UNIVERSITY OF LJUBLJANA
FACULTY OF ECONOMICS

MASTER'S THESIS

ANALYSIS OF BANK REGULATION AND BANK OPACITY IN THE EMU WITH EMPHASIS ON THE EUROPEAN DEBT CRISIS

Ljubljana, July 2018 EMILIJA POPOSKA

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LIST OF ABBREVIATIONS

BCBS	Basel Committee on Banking Supervision
BIS	Bank for International Settlements
CET1	Common Equity Tier 1 capital
ECB	European Central Bank
EMU	European Monetary Union
FE	Fixed Effects

GDP	Gross Domestic Product
IAS	International Accountig Standards
IASB	International Accountig Standards Board
IFRS	International Financial Reporting Standards
LLP	Loan-loss provisions
NPL	Non-performing Loans
RE	Random Effects
RWA	Risk Weighted Assets

INTRODUCTION

This Master's thesis will focus on examining the relationship between regulation changes and bank opacity, emphasizing the regulatory changes derived from the European debt crisis.

Opacity as a term can be described as manipulation by the banks of their financial statements, which results in their decreased transparency and hence decreased quality of the information banks disclose to the public.

The risk of a bank's opaque behavior can be easily connected to the main role of the banks as financial institutions in the markets. Namely, the main function of the banks on the markets is to issue loans to both individuals and legal entities. That constant loan issuing leads to banks being exposed to several risks, and the most fundamental is the credit risk i.e. the risk that the issued loan will not be paid back by the bank's client. That behavior by the bank's client leads to non-performing loans (hereinafter: NPLs).

Why the NPLs and loan loss provisions (hereinafter: LLP) are considered an important indicator regarding the possible opacity in the bank's statements? As it was previously stated, the primary role of the bank is to issue loans to individuals, firms and governments. That is why the banks face a credit risk that the issued loans will not be paid back. To minimize the credit risk, banks set aside a certain amount called LLPs to absorb the expected loss on the bank loans. The estimate of the LLPs is a key credit risk management tool used by the banks to meet and manage the expected losses of the loan portfolio of the bank (Ozili & Outa, 2017). European banks, individually, determine the amount they will set as LLPs by developing a model that estimates the LLPs on micro and macro independent variables. The LLPs estimate is a crucial surveillance tool in the hands of bank supervisors to assess the quality of a bank's portfolio. That is why, the LLPs estimate is both theoretically and practically the best proxy variable to estimate the possible bank opacity.

After the unanticipated recession of 2008, the LLPs became a main topic of debate in the academic circles due to their procyclical nature that led to worsening the economic performance of the complete financial sector. Many banks in the United States and European Union have increased their LLPs estimates during the crisis, which later eroded and deteriorated the profits of the banks and simultaneously eroded the banks' capital. The bank regulators have concluded that the regulation standards (Basel II Standard was implemented at that time) and the International Accounting Standard 39 (hereinafter: IAS 39) which applied the incurred-loss methodology of provisioning were not detailed enough and hence did not assess the credit risk appropriately. In addition, the regulators assessed that the non-optimized methodology of provisioning increased the severity of the crisis and led to devastating consequences for the financial markets across the world.

The biggest change in regulation, in the period after the crisis of 2008, was the introduction and the beginning of implementation of the Basel III Standard in 2013. In the regulation overview of this Master's thesis, we will focus on the chronological development of the Basel standards and their implications on the reporting quality of the banks. The new International Financial Reporting Standard (hereinafter: IFRS) 9 was presented and it has been implemented since January 2018.It presents an expected credit loss approach instead of the previously applied incurred-loss approach. We compare and analyze both methodological approaches within this Master's thesis.

In the section of the chronological overview of the loan-loss provisions, we will consider the following segments: their pro-cyclicality, their usage for earnings and capital management in different jurisdictions and different regulations throughout time. It is important to give a detailed overview of the phases of the Basel standards and the constant need for their optimization.

Due to the fact that the bank managers hold the discretionary role in defining the methodology and the provisioning policy which later on defines the amount of the LLPs kept by each bank, there is a growing concern that they are given the freedom to abuse their position. That opportunistic behavior is in most cases connected to overstatement of the LLPs estimates, when the credit risks the banks are facing are actually low. Also, the practice shows that the LLPs estimates can be manipulated by banks' management for income smoothing by the level of earnings reported, which leads to decrease of transparency of the LLPs estimates.

To give a more detailed overview of the role the LLPs in bank governance have, theoretically, there are two crucial hypotheses that test the possible decreased transparency of the financial statements due to possible managerial opportunistic behavior: 1) The Capital management hypothesis, 2) The Earnings management hypothesis (Leventis, Dimitropoulos, & Anandarajan, 2011).

The Capital management hypothesis is founded on the idea that the management of the bank uses the LLPs to fulfill the capital requirements set by the regulator when there is a possibility the banks' capital will not meet the requirements. This behavior from management's side is a result of the costs that follow, if the bank does not meet the capital requirements.

The fact that the Retained Earnings are part of Tier 1 Capital, and the limit that is set does not apply for LLPs within Tier 2 Capital, leads to conflicting effects when the LLPs are set to a higher amount. This gives space for manipulation, as an increase in the LLPs can lead to an increase in Tier 2 Capital. The empirical results up until now have shown to be non-consistent and the active participation in the capital management has proven to be mainly based in the United States.

When it comes to the Earnings management hypothesis, banks can mispresent the reported earnings in such a way that the financial result might not be a fair representation of the bank's activity. The most often used earnings management practice is the income smoothing_practice, which is achieved by increasing the LLPs when earnings are high and decreasing LLPs when earnings are low, which stabilizes the net profit. In that manner, the financial statements will display constant or nearly constant levels of earnings to show stability in the bank's financials, which in most cases is not real.

This discretional usage of the LLPs to display the regulated level of capital or to display stable earnings is a result of a non-optimal regulation which has the worst consequences whenever a financial crisis starts. That is why, after the financial crisis, many comparison analyses have been conducted, examining the difference in the regulation among the countries hit by the crisis, and the non-crisis countries.

The latest financial crisis of 2008 resulted in the introduction of the new Basel III Accord which was presented in 2013. The Basel III Accord gave a more specific definition of the capital and earning measures, and presented a new indicator expected to make up for the weaknesses of the standard capital and earnings measures, the leverage ratio. In addition, in the year 2018, the new IFRS 9 standard was presented and it has been implemented since then. This is why we can easily conclude that this is a revolutionary period for the LLPs methodology and provisioning policies. The reforms leave room for the banking sector to respond to the new regulation.

The main objective of this Master's thesis is to examine that response by considering the interdependence of the regulation and the bank opacity, using LLPs as a key indicator navigating the research. The best way to examine the behavior of the bank managers is to examine the way they change their behavior regarding earnings and capital management with major regulatory changes, such as the implementation of Basel III. Thus, the earnings and capital management hypotheses will be tested to verify whether the banks in the sample have been engaging in earnings and capital management before and after the Basel III introduction.

The secondary objective is to give an overview of the latest changes in Basel regulation, the increased discretion of the management to govern the capital and earnings management, and to give recommendations that will lead to more transparent and true financial reports by the banks in the future.

The model's estimate is the ratio of the LLPs to the total assets of the bank. As it was elaborated above, the LLPs are both theoretically and practically best proxy variable for bank opacity, as banks have proven to use the LLPs to manipulate their financial statements and hence decrease their transparency.

On the side of the independent variables, the model includes both capital and earnings financials, proxy variables that describe the bank size and the state the economies are in and

a Dummy variable (1) for variables from 2013 onward, otherwise (0). The Model we use is based on the models previously developed by Leventis et al. 2011) and Curcio, de Simone & Gallo, (2017). We also add variables which emphasize the role of the Basel III implementation and the economic crisis of 2008.

As elaborated above, two hypotheses are tested to discover if earnings and capital management is applied from the banks' management. By getting the signs in front of every variable included in the model and their statistical significance, the previously developed hypothesis will or will not be rejected. The statistically insignificant variables are treated as variables that do not affect the LLPs amount that is set aside from the bank to meet the credit risks. To be more specific, the results from the developed model give answers to the three most important direct questions:

- Have the banks used capital management to avoid costs for non-fulfilling mandatory levels of capital set by the regulators?
- Have the banks engaged in earnings management to smooth out the incomes and show stable levels of earnings over time?
- Has the new regulation introduced through the Basel III Standard decreased the bank opacity and its' impact on decreasing bank statements transparency?

This Master's thesis also gives an indirect answer on the effect the level of economic development and economic growth have on the transparency of the banks' financial statements. Similarly, we analyze the role of the award system for banks' managers and give recommendations about inclusion of their further analyses and optimization.

The Master's thesis is structured in six separate sections. In the first section, we analyze the importance of the loan-loss provisions in the EMU. The second section focuses on the literature overview of the Basel Standards. The third section focuses on the capital and earnings management hypotheses, and the signaling hypothesis. The fourth section focuses on the data sample and the methodology used to test the previously set hypotheses. The fifth section displays the results from the empirical research and gives explanation about each one of them. The sixth and last section is the conclusion that once more summarizes the results of the empirical research, set forecasts for the future and gives recommendations for regulation optimization and further research.

1 IMPORTANCE OF THE LOAN LOSS PROVISIONS IN THE EUROPEAN MONETRY UNION BANKING SECTOR

When issuing loans to private individuals and legal entities, banks and institutions increase their credit risk by exposing themselves to the inability of the borrower to pay the loan back i.e. the loans issued will be non-performing. To hedge against this credit risk, banks are obliged to set aside a certain amount that will be able to absorb the estimated and expected losses in the bank's loans portfolio. That amount is defined as LLPs. The LLPs es-

timate is an estimate that serves, as a credit- risk management tool on the one hand and on the other hand is a crucial micro prudential surveillance tool used by the supervisors, to assess the quality of the banks' loan portfolio.

The LLPs are one of the main accrual expenses of the banks and that the information they contain is sensitive and crucial for the quality of the credit portfolio of the bank. Their amount is neither generally defined by a regulating body nor agreed upon, among the banks. That is why the bank's management holds the discretion in the estimation of the LLPs. This discretion can be misused, and the provisioning policy can pursue goals that are different from a fair representation of the estimated loan loss provision variable of the bank.

Consequently, there is an apparent need for further analysis from different angles in the field of LLPs. One aspect being the link between the LLPs and the capital regulation; The other aspect is the possible income smoothing that can be applied by the bank's management; In addition, the third and most important aspect is that of the regulator: "Can the regulator set a regulation practice that will efficiently limit the possible opportunistic behavior of the management?"

1.1 Application of Loan Loss Provisions in the European Monetary Union

According to European Central Bank (2016), the main focus on this issue started in 2014 when a comprehensive assessment was conducted, which reviewed asset quality and conducted a stress test on the banks. According to the abovementioned data analysis conducted by the European Central Bank (hereinafter: ECB), numerous banks in the Member States are experiencing high levels of NPL, intensifying the credit risk supervision as a supervisory priority of the bank. That is why the Draft guidance to banks on NPL contains mostly qualitative elements on their effective management and supervision. The short-term plan is that this guide will focus on the timely assessment of the NPL, LLPs and loan write-offs.

The regulatory body advises the banks to set the amounts of the long-term NPL on an overall and a portfolio-level basis. In the examples of banks with high NPL, the aforementioned targets ought to incorporate a projected absolute or percentage of the non-performing exposures reduction. That amount should be set gross and net of the LLPs.

The crucial step in reducing a bank's NPL is the realistic self-assessment from the bank's side about the severity of the situation the bank is in. Namely, the banks need to assess the amount and the stimulators of the NPLs issue. Further assessment also includes assessment of the outcomes of the NPLs actions taken in the past and the real operational capabilities to deal with the issues when loan data is in question. On the other hand, it is important to assess the external macroeconomic and operational conditions and react to them accordingly.

When it comes to the to the regulatory, legal and judicial frameworks, on a country and European Monetary Union (hereafter: EMU) basis, it is necessary for a bank to have a good understanding of the special practices of the legal proceedings linked to the NPLs for different classes of assets involved in the loans and the jurisdictions the banks execute their duties in. All these internal and external factors affect the length of proceedings, the average outcomes in practice, the collaterals and guarantees involved. All legal processes a bank engages in due to issues with the NPLs have associated costs that arise from them.

From the above mentioned we can conclude that there is both, theoretical and practical interdependence among the NPLs and the macroeconomic conditions. Thus, it is easy to conclude that the degree of the LLPs and the NPLs are important quantitative indicators for assessing the complete well-being of the banking sector in the EMU.

As previously mentioned, there is not a general agreement about the amount of the LLPs each bank should hold, but the general practice is that the unanticipated losses of the bank ought to be covered by the bank's capital. The anticipated losses on the other hand, ought to be covered by the LLPs.

The theory requests the banks to set aside LLPs to protect against the possibility that certain loans will not be repaid in full. The practice in the EMU shows that the accounting provisions are made once the loan has genuinely become impaired (one of the most important signals is when interest payments have been missed). That practice of provisioning is called the incurred-loss approach to provisioning. Consequently, on a macro level the provisioning for most bad loans most often does not increase to a significant extent until cyclical downturns have set in. Should that be the case, it is logical that the provisioning practice intensifies the pro-cyclical effect of the economic cycle on banks' income and capital.

The regulating institution in the EMU is the ECB and as such on a regular basis, sets the objectives that the provisioning practices ought to fulfill and apply. Namely, the current three principal objectives of the ECB regarding the provisioning practices of the banks are the following (ECB, 2016):

- Adequate measurement of impairment provisions across all loan portfolios through sound and robust provisioning methodologies;
- Timely recognition of loan losses within the context of relevant and applicable accounting standards: IAS & IFRS;
- Enhanced procedures including significant improvement to the asset quality and credit risk management disclosures.

The accounting methodology that has been practiced was the IAS 39. From January 2018, the IFRS 9 was introduced and has been applied by the Single Supervisory Mechanism banks that in the EMU are preparing their financial statements in accordance with the IFRS standards. The set measurement for provisioning, by the new regulation, is going to be the

expected credit loss model, and not the incurred loss-provisioning model. It is expected that point 2 from the provisioning objectives above (timely recognition) will be achieved by the implementation of the new methodology.

In addition, according to the new IFRS 9 Standard, every time the expected credit losses are calculated, they forecasts the macroeconomic conditions. The long-term expected losses ought to be calculated by working out the present value difference of the cash flows the bank expects to receive under the loan agreement and the present value of the cash flow of the banks' clients (ECB, 2016).

The regulation practices and reforms are reviewed in more detail in section 2 of this Master's thesis. In the following paragraphs of this section we conduct an overview of many empirical analyses that have tackled the question of the LLPs behavior in the EMU.

To begin, Curcio & Hasan (2015), by using a sample of 491 banks over the period 1996-2006 and comparing the non-EMU and the EMU find that the LLPs reflect the changes in the expected quality of the banks' statements especially in the EMU as the earnings management is strongly supported. In the non-EMU, the banks used LLPs to signal private information to external stakeholders, but not for active earnings management and income smoothing. The same analysis was conducted from the authors for the period during the crisis (2007-2010), and the behavior of the banks both in EMU and non-EMU has changed. Namely, in the EMU, the LLPs became pro-cyclical, and were not used for income smoothing. When it came to the non-EMU banks, after the crisis, they started using the LLPs for income smoothing, but not for managing their capital ratios, or providing information to the market (signaling).

Empirically, banks in the EMU tend not to be supportive of changes in the financial sector, which may lead to difficulties in the implementation of the reforms. The implementation of the IFRS standards in 2005, for example, had the goal of narrowing down the interpretation of the LLPs as a factor for banks to adequately measure the credit risk. Yet, Leventis et al. (2011), by examining a sample of 91 European Banks, find that after the implementation of the IFRS the usage of the LLPs for the purpose of earnings management is significantly reduced. Thus, despite the initial negative attitudes of the financial institutions and their management, the changes have been implemented and the users of financial reports had benefited due to the enhanced quality generated in the post IFRS implementation period.

Bonin & Kosak (2013), examine the pro-cyclical behavior of the LLPs among banks in 11 emerging European countries and find evidence that banks in the emerging European economies do use the LLPs to smooth the reported earnings. They also argue that in the absence of minimum regulatory capital ratios, banks will view the LLPs as a form of bank capital. Namely, when bank equity capital is low, banks will overstate LLPs to compensate for the low capital levels and will understate the LLPs if they have sufficient equity capital.

From the above elaborated, it can be concluded that from both, the theory and the empirical practice, the LLPs are undoubtedly a significant tool in the hands of banks' management in the one hand, and in the other hand are an important regulatory segment in the hands of the bank regulators. That is why it is crucial for them to be appropriately supervised and regulated. In the following section, the pro-cyclical nature of the LLPs will be analyzed both theoretically and through empirical results from various studies constructed from data in different regulations and jurisdictions.

1.2 Loan Loss Provisions and pro-cyclicality

In the previous section we gave an overview of the current provisioning policy in the EMU and introduced the new regulation propositions. The newly introduced regulation has the goal to decrease the pro-cyclical nature of the provisioning "incurred-loss" approach.

Pro-cyclical nature of the provisioning means that the recession the economy has entered in, will be deepened and increased by the mere rational behavior of bank managers decreasing their lending amounts and increasing the LLPs set aside to meet the credit risk which in these cases is also increased.

According to Ozili & Outa (2017): An increase in the bank provisioning during recessionary periods will further reduce bank net interest margin, decrease bank overall profit and worsen the state of banks during the recession. If the recession is prolonged, bank capital can be completely wiped out.

To support that statement, Agenor & Zibermann (2015) find that banks tend to lower the LLPs during economic booms and create reserves during downturns. The unexpected losses should be covered by bank capital, whereas the expected losses should be covered by LLPs or by future margin income.

Given the above elaborated, it can be concluded that theoretically, two factors are important when a bank is developing its loan policy: the credit risk level of the bank in question, and the business cycle of the economy. Often, the misevaluation of the credit risk over the business cycle justifies the bank lending fluctuations, meaning that the misjudgment leads to non-constant loaning policies. In periods of economic expansion, banks tend to take on greater risks due to their positive expectations and credit risk understatement. On the other hand, in the cyclical downturns, the banks tend to be excessively pessimistic, if they overstate the credit risk they are facing. Petersen & Rajan (1994) claim that this kind of behavior can be connected to the herd behavior theory, which states that the bank's management is overly obsessed with short-term concerns and focuses on the perception of reputation.

The main question that should be asked when discussing a possible mitigation of the systematic risk and pro-cyclicality, is about the existing set standards and regulations that fuel up the pro-cyclical nature of the provisioning practice.

Credit risk management without specified rules on how to set the provisions covering the expected credit risk may have pro-cyclical effects. The relationship between the credit risk and the LLPs distinguishes two components: a non-discretionary component and a discretionary component.

The non-discretionary component (mostly connected to problem loans) aims to cover the estimated future credit losses in the loans portfolio of the bank. In the period of economic expansion, only few NPL tend to be identified, and that is why also the level of LLPs tends to be low. And the reverse: during the period of crisis the LLPs increase, as the loan defaults usually increase. According to Bikker & Metzemakers (2005), the ratio of LLPs to total assets, which serves as a key indicator, exhibits procyclicality.

The expected credit risk though, does not appear in the times of economic downfall, it actually appears at the time the loan is granted. Loans are usually granted in times of economic expansion. A time-lag is noticed among riskier loans which are issued when the economy is booming. That means that the bank does not detect the risk the loan has at the time of issuing, but later on when the loan performance is being monitored. Therefore, the estimated loan losses are under-provisioned and under-stated during an expansion phase. Analogically, the cyclical nature of loan issuing and losses is consequential to the underestimation of the credit risk at the time of the loan issuing. The NPLs then, lead to profit and capital deterioration. The profit and capital deterioration in the short-term discourages the loan issuing and it thereafter discourages investments in the economy which results into pro-cyclicality of the crisis.

Given that the LLPs are a variable governed by the bank management, it is logical to conclude that they tend to have a discretionary component and be used to achieve management goals and short-term objectives. There are several ways, in practice, with which banks use their provisioning policies for accomplishing goals, and those are: income-smoothing (when earnings are expected to be low, the LLPs are understated), capital management (capital-constrained banks can use discretionary accruals to achieve regulatory-capital targets) and signaling information about the financials of the bank.

The LLPs are divided into specific and general provisions. According to Agenor & Zibermann (2015), the specific provisions depend on the expected loan losses which the bank system identifies as non-performing (usually the loans are 90 days overdue). The general provisions on the other hand are dependent on the expected losses that are usually performing at the time of observance but are likely to be impaired in the future.

According to Perez, Salas-Fumas & Saurina, (2008), the general provisions increase in times of economic expansion, as the amount of the issued credit is increased. On the other

hand, during the period of economic contraction, the loans to riskier companies which were issued in the period of expansion have a materialized risk.

When risk materializes, higher specific provisions ought to be set aside to meet the risk. Analogically, the specific provisions are connected to impaired loans, whereas, general provisions are often based on a broad assessment of possible future losses on the entire banks portfolio. The IAS 39 defines the specific provisions, which require the banks to use a method of incurred losses provisioning. This method allows the banks to set the provisions only once a loss has incurred, hence the general provisions are just a small percentage of the total provisions a bank will set. As it was previously mentioned in section 1.1 the IAS 39 standard was replaced with the IFRS 9 in January 2018, which requires an estimated loan losses provisioning policy.

According to the Basel definition of capital, part of the general provisions counts as capital. Due to the close link between provisions and capital, it is easy to conclude that a stable provisioning policy ought to be a part of any regulation on capital requirements. The cyclical characteristics of the LLPs can be used by the banks' management to decrease the transparency of the financial statements submitted to the regulative entity. That is why the LLPs are crucial for the soundness and stability of the banking system.

The financial literature has analyzed the causes of the cyclical and the pro-cyclical decisions of banks' management practices when it comes to the applied provisioning methodology. For example, Bikker & Metzemakers (2005) conducted a wide research by constructing a provisioning model that consisted of panel data from the banks that are located in the countries that are members of the Organization for Economic Co-operation and Development (OECD). The model compares the LLPs and loan reserves within different countries by examining the provisioning behavior. The LLPs and reserves are examined as they are the variables containing the key information for the loans' portfolio quality. The data showed that provisioning strongly depends on the business cycle which can be concluded from the negative relationship between GDP and provisioning. In addition, the data confirms the presence of the capital management hypothesis, demonstrating that the banks apply active provisioning more, when their capital ratio is lower. The loan loss reserves showed a smaller effect in the results than the LLPs, demonstrating that the cyclical effects are not cumulative over time.

According to Monokroussos, Thomakos & Alexopoulos (2016), the crucial cause of the rapid increase of the NPLs in Greece with the outbreak of the sovereign debt crisis is to the biggest extent connected to the economic downfall and the increased level of unemployment. They also empirically confirmed that the Greek banks tend to apply provisioning policy that has pro-cyclical tendencies by taking higher provisions when the country is in economic downfall.

Lobo & Yang (2001) examine the three approaches that the bank management uses to apply their discretionary behavior: capital management, earnings management and signaling. They find that in the periods of economic recession when the capital becomes expensive due to the fact that if the capital minimum is not achieved, the bank has to cover the accompanying costs. That is why banks tend to reduce their loans at the time of economic contraction and it becomes difficult for banks to manage their capital through the LLPs.

Borio, Furfine & Lowe (2001) find empirical evidence that is consistent with the procyclicality thesis and confirm that it can be the main cause for furthering financial instability. Namely, during the periods of economic expansion, the ratio of credit to GDP statistically significantly increased, whereas in the times of the economic downfall, the ratio declined. The authors also claim there are four types of responses from the parties involved in the financial system to the frequent risk changes, which can have positive implications in the future. The responses are: better understanding of risk, introduction and implementation of new rules of supervision (which will enable implementation of a timely risk assessment and disable risk underestimation in the times of economic expansion), applying supervisory instruments in a countercyclical manner and the last response is the application of monetary policy in disabling financial imbalances from occurring in the future. From the bank clients' perspective, it is crucial for the banks to be actively hedging against the risk of economic downfalls by saving and setting aside provisions during the periods of the economic expansion. If we look how the financial industry really responded to the crisis of 2008, we can easily conclude that the four types of responses are present in the post-crisis period. The crucial changes are: the newly introduced regulation (the Basel III Accord) and the developed countercyclical instrument (the migration from the IAS 39 to the IFRS 9).

Empirically and theoretically, pro-cyclicality of the provisioning is connected to the incurred loss approach, because the bank reacts to the loan loss after it had occurred, instead of applying an expected loss approach.

For example, Agenor & Zilberman (2015) studied the interdependence among the provisioning systems and the economic fluctuations within a dynamic stochastic general equilibrium model with credit market imperfections. They started their study with the specific provisions for which they concluded that due to the fact that they are triggered only by previous due payments, they are more connected to the current stage of the business cycle and the loan loss reserves. On the contrary, the dynamic provisioning takes into consideration the past payments and the expected credit losses, and that is why in this methodology, the LLPs are smoothed over the cycle and are less affected by the current state of the economy. This affects the loan rate that reversibly defines the degree of cyclicality in the economy.

That is why the Basel Committee together with the IAS continuously develop the expected loss approach. Namely, the dynamic provisions (expected loss provisions) set by the Basel

Committee can consider more credit information about the lender and hence give a better estimation of the expected losses within the loan portfolio. This is the fundamental idea of the dynamic provisioning rules, which has been used in Spain prior the crisis and has proven to be counter-cyclical.

In the Spanish system, higher provisions are requested when credit grows more than the before calculated historical average, thus linking provisioning to the credit and business cycle. This in the one hand discourages the excessive lending during booms, and in the other hand, strengthens the banks' financials for the periods of economic recession. According to Saurina (2009), the dynamic provisioning methodology counts two approaches: economic approach and accounting approach. The Bank of Spain in compliance with the IAS and the ECB requires Spanish banks to work on developing internal methodologies of estimation for the estimated losses in their respective loan portfolios. The banks that did not develop their model of estimation of the LLPs can use the model provided by the Bank of Spain, which is built based on historical credit losses. The main model assumption is that in the period of expansion of credit risk there is a time lag for provisions transiting from being general to becoming specific. In the periods of economic stability, the above-mentioned transition period is shorter.

Nonetheless, there are criticisms to the dynamic provisioning approach, which has proven to be countercyclical in the case of Spain in the EMU. The main criticism is that the ability of the dynamic loan loss provisioning system to generate the appropriate level of provisions in anticipation of the recession periods, depends on the severity and the length of the crisis and recession, meaning that if the crisis is too strong, or too long, the dynamic provisioning model will become unsustainable (Fillat & Montoriol-Garriga, 2010). According to the IASB meeting decisions (Saurina, 2009) the dynamic provisioning permits income and profit smoothing, which results in non-transparent financial statements. One additional question to be asked is whether the GDP, the credit supply (both being systematic variables) or the loan-to-value ratio (bank-specific variable) should be the key variable to determine the volume of the dynamic provisions.

To conclude, when it comes to the dynamic provisioning model, there are many questions yet to be answered and many aspects of the method to be observed and developed, also taking into consideration whether the countries implementing the method are developing or are already developed.

2 LITERATURE OVERVIEW AND HYPOTESIS DEVELOPMENT

A bank's LLP estimate is a crucial tool at bank-level that enables the regulator to accordingly assess the quality of the loan portfolio, and that is why after the global financial crisis

of 2008, it became the most discussed accounting figure in the financial reporting of the banks (Ozili & Outa, 2017).

The key role for stability of the lending function to individuals and enterprises is in the hands of the LLPs that according to the regulators should be at least adequate to mitigate the expected losses. The problem lies in the rather abstract nature of the adequate amount that should be set, as there is no general agreement among the banks regarding the provisions. A growing concern from the regulator's side is that managers can opportunistically exploit their discretion to overstate the LLPs when credit loans are in reality low, yet the regulators still require that the banks keep a higher LLPs level as a safety cushion for potential future losses.

The following section presents a broad literature overview of the LLPs estimations in practice, the capital management hypothesis literature and the earnings management (income smoothing) hypothesis literature as the core hypotheses that will be tested in the empirical analysis of this Master's thesis.

2.1 Basel standards and Loan Loss Provisions

The following section presents a chronological overview of the Basel standards and the differences among the provisioning practices under the different standards. The changes in the economic development, the growth of the financial markets and their increased complexity have led to a need for higher level of regulation. The overview points out at the need for regulative reforms in the past and the stimulative effect the changes in the financial markets have on the evolution of the Basel Standards.

2.1.1 Basel I Accord

The Basel Committee on Banking Supervision (hereinafter: BCBS) requires from the banks to keep a certain amount of capital reserves to meet the risks they face in their everyday operations. Those risks are credit risk, market risk and operational risk. The credit risk is defined as the risk that the banks' clients will not pay their obligations back to the bank, and the issued loans will become impaired and non-performing. Hence, the credit risk is the risk that one of the sides to a loan transaction will default in fulfilling their obligations. The market risk is defined as a risk which originates from the trading operations, which is materialized when a change in price of the asset on the market results into significant losses on the market value. The third and final risk is the operational risk which originates from system failures and other internal and external causes.

The regulatory capital assigned to the banks by the Basel Committee consists of two components: Tier 1 capital which consists of equity and perpetual preferred stock and Tier 2 capital which consists instruments, such as perpetual preferred stock and subordinated debt (BIS, 2001).

The Basel I Accord in 1988 was the first attempt to set international standards for bank capital adequacy. According to the Basel I Accord, the banks are required to keep the regulatory capital equal to a minimum of 8% of risk-weighted assets (hereinafter: RWA). Precisely, the LLPs account for 1, 25% of the RWA in Tier 2 capital. The Accord also requires at least 50% of the regulatory capital (4% of RWA) to be Tier 1 capital and requires 2% of RWA to be common equity.

Ahmed, Takeda & Thomas (1999) find that the fact that the LLPs are included in the calculation of the regulatory capital, enables the banks to actively apply capital management by increasing their provisions to mitigate the impact of their low regulatory capital ratios.

The biggest criticism of the Basel I was that the required capital amount was mainly determined by fixed risk-weights attached to categories of borrowers such as individuals, businesses or governments, which resulted in non-risk-adjusted provisions and hence an inadequate provisioning policy which started to have pro-cyclical tendencies.

Due to the tight connection between the capital and the provisioning policy, the banks under the Basel I regime, overstated their specific provisions to compensate for their capital scarcity. That behavior transmitted additional pro-cyclicality to the financial system, creating a danger that maybe an additional increase in LLPs would deteriorate bank profits and reinforce the existing recession.

This constructive criticism led to a need for a revised Basel I capital standard and the introduction of the Basel II standard, which is analyzed in the following section.

2.1.2 Basel II Accord

Due to the many flaws that were detected within the Basel II Accord and its pro-cyclicality, the Basel Committee on Banking Supervision issued a first proposal for a new capital adequacy accord. The proposal was initially issued in 1999 but it underwent many changes. The third and final consultative paper was issued in 2003. Chronologically, the standardized elements of the Basel II Accord were implemented by 2006 and the advanced elements were planned to be implemented by the end of 2007. The new regulation was meant to stimulate the use of internal systems for measuring risk and allocating capital. It also aligns the set regulatory capital with the economic capital by taking into consideration the importance of the economic capital for the strategic and reputational reasons.

Logically, the crucial goal of the Basel II Accord was to present and implement a flexible and risk-sensitive approach to set the minimal capital ratio, i.e. to define the minimum capital level to absorb the losses on the credit portfolio.

The Basel II Accord consisted of three pillars: Pillar I-Minimum capital requirements, Pillar II-Supervisory review, Pillar III-Market discipline and disclosure. We analyze each pillar individually in the following section.

2.1.2.1 Pillar I – Minimal capital requirements

According to the Basel II Accord, the key constituent elements of the bank capital are the equity capital and the disclosed reserves by the bank. This founding element of the capital is the only element that is used broadly across all countries' banking systems and hence is the foundation on which most market judgments and decisions are built. According to the Basel II Accord, for supervisory purposes, the capital should also be defined as Tier 1 and Tier 2 Capital, but in a more detailed manner than with the Basel I Accord. The Committee required at least 50% of bank's capital base to consist of the Tier 1 Capital (post-tax retained earnings and equity) and Tier 2 Capital (supplementary capital, limited to 100% of Tier 1).

Like the Basel I, the minimal capital requirements set the minimum regulatory capital the banks ought to hold. The minimum regulatory capital for each bank depends on the exposure of the bank to the following risks:

- Credit risk: In the Basel II Accord, an enhanced approach to credit risk was used, that included additional public information from rating agencies;
- Market risk: In the Basel II Accord, there were no significant changes in the definition of capital and the applicable ratios;
- Operational risk: In the new accord, the framework included an explicit treatment of the operational risk (BIS, 2001 & 2004).

The biggest focus of Basel II was to hedge against the credit risk of the banks, as it was the biggest issue in the previous regulation. Namely, the Pillar I maintained the previous minimum capital requirement at 8 % of RWA. The amount of the minimum capital requirement for every bank under the Basel II Accord was based on three approaches: the internal risk-based approach, the standardized approach and the advanced measurement approach (BIS, 2004).

The first approach is the internal risk-based approach, which advises the banks to conduct individual risk assessments. The internal risk-based approach is founded on the assumption that the bank has best information about its clients, and hence it is most suitable to conduct risk assessments based on the clients' credit risk characteristics. The internal-risk based approach (hereinafter: IRB approach) requires the banks to meet the expected losses with the LLPs.

If the expected losses are at that time greater than the provisions, banks ought to subtract the amount in question from their capital. They are deducting 50% of the Tier 1 Capital, and 50% of the Tier 2 Capital. In case the provisions are exceeding the estimated losses, banks are obliged to recognize the difference in the Tier 2 capital up to a maximum of 0,6% of risk weighted assets (RWAs). The supervisor in each country sets twelve IRB requirements that are set by the Basel Committee in the specially set Framework for International Convergence of Capital Measurement and capital standards initially published in

2004. For a bank to be able to apply the internal risk-based approach, it must demonstrate that the above-mentioned twelve requirements are met.

The standardized approach on the other hand, required defining the RWA based on external credit ratings and hence refined the risk categories that were included in the Basel I formula. Under this approach, banks ought to include the loan loss reserves up to a maximum of 1, 25% of RWA.

The third and last measurement under the first Pillar of the Basel II Accord is the advanced measurement approach that gives the banks liberty to develop their own approach for risk assessment, in cases where the assessed risk is classified as systematic.

To conclude, the Basel II Pillar 1 developed a model that anticipated the loan losses in the banks' loan portfolio. According to the IRB methodology; the loan losses that are anticipated are fully covered by the LLPs that had previously been set aside. According to the standardized approach on the other hand, the banks include the loan loss reserves to the maximal level of 1.25% of the RWA. Lastly, under the advanced measurement approach, the banks are required to individually work on their own methodology for both risks and provisions assessment. As it can be seen, the Pillar I of the Basel II Accord covered the minimal capital requirements. The Pillar 2 enriched the regulation by providing a supervisory oriented review of the capital adequacy. In the following section, we cover the basic principles of the Pillar II-Supervisory review.

2.1.2.2 Pillar II - Supervisory review

The Pillar II was developed to enable a supervisory review of the capital adequacy to ensure that the banks, under the new accord, manage risk in the appropriate manner. The main assumption of the Pillar II was that even complex regulation could not completely and accurately regulate the risk profiles a bank was facing at a given time. According to the BIS (2004), the supervising entities have the role of evaluators of how the banks are estimating their needs for capital and their relationship with the risks they are facing. Should the supervising entity judge that there is a need for intervention, they are eligible to respond appropriately.

With the inclusion of the Pillar II by the Basel Committee, the Committee added other elements of a bank's balance sheet (exp. asset portfolio). The biggest weakness of the Pillar II is the fact that it can be differently implemented across different countries due to the different communication among the supervisors and bank managers in each one of them.

The supervisory review of the Basel Accord serves to supervise the banks and thereafter control the level of capital amount the regulated banks hold. The principal goal is to verify that the capital amount is enough to meet the risks the banks undertake.

The Basel Committee has identified the interdependence between the amount of capital kept, to meet the risks they are facing and the effectiveness of the banks' management and control processes. Even though the capital is a crucial element of banks' strength and efficiency of management, it is important that it does not become a substitute for dysfunctional internal risk management processes. That is why it is important for banks to develop a dialog with their national regulators and optimize their internal risk controls.

2.1.2.3 Pillar III - Market discipline and disclosure

Given that the third Pillar is based on market indicators, it allows the banks to be compared among each other in terms of their capital adequacy.

The market discipline has the main purpose to enable higher level of market transparency so that the involved parties can optimally calculate and foresee the bank risks. The crucial goal of the third pillar is to optimize the Pillar 1 and the Pillar 2 processes.

The market discipline itself is expected to be developed by the introduction of requirements of disclosure from the supervisors' side. That is how the stakeholders will be provided with wide information set regarding the risk exposures, capital levels, and efficiency of risk assessment.

To conclude, the Third Pillar of the Basel II Accord serves to provide the stakeholders with consistent information due to disclosures that ought to be consistent and understandable in different jurisdictions and by different parties involved.

2.1.2.4 Basel II and the Loan loss provisions

According to the Basel I Accord both, the general provisions and loan loss reserves, are involved in the calculation of the LLPs in case they are not being previously assigned to assets in the portfolio of the bank. In the Basel I Accord, if the provisions are calculated to meet defaults or deterioration of assets, they are not to be included in the capital calculation. The reason being that with their inclusion in capital, they cannot be used to hedge the unexpected risks which arise in different segments of a bank's portfolio.

The main change from Basel I to Basel II, when it comes to the LLPs, is that the new more specific and detailed two-tier structure enables the provisions to be available to meet some unidentified losses, as they are part of the total qualifying regulatory capital.

According to the internal risk-based methodology, the expected losses are totally covered by the LLPs. According to the standardized approach on the other hand, the banks include the loan loss reserves to the maximal level of 1.25% of the RWA. And lastly, under the advanced measurement approach, the banks are required to individually work on their own methodology for both risks and provisions assessment.

To conclude, the LLPs are crucial for optimal implementation of the Basel II Accord, but as it was shown in section 1.2 of this Master's thesis, they were also the crucial cause for the enhanced effect of the financial crisis of 2008. The following section will present a broad overview of the Basel III Accord, which was introduced after the financial crisis, in 2013.

2.2. Basel III Accord

The Basel III Accord was introduced in 2013 to: increase the level of the capital quality, increase the banks' ability to capture risks, constrain the level of bank leverage, increase the bank liquidity and constrain the pro-cyclicality. When it comes to the pro-cyclicality, up until the introduction of the Basel III Accord, it was empirically proven that the banks save up their earnings to create capital buffers in the times of economic upturn, so that they can use them in the times of economic contraction. That behavior is defined as earnings management.

According to the Basel III implementation period, it is expected that the new through the cycle (estimated loss/ dynamic) loan-loss provisioning system will be introduced by June 2018. The Basel III Accord anticipates the loan losses before they materialize, by introducing a provisioning system that requires the banks to keep specific provisions for the loans that are issued at the time, depending on the performance of the borrowers.

The Basel III Framework is implemented on a consolidated level of the banks that are doing business internationally. By applying the Accord on a consolidated level, the Committee preserves the integrity of the capital in the banks that have subsidies in the same and different countries. The scope of the implementation will also include any holding company that is the parent company within a banking group. Only by implementing the regulation on a consolidated basis, the whole risk of the group can be captured.

One of the main purposes of the supervision is to protect the banks' clients and their deposits. That is why it is crucial to make sure that the capital stated in the capital adequacy measures is actually available for the depositors. The other aspect of the supervision of the capital measures is that the individual banks are capitalized accordingly, on an individual level.

2.2.1 Pillar I – Minimal Capital Requirements according to Basel III

The Pillar I reform can be divided into two phases: focus on defining the capital side of the capital ratio and focus on calculation of the RWA. According to the Basel III Accord, the regulatory capital which is used in calculating the capital ratio of the banks consists of the following (BIS, 2010):

- Common Equity Tier 1 (hereinafter: CET1): common shares, retained earnings, other reserves;
- Additional Tier 1: capital instruments with no maturity;
- Tier 2: subordinated debt and general loan loss reserves.

The Capital ratio is a ratio among the Regulatory capital and the RWA of the bank in question. Due to the interdependence of the ratio, the higher the level of the RWA, the higher the level of capital needed to meet the credit risk the bank is facing. The RWA according to the Basel III Accord include cash securities and loans to private and public entities (BIS, 2010). Each type of the assets the bank has in its balance sheet, has different risk characteristics. That is why the Accord assigns specific weight to each type of asset based on the risks, to get the amount of the banks' risk weighted assets. To define and calculate the needed amounts of capital for each bank to cover their un-estimated losses, they multiply the book value of the asset to the relevant weight. Logically, higher capital is needed to cover riskier exposures and vice-versa.

In the Basel III Accord, two broad methodologies enable the regulators and banks to meet the credit risk: standardized and internal-risks based approach. The two methodologies were also introduced in the Basel II Accord in 2001. The approach which is most used internationally for credit risk assessment is the standardized approach for credit risk. With the standardized approach, the supervisors already set the risk weighs that banks multiply with the exposures to determine the risk weighted assets. Since the supervising entity defines the risk weights, this model is an externally defined model to calculate the RWA. The biggest changes that the Basel III Accord implemented to improve the Basel II methodology of the standardized approach are: the enhanced sensitivity of the standardized methodology, the more detailed risk-weighting approach, the reduced relying on the external credit ratings provided by ratings agencies and the required due diligence when banks decide to employ external ratings in their modeling. The Basel III Accord introduced a higher level of flexible weights assigned to the assets, especially in the cases of residential and commercial real estate (BIS, 2017b).

The other methodology, which is used into the Basel II framework and in the Basel III framework as well, is the internal ratings-based (hereinafter IRB) approach for the credit risk the banks are facing. Namely, the IRB approach for the credit risk allows the banks under certain conditions to apply internal models to credit risk estimation. The internal models to credit risk estimation allows the banks to apply their own risk-weights to the assets in their portfolios, which is not the case in the standardized approach. In 2017, reforms to the Basel III Accord introduced some constraints to banks' estimates of the risk parameters. There are two main approaches of the IRB methodology: foundation and advanced methodology (BIS, 2017b).

The IRB approach is based on measures of both unexpected losses and expected losses in the banks' loan portfolio. The risk-weight asset functions are used to calculate the capital

requirements for the unexpected losses function. The expected losses are treated separately from the unexpected losses.

The risk components that are participating in defining the capital include measures of the probability of default of loans in the loan portfolio, loss given default, the exposure at default, and effective maturity of the loans. Under the Basel II Accord, the banks provided an estimate of the loss given default for each exposure by applying either the foundation or the advanced IRB approach.

To be more specific, each asset class under the IRB approach consists of three elements: risk element, risk-weight functions and minimum requirements. Usually, the risk elements consist of estimates of risk parameters. Within the risk-weight functions, each of the risk components is transcended into RWA and hence into capital requirements. The minimum requirements on the other hand, represent the minimum standards which the banks ought to meet (BIS, 2017a).

As stated previously, there are two approaches to be used for many of the asset classes: the foundation and the advanced approach. According to the foundation approach, the banks individually set their probability of default estimates. For every additional risk component, the banks under this approach rely on estimates set by the supervisor. On the other hand, according to the advanced IRB approach, the banks individually set their own estimates for all risk components.

The main changes applied to the IRB approach with the Basel III Accord are the following: disabling the option to apply the advanced IRB approach to financial institutions, disabling the possibility to apply IRB approach for equity risk exposures and allowing the application of the IRB approach when there is low probability of default.

In summary, only the standardized approach or foundation internal risk-based approach can be applied when assessing the credit risks of the banks in the new Basel III Accord. The high level of individuality of the advanced internal risks-based approach is the reason why, with the introduction of the Basel III Accord, it cannot be applied in the future.

In addition, the Basel III Accord has set more strict rules largely to the capital indicators that follow. Namely, the Accord raised minimum common equity to RWA ratio from 4 to 4, 5%. The capital conversion buffer, under the new regime, consists of common equity of 2, 5% of RWA. The total common equity standard is increased to 7%. A countercyclical buffer from 0-2.5% which consists of common equity will be applied when the credit issuing growth by a bank is assessed to result in an unacceptable level of systematic risk. The decision was based on a fact that the high level of systematic risk caused by loan issuing has proven to be pro-cyclical. The overall regulatory capital ratio on the other hand, was left at 8% (BIS, 2017a).

As mentioned before (in the section 1.2), the insufficient and non-detailed regulation led to deepening the financial crisis of 2008. That is why the Basel III set new requirements for the large and influential banks. With the new requirements, the banks will be able to create capital cushion against the cyclical changes on their balance sheets. Namely, during economic and credit expansion, banks need to set aside the above-mentioned buffer, whereas in the periods of economic contraction, the capital requirements tend to be loosened. Should the bank be assessed to be non-feasible, by allowing the capital instruments to be written off or converted to common shares, the moral hazard will be decreased by including the private sector into resolving future banking crises (BIS, 2017b).

The new regulation framework also sets the bucketing method that groups the banks in clusters according to their size and impact to the overall economy. The more impactful banks are, the more they are subject to higher capital requirements and more strict regulation.

2.2.2 Minimal capital requirements and the Leverage ratio

The implementation of the leverage ratio requirements started from 2013 with the reporting of the European banks' to the national central banks.

In many bank cases of the crisis of 2008, the banks sustained strong capital ratios, whereas at the same time they were facing high levels of leverage in their bank portfolios. At the peak of the crisis, the financial markets put pressure on the banks to reduce the leverage they have undertaken, which then put a pressure to decrease the asset prices.

That is why the Basel Committee detected the need for a simple and transparent, non-risk leverage ratio to adequately and transparently measure the risk-based capital requirements. The key goals of the leverage ratio are to: limit the leverage concentration among the banks, reinforce the risk-based requirements, appropriately develop the deleveraging processes etc. (BIS, 2017a).

According to the Committee, the leverage ratio methodology is crucial and at the same time complementary to the risk-based traditional regulation approach. The additional benefits of appropriately defining the leverage ratio is the fact that it gives a broad picture of both on-balance and off-balance sheet of banks' exposures to leverage, which will lead to higher level of transparency of the leverage measure itself.

The Basel III Leverage ratio is calculated as a ratio between a capital measure and exposure measure. In the period of 2013-2017 the Committee tested the set requirement of 3% or the leverage ratio. The ratio framework follows the same range of regulatory consolidation as is used for the risk-based capital framework.

The capital measure for the leverage ratio is the Tier 1 capital of the risk–based capital framework. The prospects for the capital measures in the future will be either the CET1

(introduced with the Basel III agreement) or the total regulatory capital as the capital measure for the leverage ratio. When it comes to the exposure measure for the leverage ratio, it consists of the on-balance sheet exposures, derivative exposures, securities financing transaction exposures and off-balance sheet items. The leverage ratio was introduced in the Basel III leverage ratio framework and disclosure requirements, which was issued in January 2014.

When it comes to disclosure of information, due to the fact that the financial statements vary from period to period, to make a comparison among the capital adequacy for banks under different jurisdictions, it is very important for the banks to adopt a common disclosure policy for the leverage ratio. Therefore, all the international banks are required to disclose and publish their leverage ratio within a common set of templates. The disclosure frequency is the same as the one of their financial statements (quarterly or half-yearly). Every time the banks disclose their financial statements they are expected to disclose their calculated leverage ratio.

From the above, it can be concluded that the Basel Committee detected the biggest weakness of the traditional capital ratio calculation methodology i.e. the risk-based capital ratio did not detect the high leverages the banks built. The Committee reacted accordingly to regulate and limit the off-balance sheet exposures and give a more credible capital and leverage measure.

2.2.3 Pillar II - Risk management and supervision

The focus of the supervisory review process is to ensure the banks have adequate capital to support the risks they are taking in their regular business activities, but the additional segment of the review is to encourage and stimulate the banks to develop and improve their risk management techniques in managing and monitoring the risks they are facing.

The Pillar II notes that the management of the banks has the crucial role in working on internal testing processes and defining capital optimum levels even above the required minimum.

There is an interrelationship between the capital held by the banks and the strength and effectiveness of the bank's risk management and the process of internal controls. Yet, the capital is not the only option for meeting the increased risks the bank has been taking. For the bank to meet the risks, there are other possibilities: strengthening the management of the risks, setting boundaries within the internal processes and enhancing the controls in the bank. One of the biggest mistakes the banks were making in the crisis of 2008 was that they were treating the capital as a substitute for addressing fundamentally inappropriate control of risk management processes.

The aspect the Pillar II mostly focuses on when the capital in question is to fill out some of the non-fully captured segments of the Pillar I (e.g. credit concentration risk, business risk, business cycle effects etc.). Another important perspective is the grading of the suitability in fulfilling the minimal standards and disclosure requirements in the IRB framework for credit requirements, and the advanced measurement approaches for the operational risk the banks are facing. According to the Pillar II, the supervising entities must be sure that the requirements for qualifying are met.

The biggest changes in the Pillar II from the Basel II Accord, are the supplemental requirements when it comes to firm-wide governance and risk management, especially with emphasis on the off-balance sheet exposures, securitization activities, valuation practices, stress testing of the banks, corporate governance, etc.

Also, the standards for the Interest Rate Risk in the Banking Book were introduced which enhanced the interest risk management, including: development of interest rate shock scenarios, enhanced disclosure requirements (based on common interest rate shock scenarios), a stricter threshold for identifying outlier banks of 15% of a bank's Tier 1 capital, etc.

These enhanced regulations and controls are expected to result in a more transparent disclosure and better risk management of the banks. Should the supervisors become concerned that a bank is not meeting the requirements, they can consider some options in intensifying the monitoring of the bank and limitation in forbidding the payment of dividends from the bank. In addition, the regulator can require from the bank to prepare and implement a new capital-adequacy restoration plan and require the bank to raise additional capital at once. The increased level of capital often is not a permanent solution to bank's problems, but it is used as an interim measure while permanent measures are being coordinated. Should the permanent measures have shown to be effective, the interim increase of capital, as a measure, is removed (BIS, 2017a).

To conclude, the Pillar II serves to ensure that the bank capital will be able to meet all the different risks the banks take in their day-to-day business activities. The enhanced regulative control aims to lead to a higher level of transparency and improved internal risk management practices of the banks. It is expected that the enhanced regulation will lead to higher level of transparency and the bank opacity in the financial statements is expected to decrease.

2.2.4 Pillar III – Market discipline

The purpose of the Basel III, the Pillar III framework is to complement the Pilar I and the Pilar II by stimulating market discipline. The market discipline is stimulated by developing disclosure requirements and hence giving information to market participants to grade important parts of information on capital risk exposures, risk assessment and capital adequacy.

According to the Pillar III, the banks are required to make certain types of disclosures. The disclosures include qualifying criteria for the use of particular methodologies, the recognition of instruments and transactions.

The disclosures by banks should be consistent with the assessment of the senior management and board of directors of the banks. According to the Pillar I Accord, banks use specified approaches and methodologies for measuring capital requirements. The Basel Committee by the Pillar III provides effective means to inform the market about exposure to those risks and enables comparability of banks. Disclosures are separately observed as qualitative and quantitative (historical and risk) assessment of: capital structure, capital adequacy, credit risk and credit risk mitigation, operation risk, market risk, securitization, etc. (BIS, 2017b).

The main change between the Basel II and Basel III- Pillar III is that the framework was enhanced and introduced a dashboard of banks' key financial indicators that have to be regularly disclosed.

2.3 The Basel III Accord, IFRS 9 and the Loan Loss Provisions

The following section will present the regulatory treatment of the provisions under the Basel III regime. One of the biggest lessons learnt from the crisis of 2009 was that the incurred loss model resulted in a provision amount that was too low for the crisis. Consequently, the Basel Committee recommended a modification of provisioning standards to incorporate assessment of the future perspectives in the estimation of credit losses. In response, the International Accounting Standards Board (hereinafter: IASB) started adopting the provisioning standards that demand the use of an expected credit loss model, rather than the former incurred loss models.

The new IFRS 9 was published in 2014 but took effect on 1 January 2018 and focuses on the earlier recognition of credit losses. That can be achieved by estimating the losses not only based on the past events and the current conditions, but also by taking into consideration the future economic conditions.

According to the IFRS 9 standard, the estimated loan losses are calculated by: defining the possible scenarios in which the issued loans turn out to be impaired, calculating the expected shortfall in the cash-flow if a loan impairment happens, and the loss that is then estimated is multiplied to the probability of default to be able to estimate the outcomes of such defaults actually occurring (PWC, 2017, p. 27). The theory behind the methodology is that for every loan issued there is a probability of default associated with it. According to the IFRS 9 standard, the expected losses are estimated by three methodologies: general, simplified and credit adjusted approach.

The general approach is used when the bank detects significant increase of a loan's credit risk when compared to the assessed risk at the date of issuing. This approach applies to loans that are not covered by either the simplified or the credit adjusted approach. The simplified impairment approach is applied together within the IFRS 15 and the lease receivables. And lastly, the credit adjusted approach applies only rarely when an entity acquires or originates a loan or receivable that is credit impaired at the date of its initial recognition (PWC, 2017).

One important aspect of the estimated credit loss approach are the effects to the regulatory capital, as the newly introduced models for provisions estimations introduce crucial shifts' provisioning practices in a qualitative and quantitative manner. The main concern is the fact that the new provisioning regime will bring a higher volatility in the regulatory capital. That is why the Committee set up a frame of tasks to analyze the application of the new accounting method, conduct impact analyses on the regulatory capital and review the limited amounts of provisions in Tier 2 capital that are a part of the Tier 2 capital due to the previously applied incurred loss model (BIS, 2017b).

The reflection on the future perspective of the standardized approach is to introduce a universally applicable definition of both, the general provisions and special provisions that would result into a consistent methodology of expected-credit loss provisions under the new regulation of IFRS 9. By applying these reforms into the standardized approach, both the standardized approach and the IRB approach will align the accounting treatment of the provisions. Aligning the two approaches will enable the Basel Committee to set better definitions of banks' exposures and capital in the both methodologies for credit risk assessment, as under this alignment, any lack of provisions will be deducted from the CET1.

Under the standardized approach, the specific and general provisions are treated differently. That different treatment results into different outcomes within different jurisdictions and banks. Their similarity is that they both reduce the CET1. Yet their impact on the classic capital ratios is different. Namely, the general provisions add to the numerator of the total capital ratio due to their presence in the Tier 2 capital, whereas, the special provisions reduce the RWAin the denominator in the capital ratios, which results in reducing the capital requirement even for the CET1 capital to the percentage of regulatory capital (BIS, 2017a). Taking an example of the two banks with identical portfolios and credit, risk can have different capital ratios under the standardized approach due to the accounting approach (as one accounting approach requires more provisions or classifies a larger portion of the accounting provisions as general provisions instead of standard provisions).

The standardized regulatory expected loss methodology is introduced under the standardized approach and is designed to serve as a minimum amount of credit losses that the regulators request from banks, to be able to cover in the form of CET1 reduction under the Pillar I capital requirements, making the methodology accounting-independent. According to the expected loss methodology, if the provisions are lower than the minimum credit losses,

the loss will be covered through reduction in the CET1 capital by introducing regulatory floors for provisions. The provision floors will be set similarly to the capital ratio calculations that also will result into consistency and coherency among the different provisioning standards and practices. In case of provisions being excessive, the Basel III Accord will enable the same treatment of excess provisions as in the IRB approach i.e. inclusion of the provisions as part of the Tier 2 capital up to 0,6% of the credit risk weighted assets.

As stated earlier in this section, the standardized approach is more broadly used and is based on the distinction among the general provisions and the standard provisions. The main difference with the IRB framework is that the IRB methodology does not separate the provisions on general and specific provisions, whereas the standardized approach does. That is why there are no reforms in the IRB framework regarding the provisions within the Basel III Accord. Should the Committee notice it is necessary to extend any transitional agreement to cover segments where the IRB approach is applied, the Committee has the right to do so.

It can be concluded that under the estimated loss approach, the amounts calculated, and the IRB approach will be consistent. By making system reforms, a standardized regulatory estimator of loss rates for the banks will multiply the estimator rates to the exposure values (similar approach to the RWA approach). Analogically, the banks will increase the quality of their loan-loss provision estimates by improving the quality of the data that determines the provision buffers and hence introduce the through-the cycle LLPs estimates.

3 LOAN LOSS PROVISIONS AND THE RELEVANT HYPOTHESES

The following section overviews the three crucial hypotheses that explain the application of the LLPs when it comes to the capital, earnings and the effect the internal decisions in the bank have on the information the stakeholders obtain and use in their actions.

3.1 Loan loss provisions and the capital management hypothesis

In the section where we covered the cyclicality of bank lending, we concluded that the characteristics of bank lending were cyclical, and the crucial factor for that is the provisioning system. Namely, the provisioning rules and the capital requirements are interrelated via the coverage of the credit risk. The scheme of the credit risk management assumes that the LLPs ought to cover the estimated losses, whereas the unanticipated losses ought to be met by the bank's capital (Bouvatier & Lepetit, 2008, p. 514).

In case a credit risk is underestimated, the banks get the incentive to grant new loans, as their lending costs are understated. Should the losses become too strong, and if the credit risk management is applied without provisioning rules, the pro-cyclical effects will be en-

hanced. The credit risk and the capital deterioration are generally the biggest concern to regulators, and that is why the provisioning system is often disregarded.

As we elaborated previously, an increase in the LLPs results into conflicting effects on Tier 1 and Tier 2 capital and hence the calculation of the regulatory capital ratio. One of the most frequent focuses in the literature is the question why and how the banks use the LLPs to manage regulatory capital requirements.

One of the main theories about the capital regulatory requirements is that the regulation by itself and the mere request to keep minimum regulatory capital to hedge against the credit risks the banks are facing, is the key incentive for bank managers to influence and manipulate with the level of LLP estimates. When applied, the manipulation enables the banks' management to meet the requested amount of minimum capital (Ahmed et al., 1999). This, in fact, is the capital management hypothesis that has been empirically examined across different jurisdictions, regulations and banking systems.

The Ahmed et al. (1999) research was one of the first to note the importance of the provisioning practices and the potential moral hazard issues with their application. One sample consisted of 113 bank holding companies in the US for the period 1986-1995. At the observed time, the inclusion of the LLPs in defining the regulatory capital by one dollar would result into increased regulatory capital by the tax rate times one dollar (Moyer, 1990). After 1991, new important changes in the capital regulation were implemented. The focus of the research was in the two most important reforms: the elimination of the loan loss reserves from the Tier 1 capital and the limitation on the use of the LLPs in fulfilling the Total capital requirements. It was expected that the banks with higher costs of violating the capital requirements would result into higher engagement in capital management. The results showed that the new capital regime displays a negative interdependence between the LLPs and the capital, especially for the banks that have above the average loan growth and hence they benefit more from the capital management, then other banks.

Moreover, an empirical study was conducted by Schole and others (1990) on data before the period in which the Basel I was introduced. The study showed that the examined banks in the situations in which they had low capital ratios, put off their losses to display an increase in their regulatory capital.

Moyer (1990) conducted a study that finds evidence that some managers tend to adjust their banks' LLPs and discretionary use them at the timing of their reporting, to be able to avoid the regulatory capital constrains. After the Basel I Accord was applied, Kim & Kross (1998) conducted a research that showed that the banks with low capital ratios aimed to draw the LLPs and use them to create higher levels of capital and thereafter higher capital ratios. The banks with high levels of capital and thereafter capital ratios, did not actively use their LLPs for capital management.

Anandarajan, Hasan & McCarthy (2007) conducted an analysis on data of Australian commercial banks and found some evidence that supports the capital management hypothesis. Bouvatier & Lepetit (2007) by examining a sample of 186 European banks proved that the banks with low capital level use and manipulate the LLPs to manage and increase their capital level.

The results examining the capital management hypothesis have proven to be biased, as some of the researches, especially after the implementation of the Basel I Accord and the increased capital regulation, have not corroborated the hypotheses presence on the data examined.

Leventis et al. (2011) used a dataset from EU commercial banks for the period of 1999-2008. The timeframe of observance was divided into two major regulatory changes: the mandatory implementation of the IFRS and the ongoing implementation of the Basel II Accord. The model they applied the data set on, was the model previously developed by Ahmed et al. (1999). The Leventis et al. (2011) model does not provide sufficient evidence to support the capital management hypotheses and hence it can be concluded that the LLPs are not used as a tool for capital management under the Basel II and the IFRS regulation. The model also showed that sufficient evidence cannot be found that the high-risk banks tend to hold higher levels of LLPs when compared to low risk banks.

Curcio et al. (2017) examined the discretionary use of the LLPs in the last financial crisis among the EMU banks. At the time of the financial crisis, the EMU banks were experiencing deteriorated quality of their loans, and a reduction of their profitability, which can theoretically be connected to the discretionary usage of the LLPs. In the post crisis period, the regulators tended to examine the causes for the crisis and set additional and stricter supervision via the European Banking Authority 2010 and 2011 stress test exercises and the Basel III counter-cyclical buffer. The investigation period did not take into consideration the Basel III reforms, but only the Basel II regulation. According to the Basel II framework, the Tier 1 capital included the retained earnings, which would result into the cyclical tendencies and the discretionary usage of the LLPs from the management of the banks with low capital. That was also the main capital management hypothesis of the research, that the worsening macroeconomic scenario, the increased credit risk and the increased credit risk exposure of the banks will result into the higher incentives to use LLPs. A violation of capital requirements results into associated costs, which increase in bad macroeconomic conditions because of the general deteriorated level of capital in the economy. An additional hypothesis was added to the regular capital management hypothesis, and that is the hypothesis that the financial crisis resulted to an even higher discretionary use of the LLPs. The capital variable has proven to be statistically insignificant which is interpreted that the bank management did not manipulate the LLPs to increase the level of capital at the times of the financial crisis.

By the above elaborated, it can be concluded that in the period before the Basel Accord and after the implementation of the Basel I Accord when the definitions of capital were not as specific and were more broadly defined, the management discretionary used the LLPs to meet the minimal capital requirements. With the introduction of the Basel standards, especially the Basel II the capital management hypothesis is most often rejected due to the enhanced regulation and surveillance.

The Basel III standard has been implemented since 2013 with intention for further testing and implementation. The next following logical step would be to empirically examine the possible effect the Basel III Accord has had on the capital management. That is why in this Master's thesis we will develop the following hypothesis:

H1: The banks in the EMU from the period 2008-2017 have practiced capital management via their LLPs.

With the above-elaborated hypothesis, in the empirical section of this Master's thesis, we will examine the behavior of the bank management in the period after the crisis in which two regulations were implemented: Basel II and from 2013 Basel III.

3.2 Loan loss provisions and the earnings management hypothesis (income smoothing hypothesis)

In section 3.1 we conducted a broad overview of the empirical results when the capital management hypothesis is tested. In addition, we set a definition of the capital management hypothesis and gave a chronological analysis of the empirical results by which we paved the foundations of the expectations when developing the econometric model.

In this section, we will define the earnings management hypothesis i.e. the income-smoothing hypothesis. We will also conduct an overview of the empirical results and set foundations for creating expectations about the results of the test of the hypothesis.

The theoretical definition of the earnings management is derived from the empirical results shown in a lot of research conducted in different periods, over a different panel data set and different regulations. Namely, the earnings management hypothesis states that the banks will use the LLPs to smooth reported earnings so that the reported earnings would appear as stable over time in the eyes of the regulator. The goal when aiming to make the earnings seem stable over time is to show the regulators that prudential regulatory objectives are met over time or that some opportunistic financial reporting objectives are fulfilled (Sinkey & Greenwalt, 1988).

In theory, if financial labor markets are efficient, meaning that the marginal cost for obtaining information is zero and all the prices reflect all the present information, banks would have no incentive to manage their reported financial statements. The disincentive to manage the earnings would come from the fact that the regulators have access to all the infor-

mation about the banks they need from the market and not the financial statements. Due to the fact that in reality the market is not efficient, the banks' management has the incentives to influence the financial statements they submit to the regulators (Wall & Kotch, 2000).

To be more specific, if firms could reach their regulative targets for reported earnings without any additional costs, they would always tend to attain the previously set targets. The supporters of the earnings management claim that it represents a type of a credit- risk policy in which the estimated reserves are created to accommodate future loan losses (Fonseca & Gonzalez, 2008). On the other hand, the opponents of income smoothing claim that income smoothing does not give fair representation of the banks' financial results and hence the regulators do not have transparent information about the given profitability at given time.

Another reason that can be connected to why managers manage the earnings of the bank is that the income smoothing aims to provide the management with stable amounts of compensation and the shareholders with stable and predictable dividends (Bhat, 1996).

The logic is that during periods of economic expansion, the banks tend to issue more credits and hence are more exposed to credit risk that is in most cases understated. A certain percentage of the earnings are set aside as LLPs in anticipation of the loan losses when the economy is experiencing a downfall. In times of economic downfall, banks will tend to keep lower levels of LLPs and use the accumulated level of the LLPs as a cover to meet the actual loan losses in the current period (Skala, 2015).

The Basel Committee in the past has noticed this type of behavior that resulted into initiatives with the new Basel III Accord for new accounting standards to incorporate the expected-loss perspective. A similar approach to the expected-loss approach was implemented in Spain in the last financial crisis and led to Spanish banks performing income smoothing on a regular basis (Skala, 2015).

The empirical studies have shown that there are two approaches to studying the earnings management hypothesis. The first approach of income smoothing analysis and detection is the monitoring of the income distributions across time, should the regulator notice that small losses occur less frequently than small gains (Shen & Chih, 2005). Another indicator of manipulated earnings is when the bank is reporting regularly small income increases, and yet the profitability does not have changes (Beatty, Chamberlain & Magliolo, 1995). The second approach of studying earnings management is the analysis of cyclicality of the LLPs.

The initial model for testing the earnings management was developed by Greenawalt & Sinkey (1988). The earnings management hypothesis was tested on a sample of 106 banks in the period 1976-1984. The focus was on the behavior of the LLPs and all the alternative measures of the business conditions that might affect the risk taking devours of the banks and the quality of the loan portfolio. Over the testing period, it was concluded that the in-

come-smoothing behavior was present on the sample. Also, in the article, it was analyzed what exactly motivates the income-smoothing behavior, including: regulation at that time, risk management, the moral hazard issues with bank management and the compensation policy of the bank's management.

Cucio & Hasnan (2015) conducted a research on a sample of 491 banks over the period 1996-2006 and at the same time they compared banks from the EMU and banks from non-EMU countries. The research showed that banks from the EMU countries strongly applied the continuous earnings management that was not case with the non-EMU banks. Another segment of the same issue is that the restrictions on the bank activities and stronger creditors' protection results in reduced incentives to manage the earnings, especially in the EMU. In the same research, a separate sample of 195 banks was examined regarding the provisioning policies within the period of 2007-2010. It was concluded that during that period, there was statistically significant evidence of change in banks' behavior of both EMU and non-EMU countries. Within the two groups of countries, the LLPs became pro-cyclical with a slight difference that in EMU countries they were not used as smoothing income tool but started being used as a smoothing income tool among non-EMU countries during the crisis.

Ahmed et al. (1999) conducted a research over 113 banks from the United States and tested the earnings management thesis. They found that the relationship between the LLPs and the income smoothing is statistically insignificant. The results of the research were somewhat surprising for the period in question due to the new regulations that liberated the earnings management and tightened the capital management.

Bouvatier & Lepetit (2008) used a sample of panel data from the period of 1992-2004 for a set of European banks in 15 European countries. The findings regarding the earnings management hypothesis are non-consistent. Namely, they concluded that the banks behaved the exact opposite to the earnings management hypothesis, meaning that when the earnings before taxes and LLPs increased, the banks decreased their LLPs.

Leventis et al. (2011) have tested the earnings management hypothesis upon a sample of European banks for the period of 1999-2008. They have demonstrated that the high-risk banks used the LLPs to manage their earnings more than low risk banks have done so. The earnings management was present throughout the whole period of the examination, although with statistically significant decrease after the introduction of the IFRS regime in 2005.

The Basel III standard has been implemented since 2013 with intention of further testing and implementation. The next following logical step would be to empirically examine the possible effect the Basel III Accord has had on the earnings management. That is why in this Master's thesis we develop the following hypotheses:

H2: The banks in the EMU from the period 2008-2017 have practiced earnings management via their LLPs.

H2b: The banks in the EMU have decreased their practice of earnings management after the implementation of the Basel III Accord in the year 2013.

With the above-elaborated hypotheses we examine the behavior of the bank management in the period after the crisis in which two regulations have been implemented: the Basel II and from 2013 onward, the Basel III.

To sum up, the first question which is asked regarding the earnings management is: Are the earnings used for income smoothing or not? The second question which should be posed is: if the earnings are indeed used for income smoothing, should that be observed as manipulative behavior from the banks' management that will result into decreased transparency of the financial statements? The supporters of the income smoothing claim that, the income smoothing has counter-cyclical results and that is why its application may help avoid deepening the potential economic crises in the future. They consider the income smoothing a tool to decrease the credit risk. On the other hand, the income smoothing also makes the earnings over time seem stable, even if they actually are not at the time. That is why it is important to conduct a cost benefit analysis of the earnings management application and conclude whether the costs of the decreased transparency are lower than the benefits of the counter-cyclicality of the provisioning practice.

3.3 The Loan Loss Provisions and the signaling hypothesis

Another aspect of the literature focused on the LLPs is the argument that the banks might be using LLPs to signal private information to stakeholders about the quality of the loan portfolio of the banks. The signaling in practice is done by setting abnormal LLPs estimates to signal information about bank loan portfolios, firms' future earnings prospects.

The signaling hypothesis in the empirical researches is tested by verifying the statistical relationship between the discretionary LLPs and the one-year ahead estimated earnings.

Ahmed et al. (1999) did not find evidence to support the signaling hypothesis when Kanagaretnam, Lobo & Mathieu (2003) examined the motives of bank management for income smoothing by predicting that the banks that are performing better at a given moment and expect to perform worse in the future will tend to smooth the income through the LLPs. The signaling segment of this income smoothing is that the managers of the undervalued banks tended to use the LLPs to increase the level of the earnings to signal the future earnings prospects.

Kanagaretnam, Lobo & Hoon Yang (2005) investigated the signaling hypothesis, which included the bank's management future prospects. They started from the assumption that

the bank managers signaled private information that varied on a cross-sectional basis, depending on the different conditions the banks were in and the incentives the management had. The study in question tested the interdependence among the bank size and the income smoothing i.e. earnings variability. The results outcomes displayed a presence of the signaling hypothesis and suggests that the signaling practices of the banks in the sample are positively connected to the extent the asymmetrical information are present.

According to Ozili (2017), the LLPs are used to signal information about the bank to future bank clients, yet the extent to which they are used to fulfill this goal depends on the information asymmetries and the managerial compensation schemes. Moreover, it is also important to define how the potential investors perceive the amount of the LLPs. For example, is the high amount of the LLPs the bank is keeping in the period perceived as a signal for a better loan portfolio quality, or can it be perceived as a forecast of future loan defaults?

This hypothesis will not be tested in this Master's degree, due to the fact that our main goal is to examine the effect of the newly introduced regulation on the decreased or increased transparency of the financial statements. The signaling hypothesis is a more subjective approach to the issue of the decreased transparency, as the signaling is strongly connected to the extent to which investors interpret the LLPs amount that is set aside and not in the regulation itself.

4 DATA AND METHODOLOGY

The following section consists of an analysis of the data sample which is examined in this master's thesis. It answers the questions about why we have chosen EMU banks, why exactly has the period in question been chosen as period of examination, and why does the estimation model consist of the respective variables in it.

4.1 Data and sample selection

The dataset that we use in this Master's thesis is extracted from the Fitch Connect bank database. It is reviewed to ensure there are no data inconsistencies and that all the needed data was available. The data consists of the EMU banks for the period of 2008-2017. During the specific time observed, the Basel III Accord was introduced and since then it has been implemented. The Basel III Accord was not optimized by the last year that is included in the database. Yet, the crucial reforms that ought to be tested, were implemented with the Basel III Accord in 2013.

The sample includes all the consolidated banks in the EMU, indicating the connection between the Basel III implementation and the type of the banks' financial statements. The Basel III Accord has been implemented on a consolidated basis. That means we leave little

probability that the effect of the newly implemented regulation will not be noticed within the extracted sample if it is present. We use the Fitch Connect database to extract bank-level data, yet the model we develop within this Master's thesis demands the downloading of macroeconomic variables also.

For downloading macroeconomic indicators, we use the World Bank data set as the most reliable source of macroeconomic data world-wide. The period we consider for the downloaded World Bank data is also the timeframe 2008-2017. The World Bank data is extracted on a country basis. Within the construction of the data we match the bank-level data, depending on the country the consolidated bank was registered in and the macroeconomic indicators of the countries in the EMU.

The data we observe is bank-level panel data. That means that each bank individually is observed for the period of 2008-2017. The panel data is unbalanced, i.e. not every bank is observed every year. Out of the 267 observed banks, 95% i.e. 256 banks are observed for the total period between 2008-2017.

The total number of observations is 1610. From the sample observations, the minimum observation per bank is one year, whereas the total sample average of observations is 6.3 observations per bank.

To conclude, we extracted the sample from the two sources: The World Bank data set (macroeconomic indicators) and the Fitch Connect (bank financials). The sample has shown to be unbalanced yet provides us with the information needed to build the model and to come to the conclusions and recommendations for the further courses of the LLPs and their according regulation. In the following section, we develop the model which tests the earnings and capital management hypotheses by testing the interdependence among the earnings, capital variables, and the loan- loss provisions as dependent variable.

4.2 Model construction

The main objective of this Master's thesis is to empirically analyze the bank regulation and the bank opacity in the EMU with special emphasis on the European debt crisis. Bank opacity represents non-transparent financial reporting of a bank's financial statements. Because of the non-transparent submitted financial statements, the information they contain is not reliable and hence cannot be used by regulators and all the remaining stakeholders. The submitted financial statements represent a window to the public for the internal matters, financial decisions and results of the banks. That is why it is of greatest importance for the statements to be as transparent as possible. In the past, many banks all around the world have been involved in many scandals, starting from hiding certain assets they had in their portfolios, to abusing the liberal regulation regarding some matters. That bank managements' behavior has led to devastating consequences to the banks and their clients many times.

One of the most sophisticated approaches for manipulation with the financial statements are the earning management and capital management practices which are practiced in different regulations, different countries and jurisdictions. The LLPs have grown to be the tool that is used for earnings and capital management. That is why in the model we construct, they represent proxy variables for bank opacity. The theoretical background of the LLPs, the accounting practices for the LLPs and the reforms the accounting practices of the LLPs are a credible explanation why they are a suitable proxy variable for non-transparency in the financial statements.

On the right side of the model, we include both bank-level and macroeconomic variables to incorporate the impact of the economic situation on the decisions the bank managers make on the amount of the LLPs and their effect on the reported capital and the reported earnings.

The proxy for the bank opacity which we examine in this Master's thesis are the LLPs. They have theoretically and empirically proven to be used and misused by banks' management to smooth out earnings or to achieve the minimum level of capital that is requested by the regulators.

The dependent variable of the model will be $LLP_{i,t}$ which presents the ratio among the LLPs of bank i and the total assets of the bank i at time t. The accounting practice at the moment divides the provisions to specific and general ones. The specific provisions are used to protect the bank's capital from the unexpected credit losses and the miscalculated credit risk and exposures the banks were facing. The general provisions on the other hand are used to meet the estimated credit risk. The specific provisions are a part of the Tier 2 capital of the bank and have proved to be one of the main causes of the pro-cyclicality of the economic crisis. The recent economic crisis brought new reforms that led to the introduction of the Basel III Accord and the possible shifting from the incurred losses into the expected losses approach in managing the LLPs.

Given that, the model serves to test the capital management hypothesis and the earnings management hypothesis, on the right side of the model we set the independent variables which represent bank financials connected with the earnings and capital of the respective banks. The hypotheses H1, H2 and H2b are tested by the following model:

$$LLP/TAi;t=a0+a1NPLi;t+a2Tai;t+a3LOANi;t+a4GDPj;t+a5UNEMPj;t+a6PROFITi;t+a7TIER1i;t+a8LEVERAGEi;t+a10REGi+a9PROFIT2i;t+\varepsilon i;t; \quad (1)$$

Hereinafter, we give an overview and define the model variables and the their theoretical background. The variable $NPL_{i,t}$ represents a ratio of the NPL of the banks and the equity plus reserves of the bank. It has the theoretical characteristics or the specific provisions. The theory states that the NPL that occurred had a credit risk that previously was not accordingly estimated. Should there be actively involved capital management within the specific provisions and their usage as part of the Tier 2 capital, we expect a positive sign of

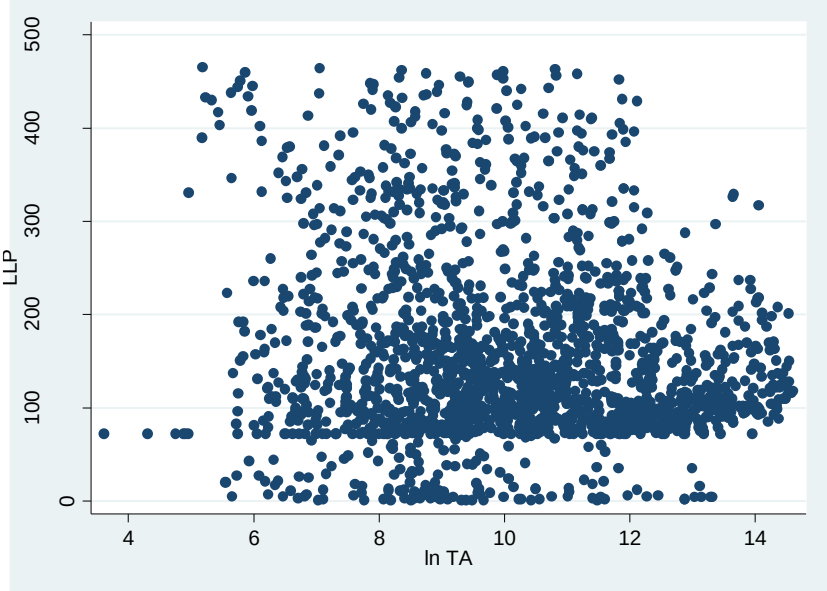
the coefficient of the NPL variable. To be more exact, in the case of having specific provisions used discretionary as part of the Tier 2 capital, the sign of the coefficient in front of the variable will be positive and statistically significant at the significance level of 0,05.

In paragraph one of this explanation, we elaborate that the specific provisions have empirically displayed characteristics of pro-cyclicality. Given that in the model we use the proxy variable of the NPL as a fair representation of the specific provisions, the variable can be connected to the pro-cyclicality of the provisions.

The variable $LOAN_{i,t}$ is a proxy variable of the general provisions and their usage. The variable represents a ratio among the total loans and the total assets of the bank. The logical assumption would be that the more loans the bank is issuing, the bigger the exposure to credit risk will become. That is why, we assume that the $LOAN_{i,t}$ variable is positively correlated to the LLPs estimate. In that way we capture the capital risk management of the total provisions, should it be the case in practice (Curcio et al. 2017).

The variable TAi,t represents the natural logarithm of the total assets of the bank i (lnTA), from the respective balance sheet, for the respective analyzed year in the sample. The reason, the natural logarithm of the total assets is used, is because the coefficients in front of the variable, on the natural-log scale are directly interpretable as the approximate proportional differences in percentages.

Figure 1: *Interdependence among the TA and the LLP/TA ratio*



Source: own work.

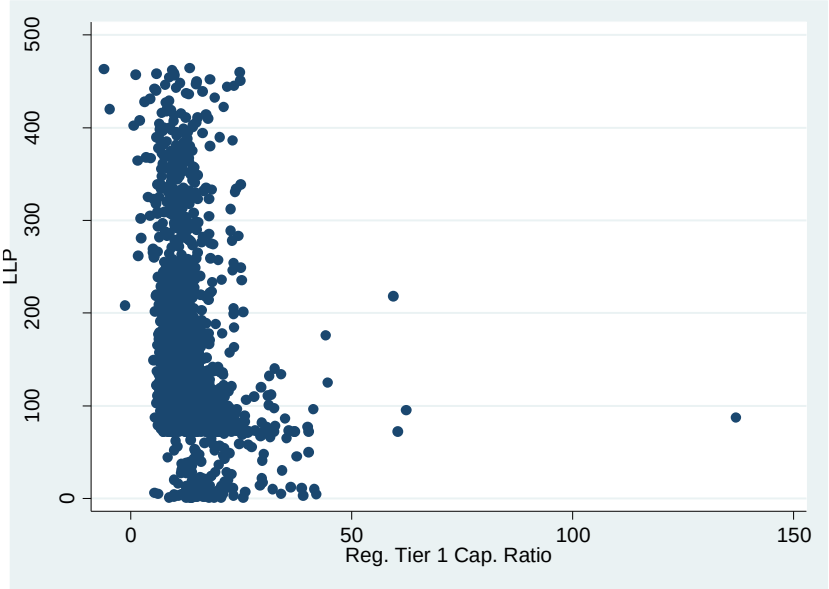
The answer to the question why the total assets are used in this model is that the amount of the total assets of the bank i, represents a proxy variable for the size of the bank. The bigger the amount of the total assets, the bigger the size of the bank. Logically, the bigger the banks are in the size of their assets, the bigger the earnings of the bank are supposed to be.

Hence, the bigger the credit risk exposure the bank is able to take and the bigger LLPs the bank will set aside as a cushion for meeting the exposure.

As shown in Figure 1, no positive correlation is displayed between the size of the bank and the dependent variable LLPs over total assets. The outcome is interpreded as follows: The size of the bank does not play role on the provisioning policies of the banks.From the model itself, we will examine the actual interdependance between the total assets and the LLPs and its' statistical significance, if we conduct a more detailed overview of the variables in question. Namely, we can see that the highest levels the nautral logaritham of the total assets reches is 14%. In addition, a constant amount of 0.83% of the LLP to Total Assets ratio is a result of the general average of the provisioning amounts in bank i of the sample.

The variable TIER1 represents the Regulatory Tier 1 Capital ratio which represents the capital of the respective bank and the RWAof the bank. The two main reasosns why this ratio represents the best indicator for possible capital management are the following: 1) There is no correlation between the Regulatory Tier 1 Capital ratio and the LLPs. The reason being the Tier 1 capital is negatively correlated with the LLPs, and the Tier 2 capital is positively correlated to the LLPs; 2)The second reason is that the Tier 1 capital across different regulations and jurisdictions is more standardized than the Tier 2 capital. That is why the usage of the Tier 1 capital will give more structure and punctuality in the model used.

Figure 2: Interdependance among the Tier 1 Capital ratio and the LLP/TA ratio



Source: own work.

Given that the capital management hypothesis states that the LLPs are used to achieve the minimum regualtory capital and to create enough capital to meet the exposure to risk, in the case of capital management, the sign of the coefficient in front of the variable TIER1

will be positive and statistically significant. In the case of getting a statistically insignificant coefficient, the conclusion is that the capital management hypothesis is rejected, and that we cannot confirm with statistical significance that the bank uses capital management to meet its' credit risks.

The variable Regulatory Capital Tier 1 ratio exibits perfect inelasticity to the LLPs ratio over total assets of bank i. From the figure above we can expect that the capital management hypothesis will be rejected, and that the banks in the EMU did not engage in the capital management in the period from 2008 to 2017. As it is displayed in the Figure 2, there is one bank which is an obvious outlier. The high amounts of capital for the bank in question is connected to the high level of NPL as a percentage of the equity of the bank in 2010. That is why the bank bulked up the capital to be able to meet the NPL. Yet, unfortunately, the strategy did not turn out to be sustainable, and the bank in question terminated its banking activities in 2017.

The variable PROFIT is a ratio among the profit before taxes and LLPs of bank i at time t devided to the total assets of bank i at time t. It is important to deduct the LLPs from the profit variable to avoid possible colinearity with the dependant variable: ratio between the LLPs and total assets of bank i at time t. The earnings management hypothesis states that the bank i at time t uses the LLPs to smooth their income over time. Should the banks in the sample apply earnings management, the coefficient in front of the variable will be positive and statistically significant. In the case of banks not applying earnings management, the coefficient infront of the variable will be statistically insignificant. The additional question is the following: If there was active earnings management before the introduction of Basel III, has it decreased after the implementation of the Basel III Accord in the year 2013?

To verify the impact of the Basel III Accord on the possible earnings management decreasing, we construct a dummy variable REG which separates the two periods: the first interval from 2008-2013 and the second time interval observed 2013-2017. If the variable is observed in the period 2008-2013, the dummy variable has a value 0. If the variable is observed from 2013-2017, the dummy variable has a value 1. The effect of the new regulation presentation and implementation is best asessed by the implementation of the interaction variable $PROFIT_{i,t}$ *REG. In the case of the decrease of the earnings management the sign in front of the coefficient is expected to change from positive to negative.

The $LEVERAGE_{i,t}$ variable represents the Basel III Leverage ratio. In the section 2.1.3.2. we overview the motives for introduction and implementation of the Leverage ratio and the formula for its calculation. Namely, the Leverage ratio represents a ratio beween a capital measure and an exposure to risk measure. The capital measure as part of the Leverage ratio represents the common equity and the other Tier 1 Capital. The exposure to the risk measure represents the sum of all balance sheet exposures and off-balance sheet exposures

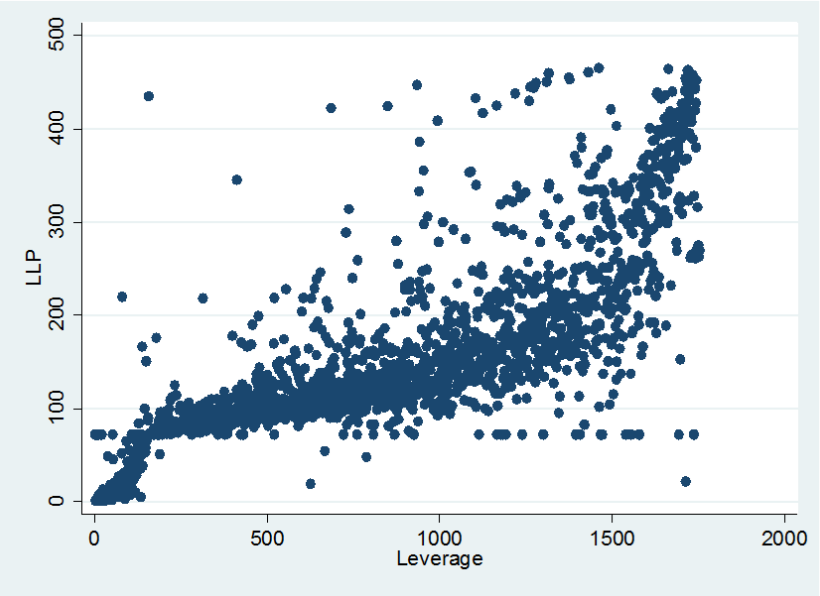
(derivatives exposures). In the crisis of 2008, it was noted that the banks tended to keep healthy levels of capital and had strong capital ratios, yet their risk exposures showed to be high and in most cases undervalued at the time of occurence. That is why, the Leverage ratio is an important indicator from the year 2013 regarding the risks the banks take on and is included in our model.

In the Figure 3, the correlation between the Leverage ratio and the LLPs to total assets ratio is positive, showing that the higher the value od the leverage ratio of the bank the higher the level of the LLPs set aside.

The displayed positive correlation in the figure is consistent with the theory that the higher the level of leverage the banks take, the higher amount of provisions they will tend to set aside to meet the possible credit risks the bank might encoutner when some of the issued loans will default in the future due to risk underestimation.

The low interdependance level in the bottom left part of the Figure 3, is connected to the testing period which is still undergoing. It serves to optimize the Leverage ratio as an indicator and the crucial bank finances.

Figure 3: Interdependance among the Leverage ratio and the LLP/TA ratio

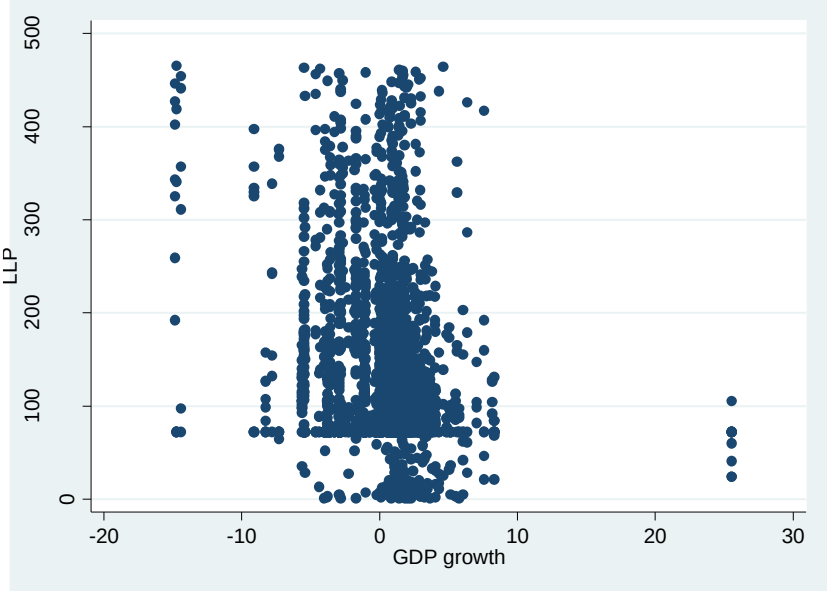


Source: own work.

The variables GDP and UNEMP represent the GDP growth of country j at time t and the unemployement rate of county j at time t. The macroeconomic variables serve in the model to include the economic cycle the country j is in. The economic theory leads us to expect that the sign sign in front of the variable GDP is negative, meaning that in the case of a decrease of the GDP growth, the amount of the LLPs will be higher. And the other way around, should the GDP growth increase, the amount of the LLPs is expected to decrease.

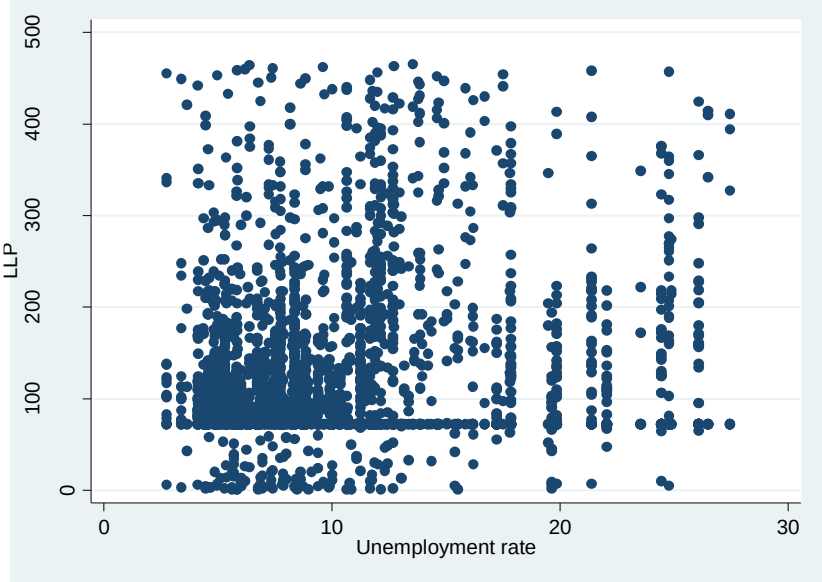
In Figure 4 we examine the interdependance among the GDP growth in country j and the LLPs of bank i which is registred in country j. From the Figure 4, we conclude that the amount of the LLPs ratio over the total assets does not display correlation to the GDP growth in the country in the model that we develop.The outliers which are displayed in the Figure 4 are Irish banks in 2015 and 2016 when the GDP growth reached 25,55%.

Figure 4: Interdependance between the GDP growth and the LLP/TA ratio



Source: own work.

Figure 5: Interdependance between the Unemployment rate and the LLP/TA ratio



Source: own work.

In the Figure 5, on the other hand, we examine the interdependance between the unemployment rate and the LLPs to the total assets ratio. The Unemployment ratio, as presented in the Figure 5, serves as a proxy variable for detecting the state the economy is

in and how the economies hire the work force in the different economic conditions. From the figure we can not expect to show a statistically significant correlation among the LLPs and the level of unemployment in the model we develop.

Short and organized explanations of the model's variables are displayed in the Table 1 below. The Table 1 summerizes the labels, names and descritpion of the variables used to test the hypotheses of this Master's thesis. It enables us to understand theoretically why the variables are actually a part of the model and how they contribute to the final conclusions and the future perspectives of the researches in this field.

The model involves both bank-level and macroeconomic variables to asses their effect on the LLPs and the ratio of LLPs over total assets.

Table 1: Variable definitions

LLP/TAi;t	Loan-loss provisions/Total Assets of bank i at time t;
NPLi;t	Non-performing loans/ (Equity + Reserves of bank i at time t);
TAi;t	Natural logaritam of bank i's total assets;
LOANi;t	Ratio between the Total loans/Total assets of bank i at time t. The variable is used as a proxy variable for the general provisions of a bank;
PROFITi;t	Ratio between the profit before taxes and loan loss provisions of bank i at time t devided to the total assets of bank i at time t;
TIER1i;t	The variable TIER1 represents the Regulatory Tier 1 Capital ratio, which represents the capital of the respective bank and the risk weighted assets of the bank.
LEVERAGEi;t	Ratio beween a capital measure and an exposure to risk measure. The capital measure as part of the Leverage ratio represents the common equity and the other Tier 1 Capital. The exposure to the risk measure represents the sum of all balance sheet exposures and all off-balance sheet exposures (derivatives exposures).
REGi	Dummy variable > 2013
PROFIT2i;t	Interaction variable among the PROFIT variable and the dummy variable > 2013

Source: own work.

The following section gives an overview of the emphirical results of this Master's thesis. In addition it gives conclusions based on the emphirical results. The conclusions are connected to the obtained coefficients provided by the two tested hypotheses and the interpretation of their results respectively.

5 EMPIRICAL RESULTS

In the panel data sample tested in this Master's thesis, numerous banks are observed in the period between 2008-2017. Theoretically, the two basic models for the analysis of panel

data are the Fixed Effects (hereinafter: FE) and the Random Effects (hereinafter: RE) models that present consistent estimators for the sample in question. The panel data analysis approach, which is used in this Master's thesis, allows to examine the banks' specific characteristics. Given that the panel data can be analyzed by both FE and RE, we conduct a Hausman test to decide whether FE or RE estimates should be used to estimate the equations and get reliable conclusions to the hypotheses. According to the Hausman test at the level of significance 0.05, we cannot rejct the Ho of the Hausman test that the RE should be used. Due to the fact that the results of the Hausman test are on the border (p-value= 0.058), we use both results FE and RE).

By conducting the Breuch and Pagan Lagrangian Multiplier test for RE, we also conclude that the individual effects should be used, and not the OLS regression. In the following section we conduct an overview of the correlation coefficients of the variables of the model and the coefficients of every variable we got for the least-squares dummy variable regression, the FE regression and the RE regression.

5.1 Sample correlations

The Table 2 below represents the pairwise correlations between the variables in the model we develop to estimate the ratio among the LLPs and the total assets of bank i at time t.

From Table 2, we can see the relationship among the variables, the interdependance among them, their positive or negative correlation and the strenght of the correlation coefficient which displays how strong is the relationship among them.

Table 2: *Sample correlations*

	LLP	PROFIT	TIER1	TA	LEVERAGE	GDP	UNEMP	LOAN	NPL	PROFIT 2
LLP	1									
PROFIT	0.1574	1								
TIER 1	-0.2785	0.1135	1							
TA	-0.1347	0.1292	-0.1406	1						
LEVERAGE	0.8022	-0.0957	-0.3817	0.0045	1					
GDP	-0.219	0.027	0.1875	0.0339	-0.3098	1				
UNEMP	0.0846	-0.1439	-0.0018	-0.0743	0.2375	-0.1401	1			
LOAN	0.112	0.0979	-0.0521	-0.0604	0.0598	-0.0497	-0.0455	1		
NPL	0.0664	0.0815	0.0111	0.0648	0.0051	-0.0212	-0.1023	0.4192	1	
PROFIT 2	-0.0664	0.4809	0.2978	0.0467	-0.228	0.265	-0.011	-0.0368	0.0016	1

Source: own work.

Namely, there is a high positive correlation between the LLP/TA ratio and the Leverage ratio, which also could be noticed in Figure 3 of this Master's thesis (correlation coefficient 0.8022). In addition, there is a positive correlation between the LLP/TA ratio and the PROFIT variable (correlation coefficient 0.1574).

The PROFIT 2 variable represents an interaction variable between the Dummy variable diversifying the years before and after the new Basel III Regulation and the profit before the LLPs and tax. Its sign is negative, displaying a decrease in the earning management after the new regulation (correlation coefficient -0.0664). The capital variables do not show strong correlation coefficients with the LLPs, implying either a low level of capital management by the banks in the sample, or implying even a statistically insignificant capital variable. Hence, we do not expect presence of the capital management among the banks in the sample.

The GDP variable displays a negative correlation with the LLP/TA ratio, showing that the lower the GDP growth, the higher the level of the LLPs is, due to the higher level of credit risk exposure in the times of economic downfall (correlation coefficient -0.219).

The Unemployment variable displays a positive correlation between the LLPs and the level of unemployement in country j (correlation coefficient 0.046). We can interpret the outcome, where the higher the level of unemployment representing the bad economic conditions, the higher the amount of the provisions the banks will tend to set aside to meet the bad loans.

The two variables which take into consideration the total loans amount and the NPL amount: LOAN and NPL display a positive correlation between the LOAN variable and the LLP/TA ratio variable and the NPL variable and the LLP/TA variable.

There is a positive correlation between the profits before tax and LLPs and the total assets of the banks (correlation coefficient 0.1292). That correlation can be interpreted as a positive correlation among the size of bank i and the amount of the provisions set aside.

There is also a positive correlation among the Tier 1 Regulatorty Capital ratio and the PROFIT variable, meaning that the higher the profitability of bank i, the higher the level of the Tier 1 Capital the Bank will hold (correlation coefficient 0.1135).

A positive correlation was detected between the Total Loans and the NPL of the bank i. The correlation coefficient of 0.4192 demonstrates a positive correlation between the amount of issued loans and the exposure to credit risk of the bank i.

5.2 Econometric estimation

In the following section we overview the results from the models we developed, their signs and their level of statistical significance.

Theoretically, in the FE model, the unobserved variables can be correlated with the observed variables, as the FE control for the effects of the time-invariant variables with the time-invariant effects. In the RE estimators, on the other hand, it is assumed that the unobserved variables are uncorelated with all the observed variables.

When it comes to the model fit, the overall R^2 of the FE model is 0.68, which means that with the FE model, we explain 68% of the dependent variable. The F-test is statistically significant; hence, we conclude that the R^2 does not equal zero, and there is a statistically significant interdependence between the dependent and independent variables in the Fixed Effect model. The overall R^2 of the RE model is 0.70, which means that with the RE model we explain 70% of the dependent variable. Moreover, the F-test is statistically significant with the RE model, which leads to a conclusion that there is a statistically significant interdependence between the dependent and independent variables.

Table 3 below displays the results from the RE and FE estimators and their corresponding p-values, which leads to conclusions about their statistical significance in the model.

Table 3: *Fixed and random effects estimators, their respective standard errors and p-values*

Variable	Random effects(R^2=0.70)			Fixed effects (R^2=0.69)		
LLP	Coeff.	Std. Err.	P-value	Coeff.	Std. Err.	P-value
PROFIT	0.076023	0.015169	0.000	0.069385	0.016879	0.000
TIER 1	-0.28924	0.236007	0.220	-0.40134	0.267437	0.134
TA	-6.15367	1.168847	0.000	-0.39901	4.906559	0.935
LEVERAGE	0.157313	0.003213	0.000	0.155076	0.003569	0.000
GDP	-0.8437	0.382234	0.027	-0.80662	0.395722	0.042
UNEMP	1.243693	0.35395	0.000	2.249151	0.490325	0.000
NPL	-0.00046	0.003125	0.883	0.002793	0.003836	0.445
LOAN	-0.00063	0.002555	0.806	-0.00213	0.00279	0.467
REG	2.075089	5.924536	0.000	2.186777	6.325843	0.001
PROFIT2	-0.04092	0.020172	0.043	-0.05148	0.021607	0.017
_cons	5.279101	1.414847	0.000	-1.199332	5.148383	0.816

Source: own work.

The PROFIT variable in both models has a positive sign and statistically significant coefficient. The Ho of the earnings management hypothesis is as follows: The banks in the EMU from the period 2008-2017 have practiced earnings management via their LLPs. That being said, the positive coefficient in front of the PROFIT variable and its statistical significance serves to prove that the banks in the EMU have practiced earnings

management via their LLPs. This means that the higher the profits before taxes and LLPs are, the higher the amount of LLPs are set aside to smooth the incomes over time.

Both, the Dummy variable REG_i and the interaction variable $PROFIT2_{i,t}$ have proven to be statistically significant, which means that after 2013 the new Basel III regulation has decreased the earnings management by banks' management. The interaction variable PROFIT2 with the FE model has the coefficient -0.05148 and the p-value of 0.017. With the RE model, the coefficient and p-value are as follows: -0.04092 and 0.043 at the significance level 0.05.

The second hypothesis regarding the earnings management is that after the 2013 Basel III presentation and its implementation, the earnings management has decreased due to the higher level of regulation. To be able to eather reject the hypotehesis or not, we introduce the PROFIT2 variable, which represents an interaction between the Profits before tax and LLPs and the dummy variable for years after 2013 (the year the Basel III Standard was introduced). The sign in front of the coefficient changed into being negative, resulting into a statistically significant decrease in the earnings management after the implementation of the Basel III Standard (RE:coefficient -0.04092 with p-value 0.043; FE: coefficient -0.05148 with p-value 0.017).

To conclude, the earnings management in the period between 2008-2017 cannot be rejected, according to the hypothesis that the banks took part in. Also, the second hypothesis that after 2013 the earnings management has decreased, cannot be rejected at statistical level of significance 0.05.

The Tier 1 capital is the capital from the banks which has highest absorbing capacity to losses. That is why, we have theoretically chosen to use the Tier 1 capital ratio as a proxy variable for capital management. By applying both fixed and RE estimators, in both cases, the capital variable (TIER1 variable which represents the Tier 1 capital ratio) has proven to be statistically insignificant. That being said, the capital management Ho hypothesis that the banks in the EMU from the period 2008-2017 have practiced capital management via their LLPs is rejected at the statistical significancy level of 0.05. These results that the capital management hypotheses is rejected have been consistent among the researches conducted on panel data in Europe and in the world, especially after the implementation of the Basel II Standard when more specific regulation of the capital was introduced.

The lnTA (Total Assets) variable which serves as a proxy variable for bank size is statistically insignificant at the significance level of 0.05 in the fixed effect model which means that the bank size is not relevant in the decisions of the management to set aside a certain amount of the LLPs. In Figure 1 of this Master's thesis, any interdependance between the size of the banks and the LLPs has not been detected. In the RE model, the bank size variable is statistically significant and has a negative coefficient (coefficient: -

6.15367, p-value: 0.000). This means that the smaller the size of the bank, the higher the level of the LLPs set aside to meet the credit risk is for bank i in the panel data sample.

The Basel III Leverage ratio has both in the fixed and the RE a positive sign and is a statistically significant at level of significance 0.05. The estimator with coefficient 0.157313 in the RE model and FE coefficient of 0.155076 and p-values 0.000 are interpreted as follows: the higher the amount of the leverage the banks take off-balance sheet and on - balance sheet, the higher the amount of the LLPs will be set aside. That level of LLPs will serve to meet the leverage which was undertaken.

The NPL and the Total Loans variables are statistically insignificant in both models that also was the case in the Least Squares Dummy Variable model. This means that the amount of the NPL and the total loans is not statistically significantly correlated to the ratio of the LLPs and the total assets.

The GDP and the Unemployment coefficients have signs consistent with the theory and are statistically significant. Under the RE model, the coefficient of the GDP and Unemployment is -0.8437 and 1.243693 respectively. Under the FE model, the coefficient of the GDP and Unemployment is as follows: -0.80662 and 2.249151 accordingly, which can be interpreted as follows: Should the macroeconomic conditions in country j worsen (GDP growth will decrease, unemployment rate will increase), the bank i will increase the amount of the provisions to meet the increased credit risk.

We conduct a Hausman test to choose which of the RE or the FE should be used. The Ho of the Hausman test is as follows: difference in the coefficients is not systematic. At the chosen level of significance 0.05, the Ho cannot be rejected.

After the retrieved results, we should ask the following two important questions:

- Is the decreased level of earnings management after 2013 a result of the introduction of the Basel III Standard only, or is it also a result of the improved economic situation in the EMU?
- Is the Basel III Leverage ratio theoretically a better capital variable than is the Tier 1 Capital regulatory ratio, as in the crisis of 2008, the banks tended to have high levels of capital ratios, and yet did bulk up high levels of exposure off-balance sheet which was not captured by the Tier 1 Capital ratio?

The answer to the first question is that we have excluded the effect of the improved economic situation on the earnings management, with the inclusion of the macroeconomic variables in the model. The variable of the GDP growth and the Unemployment rate have taken the impact of the macroeconomic situation, whereas the earnings variable has taken the actual earning management characteristics.

When it comes to the second question, the Leverage ratio has both capital and exposure measure to include the capital features and the exposure on-balance sheet and off-balance sheet. Even though the Leverage ratio has capital variable included in its calculation, it does not theoretically focus on the capital itself and how the provisions would be included in the capital itself as part of the capital management. Namely, the Leverage ratio represents a measure of risk, and not a proxy variable for capital management. Suitable proxy variable for capital management is the Regulative Tier 1 Capital ratio which would actually stimulate a certain discretionary behavior of banks' management, due to the costs connected if the criteria are not met.

5.3 Future research recommendations

The Basel III Accord was introduced in 2013 together with then newly introduced Leverage ratio. The newly introduced IFRS 9 and the migration from the incurred loss to the estimated loss provisioning approach are also a segment of the industry to be observed and further analyzed.

Given that the IFRS 9 gives a more detailed overview of the stages a loan goes through before it definitely gets impaired, we suggest that the future researches should focus on the interdependence between the crucial triggers which classify the loans as impaired and the actual manipulation with their classification. For example, the main triggers for impairment of loans can be: 90 days overdue, official bankruptcy, write-offs, restructuring, detected fraud in the financial reports of the firms etc. The principle question would be: are the actual triggers rightly defined and applied in the banks' policy?

Future research should focus on the further decrease of the earnings management by optimizing the regulation practices. On the other hand, the future researches should shift the focus more on the affects the change of the provisioning practice has on the pro-cyclicality of the economic conditions.

In addition, further research should geographically expand the data sample, when the Basel III Accord is approaching the end of its implementation, and the IFRS 9 is actively being implemented. The goal would be to examine the difference between the effects the IFRS 9 has on the differently developed banking systems and under different supervising bodies.

One often overseen topic is the reward system to the bank professionals, which is connected to the provisioning practices and the information due to the provisioning processes. Namely, the reality is that the current rewarding systems in some banks reward the bank's professionals to set lower levels of the LLPs, to signal to the potential clients that the bank portfolio is of high quality and they do not expect any loan impairments in the future. On the other hand, they punish the bank's employees that set higher amounts of LLPs, even if they are needed at the time, just so that they do not signal information about the possible credit difficulties of the bank (Ozili, 2016).

That rewarding system explains the discretionary behavior of the banks' management and the tendency to understate the credit risk, which has empirically been proven to lead to pro-cyclicality of the economic movements and deepening the economic crisis.

From short-term perspective, the overall earnings of the bank will be reported at higher level and signal a better economic position of the bank, than it actually is. That is why, future researches should aim to give a more detailed overview of the reward systems in different jurisdictions and how it affects the decreased transparency of the reported financial statements. Moreover, future researches should aim to give recommendations on the reward systems in question.

CONCLUSION

This thesis addresses the issue of banks' opaque behavior and decreased transparency of banks' financial statements, by examining how the newly introduced Basel III Standard has affected the issue in question. The risk of banks' opaque behavior can easily be connected to the main role of the banks as financial institutions in the markets to issue loans. The loan issuing leads to exposure to credit risk that the loan might not be returned. To minimize the credit risk, banks set aside a certain amount called LLPs to absorb the expected loss on the bank loans.

European banks, individually, determine the amount they will set as LLPs by developing a model that estimates the LLPs based on micro and macro independent variables. The LLPs estimate is a crucial surveillance tool in the hands of bank supervisors to assess the quality of bank's portfolio. That is why, the LLPs estimate is both, theoretically and practically the best proxy variable to estimate the possible bank opacity.

By conducting a chronological overview of the LLPs, we considered their pro-cyclicality, the use of the earnings and capital management in different jurisdictions and different regulations (Basel I, Basel II and Basel III Accord and the changes in their three pillars). We overview each section separately to be able to give remarks and conclusions individually and jointly.

The main purpose of this Master's thesis is to give a more detailed overview of the role of the LLPs in bank governance and banks' management opaque behavior. Theoretically, there are two crucial hypotheses that test the possible decreased transparency of the financial statements due to a possible managerial opportunistic behavior: the capital management hypothesis and the earnings management hypothesis.

The active participation in the capital management from banks' management is defined as a purpose and/or use of the LLPs to avoid all costs correlated with not fulfilment of the capital adequacy requirements. Such behavior is enabled by the theoretical characteristics of the retained earnings, which are part of the Tier 1 Capital of the bank and by the fact

that the LLPs are a part of the Tier 2 Capital. The increase of the LLPs hence is expected to increase the amount of the Tier 2 Capital.

The earnings management on the other hand is defined as the use of the current income by the bank to smooth out the earnings by increasing the LLPs when the earnings are high and decreasing the LLPs when the earnings are low. That behavior leads to stabilizing the reported net profit.

As previously stated, the main purpose of this Master's thesis is to examine the role of the provisioning systems in the possible banks' opaque behavior. The approach we choose to take in the examination is by developing a panel data-based model with the ratio of LLPs and total assets as a dependent proxy variable for the bank opacity.

The used data set consists of 267 consolidated Eurozone banks in a period of 10 years. Meanwhile, the Basel III Accord was introduced in 2013. That presented a chance to examine the impact of the newly introduced regulation over the alleged earnings and the capital management. It is important to examine the data sample on a consolidated level, as the Basel III Accord is introduced and implemented in a consolidated manner. The macroeconomic variables GDP growth and Unemployment rate were downloaded from the World Bank database.

In the model itself, we include both bank level and macroeconomic variables and thereafter examine the interdependence between each of them by conducting the pairwise correlation test. The variables include the ratio of the NPL and equity, the natural logarithm of banks' total assets, the ratio of the total loans and total assets, the ratio of profit before taxes and LLPs and total assets, the regulatory Tier 1 Capital ratio, the Basel III leverage ratio, the unemployment rate and the GDP growth. In addition, to examine the impact of the new regulation in 2013, we include a dummy variable to diversify the years after 2013. We also include an interaction variable between the earnings variable and the dummy variable to examine the impact the newly introduced regulation had on earnings management.

The results of the panel data model lead to the following conclusions:

- We cannot reject the earnings management hypothesis at the statistical significance level of 0.05. Hence, we conclude that the banks in the EMU for the period 2008-2017 did engage in earnings management. From the created interaction variable between the earnings variable and the dummy variable for the year 2013, we conclude that with the new regulative practice, the earnings management decreased.
- We reject the capital management hypothesis at the chosen statistical significance level 0.05. Hence, we conclude that the banks in the EMU for the period 2008-2017 did not engage in capital management practice. The non-using of the LLPs as part of the Tier 2 capital of the banks in a higher amount at the times of economic downfalls can be connected to the previous optimization of the regulation with the introduction of Basel I and Basel II.

- There is statistically significantly positive interdependence among the leverage the banks in the EMU are taking and the amount of the LLPs they set aside to meet the according risks. This interdependence is noted from 2013 when the actual Basel III Ratio was introduced.
- At the times of economic contraction, logically the GDP growth decreases and the Unemployment rate increases. When the economy experiences a downfall, the amount of the LLPs increases, which confirms the theory that the LLPs are used to meet the credit risks the banks face. Logically, the credit risk is higher in the times of crisis.

Due to the fact that the Basel III Accord is still being implemented, the benefits of the Leverage ratio are still being tested and the migration from the IAS 39 to the IFRS 9 began in the beginning of 2018, we can easily conclude that this field of research is about to be further developed and broadened.

One of the most often overseen subjects when this topic is researched and analyzed, is the award system to the provisioning teams within the banks, which has empirically and theoretically proven to be stimulating the professionals to manipulate the provisions to demonstrate a higher level of earnings in the financial statements, than they actually are. That is why in this Master's thesis we give remarks about the future perspectives of the researches on this topic. Namely, we suggest that the reward systems in the banks should be observed in a more detailed manner so that the regulating bodies are able to introduce corresponding regulation.

As a final remark we also make recommendations that the future researches should focus on the impact of the newly introduced IFRS 9 and the migration from the incurred loss to estimated loss methodology of provisioning. The researches should examine how the newly introduced regulation on the pro-cyclicality and the discretionary application of earnings management works. Moreover, they should further examine the development of the Leverage ratio and its optimization. In addition, the data sample should be geographically broadened to examine the difference in the implementation and the implementation effects among the countries in the EMU and the non-EMU countries.

To conclude, this Master's thesis study is an original empirical analysis of the earnings and the capital management and the impact of the Basel III implementation on each of them separately. The findings contribute both to the theoretical and practical approaches of treating the issue of decreasing in transparency of the financial statements. The thesis also gives its contribution to the regulatory changes with the introduction of the estimated loss approach and the reform from the application of the incurred loss methodology.

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APPENDIXES

Appendix 1: A summary of the thesis in Slovenian Language

Kratek povzetek magisterskega dela v slovenskem jeziku

Magistrsko delo se osredotoča na preučevanje korelacije med spremenljivostjo regulativnih predpisov s poudarkom na spremembah, ki izvirajo iz evropske dolžniške krize, in ne transparentnim delovanjem bank. Rezultati ugotovitev so del teoretičnega in empiričnega raziskovanja. Za raziskovanja teme sem se odločila zaradi dobrega poznavanja finančnega področja in izkušenj, ki sem jih pridobila pri upravljanju z bančnimi kreditnimi tveganji.

Na začetku magistrske naloge smo se osredotočili na definiranje primarne vloge bank, in sicer dajanje posojil posameznikom, podjetjem in vladam. Prav tako smo definirali tveganja, ki izhajajo kot posledica poslovanja. Sklenili smo, da je kreditno tveganje, tj. da dana posojila ne bodo vrnjena nazaj klientom, največje tveganje bank. Za namen zmanjševanja kreditnega tveganja banke oblikujejo določen znesek, imenovan rezervacije za izgubo iz posojil, s čimer absorbirajo pričakovano izgubo pri bančnih posojilih. Evropske banke znesek rezervacij določijo posamezno z uporabo modela, ki na podlagi uporabe mikro in makro neodvisnih spremenljivk predvidi znesek potrebnih rezervacij. V magistrski nalogi smo preverili kako določene rezervacije za izgube iz posojil vplivajo na upravljanje s prihodki in kapitalom na ravni statističnega vzorca.

Teoretični del magistrske naloge se osredotoča na kronološko analizo bančnih uredb, s poudarkom na najpomembnejšo spremembo bančne uredbe v obdobju po gospodarski krizi leta 2008, in sicer sprejem standarda Basel III. Iz pregleda regulativnega dela je razviden kronološki razvoj nastajanja Baselskih standardov in njihove posledice na kakovost poročanja bank. Dodatna sprememba uredb je implementacija novega standarda MSRP 9, ki se je začel izvajati januarja 2018. Skladno s tem standardom lahko banke prehajajo iz implementacije incurred- loss model v anticipated loss model. V tem magistrskem delu je podana tudi primerjava in analiza obeh metodoloških pristopov.

Kot je bilo že omenjeno, rezerve za kreditne izgube vplivajo na upravljanje s kapitalom in prihodki. Podrobnejši pregled vpliva rezerv za kreditne izgube pri upravljanju bank razkriva obstoj dveh ključnih teoretičnih hipotez, ki preverjata morebitno zmanjšano preglednost računovodskih izkazov, zaradi morebitnega oportunističnega delovanja vodstva, in sicer: 1) Hipoteza o upravljanju s kapitalom in 2) Hipoteza o upravljanju s prihodki.

Empirični del magistrske naloge temelji na preverjanju zgoraj navedenih hipotez. V okviru analize je bila uporabljena baza podatkov, sestavljena iz 267 konsolidiranih bank euro območja, od katerih jih je bilo 256 opazovanih v celotnem obdobju desetih let. Na podlagi opravljenega Hausman testa sem ugotovila, da za podatkovno bazo lahko uporabljamo Fixed in RE ocenjevalce. Iz koeficientov in njihovih predznakov sem prišla do naslednje ugotovitve v zvezi z relevantnima hipotezama, in sicer:

- Hipoteza o upravljanju s prihodki se ne more zavrniti na ravni statistične pomembnosti 0,05. Zato sklepamo, da so banke v evro območju v obdobju 2008-2017 aktivno upravljale s prihodki preko rezervacij za pokritje izgube iz posojil. Iz ustvarjene interakcijske spremenljivke med spremenljivko prihodkov in Dummy spremenljivko ugotavljamo, da se je od leta 2013 dalje z novo regulativno prakso zmanjšalo upravljanje s prihodki.
- Hipotezo o kapitalskem upravljanju se zavrne na izbrani stopnji statistične pomembnosti 0,05. Zato zaključujemo, da se banke v evro območju v obdobju 2008-2017 niso vključile v prakso upravljanja s kapitalom. Neuporaba rezervacij za pokritje izgube iz posojil, kot del kapitala banke v višjem znesku v času gospodarske krize, je v povezavi s prejšnjo optimizacijo uredbe ob uvedbi Basel I in Basel II.
- V času gospodarske krize je prišlo do zmanjšanja rasti BDP in povečanja stopnje brezposelnosti. Ko je gospodarstvo doživelo padec rasti, se je povečal znesek rezervacij za pokrivanje izgube iz posojil, kar potrjuje teorijo, da se rezervacije za pokrivanje izgube iz posojil uporabljajo za kritje kreditnih tveganj, s katerimi se soočajo banke.

Sklenimo, da je ta magistrska študija izvirna empirična analiza upravljanja s prihodki in kapitalom in prikazuje vpliv izvajanja standarda Basel III. Ugotovitve prispevajo tako k teoretičnemu kot praktičnemu pristopu obravnavanja vprašanja zmanjšanja preglednosti in transparentnosti računovodskih izkazov.

Appendix 2 - Results from Stata

Table 1: Fixed effects estimators

```
Fixed-effects (within) regression               Number of obs      =      1610
Group variable: bank_n                          Number of groups   =       257

R-sq:  within  = 0.6614                         Obs per group: min =         1
       between = 0.7114                                        avg =       6.3
       overall = 0.6822                                        max =         9

                                                F(10,1343)         =    262.34
corr(u_i, Xb)  = -0.1001                        Prob > F           =    0.0000
```

llp_n	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
profit	.0693849	.016879	4.11	0.000	.0362728	.1024969
regtier1capratio	-.4013353	.2674369	-1.50	0.134	-.9259747	.1233042
lnta	-.3990124	4.906559	-0.08	0.935	-10.02437	9.226342
leverage_n	.1550759	.0035694	43.45	0.000	.1480737	.1620781
gdpgrowth	-.8066169	.3957216	-2.04	0.042	-1.582917	-.0303172
unemploymentrate	2.249151	.490325	4.59	0.000	1.287265	3.211037
loansassets_n	.0027928	.0038359	0.73	0.467	-.0047323	.0103178
nplequity_n	-.0021301	.0027897	-0.76	0.445	-.0076027	.0033426
Regulation	21.86777	6.325843	3.46	0.001	9.458159	34.27737
profit2	-.0514831	.0216067	-2.38	0.017	-.0938696	-.0090965
_cons	-11.99332	51.48383	-0.23	0.816	-112.9908	89.00415
sigma_u	42.645056					
sigma_e	41.645351					
rho	.51185857	(fraction of variance due to u_i)				

```
F test that all u_i=0:     F(256, 1343) =     4.50           Prob > F = 0.0000
```

Table 2: Random effects estimators

```
Random-effects GLS regression                   Number of obs      =      1610
Group variable: bank_n                          Number of groups   =       257

R-sq:  within  = 0.6596                         Obs per group: min =         1
       between = 0.7493                                        avg =       6.3
       overall = 0.7038                                        max =         9

                                                Wald chi2(10)      =   3345.26
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000
```

llp_n	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
profit	.0760233	.0151691	5.01	0.000	.0462923	.1057543
regtier1capratio	-.2892409	.2360069	-1.23	0.220	-.7518059	.173324
lnta	-6.153668	1.168847	-5.26	0.000	-8.444566	-3.86277
leverage_n	.1573128	.003213	48.96	0.000	.1510154	.1636102
gdpgrowth	-.843695	.3822335	-2.21	0.027	-1.592859	-.0945311
unemploymentrate	1.243693	.3539496	3.51	0.000	.5499644	1.937421
loansassets_n	-.0004595	.003125	-0.15	0.883	-.0065844	.0056654
nplequity_n	-.0006275	.0025549	-0.25	0.806	-.0056349	.00438
Regulation	20.75089	5.924536	3.50	0.000	9.139017	32.36277
profit2	-.0409207	.0201724	-2.03	0.043	-.080458	-.0013835
_cons	52.79101	14.14847	3.73	0.000	25.06053	80.52149
sigma_u	33.729312					
sigma_e	41.645351					
rho	.39612319	(fraction of variance due to u_i)				

Table 3: Hausman test results

```
. hausman fixed random
```

	Coefficients (b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
profit	.0693849	.0760233	-.0066384	.0074025
regtier1ca~o	-.4013353	-.2892409	-.1120943	.1257905
lnta	-.3990124	-6.153668	5.754655	4.765304
leverage_n	.1550759	.1573128	-.0022369	.0015547
gdpgrowth	-.8066169	-.843695	.0370781	.102436
unemployme~e	2.249151	1.243693	1.005458	.3393204
loansasset~n	.0027928	-.0004595	.0032522	.0022245
nplequity_n	-.0021301	-.0006275	-.0015026	.0011204
Regulation	21.86777	20.75089	1.116873	2.217242
profit2	-.0514831	-.0409207	-.0105623	.007741

```
                b = consistent under Ho and Ha; obtained from xtreg
    B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                         =        17.82
              Prob>chi2 =       0.0580
```

Table 4: LM test

```
. xttest0

Breusch and Pagan Lagrangian multiplier test for random effects

        llp_n[bank_n,t] = Xb + u[bank_n] + e[bank_n,t]

        Estimated results:
                     |       Var     sd = sqrt(Var)
             ---------+------------------------------
               llp_n |    9169.369       95.75682
                   e |    1734.335       41.64535
                   u |    1137.666       33.72931

        Test:   Var(u) = 0
                           chibar2(01) =   527.22
                         Prob > chibar2 =   0.0000
```