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PhD Thesis

ABSTRACT

BANKING STABILITY DURING THE CRISIS- THE IMPACT OF LIQUIDITY

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INTRODUCTION

In the real economy, financial intermediaries are a bridge between creditors and debtors of a bank. The combination of these two activities, namely, lending to some customers based on deposits from other customers and borrowing from some customers to lend to others, highlights the main function of banking institutions: creating liquidity. Based on this consideration, studying liquidity in the banking system has always been a subject of interest among lay people, researchers in the field and supervisors and regulators.

The financial crisis started in the United States in 2007 and moved quickly triggering the bankruptcy of renowned banks such as Northern Rock in September 2007, Bear Stearns in March, 2008 and Lehman Brothers in September, 2008. At the end of 2008, the crisis has spread to Europe and Asia and has severely affected countries such as Iceland, Ireland, Latvia, Spain and Greece. The first phase of the financial crisis was characterized by a lack of confidence of depositors and an increase in the liquidity deficit in the interbank markets; the second phase was characterized by debt restructuring and insolvency of banking institutions.

Greedy and reckless behavior of financial and banking players and ineffective prudential regulations jeopardized the stability of the entire financial system. In order to redress the banking system, European countries, through their governments and central banks, implemented a series of rescue measures. These measures include bailout mechanisms to assist mergers and acquisitions, purchase of toxic assets and the nationalizations of banking institutions plagued by financial problems. The measures were implemented ex-post crisis and were not always effective. In the new economic reality, the management of liquidity risk becomes particularly important to maintain banking stability.

The reasons for choosing this research theme lies in in-depth analysis of liquidity risk in the European banking system and the analysis of the overall framework which prompted the initiation and propagation of the liquidity crisis and of the banking crisis. Despite the number of research articles that analyze the liquidity hoarding behavior of banks, there is

scarce evidence of precise measures that distinguish between hoarder and non-hoarder liquidity banks.

The aim of the research. On the one hand, we aimed to detect and estimate the factors that influence the incentives of banks to start hoarding liquid assets and, on the other hand, we assessed the measures implemented by European governments in order to redress economies and banking systems. In order to identify risk factors that influence the preventive behavior of banks we conducted a qualitative analysis and we identified rescue measures implemented by European governments in order to maintain financial and banking stability. We also evaluated methodologies used in the related literature. In addition, we conducted a quantitative analysis of the impact of these risk factors on banking liquidity, and as a natural complement we analyzed the impact of the main financial measures implemented by European governments on bank stability.

In order to achieve our stated goals, we turned our attention towards the following *specific objectives*:

- the analysis of the ineffective management of assets and liabilities and bank liquidity deficit that may generate an eventual financial crisis;
- the impact of prudential regulations on liquidity risk;
- an estimation of the liquidity risk in the European banking markets based on the literature in the field;
- a general analysis of the mechanisms that amplify the recent financial crisis, and in particular, the analysis of the preventive behavior of European banking institutions.
- an identification of rescue measures taken by European governments to reduce the negative externalities of the recent financial crisis;
- an estimation of the impact of these rescue measures on the stability of the European banking system.

Research methodology. In the first empirical study -- *Liquid reserves accumulation during the financial crisis. Empirical evidence from the European banking system*, we

used a dynamic panel specification, the First Differenced-GMM estimator proposed by Arellano and Bond (1991). The bank specific data used in our analysis reveals the precautionary motives of European banks to hoard liquid assets. Funding constraints, structural balance sheet risk, investment portfolio risk, specialization and profitability are key determinants of the hoarding behavior.

In the second empirical study conducted -- *The impact of the measures taken by governments in order to maintain banking stability. Empirical evidence from the european banking system,* we applied OLS estimator with robust standard errors which are consistent with panel-specific autocorrelation and heteroskedasticity. We assessed three measures implemented by European governments: liquidity injections, purchase of toxic assets and nationalization. It turned out that they do not have the desired impact on banking stability and are not always effective. In the future, it is necessary to implement some measures to prevent ex-ante financial shocks that may occur in banks and can be transmitted through various channels in the banking system.

This PhD thesis contains four chapters that address our objectives and provide a detailed picture of the preventive behavior for hoarding liquidity and the impact of the measures implemented by European governments on banking stability.

The first chapter -- BANK LIQUIDITY MANAGEMENT. MICRO- AND MACROPRUDENTIAL APPROACHES, is theoretical and addresses the management of assets and liabilities and the liquidity risk in the banking sector. In the beginning we introduced the concept of bank liquidity and liquidity risk. The second part addresses the ways in which withdrawals, liquidity deficit and relationships in the interbank markets can generate the emergence and expansion of a financial crisis. The third and final part is an analysis of the new Basel III regulations regarding bank liquidity risk. In this chapter we covered the most important theoretical models in the literature that explain the cause of liquidity deficits and bank failures. On the one hand, the traditional theories consider that bank failures are unwanted events caused by random deposit withdrawals without being associated with the changes in the real economy.On the other hand, the same

theories posit that bank failures may depend on the natural development of the economic business cycles.

In the second chapter -- SPECIFIC OBJECTIVES AND METHODS OF THE LIQUIDITY RISK MANAGEMENT INTERVENTION IN CRISIS CONDITIONS PERIODS, we examine the role of the interbank markets and the mechanisms used to boost liquidity shocks in these markets, such as asymmetric information and the precautionary hoarding of liquid assets by European banks. . During the recent financial crisis, banking institutions have faced difficulties in obtaining funding from the interbank markets. Due to asymmetric information and increased counterparty risk, a number of banks preferred to reduce lending and to provision liquidity buffers. In the last part, we analyzed the framework of deteriorating external financing conditions**.** The main objective is to understand the events that led to and amplified the recent financial crisis and liquidity crisis, with emphasis on both individual and aggregate levels. We also present the main directions in the literature on the preventive behavior for hoarding liquidity to protect against financial shocks on interbank markets.

In the third chapter -- DETERMINANTS OF THE PREVENTIVE ACCUMULATION OF LIQUIDITY IN THE EUROPEAN BANKING SECTOR. EMPIRICAL EVIDENCE, we analyze the main actions taken by the European Central Bank to cover the liquidity needs of the banking system and the main liquidity risk indicators. In the empirical study, we focus on several determinants that could explain the hoarding behavior of banks through different channels: funding, lending, trading and interbank markets. Our sample consists of 73 international banks from 17 European Union countries. In our analysis, we use annual data for 2004–2011 period. This coincides with the implementation of the Basel II capital adequacy accord, which was initially published in 2004. The period covers both the pre-crisis and the crisis years. Our analysis contributes to the existing empirical literature by identifying the liquidity hoarding banking institutions. We define the liquidity hoarding banks to be the financial institutions for which the liquid assets to deposits and short term funding ratio exceeds a certain threshold. The proposed threshold is the value corresponding to the 75^{th} quantile of the distribution of liquid assets

to deposits and short term funding ratio.

In chapter 4 -- MEASURES TAKEN BY EUROPEAN GOVERNMENTS TO MAINTAIN BANKING STABILITY. EMPIRICAL EVIDENCE, we introduce the concept of financial and banking stability, we present the responsible European institutions and the main actions carried out by European countries in order to rescue the banking system. In the empirical study, we focus on the impact of various bailout programs on bank behavior. Our sample consists of 85 banking institutions from 10 developed European countries, whichare analyzed during the q1:2009-q4:2013 period. We focuse on Z-score as a banking stability indicator and we assess three policies used by governments: liquidity injections, asset acquisition programs and nationalizations. These safeguard measures are implemented ex-post, but in the future it is necessary to implement some measures to prevent ex-ante shocks that can occur and can be transmitted through various channels in the banking system. Our analysis contributes significantly to the literature because we consider a package of measures implemented by European governments in response to the recent financial crisis. There is a large literature on the impact of government interventions on bank behavior using a single policy mechanism, but as far as we know, there is only one paper which empirically assesses the total impact of government rescue packages on bank behavior (Hryckiewicz, 2014), using a database that covers the period 1991-2003.

Our purpose is to present and understand the recent events that caused and amplified the liquidity shortage at both individual and aggregate levels and their impact on the banking system and the real economy. In order to mitigate the negative impact of the liquidity crisis, stable financial conditions are necessary. In this context, ensuring financial and banking stability has become a priority for political authorities. Knowledge and understanding of liquidity risk is of interest to any banking institution and financial banking regulator.

CHAPTER I SUMMARY. BANK LIQUIDITY MANAGEMENT. MICRO- AND MACROPRUDENTIAL APPROACHES.

The recent liquidity crisis had a significant impact on the banking industry and the economies in the USA, Europe and Asia. If we cannot know precisely the long term effects, it is obvious that the short-term bank liquidity management should be reviewed. The complexity and interconnection between liquidity risk and other categories of banking risk (interest rate risk, credit risk and operational risk) makes the management of this risk crucial for the activity of banking institutions, especially during vulnerable periods.

The emergence of new information, productive and financial shocks, and exogenous future expectations can cause early withdrawal of deposits and the deterioration of the external financing conditions with irreversible consequences on the banking system. Unlike other types of banking risk that can be covered or neutralized with bank capital, illiquidity can have a crucial impact on the existence and operation of a banking institution. The main function of the interbank markets to ensure efficient transfer of liquidity and to provide a co-insurance system against liquidity shocks has been questioned as a result of recent events. The supervisory authorities have considered all these shortcomings and implemented the Basel III Accord, which brings regulations regarding minimum standards for bank liquidity.

Banking institutions should implement prudential regulations, such as an appropriate level of capital, according to risk levels and an optimum level of liquidity risk, in order to mantainn banking business under normal conditions. A proper and prudent management of bank assets and liabilities and of liquidity risk would prevent financial shocks at both individual and aggregate bank levels.

We support the implementation of the Basel III Accord developed to prevent future liquidity crises. Basel III norms were introduced with Liquidity Coverage Ratio (LCR), which is designed to ensure that financial institutions have the necessary assets on hand

to ride out short-term liquidity disruptions and Net Stable Funding Ratio (NSFR), which requires a minimum amount of funding that is expected to be stable over a one-year time horizon, based on liquidity risk factors.

CHAPTER II SUMMARY. SPECIFIC OBJECTIVES AND METHODS OF THE LIQUIDITY RISK MANAGEMENT INTERVENTION IN CRISIS CONDITIONS PERIODS.

The recent financial crisis started in the United States in 2007 with the mortgage backed securities market crunch. Commercial banks provided mortgage loans secured by commercial property to the population. These loans were packaged into securities trading based on the different risk classes and on the repayment capacity of the borrower. The securitization of the bank portfolios was achieved by a "shadow banking system" (i.e. investment banks, mutual investment funds and mortgage brokers).

In 2007, Federal Reserve System decided to increase the interest rates which caused an increase of the lending interest rate. The main consequence of this measure was a large number of borrowers defaulting on loans. In this framework, existing market securities didn't have a potential transaction. Buyers didn't know if such securities were sold because of their low quality or because of the seller's sudden need of more liquidity. This was not an isolated problem, but rather a prevalent one. Thus, adverse selection owes its origin to the sub-premium mortgage market, whichwas amplified and propagated to other financial markets.

As a result of counterparty risk and panic among the population, banks were faced with a cash deficit and a decrease of liquid assets. Based on this situation, banks were forced to either sell their assets, or to increase their funds. Due to limited access to other funds, banks were forced to sell their assets at a price below the long term fundamental price. Increased counterparty risk and the fear of losing future access to the interbank market are are two potential explanations for the liquidity hoarding bahavior of banks. The aspects mentioned above determined and amplified the liquidity shortage and the financial crisis.

Moreover, due to the domino effect, the negative externalities on the interbank markets have a much stronger effect compared to other financial markets. Based on these

considerations, we suggest prudential regulations in order to monitor and treat this risk which affects a considerable number of markets: the interbank market, payment and settlement market, and the OTC derivatives markets.

CHAPTER III SUMMARY. DETERMINANTS OF THE PREVENTIVE ACCUMULATION OF LIQUIDITY IN THE EUROPEAN BANKING SECTOR. EMPIRICAL EVIDENCE.

During the recent financial crisis, banking systems and interbank markets were subject to financial and liquidity shocks that gave rise to the liquidity hoarding behavior of banks. Banks are motivated to exhibit a such behavior either for precautionary or speculative reasons (Gale and Yorulmazer, 2013).

Our analysis provides empirical evidence regarding the main incentives of liquidity hoarding behavior within a unique sample of European banks, whose assets represent around 80% of the European banking system total assets over the period 2004-2011. The dependent variable is the ratio of liquid assets to deposits and short term funding ratio.

Among the possible determinants provided by the theoretical and empirical literature, we consider bank-specific risk variables, specialization and profitability. The incentives for liquidity hoarding are assessed through a dynamic panel specification, using the First Differenced-GMM estimator of Arellano and Bond (1991).

Despite the number of papers that analyze the liquidity hoarding behavior of banks, there is scarce evidence of empirical measures that distinguish between hoarder and non-hoarder financial institutions. In addition to Berrospide (2012), we propose a time-varying approach to distinguish between liquidity hoarding and non-hoarding banks. We define the liquidity hoarding banks to be the financial institutions for which the liquid assets to deposits and short term funding ratio exceeds a certain threshold. The proposed threshold is the value corresponding to the 75^{th} quantile of the distribution of liquid assets to deposits and short term funding ratio. On the one hand, this measure allows for a time-varying evaluation of liquidity hoarding behavior of banks. On the other hand, the ratio of liquid assets to deposits and short term funding ratio accounts for both the availability of liquid buffers as well as the risk of short term funding liquidity shocks. These features are of great importance especially during stress periods.

Our empirical results demonstrate that funding and liquidity constraints significantly influence the liquidity hoarding behavior, due to concerns regarding future access to long term financing markets and unexpected withdrawals by depositors. A reduction of the derivatives portfolio, through which banks could actively manage the liquidity and market risk, determines the decrease of the liquidity buffers. Specialization is another important factor; a reduction in the lending activity determines the increase of the liquidity buffers. Also, a decrease in the profitability ratio enhances hoarding behavior. Moreover, smaller and less capitalized banks present more incentives to hoard liquid assets in respect to funding liquidity shocks.

The empirical results are validated according to various types of specifications. Their robustness was checked by employing different strategies: controlling for other potentially relevant variables, accounting for different period spans and allowing for different endogeneity specifications.

In terms of policy implications, we want to stress that the analysis of liquidity hoarding behavior in the banking system is of great importance both for the individual risk management of banks, as well as for the financial supervisory authorities in designing an efficient macroprudential supervision framework.

CHAPTER IV SUMMARY. MEASURES TAKEN BY EUROPEAN GOVERNMENTS TO MAINTAIN BANKING STABILITY. EMPIRICAL EVIDENCE.

Injections of liquidity provided by central banks and nationalizations are not effective measures for bank stability. These safeguard measures are implemented ex-post, but in the future, it is necessary to implement some measures to prevent ex-ante shocks that can occur and can be transmitted through various channels in the banking sector. Buying toxic assets as a mechanism to slavage failed banks effects changes in a bank's balance sheet, but the lending activity is not affected.

In our empirical study, we focus on the impact of various bailout programs on bank behavior. Our sample consists of 85 banking institutions from 10 developed European countries, which are analyzed during the q1:2009-q4:2013 period. We focused on Z-score as a banking stability indicator and we assessed three policies used by governments: liquidity injections, asset acquisition programs and nationalizations.

The estimates are run through OLS panel data method with robust standard errors, consistent with panel-specific autocorrelation and heteroskedasticity. The results show that the liquidity injections and nationalizations have a negative impact on banking stability, while the purchase of toxic assets from banks' balance sheets has a positive impact on banking stability.

The above results are in line with a theoretical model proposed by Dietrich and Hauck (2012) who shows that the mechanism of buying toxic assets from banks' balance sheets may have a positive effect on the economy. The implementation of this policy may effect changes in a bank’s balance sheet (i.e. the amount of risky assets is replaced with safe assets) but it does not affect the bank's new business; the bank’s marginal cost and the benefits of new bank loans remain the same.

GENERAL CONCLUSIONS

This paper addresses liquidity risk and the stability of the European banking system. We had two main research questions: Which are the risk factors that influence the incentives of European banks to start hoarding liquid assets? What is the impact of governments' financial measures on banking stability?

The topic addressed is of utmost importance for several reasons. First, we noticed an increase in liquidity shocks and in the the frequency of worldwide financial and banking crises. Since 1970, there have been about 147financialcrisesin116countries. (GBO, http://www.globalbanking.org/globalbanking.taf?section=mapsmap=systemic-banking-crises).

Second, social and economic costs of these financial imbalances are particularly high. Thus, political authorities should adopt measures and programs to reduce the effects of negative shocks recorded. The United States spent about 30 trillion dollars (Hryckiewicz, 2014), and Europe have spent about 3 trillion € (Petrovic and Tutsch, 2009) to address the negative effects of the recent financial crisis.

At the same time, there is a continuous change in the nature of risk assumed by banks based on intensifying interbank connections, the processes of globalization and liberalization of services and innovations in this field. Liquidity risk management in vulnerable economic times has become essential as it can affect the existence and operation of banking institutions. The inefficient allocation of liquidity resources coupled with the inability to sell an asset in a short term at a low cost and with little impact on its price, may cause major losses and even bankrupt financial institutions. Liquidity shocks that affected financial giants, such as, Northern Rock, Lehman Brothers and Bear Sterns, confirms the irreversible nature of liquidity risk on banking institutions and the banking sector. This paper sought to analyze a range of factors related to bank liquidity management and assessment of systemic financial and banking stability.

The recent financial crisis started in the United States in 2007, with the mortgage-backed securities market crunch. Commercial banks provided mortgage loans secured by commercial property to the population. These loans were packaged into securities trading based on different risk classes and on the repayment capacity of the borrower. The securitization of the bank portfolios was achieved by a "shadow banking system" (i.e. investment banks, mutual investment funds and mortgage brokers). Securitisation involves asymmetric information due to the complexity of the instruments, due to the lack of transparency and the difficulty of being valued by investors (Ashcraft and Schuermann, 2008). Structured products such as collateralized debt obligation (CDOs) were created to diversify the portfolios of mortgages and other asset classes, such as corporate bonds, auto loans and credit cards.

In 2007, the Federal Reserve decided to increase the interest rates, which caused an increase of the lending rate. The main consequence of this measure was a large number of borrowers defaulting on loans. In this framework, market securities did not have a potential transaction. Buyers did not know if such securities were sold because of their low quality or because of the seller's sudden need for more liquidity. Adverse selection, the uncertainty about the value of assets, increased counterparty risk in financial markets and the liquidity hoarding behavior are the main factors that caused the liquidity deficit and the recent financial crisis. The European banking sector has been severely affected since the last quarter of 2008.

Liquidity hoarding behavior is a phenomenon that occurs when investors sell what they believe to be less liquid, with higher investment risk, and buy more liquid investments. This phenomenon accompanying economic shocks may increase adverse selection and turn into a severe financial crisis. A higher preference for liquid assets during the financial crisis may be understood as preventive behavior caused by perceived limited possibilities to increase funds and to liquidate assets from banks' portfolios.

Despite the number of papers that analyze the liquidity hoarding behavior of banks, there is scarce evidence of empirical studies that distinguish between hoarder and non-hoarder financial

institutions. Our main contribution was precisely to define the preventive behavior of hoarder banks. The proposed threshold is the value corresponding to the 75^{th} quantile of the distribution of liquid assets to deposits and short term funding ratio. Thus, liquidity hoarding banks are the ones that register a liquidity ratio above the corresponding value of the 75^{th} quantile, while the banks with a ratio below this value are considered to not be liquidity hoarding banks. The ratio of liquid assets to deposits and short term funding is the dependent variable used in our approach. This ratio captures the maturity mismatch risk specific to a bank's balance sheet;managing this risk during vulnerable timesis essential for the activity of financial and banking institutions.

In order to determine the incentives of liquidity hoarding, we performed an empirical analysis on a sample which consisted of 73 international banks from 17 countries, all members of the European Union. At the end of 2011, their assets accounted for 79,58% of the total assets of the European banking system. During the period 2004-2011 we identified 26 hoarding European banks.

Among the possible determinants provided by the theoretical and empirical literature, we consider bank-specific risk variables, specialization and profitability. The incentives of liquidity hoarding are assessed through a dynamic panel specification, using the First Differenced-GMM estimator of Arellano and Bond (1991). We used this methodology based on the following considerations: in our sample, the number of banks is greater than the number of periods (N = 73> T = 8);it is assumed that one or more regressors are correlated with the error term; and there may be variables excluded from the model that are uncorrelated with the error term. In a dynamic panel, the correlation between the lagged dependent variable $Lq_{i,t-1}$ and the fixed effects η_i, generates dynamic panel bias as pointed out by (Nickell, 1981). This problem could be addressed by instrumenting $\Delta Lq_{i,t-1}$ with lagged values of the dependent variable in the differenced regression. In our empirical specification, we applied a set of options that correct heteroskedasticity and autocorrelation (i.e. robust standard error, small sample correction and orthogonal deviations). To test for serial correlation, we used the Arellano-Bond test with null hypothesis of no serial correlation between residuals.To test the validity of the

instrumental variables, we used the Hansen test. Its null hypothesis is that the instruments are not correlated with the residuals.

Banks accumulated liquid assets to defend against liquidity shocks from interbank markets during the recent financial crisis. Our empirical results demonstrate that funding and liquidity constraints significantly influence the liquidity hoarding behavior. Following the freezing of the interbank market after the bankruptcy of the American financial group, Bear Sterns, banking and financial institutions had difficulties in obtaining liquidity. The latest studies (Ivashina and Scharfstein, 2010) demonstrated that after the bankruptcy of the Lehman Brothers financial institution, many banks have experienced withdrawals of deposits and decreases in credit lines. Therefore, during the financial crisis, financial institutions displayed increased concern over long-term funding sources and unexpected withdrawals of deposits.

A reduction of the derivatives portfolio, through which banks could actively manage the liquidity and market risk, determines the decrease of liquidity buffers. Banking institutions that have accumulated liquidity reserves are more specialized in this type of activity than those that do not display this behavior. Banks which increased the value of this indicator during the crisis compared to pre-crisis value, preventively acquired liquid assets.

Specialization is another important factor that stimulates banks to build up reserves of liquid assets. Based on a high exposure to mortgage-backed securities market, banks had good reasons to be worried about lending to other banks in the interbank market.Thus, immediately after the collapse of the mortgage-backed securities market, banks were faced with the difficulty of borrowing on the interbank market. Meanwhile, lending rates reached record levels.The difficulty of obtaining liquidity on the interbank market manifested itself in several countries. Thus, during the crisis, some banks behaved preventively and reduced lending activity in exchange for accumulation of liquid assets.

In addition, a decrease in the rate of profitability as a source of liquidity may cause the banking institutions to build up liquidity buffers due to preventive reasons. Another important result of our study shows that small banks and less capitalized banks are much more stimulated to build up reserves of liquid assets.

The effects of liquidity shocks and of the recent financial crisis on the banking systems and on the real economies have been devastating. Fiscal, economic and social costs were very high. It is therefore necessary to implement effective policies for the amelioration of economic disasters. To prevent the spread and the collapse of the entire financial and banking system, governments implemented a number of measures to limit the externalities: deposit-guarantee scheme, injections of liquidity, recapitalizations, ”toxic assets” purchases mechanisms, nationalization of the institutions with severe financial problems. In this context, mantaining banking stability has become one of the main concerns of political authorities. The main goals of political authorities is to increase the global financial stability and the management of financial sector instability.

In this framework, the main challenge of the European governments is to implement effective financial measures in order to establish financial and banking stability. On the one hand, there are pros for which the state should intervene to assist financial institutions to avoid the collapse of the entire financial system, but on the other hand, there are also arguments that banks should be allowed to fail because their failure is ther result of nothing but their greedy and reckless behavior and the rescue plan would not do anything else than to stimulate the moral hazard problem.It is in this context that wedecided to address the financial effects of the measures implemented by governments over the European banking system stability.

As far as we know, there is only one paper which empirically assesses the total impact of government rescue packages on bank behavior (Hryckiewicz, 2014). The policies used in the research are blanket guarantees, liquidity injections, nationalization and government-assisted mergers. The database covers the period 1991-2003. Our main contribution was to analyze a set of similar measures taken by European governments during the recent financial crisis. In our empirical analysis, we included three measures implemented by governments: liquidity provision, the purchase of toxic assets and the nationalization of financial and banking institutions.

Our empirical setting focuses on 85 banking institutions from 10 developed European countries, which are analyzed during the q1:2009-q4:2013 period. We focused on Z-score as a banking stability indicator. A higher Z-Score implies a higher degree of solvency and therefore it gives a direct measure of bank stability. Based on a large set of bank-level, macroeconomic and market structure variables we applied OLS estimators.

Injections of liquidity provided by Central banks and nationalizations are not effective measures in terms of bank stability. These safeguard measures were implemented ex-post, but in the future it is necessary to implement some measures to prevent ex-ante shocks that can occur and can be transmitted through various channels in the banking sector. By implementing the mechanism of buying toxic assets there will be changes in the bank's balance sheet, but its lending activity remains unaffected

We conclude by emphasizing the role of the liquidity risk management during vulnerable periods. The recent financial crisis was a catalyst for bank regulatory reforms since the supervision and regulation framework of the pre-crisis period proved inadequate in stress periods. The Basel Committee on Banking Supervision introduced internationally harmonised global liquidity standards to meet liquidity shortfalls encountered in the banking practice. In this framework, we support the implementation of the new Basel III capital and liquidity requirements.

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