly in light of the fact that there are many factors that determine the manifestation of systemic risk.

The third chapter, “Bank governance: micro surveillance vs. macro prudential supervision”, focuses on the relationship banking governance – risks, outlines banks regulation in relation to risk preference, analyzes the reforms implemented in the European Union as solution for risk mitigation and risk prevention, and studies the banking supervision framework in Romania and the implications on performance levels.

The financial crisis has highlighted the weaknesses of corporate governance regimes in the form of negligence towards associated risks, the lack of control mechanisms that have contributed to increased exposure to risks, unclear allocation of roles and responsibilities in the implementation of corporate governance principles, and a complicated, obscure structure of director’s remuneration looking for short-term results taking significant risk.

The problem of systemic risk accompanied by a crisis of confidence is rooted in the current financial relations, especially in terms of banking strategy-business relationship rapidly changing. The chaotic adaptations to the financial environment and the novelty of decisions could lead to increased systemic risk or the intensification of the causal relationship banking governance-risks in general. Systemic importance in relation to the risk of bankruptcy and the associated costs places banking regulation above the law for a wide area, inter alia, restrictions on the activities (products, branches), prudential regulations (classification of loans, reserve requirements). Banks monitoring is performed by various bodies (the central bank, government deposit guarantee fund). Prudential regulation in the form of minimum capital requirements and leverage limits, directly affect the level of risk that a bank and take. In line, reforms proposals of the banking governance aim to align remuneration schemes or reduce the overall risk by business strategy and system-wide reforms focus on limiting systemic risk events.

Globally, legislative changes have translated into the reshaping of corporate governance codes, additions to risk management and also restrictions to the banking business. Motivation is common in nature and consists both in preventing systemic episodes as well as resolving issues blamed for the recent developments. In terms of legislation, we mentioned the initiatives in the U.S. (Dodd-Frank Act, Volcker Rule), the UK (Independent Banking Commission) and the European Union (the Basel Committee, the Union Banking).

In Romania, the National Bank measures on prudential supervision have been implemented in banking legislation through the modification and improvement of existing regulations and through new standards for banks within the system. We believe that assessment of the risk level (individual and general) should be permanent, motivated by the potential negative effects on a large area, if risk materializes.

In the last chapter, "A credit risk analysis model. Empirical studies", we have calibrated the influence of individual risk on systemic risk in the period 2001-2011 using a panel technique to provide an overview of the euro area banking system, respectively of the Romanian banking system during 2007-2012, based on Johansen cointegration technique. For the euro area, we found this methodology to be appropriate because we can build time and units of study correlations and it returns more accurate results with more freedom degrees and a low multicolinearity level.

Clearly, the banking systems of euro area countries have a different degree of development; however, the balance sheet interdependencies, internationalization and chain evolutions from 2007 onwards are arguments that support the objective of an integrated analysis.

The model includes a dependent variable (the Z score, a proxy for systemic risk) and several independent variables: banking efficiency indicators (net interest margin, non-interest income/total revenue, cost/income), credit risk variables (liquid assets/total deposits, loans/deposits, capital/total assets, regulatory capital/total risk-weighted assets, non-performing loans/total loans), an indicator of competitiveness of bank concentration ratio, an indicator of size, depth and development of banks (deposits/GDP), the rate of financial intermediation (loans/GDP), bank performance variables (ROA, ROE), macroeconomic variables (consumer price index and average annual GDP growth). The model includes 16 countries of the euro area (except of Luxembourg) and has been designed to analyze the derivers of systemic risk likelihood in the euro area (measured by the Z index, a measure of risk and performance) as a multiple linear panel regression model.

Our contribution is characterized by extending the sample to 16 countries over an 11 year period, using annual frequency data for each banking system separately. Of the 15 independent variables related to different bank categories, 11 are statistically significant, influencing the dependent variable (the Z index). The results show that, during 2008-2009, euro area banking systems experienced high levels of systemic risk, driven by risk variables influence; financing based on deposits limits the system risk; the share of bad loans in total loans (preceding year value) has had a negative impact on bank stability, as an increase in this indicator determines systemic risk emergence through credit risk exposure; regulatory capital share of total risk weighted assets directly affects the level of systemic risk through increased capacity of losses absorption, (the relationship between variables is direct); return on assets is the most important determinant of the Z indicator.. The manifestation of systemic risk becomes a reality that incorporates influences of past developments, amid the accumulation of imbalances in the banking business.

In 2008-2009, the Romanian banking system was exposed to a generally high level of risk, return on capital declined, the total outstanding receivables and doubtful loan portfolio grew amid credit risk manifestation, while the interbank market suffered an activity contraction. In 2012, the National Bank of Romania continued its efforts to reduce risks related to consumer loans and non-covered loans.

The analysis of the period 2007-2012 revealed a long-term relationship between the Z index (proxy for systemic risk) and independent variables (investments and loans to other banks/Total assets (gross)% (PCIA)- indicator of bank management; the solvency ratio% (RS)- a measure of banking system soundness; outstanding and doubtful loans/Total loans (net)% (CRI)- proxy for credit risk; credit risk rate (Gross exposure on non-bank loans and interest classified as doubtful and non-performing /Total loans and interest on non-bank loans, excluding off-balance sheet items) % (RRC); liquidity indicator (effective liquidity/ required liquidity) (RL) - measuring liquidity risk; leverage effect (Tier 1/Total average assets) % (LEV) - indicator of bank capital; the rate of inflation% (RINFL) - macroeconomic variable; the average exchange rate (CSCH) - proxy for market risk; ROE - return on equity% (calculated by interpolation to obtain monthly values) - a measure of bank performance).

Our research of both the Eurozone banking system and the Romanian banking system, show the potential, direction of influence and the impact of individual risks on systemic risk regarded as a phenomenon that would lead to a global banking (financial) crisis. If presently the credit risk is a chronic threat, the likelihood of new systemic episodes within the European banking sectors is high, as a result of the massive deterioration of bank balance sheets, under the current macroeconomic context dominated by recession and high values of sovereign debt. In other words, the financial burden increases and banking structures experience a quantitative and qualitative use phenomenon.

In conclusion, we highlight the nature and the influences over the systemic risk, which can have a double and simultaneous path through contagion or exposure to a common asset and we propose to carry on our investigation through further analyses. Because the financial activity, on every form, has been, is and will always be modeled under the individual and aggregated risk levels.

I am grateful to my scientific advisor, Professor Vasile Cocriș for his confidence and coordination during the elaboration of my doctoral thesis. I believe that his scientific values and experiences have contributed to my research, the value of the paper being the result of three years' work. Also, I would like to thank to my family for their moral support and understanding.

This work has been supported by the European Social Fund in Romania, under the responsibility of the Managing Authority for the Sectoral Operational Program for Human Resources Development 2007-2013 [grant POSDRU/107/1.5/S/78342].

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