St. Petersburg University

Graduate School of Management

Master in Corporate Finance

Relationship between accounting conservatism and solvency and liquidity levels: evidence from the Russian banking sector

Master's Thesis by the 2nd year student

Concentration – Master in Corporate Finance

Maria E. Kiseleva

Research advisor:

Associate Professor, Tatiana A. Pustovalova

St. Petersburg

2017

ЗАЯВЛЕНИЕ О САМОСТОЯТЕЛЬНОМ ХАРАКТЕРЕ ВЫПОЛНЕНИЯ ВЫПУСКНОЙ КВАЛИФИКАЦИОННОЙ РАБОТЫ

Я, _____, студентка второго курса магистратуры направления «Менеджмент», заявляю, что в моей магистерской диссертации на тему «Взаимосвязь между принципом осторожности и уровнями платежеспособности и ликвидности: пример российского банковского сектора», представленной в службу обеспечения программ магистратуры для последующей передачи в государственную аттестационную комиссию для публичной защиты, не содержится элементов плагиата.

Все прямые заимствования из печатных и электронных источников, а также из защищенных ранее выпускных квалификационных работ, кандидатских и докторских диссертаций имеют соответствующие ссылки.

Мне известно содержание п. 9.7.1 Правил обучения по основным образовательным программам высшего и среднего профессионального образования в СПбГУ о том, что «ВКР выполняется индивидуально каждым студентом под руководством назначенного ему научного руководителя», и п. 51 Устава федерального государственного бюджетного образовательного учреждения высшего образования «Санкт-Петербургский государственный университет» о том, что «студент подлежит отчислению из Санкт-Петербургского университета за представление курсовой или выпускной квалификационной работы, выполненной другим лицом (лицами)».

_____ (Подпись студента)

_____ (Дата)

STATEMENT ABOUT THE INDEPENDENT CHARACTER OF
THE MASTER THESIS

I, _____, a second year master student, MCF_program «Management», state that my master thesis on the topic « Relationship between accounting conservatism and solvency and liquidity levels: evidence from the Russian banking sector», which is presented to the Master Office to be submitted to the Official Defense Committee for the public defense, does not contain any elements of plagiarism.

All direct borrowings from printed and electronic sources, as well as from master theses, PhD and doctorate theses which were defended earlier, have appropriate references.

I am aware that according to paragraph 9.7.1. of Guidelines for instruction in major curriculum programs of higher and secondary professional education at St.Petersburg University «A master thesis must be completed by each of the degree candidates individually under the supervision of his or her advisor», and according to paragraph 51 of Charter of the Federal State Institution of Higher Education Saint-Petersburg State University «a student can be expelled from St.Petersburg University for submitting of the course or graduation qualification work developed by other person (persons)».

_____ (Student's signature)

_____ (Date)

АННОТАЦИЯ

Автор	Киселева Мария Эдуардовна
Название магистерской диссертации	«Взаимосвязь между принципом осторожности и уровнями платежеспособности и ликвидности: пример российского банковского сектора»
Факультет	Высшая Школа Менеджмента
Направление подготовки	080200 "Менеджмент" (Профиль: Корпоративные финансы)
Год	2017
Научный руководитель	Пустовалова Татьяна Александровна, к.э.н.
Описание цели, задач и основных результатов	Цель работы: исследовать взаимосвязь принципа осторожности и уровней платежеспособности и ликвидности на примере российского банковского сектора. Задачи: изучить теорию по принципу осторожности и регулированию платежеспособности и ликвидности в банковском секторе, сформировать эмпирическую модель исследования, собрать выборку для эмпирического анализа, провести эмпирический анализ по выборке, изучить полученные результаты и сформулировать финальные рекомендации. Результаты: выявлена отрицательная зависимость между применением принципа осторожности и нормой достаточности капитала, нормативом краткосрочной ликвидности и нормативом долгосрочной ликвидности.
Ключевые слова	Принцип осторожности, платежеспособность, ликвидность, норматив достаточности капитала, норматив ликвидности

ABSTRACT

Master Student's Name	Kiseleva Maria Eduardovna
Master Thesis Title	«Relationship between accounting conservatism and solvency and liquidity levels: evidence from the Russian banking sector»
Faculty	Graduate School of Management
Main field of study	080200 "Management" (specialization: Corporate Finance)
Year	2017
Academic Advisor's Name	Pustovalova Tatiana Aleksandrovna, Associate Professor
Description of the goal, tasks and main results	The goal of the research is to determine the relationship between accounting conservatism and solvency and liquidity levels, using evidence from Russian banks. We state and complete the following objectives: to analyze the theoretical background on accounting conservatism (its nature and measurement); to study existing literature on the relationship between accounting conservatism and solvency and liquidity of banks; to study regulatory international and Russian requirements for banks' capital adequacy and liquidity levels; to identify the measures of accounting conservatism, solvency and liquidity levels; to build and describe a sample for the analysis; to conduct an empirical study on the built sample and provide managerial implications based on the findings. Main research findings: negative relationship was found between accounting conservatism and capital adequacy ratio. We conclude that managers tend to use more conservative estimates for potential gains and losses when the capital adequacy ratio that represents solvency level of the bank decreases. Moreover, there is negative relationship between accounting conservatism and two liquidity ratios: instant liquidity ratio and long-run liquidity ratio. Based on the findings, we provide several recommendations for the key stakeholders in the banking sector.
Key words	Accounting conservatism, solvency, liquidity, capital adequacy ratio, liquidity requirement

Contents

Introduction

Accounting conservatism is one of the principles used in the financial accounting that provides guidance how to report assets and liabilities with a high degree of validity and fairness. Companies need to reflect all current performance results and risks adequately in order not to carry over the potential risks to the future periods. That is why conservative accounting is applied when potential future gains and losses are needed to be estimated in the current period, so that there is no risk-shifting to the future periods. Applying accounting conservatism rules usually results in the understatement of assets and revenue and the overstatement of liabilities and expenses. At the same time, conservative accounting does not dictate the creation of hidden reserves in order to understate an entity's net worth in the balance sheet and decrease a taxable income in the income statement.

There is a number of research papers devoted to the analysis of accounting conservatism and its implications for the businesses. Majority of studies examine conservative accounting in non-financial industries, while the topic of financial accounting in general and accounting conservatism in particular in the financial institutions is neglected in the research. Our rationale for studying conservative accounting within the context of the financial sector is driven by the importance of the fair and correct estimates of the reported data of the financial institutions that play a significant role in the economy facilitating access to funding for the businesses. At the same time, it is important for the financial institutions to manage their own assets and liabilities so that they could meet their short-term obligations and make long-term strategic decisions. Liquidity management is one of the key areas in the bank management that is crucial in sustaining continuity of banking operations. Solvency is another important aspect of sustaining the functioning of the financial system. Moreover, finding out a relationship between accounting practices applied by financial institutions and their solvency and liquidity levels may contribute to the development of set of regulations by the official bodies e.g. central banks that monitor and control the performance of the financial sector to assure its stability.

Thus, the research goal is to determine the relationship between accounting conservatism and solvency and liquidity levels in the financial industry using evidence from the Russian banking sector.

In order to achieve the outlined research goal, we define the following objectives:

1. To analyze the theoretical background on accounting conservatism (its nature and measurement);
2. To study existing literature on the relationship between accounting conservatism and solvency and liquidity of banks;

3. To study regulatory international and Russian requirements for banks' capital adequacy and liquidity levels;

4. To identify the measures of accounting conservatism, solvency and liquidity levels suitable for the Russian banking sector;

5. To build and describe a sample for the analysis;

6. To conduct an empirical study on the built sample;

7. To interpret results and provide managerial implications based on the findings.

Specialized econometric software Stata is used to conduct quantitative analysis. The main sources of the theoretical background for the study are academic articles devoted to the analysis of the nature of accounting conservatism and its measurement, factors that influence conservative accounting practices in the entities, and capital adequacy and liquidity requirements for banking sector.

Data need to conduct the empirical research are collected from the annual reports of the Russian banks available on the official website of the central bank of Russia.

The research is structured as follows. In the first chapter, we introduce the nature of accounting conservatism and how it can be measured. In addition, we study capital adequacy and liquidity requirements for banks and rationale behind the importance of such requirements. In the second chapter, we establish our research framework, introduce key variables and econometric model that we use for the empirical analysis. In the third chapter, we report the results of the empirical study and the limitations of the research, and make conclusions.

1. Theoretical Background and Literature Review

1.1 Nature and measurement of accounting conservatism

The review of wide range of literature on the topic revealed that researchers who are interested in accounting are interested in the nature of accounting conservatism and the effect that it has on the company performance and well-being of key stakeholders (shareholders, managers, and lenders). We would like to classify the research papers about accounting conservatism into the following three groups and discuss briefly the key findings of the research papers from each group:

1. Definition and nature of accounting conservatism;
2. Measurement of accounting conservatism;
3. Impact of accounting conservatism on the decision-making and company performance.

We start with the literature review on the first group of studies: the definition and nature of the accounting conservatism. Traditionally, two types of this accounting phenomenon are distinguished: unconditional and conditional accounting conservatism. According to (Beaver and Ryan, 2005), unconditional conservatism is characterized by the understatement of the book value of net assets because of predetermined aspects of the accounting process. Examples of unconditional conservatism include acceleration of depreciation of fixed assets relatively to their economic depreciation, immediate expensing of the costs of intangibles developed most internally, and historical cost accounting for positive net present value projects. Conditional conservatism, on the other hand, is characterized by the write-down of the book value under adverse circumstances and the absence of the write-up under favorable circumstances. Examples of conditional conservatism include impairment accounting for tangible and intangible assets with long service life and lower of cost or market accounting for inventory.

According to (Watts, 2003a), accounting conservatism results from various economic reasons. In other words, conservatism may be caused by:

1. Its impact of being a part of efficient technologies employed in firm governance and firm contracts with external parties;
2. Litigation costs' increases;
3. Asymmetric loss functions of regulators;
4. Links between reported income and income taxes.

It can be seen that an asymmetric loss function is a cause of incentives to apply conservative accounting practices. For example, limited liability of shareholders means that their loss function is asymmetric. Thus, they may be induced to transfer wealth from debt-holders to

themselves by overstating earnings and net assets. At the same time, managers have limited liability; therefore they have incentives to overstate financial performance in order to transfer wealth from shareholders to themselves.

After defining the term "accounting conservatism', we would like to move on to discuss the possible measures of this accounting phenomenon. There can be identified four measures of accounting conservatism examined in the research on the topic and we are going to discuss them further in the literature review section:

1. Basu's asymmetric timeliness measure (Basu coefficient);
2. Book-to-Market ratio;
3. Ball's and Shivakumar's asymmetric-cash-flow-to-accruals measure (ACCF);
4. Penman and Zhang's hidden-reserves measure.

One of the most influential papers about the nature and possible measures of accounting conservatism is (Basu, 1997). The author introduces the concept of timeliness of earnings and states that earnings reflect bad news more quickly than good news. Examples of good news include unrealized gains, increases of future cash flow, and increase of asset life, thus, decrease of depreciation charge and increase in reported earnings. On the contrary, bad news includes the following examples: unrealized losses, decreases of future cash flows, and decrease of asset life followed by the simultaneous increase of depreciation charge and decrease of the reported earnings. The stock returns are used as a measure of the news, in accordance with the assumption of the efficiency of stock markets, where all available news is incorporated quickly into the stock prices. The Basu's model is a regression model that is traditionally written in the following way:

$$\frac{EPS_t}{P_{t-1}} = \alpha_0 + \alpha_1 * DR_t + \beta_0 * R_t + \beta_1 * R_t * DR_t + \varepsilon_t \qquad (1.1.1)$$

where EPS_t is earnings per share for year t; P_{t-1} is the share price at the beginning of the fiscal year t; R_t is return on the share over the fiscal year t; DR_t is a dummy variable taking a value of 1 if R_t is less than 0, and 0 otherwise, ε_t represent regression residuals.

The coefficients α_0 and β_0 are the measures of the relationship between earnings and annual return when future good news is expected. The coefficients α_1 and β_1 demonstrate the change in the relationship between earnings and returns when future bad news is expected. Finally, the coefficient β_1 is considered to be the measure of the conservatism. The main hypothesis tested in the Basu's model is that the slope coefficient and R^2 from a regression of annual earnings on annual unexpected returns are higher for negative unexpected returns than for positive unexpected returns because of the nature of accounting conservatism: bad news are more likely to be recognized immediately under conservative accounting than good news. As the

result of the research, the hypothesis is confirmed.

Basu's coefficient of timeliness of earnings is widely used in the research papers devoted to the accounting conservatism. However, there is a number of works criticizing Basu's model. For example, (Dietrich, Muller, Riedl, 2007) claim that the Basu's coefficient is a biased measure of accounting conservatism and may show its existence even when in reality it is absent. The authors argue that the research design of the Basu's study is flawed that is why the final conclusions are unreliable.

Another measure of accounting conservatism is book-to-market ratio (BTM). It is thought that a conservative accounting principle is likely to decrease the net book values of a firm relative to the firm's economic value. In other words, a lower BTM implies a higher degree of accounting conservatism. According to (Feltham and Ohlson, 1995), BTM measure of conservatism is derived from residual income valuation model and conservatism is defined as a tendency to bias downwards the book value of a firm relative to its market value.

Needless to say, BTM is rather controversial measure of accounting conservatism. For example, market-to-book ratio (a reciprocal of BTM) is a proxy for many other factors such as risk and Tobin Q. Therefore, the correct interpretation of applicability of BTM to measure accounting conservatism is required.

The third measure of accounting conservatism was developed by (Ball and Shivakumar, 2005) and is similar to the (Basu, 1997). The specific feature of this measure is that it does not require any stock data. Thus, this measure is applicable to the non-listed companies. The accounting conservatism's measure of Ball and Shivakumar (ACCF) is calculated based on the following regression:

$$ACCF_{it} = \beta_0 + \beta_1 * DCF_{it} + \beta_2 * CF0_{it} + \beta_3 * DCF0_{it} * CF0_{it} + \varepsilon_{it} \quad (1.1.2)$$

Where ACC_{it} is operating accruals scaled by beginning total assets, CFO_{it} is operating cash-flow for period t, scaled by beginning total assets, and $DCFO_{it}$ is a dummy variable that is equal to 0 if $CFO_{it} \geq 0$, and is equal to 1 if $CFO_{it} < 0$, and ε_t stand for regression residuals.

Similar to Basu's model, which uses stock returns a proxy for the economic news, AACF measure includes cash flow from operating activities as a measure of the underlying news affecting the reporting figures and degree of accounting conservatism. The more the operating accruals incorporate bad news as opposed to good news, the higher the degree of conservative accounting. In mathematic terms, the coefficient β3 is the AACF measure of accounting conservatism. A higher β3 indicates a higher degree of accounting conservatism. Many researchers argue that ACCF measure overcomes the problem of bias of the returns, while Basu's model is heavily criticized for incorporating such biases. Thus, some researchers

recommend to use ACCF measure as a more reliable proxy of accounting conservatism.

The fourth measure of accounting conservatism is the C-score that was developed by (Penman and Zhang, 1999):

$$C_{it} = \frac{Estimated\ Hidden\ Reserve_{it}}{NOA_{it}} \qquad (1.1.3)$$

where NOA$_{it}$, is the book value of operating assets minus operating liabilities. Hidden reserves include deferred revenue, bad-debt allowances, pension liabilities, and other estimated liabilities that can overstate liabilities and eventually understate net worth. This measure of accounting conservatism is rarely used in the research because of the difficulty of estimating hidden reserves. What indicators include in the hidden reserve estimation is a debatable question.

Briefly summarizing the key findings of the research on the possible measures of accounting conservatism, we would like to state that researchers cannot agree on the one measure that best captures the degree of conservative accounting. Controversial results are revealed while measuring conservatism using different approaches. Thus, the research on the topic of accounting conservatism with the focus on the Russian financial sector seems relevant to contribute to the field of the study on the topic of conservative accounting as a whole.

Talking about the third group of research papers about accounting conservatism, a wide range of works aims to investigate relationship between accounting conservatism and:

- debt policy and debt contracting efficiency;
- investment decision-making and its efficiency;
- quality of the financial reporting and earnings management practices.

(Martin and Roychowdhury, 2014) study the implications of the introduction of new financial products, namely, credit default swaps (CDS), for accounting practices of companies. Since credit default swaps provide insurance on negative credit outcomes for the lenders, the authors seek to reveal that usage of such financial instruments decreases incentives for the companies to apply accounting conservatism principle. The researchers investigate a sample of companies that initiate CDS trade and the following presence/absence of change in conservatism caused by this event. The Basu's model is used in the research to measure accounting conservatism. As a result of the research, the authors conclude that the initiation of CDS trade results in the decline of conservatism in the financial reporting of the companies. The finding of the study is consistent with the idea that credit default swaps help to address agency problem, thus there are fewer incentives for accounting conservatism.

Another research devoted to the impact of changes in the overall financial environment on the accounting policies of the companies is (Gormley, Kim, and Martin, 2011). In their research, they study possible changes in the accounting policies of companies after changes in

banking industry. More precisely, the authors investigate Indian banking sector and timely loss recognition of the Indian companies as a response to the entry of foreign banks to the county's banking industry. The final result that the researchers obtain is that the Indian companies improved conservatism in their financial statements in order to make their financial statements more transparent following the entry of new banks to the country. The authors argue that such changes in the in the banking environment influence accounting practices of the companies. However, the authors do not investigate the impact that such changes in the accounting policies (increased degree of accounting conservatism, in particular) have on the loan pricing and debt contracting conditions. Do increased transparency and timely loss recognition improve the lending terms or not? A number of researchers attempted to answer the question, and they came to different conclusions.

For example, (Gigler, Kanodia, Sapra, and Venugopalan, 2008) focus on the impact of accounting conservatism on debt contracting and debt covenants. The main finding of the research is that accounting conservatism does not contribute to the higher efficiency of debt contracts. Interestingly, by efficiency the authors mean not the lower interest rate but the minimized sum of the expected opportunity costs arising from two kinds of decision errors: errors due to false alarms and errors due to undue optimism. In other words, the authors conclude that accounting conservatism does not guarantee the better lending terms for the borrowers.

(Zhang, 2007) examines the impact of accounting conservatism on lenders' and borrowers' benefits. The author argues that lenders are likely to offer lower interest rates to those borrowers who apply accounting conservatism principle than to those who do not use conservatism in their accounting practices. In contrast to the works of (Gigler, Kanodia, Sapra, and Venugopalan, 2008) and (Gormley, Kim, and Martin, 2011) discussed in the previous paragraphs, (Zhang, 2007) concludes that applying accounting conservatism practices results in the increased efficiency of debt contracting. The author reveals that there are benefits for lenders through timely signaling of default risk and borrowers through the decreased interest rate due to accounting conservatism. However, the author does not take into account the covenant agreements, thus, his definition of efficiency is different from the one used in other above-mentioned studies.

(Choi, 2007) investigates the relationship between accounting conservatism, value relevance of the income statement, and firms' bank dependence. More precisely, the author seeks to investigate the impact that bank relationships have on the financial reporting of companies. The author supports the idea that timelier loss recognition is perceived positively by banks and thus banks would prefer to lend money to those companies who demonstrate the high level of

accounting conservatism. At the same time, the author claims that there is also a positive association between timely loss recognition and the value relevance of financial statements. Therefore, after conducting econometric analysis, the author concludes that the higher the firm's bank dependence is, the higher the value relevance of the financial data presented in the income statement is due to the accounting conservatism applied by the firms. In other words, the value relevance of the income statement is a function of a firm's debt financing decision.

(Callen, Chen, Dou, and Xinthe, 2015) investigate relation between performance covenants and conservative accounting under adverse selection. Adverse selection implies information asymmetry because lenders tend to be less informed than borrowers about the borrower's financial position. The implications of this adverse selection on the relation between conservative accounting and performance covenants in the lending process. The authors provide evidence that accounting conservatism and covenants contribute to the efficient design of debt contracts under a high degree of information asymmetry, At the same time, conservatism and covenants are predicted to be weakly related to each other when there is a low degree of information asymmetry between parties in the lending process.

Implications of conservative accounting on the debt policy are studied not only for the companies attracting private debt, but also for the companies attracting public debt through bond issues. (I. Haw, J. Lee, W. Lee, 2014) examine accounting conservatism in the private companies with different types of debt. The authors find out that private firms with public debt show a higher degree of asymmetric loss recognition than private firms with exclusively private debt. It is the evidence of a higher demand from bondholders for more conservative accounting than the demand for such accounting practices from banks. Moreover, the researchers claim that firms that apply accounting conservatism practices are charged a lower interest rate for public debt when they issue public debt repeatedly. Bond investors charge significantly lower bond spreads when private firms adopt conservative accounting for approximately six years. These findings reveal the importance of consistency of applying conservative accounting in the financial reporting that eventually results in the better lending terms for the borrowers. It is important to mention that the research sample in this case consists of the Korean private companies. The legal requirements and financial market environment are important factors that may influence the results of the study.

Now I would like to proceed with the literature review of the relationship between accounting conservatism practices and investing decisions of companies. (Kravet, 2014) examines the degree of risk-averseness of managers regarding corporate acquisitions in the presence of the conservatism in the financial reporting. The author states hypothesis that there is a negative relationship between accounting conservatism and acquisition riskiness. Such

association is driven by firms with accounting-based debt covenants. Managers tend to be reluctant to carry on risky projects because of the concerns about violating covenants. Thus, the author concludes that application of accounting conservatism practices decreases the likelihood of transferring of wealth from debt holders to shareholders and increases risk-averseness of the managers.

(Ahmed and Duellman, 2011) also contribute to the field of research of implications of accounting conservatism on the investing decisions of the managers. The authors consider two aspects of the investment decisions: future profitability and future special items charges. The following conclusion is made after the regression analysis: companies with a higher degree of conservative accounting have significantly higher profitability up to 3 years in the future, compared to companies with a lower degree of conservative accounting. The findings of the study are consistent with the role of conservatism in corporate governance predicted in (Watts, 2003) and (Ball and Shivakumar, 2005). In other words, conservative accounting practices have a positive impact on the company investing decision-making process and lead to the better performance. Such findings might be useful for both shareholders and lenders who monitor the investing decisions of the managers and thus can use accounting conservatism practices as a tool to mitigate agency risks.

Investing decisions, overconfidence of managers and conservative accounting are studied further by (Ahmed and Duellman, 2012). The authors state that there is a significant negative effect on accounting conservatism caused by management overconfidence. When managers are too optimistic about new investment opportunities and overconfident in the eventual success of these investments, they tend to delay loss recognition i.e. deviate from conservative accounting approach. This result is also useful for company shareholders who might require using conservative accounting in the financial reporting as a measure of control of overconfident managers.

(Lara, Osma, and Penalva, 2009) also investigate the relationship between efficiency of investment decisions and conservative accounting. The results of the study are consistent with the results of (Ahmed and Duellman, 2011) and reveal that more conservative firms tend to invest less and outperform other firms in terms of future investment performance. This research also contributes to the growing field of study of the relationships between financial reporting practices and decision-making within companies.

The literature review on the topic revealed the following:

1. Application of accounting conservatism practices is a relevant topic within the field of accounting research in general;
2. The researchers cannot agree on the one unbiased and consistent measure of

accounting conservatism with the Basu's coefficient being the most widely used measure of conservative accounting;

3. Majority of researchers focus on the impact of conservative accounting on debt contracting and investing policy of the companies operating in the non-financial sector;

4. There was identified a lack of research papers about accounting conservatism in the banking sector because the majority of papers on the topic of accounting conservatism are dedicated primarily on the implications of this accounting phenomenon in the non-financial industries.

I would like to highlight the limited number of works dedicated to the modern Russian banking sector in general and to the financial accounting in the banking sector in particular. Researchers who are interested in the accounting practices tend to exclude the banking sector from the scope of their studies and focus rather on other industries e.g. oil and gas and heavy engineering. Obviously, it seems reasonable because the financial reports of the banks differ significantly from the financial reports provided by the companies operating in other industries. This difference is explained by the nature of operations in the non-financial and financial sectors. For example, the typical assets for non-financial companies include accounts receivable, inventories, property, plant and equipment, and intangibles, while assets of banks typically consist of loans, investment securities held till maturity and held for sale, trading securities, and premises and equipment .However, taking into account the importance of the financial sector for the economic development and special attention paid by regulators nowadays towards the bank management, we would like to focus specifically on the financial accounting practices, namely, accounting conservatism, applied in the banking sector and its relationship with solvency and liquidity levels of banks.

1.2 Capital adequacy requirements in the banking sector

In this section, we will focus on the following aspects of the capital requirements for banks:

- Definition and measurement of the capital adequacy ratio (CAR);
- Insolvency and role of the capital requirements in the banking sector;
- International requirements for the capital levels in banks;
- Russian standards imposed by the Central Bank of Russia for the banks' capital.

Capital adequacy ratio is a measure of the amount of a bank's capital expressed as a percentage of its risk-weighted assets. Bank capital used in the calculation of CAR includes two types of capital: Tier 1 capital and Tier 2 capital.

Tier 1 capital is the going concern capital that keeps a bank solvent and sustains its activities. It is composed of core capital that includes common stock and disclosed reserves and might also include non-redeemable non-cumulative preferred stock. It is assumed that tier 1 capital can absorb losses without the need from bank to cease its trading activities.

Tier 2 capital is the gone concern capital meaning that it allows a bank to repay depositors and senior creditors if a bank became insolvent. It includes revaluation reserves, undisclosed reserves, hybrid instruments and subordinated term debt. Tier 2 capital is considered less reliable than Tier 1 capital because of the nature of its components. It is more difficult to accurately calculate different types of reserves than to calculate the core capital of a bank.

Tier 2 can be split into two levels: upper and lower. Upper level Tier 2 capital has the characteristics of being perpetual, and senior to preferred capital and equity. It also has cumulative, deferrable coupons and interest and principal that can be written down. Lower level Tier 2 capital is characterized by being inexpensive for a bank to issue, having coupons that are not deferrable without triggering default, and includes subordinated debt with a minimum five-year maturity.

After defining the components of Tier 1 capital and Tier 2 capital, we can define the overall capital adequacy ratio:

$$CAR = \frac{Tier\ 1\ capital + Tier\ 2\ capital}{Risk\ Weighted\ Assets} \qquad (1.2.1)$$

The numerator of the ratio is represented by the sum of two types of capital discussed above. The denominator is represented by the sum of the bank assets that are grouped by their riskiness and each group of assets is multiplied by the risk coefficient. Such classification of assets according to the level of risk they carry results in a more accurate estimate of the bank's exposure to the risk. The correct estimation of the denominator to calculate CAR depends primarily on two factors: reasonable assessment of the riskiness of the bank assets and accurate estimation of the value of the bank assets.

The theoretical reason for holding capital is that it should provide protection against unexpected losses and mitigate insolvency risk of banks. Bank insolvency is the state of bank when it is unable to pay its liabilities on time. There are three general types of bank insolvency in terms of the degree of impact on the financial system as a whole. The first type of insolvency risk is limited to a single bank or a small number of banks. The second type is represented by overt banking system runs (banking panic). According to (Calomiris and Gorton, 1991), banking panic occurs when bank debt holders at all or many banks start suddenly demanding from banks to convert their debt claims into cash to such extent that the banks suspend convertibility of their

debt into cash. Under such circumstances, banks have to secure support from a lender of last resort. It is important to mention that overt runs happen suddenly and end rather quickly.

The third type of the insolvency risk is the most severe as it affects the whole financial system (i.e. systematic risk) and it is called financial distress. Financial distress implies that significant portion of the system is insolvent. The recent financial crisis of 2008 demonstrated the importance of the correct monitoring of solvency positions of banks. Extremely high levels of leverage of banks and highly risky assets led to significant losses, lack of liquidity, and declines in bank capital. Because of the variety of interrelations between global financial institutions, the losses of banks in different regions eventually resulted in the worsening of the financial environment worldwide and severe global financial crisis. That is why The Basel Committee on Banking Supervision (BCBS), a major global standard setter for the prudential regulation of banks, adopted of a series of reforms known as Basel III in 2010. The main purpose of Basel III was to establish common framework to strengthen global capital and liquidity rules because the regulators realized that there was the lack of consistency in the definition of capital across jurisdictions and the lack of disclosure of information by banks. Such circumstances eventually led to the low solvency levels in a number of systemically important financial institutions and financial crisis.

Basel III introduces minimum capital requirements and buffers for the banking sector. According to BCBS, common equity is the highest quality component of a bank's capital, that is why the regulators mainly focus on this element of the capital.

In the table 1.2.1, the minimum capital requirements imposed by Basel III are presented.

Table 1.2.1 Basel III minimum capital requirements

Component of bank's capital	Minimum level
Common Equity Tier 1	4.5% of risk-weighted assets
Tier 1 capital	6.0% of risk-weighted assets
Total capital	8.0% of risk-weighted assets

As it can be seen form the table 1.2.1, minimum requirement for the total capital of banks is represented by capital adequacy ratio equal to 8.0 %. Third Basel Accord represents recommendations on regulations of the banking sector and national banking regulators can use the minimum requirements disclosed in the Basel III as a benchmark. We will proceed now with the study of the Russian capital requirements and compare the regulatory standards imposed by the Central Bank of Russia (CBR) and the standards of BCBS.

In accordance with the Instruction № 139-of December 3, 2012 by CBR, bank's capital adequacy ratios must be calculated as the ratio of the bank's common equity, Tier I capital, and equity (capital) to the sum of:

- credit risk on the assets displayed in the balance-sheet accounts (assets minus created loss provisions and provisions for potential losses on loans and equivalent debts weighted according to risk level);
- credit risk on credit contingencies;
- credit risk on financial derivatives;
- risk of change in credit claim value as a result of counterparty credit quality
- deterioration;
- operational risk;
- market risk.

In order to assign the correct risk coefficient to an asset, all assets are classified in five groups. In general, the methodology is similar to the methodology recommended by BCBS. The level of the minimum requirements for the capital adequacy is equal to the level proposed by BCBS. Historically, these levels were different, but currently all the national regulators work towards the convergence of the legal requirements for capital in order to achieve greater transparency and comparability of national financial systems. Minimum requirement for the capital adequacy imposed by the Central Bank of Russia is equal to 8 %.

1.3 Liquidity requirements in the banking sector

Similar to the previous section about the capital adequacy requirements, in this section we will focus on the following aspects of banks' liquidity:

1. Definition of liquidity;
2. Liquidity risk in the banking sector;
3. International liquidity requirements and liquidity risk measures;
4. Liquidity requirements in the Russian Federation.

Bank liquidity is an ability of a bank to meet its financial obligations on time without incurring unacceptably large losses. Liquidity management is an important task for bank managers since there is a trade-off between liquidity and profitability. On the one hand, banks provide loans to customers and receive interest income. On the other hand, banks attract customers' deposits and incur interest expenses. Maximizing the amount of loans at the expense of the liquidity level may lead to the inability of a bank to meet its debt obligations. However, holding too big cash reserves may result in high costs for holding cash, low interest income and, eventually, low profitability. Moreover, maturity mismatch between bank's long-term assets and short-term liabilities implies inherent liquidity risk in the banking sector. Cash flow obligations of banks are to the large extent dependent on other agents' behavior and external environment. For example, banks can face bank runs when customers withdraw money from their deposit

accounts when there is financial turmoil and high degree of uncertainty in the financial sector. Moreover, given the current globalization trends, intensification of international economic relations, and interdependence of entities across countries, liquidity problems faced by some banks can affect liquidity positions of other banks as well.

The financial crisis of 2008 highlighted the key role of the liquidity management for the functioning of financial markets and the banking sector. That is why the issue of liquidity management play an important role in the bank management and attracts a lot of attention from the official bodies regulating the financial sector.

The main liquidity risk that banks are exposed to is the inability of a bank to pay to its counterparties and clients as the obligations due or can pay only by selling assets and acquiring necessary amount of cash at high cost. This risk is known as funding liquidity risk and for the research goal we will focus specifically on this type of liquidity risk.

In practice, it is possible to construct various funding liquidity ratios, which reveal different aspects of the availability of funds within a certain time horizon ahead and use them as proxies for funding liquidity risk. Such measures can be calculated using static balance sheet analysis, dynamic stress testing techniques, and scenario analysis. We will now consider official requirements for the liquidity in banks.

Basel III introduces new liquidity ratios in order to enhance global capital and liquidity regulations with the final goal of promoting stable functioning of the financial sector. Banking sector should be capable of absorbing shocks resulting from financial turmoil, thus reducing the risk of spillover from the financial sector to the real economy and negative impact on all other industries.

The recent financial crisis again demonstrated the importance of an adequate liquidity management to the proper functioning of financial system. The difficulties experienced by some banks were due to errors in basic principles of liquidity risk management. In order to address the problem, The Basel Committee on Banking Supervision published Principles for Sound Liquidity Risk Management and Supervision ("Sound Principles") in 2008. The Sound Principles provide detailed guidance on the risk management and supervision of funding liquidity risk and should help promote better risk management in this crucial area.

To complement these principles, the Committee has further strengthened its liquidity framework by developing two minimum standards for funding liquidity that were announced: liquidity coverage ratio (LCR) and net stable funding ratio (NSFR). LQR is calculated as follows:

$$LQR = \frac{HQLA}{Total\ Net\ Cash\ Outflows} \qquad (1.3.1)$$

Where HQLA represents high quality liquid assets (e.g. US Treasury securities). In the denominator, the net cash in- and outflows are considered with a prudent minimum of 25% of the cash outflows (that is, the cash inflows are capped at 75% of the cash outflows). Such estimation implies that banks should not rely exclusively in the expected cash inflows.

LQR was established by BCBS to promote short-term resilience of a bank's liquidity risk profile by ensuring that it has sufficient high-quality liquid assets to survive a significant stress scenario lasting for one month. Banks are required to hold an amount of HQLA equal to or greater than their net cash outflow over a 30-day stress period, meaning that the minimum requirement for the LQR is 100 %. However, there is a transition period towards the achievement of this threshold. In 2016, the requirement was equal to 70% and steadily increasing to reach 100% by 2019.

Net stable funding ratio is calculated in the following way:

$$NSFR = \frac{Available\ amount\ of\ stable\ funding}{Required\ amount\ of\ stable\ funsing} \qquad (1.3.2)$$

The ratio has a time horizon of one year and has been developed to provide a sustainable maturity structure of assets and liabilities. Some clarification is needed on what stable funding means and what the difference is between available and required stable funding.

According to Consultative Document of BCBS "Basel III: The Net Stable Funding Ratio", "the amount of available stable funding (ASF) is measured based on the broad characteristics of the relative stability of an institution's funding sources, including the contractual maturity of its liabilities and the differences in the propensity of different types of funding providers to withdraw their funding. The amount of ASF is calculated by first assigning the carrying value of an institution's capital and liabilities to one of five categories. The amount assigned to each category is then multiplied by an ASF factor, and the total ASF is the sum of the weighted amounts. Carrying value represents the amount at which a liability or equity instrument is recorded before the application of any regulatory deductions, filters or other adjustments".

The measurement of required stable funding is based on the liquidity risk profile of assets and off-balance-sheet exposures of banks. First, the amount of required stable funding is calculated by assigning the carrying value of an institution's assets to the categories defined by BCBS. Second, the amount assigned to each category is multiplied by its associated required stable funding (RSF) factor and the total required stable funding is calculated as the sum of the weighted amounts added to the amount of off-balance-sheet activity (or potential liquidity exposure) multiplied by its associated RSF factor.

In general, the calculation of both liquidity measures introduced by Basel III is

complicated and requires profound analysis of the riskiness of the assets of a bank. Only careful investigation and classification of risky assets and off-balance-sheet items will result in the adequate estimation of liquidity requirements in the banking sector, that is why BCBS introduces such measures and regularly publishes comments and additional information on the calculation of these measures.

Talking about the Russian practice of liquidity regulation, Central Bank of Russia includes the Basel III liquidity and other requirement starting from 2016. CBR determined systemically important credit institutions that are required to estimate the liquidity coverage ratio and additional capital adequacy ratios according to Basel III. The list includes 10 banks:

1. UniCredit Bank JSC;
2. GPB OJSC;
3. VTB Bank PJSC;
4. ALFA-BANK JSC;
5. Sberbank of Russia;
6. FC Otkritie Bank (PJSC);
7. ROSBANK PJSC;
8. Promsvyazbank PJSC;
9. Raiffeisenbank JSC;
10. Rosselkhozbank JSC.

These banks were chosen by CBS because according to the CBS officials, as of July 1, 2015 these ten banks accounted for more than 60% of the Russian banking sector's assets.

For the goal of the research, we will focus on the liquidity ratios that are imposed by CBS and adherence to them is obligatory for all the banks. These requirements include:

1. Instant liquidity ratio (N2) - the ratio of the sum of the banks' highly liquid assets to the sum of the bank's liabilities on demand accounts;
2. Current liquidity ratio (N3) - the ratio of the sum of the bank's liquid assets to the sum of the bank's liabilities on demand accounts and accounts up to 30 days;
3. Long-term liquidity ratio (N4) - the ratio of the entire long-term debt to the bank, including guarantees and sureties with a maturity of more than a year, to the bank's equity capital and liabilities on deposit accounts, credits received and other debt liabilities with maturities exceeding 1 year.

In the table 1.3.1, the minimum requirement for the ratios are presented.

Table 1.3.1. Minimum liquidity requirements by the Central Bank of Russia

Liquidity	Minimum requirement

ratio	
N2	20 %
N3	50%, starting from the balance-sheet as of February 1, 1998, and 70%, starting from the balance-sheet as of February 1, 1999
N4	120% (maximum value)

As it can be seen from the definition, the liquidity coverage ratio introduced by Basel III can be seen as mixture of N2 and N3 liquidity requirements imposed by the Central Bank of Russia.

1.4 Accounting conservatism and solvency and liquidity levels

As mentioned in the previous paragraphs, financial accounting practices applied in the financial sector are not studied widely. There is a limited number of research papers that investigate relationship between accounting conservatism and bank management. However, with the introduction of different ratios and standards by regulatory bodies (e.g. Basel III), additional interest in the analysis of potentially existing relationships between accounting practices and approaches to manage liquidity and solvency by banks arises.

(Bushman and Piotroski, 2006) argue that accounting information is an important part of the information used by politicians in making their intervention decisions. In this sense, banks are particularly vulnerable to political intervention and so they may use accounting choices to address an increase in political scrutiny.

There is a limited number of studies that examine relationship between conservative accounting practices and solvency and liquidity management in the financial sector. However, we believe that it is a prosperous field for the further research. As literature review demonstrated, the majority of researchers focus on the relationship between accounting conservatism and debt contracting and find out different benefits/drawbacks of accounting conservatism for lenders and borrowers. It is also common to study relationships between accounting conservatism, investment decisions, and efficiency of firm's investing policy. We believe that solvency and liquidity management play an important role in the internal decision-making process both in the financial and non-financial sectors. Moreover, while many researchers prove that accounting conservatism mitigates agency costs problem and disciplines company management, it seems reasonable to study the effect of conservative accounting on solvency and liquidity management in the banking industry and estimate whether accounting conservatism affects cash holdings and an ability to meet long-term obligations.

(Lee J., 2010) examines whether firms with greater reporting conservatism hold less or more cash. The rationale behind the research is that if conservative accounting increases financial flexibility and facilitates access to funding, companies that apply such accounting

principle will have lower levels of liquidity (negative relationship between accounting conservatism and liquidity) because of the better financial contracting conditions and thus, better access to the external funding in case if needed. As a result of the research, the author comes to the opposite conclusion: firms with greater reporting conservatism hold more cash. In other words, the author finds a positive relationship between these two concepts. (Ghavi, Najafi, and Arfai, 2013) also find statistically significant positive relationship between liquidity and accounting conservatism. Such findings may be explained by the applying of both conservative accounting and conservative style to the liquidity management.

(Kim, 2011) goes further and examines the relationship between accounting conservatism and choice of the liquidity resources: cash and lines of credit. The author measures accounting conservatism as a asymmetric timeliness of earnings and finds out that there is a positive association between conservative accounting and ratio of cash to total liquidity assets. Moreover, such association is more pronounced for firms facing high ex-ante agency costs than for firms facing low ex-ante agency costs. The author claims that such result is consistent with the assumption that accounting conservatism mitigates agency problems and justifies holding of extra cash reserves.

(Lee H. S., 2010) also uses agency costs theory to study the relationship between liquidity and accounting conservatism. The author argues that accounting conservatism results in the lower cost of debt since it signals to the debt holders about the overall riskiness of the borrower. Thus, the more conservative companies will have lower liquidity levels since they can attract debt at a lower cost in case they need short-term loan to finance current obligations. As a result of the research, the author confirms the hypothesis that there is a negative relationship between accounting conservatism and liquidity levels.

In regards of the research on bank's solvency and accounting conservatism, it seems reasonable to study their relationship because of the importance of sustaining an adequate solvency level for efficient functioning of the financial system, and high level of regulation from state bank authorities (e.g. Central bank of Russia) and state accounting authorities (e.g. Ministry of Finance). According to (Niswander and Swanson, 2000), a capital adequacy threshold affects regulatory scrutiny because the official bodies use it as an indicator to classify between potentially troubled banks and banks that are in a healthier solvency position. That is why in order to avoid additional audit procedures and intervention of the regulatory bodies, banks may prefer to have excess capital over the minimum capital adequacy requirements.

According to (Donovan, Frankel, and Martin, 2013) there is a positive relationship between accounting conservatism and solvency and liquidity levels. More precisely, the authors investigate such relationships in the troubled companies prior to their default. The results of the

research reveal that conservative firms are likely to have greater liquidity at default. It can be explained by two reasons. First, managers of the conservative firms have less time to destroy or transfer shareholder value to themselves because of the timely loss recognition principle. Second, bankruptcy of such companies is more likely to result from a covenant-based transfer of control rights than a missed interest payment. In general, the results of the research suggest that liquidity levels plays a less significant role in forecasting insolvency and future default. However, financial institutions differ significantly from non-financial companies, and it is important for policy makers to understand the relationship between solvency and liquidity levels of banks and accounting standards they use.

Summary of Chapter 1

In Chapter 1, we presented the main findings of the literature review on the topic of accounting conservatism and solvency and liquidity levels in the banking sector. It was found out that accounting conservatism is studied by a number of the researchers as an important accounting concept. The rationale behind the study of accounting conservatism is that the choice of estimations and assumptions by managers under uncertainty has an impact on the final financial reports that are presented to the external parties such as investors, lenders, suppliers, and regulatory bodies. Fair and accurate estimation of all potential gains and losses results in the more reliable financial data and is directly linked to the better decision-making process.

In regards of the measures of accounting conservatism, the timeliness of loss recognition proposed by (Basu, 1997) is a key principle used to capture the conservative accounting. However, a growing body of research reveals several biases in this measure. Controversy around the topic makes it reasonable to investigate further accounting conservatism as an important accounting principle and its possible measures.

Liquidity and solvency levels in the banking industry are important indicators of the stability of the financial industry as a whole. New requirements introduced by the official regulatory bodies highlight the importance of proper liquidity and solvency management in the banking industry in order to mitigate risks of the financial distress. There is a general tendency towards the convergence of international and local standards about the minimum liquidity and solvency requirements that is aimed to increase transparency and reliability of the financial reports of the financial institutions.

Having reviewed the literature on the accounting conservatism and, more precisely, on the relationship between accounting conservatism and solvency and liquidity, we have identified an opportunity to investigate such relationship in the banking sector using the evidence from the Russian Federation. First, it seems reasonable to see whether accounting conservatism in the financial sector has the same effect on the solvency and liquidity management as in the non-

financial industries. Taking into account specifics of the financial industry and different findings on the topic for the non-financial industries, we believe the research will contribute to the better understanding of the role of accounting conservatism in the banking sector. Second, Russia, being an emerging economy, is an interesting case for the study of banking practices because of the turbulent and highly uncertain financial environment. Finally, understanding of the impact of accounting practices on different areas of banking management and bank's exposure to solvency and liquidity risks is of paramount importance for the regulatory bodies that establish standard metrics to assure stable functioning of the financial sector. Thus we proceed with the research by identifying the appropriate research design taking into account the specifics of the Russian banking sector.

2. Research Design

2.1 Measures of accounting conservatism in the Russian banking sector

The first step in choosing the model to examine the relationship between accounting conservatism and solvency and liquidity levels of Russian banks is to choose the proxy for accounting conservatism. In this research, we will use and Ball's and Shivakumar's accruals measure (ACCF) because of the specifics of the Russian banking sector that is presented mainly by banks that are not publicly traded.

Basu's model and BTM ratio that are the most commonly used model to measure accounting conservatism in the empirical research are not suitable for the analysis of the Russian banking sector. According to the Central Bank of Russia, as of February 1, 2017, there were 619 banks in total in the Russian Federation, and only 14 out of them were listed on the stock exchange. Thus, there are physical constraints of the data availability to construct Basu's model and to calculate BTM ratio since stock returns and market value can be derived only for the very limited sample of the Russian banks. Moreover, out of the top 10 Russian banks in terms of assets, there are only 4 banks whose stocks are publicly traded. However, we believe that it is important to include all the major banks in the analysis because of their significant role in the financial system of the Russian Federation. Thus, we use Ball's and Shivakumar's accruals measure to estimate accounting conservatism in the Russian banking sector.

We define accruals as follows:

$$Accruals = NOA_t - NOA_{t-1} \qquad (2.1.1)$$

Where NOA_t represents net operating assets in year t and is calculated as follows:

$$NOA = (Total\ Assets - Cash - (Total\ Liabilities - Total\ Debt) \qquad (2.1.2)$$

According to (Ball and Shivakumar, 2006), accruals measured as change in net operating assets reflect the timely recognition of economic losses. The important role of the accruals is linked to the recognition of unrealized gains and losses. In order to estimate expected future cash flows to calculate economic gains and losses for the period, accounting managers use their professional judgement and assumptions. In other words, an economic gain or loss during a period is calculated as the current-period cash flow plus (minus) any upward (downward) estimation in the present value of expected future cash flows. Thus, any estimation of future cash flow upwards and downwards before the actual changes in the cash flow is directly linked to the creation of accounting accruals.

27

Examples of timely recognition of the potential changes in the future cash flow in the banking industry include gains and losses on trading securities, revaluations of loan loss provisions, restructuring charges, goodwill impairment charges, and asset impairment charges. All these examples are also related to the accounting conservatism practices because estimations used to calculate potential charges in the future can be more or less conservative depending on the accounting choice of the management.

Taking into account all mentioned above, we may conclude that the relationship between cash flow from operating activities and accruals measured according to formula (2.1.1) is an appropriate measure of accounting conservatism.

2.2 Measures of solvency and liquidity levels in the Russian banking sector

We are going to use the following solvency and liquidity measures in the model:

1. Capital adequacy ratio (N1.0);

2. Instant liquidity ratio (N2);

3. Current liquidity ratio (N3);

4. Long-term liquidity ratio (N4).

These ratios were chosen for the consistency reasons. The financial data we use for the calculations of accruals are derived from the financial reports compiled in accordance with the Russian GAAP. That is why we use the Russian requirements for capital and liquidity in banks. Moreover, the application of new liquidity requirements introduced by Basel III such as net stable funding ratio is mandatory starting from 2016 only for 10 Russian banks that are considered systematically important and that hold the major stake in the Russian banking sector asset-wise. It implies physical constraints of data availability for a big sample of banks that is needed for the research to better estimate the relationship between accounting conservatism and liquidity levels of banks.

In the Table 2.2.1, the summary of all the variables used in the regression analysis is presented.

Table 2.2.1. Variables used in the regression analysis

Type	Measure of	Variable	Name in Stata
Independent	Accounting conservatism	Cash flow from operating activities and dummy variable (1 if CFO is negative and 0 otherwise)	cfo dcfo
	Solvency	Capital adequacy ratio	car
	Liquidity	Instant liquidity requirement	n2
		Current liquidity requirement	n3

		Long-term liquidity requirement	n4
Dependent	Accruals	Accruals	acc

2.3 Sample description

We choose top 100 Russian banks in terms of assets. Even though there are more than 500 banks in Russia, 10 banks account for more than 60 % of the overall Russian banking sector's assets. Moreover, the Central Bank of Russia often withdraws bank licenses of the mismanaged banks, which do not comply with the standard requirements. For example, only in March 2017, 4 licenses were withdrawn. That is why it seems reasonable to focus primarily on the top banks and use the results of the research to establish some benchmarks for accounting practices of all the banks in the Russian Federation with the ultimate goal of increasing quality of the accounting reporting and efficiency of bank management.

Out of the 100 Russian banks, we exclude those that have missing data in the period from 2011 to 2015. This timeframe of the research was chosen for two main reasons. First, the beginning year for the research is 2011 because there are data about capital adequacy ratios and different liquidity ratios available only from 2011. We decided not to expand the timeframe but calculating the ratios for the earlier years because the practices for assets' risk assessment applied by different banks are complex and require detailed information on classification of assets that is not publicly available before 2011. Second, the latest financial data for 2016 is not available, that I why the last year included in the research is 2015. The final sample includes 74 banks. The banks included in the final sample are presented in the Appendix 1.

2.4 Hypotheses development

In order to estimate the relationship between accounting conservatism and solvency and liquidity levels in the Russian banking sector, we develop and test four hypotheses.

H₁: There is negative relationship between solvency level of a bank and accounting conservatism.

The rationale behind the hypothesis is the high regulation of the financial industry and political scrutiny. We hypothesize that the decrease in the minimum requirement for the capital adequacy may act as a trigger for management to apply more conservative estimates for potential gains and losses.

We believe that the high state involvement in the economy in the Russian Federation is one of the reasons that banks may adhere to the conservative reporting principle when facing difficulties with their solvency level estimated as the capital adequacy ratio. According to (Chami and Cosimano, 2003), regulators rely on capital adequacy ratio as one of the main indicators that matter for monitoring the banking sector performance. Thus, the decrease in the

capital adequacy ratio may lead to the increased political scrutiny i.e. additional monitoring from the Central Bank.

Closer monitoring and control by regulators and the threat of politically imposed decisions as capital adequacy ratio (CAR) decreases might lead to the increasing of the level of accounting conservatism. In other words, as CAR decreases (bank's political attention increases), managers might have incentives to increase the level of accounting conservatism in order to reduce the likelihood of having negative government actions.

On the one hand, non-compliance with the minimum capital adequacy requirements results in the withdrawal of a license by the Central Bank of Russia. We believe that such threat will provide an incentive to the management to review their accounting practices and report in the more conservative manner.

On the other hand, when banks meet capital adequacy requirements and face no threat of the increased regulatory monitoring, management may lack incentives to use conservative estimates when accounting for and reporting assets and liabilities. In this sense, we consider accounting conservatism as an instrument to mitigate potential regulatory costs resulted from the intervention of the official regulatory bodies when there is a risk of not complying with the minimum capital requirements.

After developing the hypothesis about the relationship between accounting conservatism and solvency level, we proceed with the following three hypotheses related to accounting conservatism and liquidity levels:

H_2: There is negative relationship between instant liquidity level of a bank and accounting conservatism.

H_3: There is negative relationship between current liquidity level of a bank and accounting conservatism.

H_4: There is negative relationship between long-term liquidity level of a bank and accounting conservatism.

The rationale behind these hypotheses is also linked to regulatory costs and to the decisions of bank management to report according to more conservative standards when the risk of political intervention from the regulatory bodies is higher. Moreover, accounting conservatism may be considered as an accounting tool to mitigate agency problem and to facilitate access to the borrowed funds by demonstrating cautious estimations of the future gains and losses. That is why shareholders might be not concerned with the relatively low liquidity levels when they know than conservative estimations are applied to assess the future cash flows.

2.5 Model specification

After choosing appropriate measures for conservatism, solvency, and liquidity in the Russian banking sector and stating the hypotheses, we can specify regression models that we will estimate using the special statistical software Stata. To test H1, we estimate the following regression:

$$ACCF_{it} = \beta_0 + \beta_1 * DCFO_{it} + \beta_2 * CF0_{it} + \beta_3 * DCF0_{it} * CF0_{it} + \beta_4 * CAR_{it} +$$
$$\beta_5 * CAR_{it} * DCF0_{it} + \beta_6 * CAR_{it} * CF0_{it} + \beta_7 CAR_{it} * DCF0_{it} * CF0_{it} + \varepsilon_{it} \qquad (2.5.1)$$

where ACCF represents accruals; CFO represents cash flow from operating activities; DCFO is a dummy variable equal to 0 if $CFO_{it} \geq 0$, and is equal to 1 if $CFO_{it} < 0$; $CFO_{it;}$ CAR is capital adequacy ratio that represents solvency level of banks. The coefficient β_3 is a measure of accounting conservatism and we expect it to be positive and statistically significant. The relationship between solvency and conservative accounting is measured by the coefficient of the three-ways interaction term, β_7. According to H1, we expect β_7 to be negative.

To test H2, H3, and H4, we estimate the following regression models:

$$ACCF_{it} = \beta_0 + \beta_1 * DCFO_{it} + \beta_2 * CF0_{it} + \beta_3 * DCF0_{it} * CF0_{it} + \beta_4 * N2_{it} + \beta_5 *$$
$$N2_{it} * DCF0_{it} + \beta_6 * N2_{it} * CF0_{it} + \beta_7 N2_{it} * DCF0_{it} * CF0_{it} + \varepsilon_{it} \qquad (2.5.2)$$

$$ACCF_{it} = \beta_0 + \beta_1 * DCFO_{it} + \beta_2 * CF0_{it} + \beta_3 * DCF0_{it} * CF0_{it} + \beta_4 * N3_{it} +$$
$$\beta_5 * N3_{it} * DCF0_{it} + \beta_6 * N3_{it} * CF0_{it} + \beta_7 * N3_{it} * DCF0_{it} * CF0_{it} + \varepsilon_{it} \qquad (2.5.3)$$

$$ACCF_{it} = \beta_0 + \beta_1 * DCFO_{it} + \beta_2 * CF0_{it} + \beta_3 * DCF0_{it} * CF0_{it} + \beta_4 * N4_{it} + \beta_5 *$$
$$N4_{it} * DCF0_{it} + \beta_6 N * 4_{it} * CF0_{it} + \beta_7 * N4_{it} * DCF0_{it} * CF0_{it} + \varepsilon_{it} \qquad (2.5.4)$$

Where N2, N3, and N4 represent instant liquidity, current liquidity, and long-term liquidity, respectively. We expect coefficient β_7 to be negative in all the equations.

We use three standard panel data estimators in the research: pooled ordinary least squares model, fixed effects model, and random effects model. In this section, we will briefly introduce all of them and explain the choice of the model for the goal of the research.

The pooled OLS model is expressed as the following equation:

$$Y_{it} = \alpha + \beta_1 X_{1,it} + \beta_2 X_{2,it} + \cdots + \beta_k X_{k,it} + \varepsilon_{it} \qquad (2.5.5)$$

The intercept and the slope coefficients are constant across time and objects, and the error term captures differences over time and objects.

The fixed effects model looks as follows:

$$Y_{it} = \alpha_i + \beta_1 X_{1,it} + \beta_2 X_{2,it} + \cdots + \beta_k X_{k,it} + \varepsilon_{it} \qquad (2.5.6)$$

The fixed effects model controls for the effects of time-invariant variables with time-invariant effects. It is also important to mention that the fixed effects models better fit data if there is significant within-subject variability. In order to control for the time-invariant variables, demeaning variables method is used in the linear regression models.

The random effects model is expressed in the following way:

$$Y_{it} = \alpha_{it} + \beta_1 X_{1,it} + \beta_2 X_{2,it} + \cdots + \beta_k X_{k,it} + \varepsilon_{it} \qquad (2.5.7)$$

The slope coefficients are constant but the intercept varies over objects and time. In other words, the intercept itself becomes a random variable in the random affects model. The assumption made in a random effects model is that the individual effects are not correlated with the independent variables.

In order to choose the most appropriate model for our sample, we use the following tests: F-test, Breusch – Pagan LM test, and Hausman test.

F-test is used to find the preferred model between fixed effects and pooled ordinary least square models. F – test null hypothesis states that both observed and unobserved fixed effects are equal to zero. Thus, rejecting the null indicates the existence of significant fixed effect and, therefore, this model better fits for the analysis. (Greene, 2003)

H_0: *Pooled OLS model*

H_1: *Fixed effects model*

Breusch – Pagan LM test allows us to check whether there are random effects present. According to the null of the test, variance of the random effects is zero. Therefore, rejecting the null leads to the conclusion that random effects model is preferred to pooled OLS (Greene, 2003)

H_0: *Pooled OLS model*

H_1: *Random effects model*

If there are both random effects and fixed effects are present in the data, we have to choose which model beer describes our data. Hausman test is applied in this case. Under the null of this test models errors are not correlated with regressors. Thus, rejecting the null hypothesis means that fixed effects model should be chosen (Greene, 2003).

Summary of Chapter 2

In Chapter 2, we described the regression model used to estimate the relationship between accounting conservatism and solvency and liquidity levels. Specifics of the Russian banking sector do not allow to use Basu's model and BTM ratio to estimate accounting conservatism, thus we use Ball's and Shivakumar's model, another well-known measure of accounting conservatism. As independent variables, we include cash flow from operating

activities, dummy variable (equal to 1 when cash flow from operating activities is negative and equal to 0, otherwise), capital adequacy ratio, instant liquidity ratio, current liquidity ratio, and long-term liquidity ratio into the model.

Our final sample includes 74 banks and data were collected for the period from year 2011 to year 2015. In our analysis, we focus on the Russian banks that are included in the top 100 banks in terms of the asset size. We do not take into account other banks because currently the Central Bank of Russia actively withdraws licenses of many banks that do not comply with the minimum requirements and thus the number of banks decreases. Moreover, the choice of the biggest banks asset-wise is based in the assumption that the quality of the financial reports of these banks is higher because of their significant role in the Russian financial system.

Three standard panel data estimators will be applied to run the regression analysis: pooled ordinary least squares model, fixed effects model, and random effects model. A number of statistics tests will be used to identify the model that more accurately describes the existing relationships between the dependent and independent variables.

We hypothesize that there is negative relationship between accounting conservatism and solvency and liquidity levels in the Russian banking sector. Such hypotheses are based on the specifics of the financial industry that can be described as highly regulated by state and all banks must comply with the minimum requirements imposed by the Central Bank of Russia. Once facing the threat of non-complying with the minimum levels of capital adequacy and/or liquidity levels, bank managers have more incentives to apply more conservative estimates when assessing potential gains and losses in order to avoid intervention of the Central Bank of Russia into their daily operations.

In the next chapter, we proceed with the regression analysis and will confirm or reject the stated hypotheses, provide managerial implications of the research findings, and make a final conclusion.

3. Research Findings

3.1 Descriptive Statistics

In this section, we provide descriptive statistics of the data used in the analysis. Summary of the statistics will let us see the main patterns in the financial data used in the research and will provide an overview about the compliance of the banks with the minimum requirements concerning solvency and liquidity established by the Central Bank of Russia.

Table 3.1.1. Descriptive Statistics

Type of variable	Variable	Unit	Mean	Std. Dev.	Min	Max
Dependent	Accruals	% of total assets	0.032092	0.88879	-0.60404	0.389021
Independent	Cash flow from operating activities	% of total assets	0.031656	0.090503	-0.48913	0.210583
	Capital adequacy ratio	%	13.55593	2.854671	10.16	31.02
	Instant liquidity ratio	%	86.98096	79.44959	22.79	819.72
	Current liquidity ratio	%	108.0517	55.77623	54.4	354.08
	Long-term liquidity ratio	%	72.36052	32.66174	11.85	245.24

As it can be seen from the table, the average accruals are equal to 3.2092 % of the total assets. In total, accruals scaled by total assets range from -0.60404 to 0.389021. In regards of the minimum requirements for capital adequacy and liquidity, all the banks included in the sample complied with the minimum requirements for capital adequacy, instant liquidity, and current liquidity. On average, capital adequacy ratio equals to 13.56 %. In other words, banks included in the sample on average exceed the minimum capital adequacy requirement by 5.56%.

The average value for instant liquidity ratio is more than 4 times higher than the minimum requirement of the Central Bank of Russia and is equal to 86.98 %. The average value for current liquidity ratio on average is more than 2 times higher than the minimum requirement of the Central Bank of Russia and equals 108.05 %. Based on this statistics, we may conclude that the banks included in the sample are stable in terms of their capital adequacy, instant liquidity level, and current liquidity level.

However, the maximum value of the long-term liquidity in the studied sample is greater than the maximum possible value imposed by the Central Bank of Russia (245.24 % and 120 %, respectively). Let us see the number of observations and number of banks that violated the requirements for long-run liquidity level.

Table 3.1.2. Violations of the long run liquidity requirement

Long run liquidity requirement	Number of observations	Number of banks
>120 %	24	14

In the studied sample, there are 24 observations that exceed the maximum level of long run liquidity i.e. the long run liquidity ratio exceeds 120 %. 14 banks did not meet the requirement in the studied period from year 2011 to year 2015. However, these banks met other minimum requirements of the Central Bank of Russia and improved their long run liquidity position, that is why severe intervention into their daily operations and eventual withdrawal of a banking license did not occur.

After providing the descriptive statistics of the sample and before conducting the regression analysis, we build correlation matrix to see how the variables that we use in our analysis are correlated with each other.

Table 3.1.3. Correlation matrix

	cfo	acc	car	n2	n3	n4
cfo	1	-	-	-	-	-
acc	0,79214	1	-	-	-	-
car	-0,01521	-0,01443	1	-	-	-
n2	0,078813	-0,093096	0,117543	1	-	-
n3	0,052749	-0,061583	0,156301	0,318431	1	-
n4	0,095132	0,093284	0,165837	0,198847	-0,04	1

The correlation matrix presents to what extent two variables have a liner relationship between each other. However, it is important to remember that the correlation does not imply causation. In other words, the presence of the correlation does not necessarily mean that a change in one variable leads a change in another variable. In order to prove the existence or absence of the casual relationship between the studied phenomena, we will use the regression analysis in the next section.

The highest correlation coefficient describes the relationship between accruals and cash flow from operating activities. Such strong correlation may be explained by the fact that the

operating section of the cash flow includes net income and changes of the operating assets and liabilities, while accruals are measured as change in the net operating assets.

We can also see that there is positive correlation between capital adequacy ratio and all the liquidity ratios included in the analysis. Capital adequacy ratio is negatively correlated with both accruals and cash flow from operating activities. While we may conclude that there is positive correlation between instant liquidity ratio and two other liquidity ratios under consideration, we note that there is also negative correlation between current liquidity ratio and long-term liquidity ratio.

3.2 Model findings

In this section, we proceed with the empirical results of the hypotheses stated in the previous chapter.

H₁: There is negative relationship between solvency level of a bank and accounting conservatism.

Table 3.2.1 presented below summarizes the findings of the empirical test of the hypothesis.

Table 3.2.1. Relationship between accounting conservatism and solvency level

acc	POLS	FE	RE
dcfo	-.703	-.212**	-.252*
cfo	.013	0.015*	.004*
cfodcfo	.001	0.381**	.084**
car	-.613	-.547**	-.419*
cardcfo	.038	.081*	.021**
carcfo	.003	.359*	.255*
cardcfocfo	-.621	-0.34**	-.105**
_cons	.419	.004*	.091*
F – test	35.11**	61.57*	
R²	0.36	0.26	0.29

$$*** \; p < 0.10, \; ** \; p < 0.05, \; * \; p < 0.01$$

First, we conclude that the coefficient of cfodcfo that represents the degree of accounting conservatism is statistically significant in FE and RE model. It means that the model does capture the accounting conservatism in the studied sample. The higher the coefficient, the higher the degree of conservatism, according to the model.

Second, coefficient of cardcfocfo that represents relationship between solvency and accounting conservatism is negative and statistically significant at 5 percent level in two models: fixed effects model and random effects model. After conducting Hausman test, we conclude that the null hypothesis is rejected and fixed effects model better describes our model.

After testing the first hypothesis about the relationship between accounting conservatism and solvency level in the banking sector, we proceed with the test of the second hypothesis about the relationship between accounting conservatism and instant liquidity level in banks:

H2: There is negative relationship between instant liquidity level of a bank and accounting conservatism.

Table 3.2.2. Relationship between accounting conservatism and instant liquidity level

acc	POLS	FE	RE
dcfo	-.012**	-.119*	-.169*
cfo	.043*	0.528**	.016
cfodcfo	.702	0.016**	.037**
n2	.38	0.038*	.058
n2dcfo	.015*	0.29**	.036**
n2cfo	-.301*	-.438**	-.516*
n2dcfocfo	-.016	-.009**	-.007**
_cons	.049*	.083**	.092*
F – test	38.02	24.16**	
R^2	0.21	0.29	0.24

*** $p < 0.10$, ** $p < 0.05$, * $p < 0.01$

The results are similar with the first model. We state that the coefficient of cfodcfo is statistically significant in FE and RE model. Thus, the banks are conservative in terms of their accounting practices. Moreover, coefficient of n2dcfocfo that represents relationship between instant liquidity level and accounting conservatism is negative and statistically significant at 5 percent level in two models: fixed effects model and random effects model. Hausman test reveals that fixed effects model better describes our model.

Now we proceed to test the third hypothesis:

H3: There is negative relationship between current liquidity of a bank and accounting conservatism.

Table 3.2.3 presented below summarizes the findings of the empirical test of the hypothesis.

Table 3.2.3. Relationship between accounting conservatism and current liquidity level

acc	POLS	FE	RE
dcfo	-.284	-.201*	-.012**
cfo	.018	0.415*	.0301
cfodcfo	.023	0.381**	.084**
n3	.231	.032**	.005
n3dcfo	.003	.041*	.025**
n3cfo	.023	.099*	.031*
n3dcfocfo	-.731	-0.48	-.225
_cons	.087	.008*	.001*

F – test	56.94**	81.32*	
R^2	0.15	0.19	0.09

<center>*** $p < 0.10$, ** $p < 0.05$, * $p < 0.01$</center>

The coefficient of cfodcfo that represents the degree of accounting conservatism is statistically significant in FE and RE model.

The coefficient of n3dcfocfo that represents relationship between current liquidity level and accounting conservatism is not statistically significant in all the three models. Thus, we cannot state that there is relationship between accounting conservatism and current liquidity.

Finally, we test the fourth hypothesis:

H4: There is negative relationship between long-term liquidity level of a bank and accounting conservatism.

Table 3.2.4. Relationship between accounting conservatism and long-term liquidity level

roa	POLS	FE	RE
dcfo	-.037**	-.631*	-.488*
cfo	.0227*	.103**	.094
cfodcfo	.321	.664**	.0525***
n4	.044	.116**	.263
n4dcfo	.015*	.209	.233
n4cfo	-.301*	-.277	-.516
n4dcfocfo	.042**	.029***	.097**
_cons	.803**	.271***	.025**
F – test	54.23	48.21**	
R^2	0.29	0.19	0.21

<center>*** $p < 0.10$, ** $p < 0.05$, * $p < 0.01$</center>

The results show the coefficient representing the accounting conservatism is statistically significant in the fixed effects and random effects models (at 5 % and 10 % levels, correspondingly). There is also significant negative relationship between accounting conservatism and long-term liquidity level in the studied sample (coefficient of n4dcfocfo is significant in the three models). Thus, we accept the initial hypothesis about the existence of the negative relationship between accounting conservatism and long-term liquidity. Hausman test shows that the random effects model is the best fitting estimator for the model.

After testing all the hypotheses, we summarize the results in the table below.

Table 3.2.5 Summary of the findings

Hypothesis	Confirmed/Rejected	Best fitting estimator	Relationship with accounting conservatism
H_1	Confirmed	Fixed Effects	Negative
H_2	Confirmed	Fixed Effects	Negative
H_3	Rejected	Random Effects	None
H_4	Confirmed	Random Effects	Negative

Two of the four hypotheses were confirmed, and we may conclude that there is a positive relationship between accounting conservatism and solvency and instant liquidity levels. The third hypothesis about the negative relationship between accounting conservatism and current liquidity was rejected because there was no significant relationship found in any of the model estimators. Finally, a positive relationship between accounting conservatism and long-run liquidity level was found.

3.3 Discussion of the results

In this section, we proceed with the interpretation of the findings of the regression analysis.

Accounting conservatism and solvency level

Our first hypothesis was confirmed. When capital adequacy ratio declines, accounting conservatism principle is applied to the greater extent by managers in the banking sector. In practice, it means that while estimating reserves for loan losses provisions, accounting managers may use more conservative estimates for potential losses based on their professional judgment and assumptions when they face a risk of non-complying with the minimum requirement concerning capital adequacy. Thus, we can conclude that decreasing capital adequacy ratio provides an incentive for the bank managers to apply more cautious accounting practices and, consequently, provide more conservative figures in the financial reports without misleading the internal and external users of the financial reports about the current financial position and potential gains and losses of the bank in the future.

One may claim that more conservative accounting distorts real financial situation since potential losses are recognized on the timelier basis than potential gains. However, we believe that conservative accounting in the banking industry is of paramount importance because of the highly regulated environment of the financial sector and that in the long run understatement of the net worth with the purpose of not transferring potential risks and losses from current periods to the future periods has no negative impact on the banks' performance and stability of the

financial industry in general. On the contrary, overstatement of net worth may result in the unexpected losses and, consequently, financial distress.

Moreover, increasing loan loss provisions may result in the increase of capital adequacy ratio because of the decline of the risk-weighted assets used as the denominator of the formula. In other words, by applying more conservative accounting practices, bank management may report higher solvency level and thus demonstrate lower exposure to the insolvency risk to the regulatory bodies.

Accounting conservatism and instant liquidity level

Our second hypothesis was confirmed. Banks that have lower instant liquidity levels tend to adhere to more conservative rules while preparing financial statements. Similarly to the effect of accounting conservatism in the non-financial industries, conservative accounting can be seen as an accounting tool to reduce debt contracting costs and mitigate manager-shareholder conflicts. For example, managers may report to the owners that they control for potential liquidity risks in the future by using more conservative estimates. Thus, the owners are not concerned with relatively low instant liquidity ratio.

Moreover, in case of financial industry, we will also point out political scrutiny factor and high regulation of the banking activities. Thus, greater exposure to the potential intervention of the regulatory bodies to the daily operations of a bank is likely to result in more conservative estimates of the assets and liabilities. On the contrary, when there is no threat of the regulatory intervention, managers may feel relaxed and switch to less conservative practices. In other words, an extent to which conservative accounting is applied varies inversely with the change of the instant liquidity level.

Because of the importance of the correct estimation of all the potential losses and cash flow decreases for a bank to sustain its instant liquidity position and be able to meet its obligations related to the demand accounts, managers may consider applying more conservative estimates on the constant basis and not only when the instant liquidity ratio decreases. We will elaborate on the idea further in the section devoted to the managerial implications of the findings.

Accounting conservatism and current liquidity level

No significant relationship between accounting conservatism and current liquidity level was found. It means that changes in the current liquidity position do not provide any incentives to the accounting managers in banks to use more or less conservative estimates in the accounting process. It may be explained by the fact that managers are more concerned with instant liquidity levels than with the current liquidity level because they mainly focus on the ability of paying out their obligations related to the demand accounts and they do not apply more conservative

estimates for other obligations that come due in 30 days. However, we believe that accounting conservatism practices should be applied consistently for all the types of assets and liabilities in banks, so that there are no overstatement of assets and understatement of liabilities. Such distortion of the reality in the financial reports presented to the public may lead to the wrong estimates of the financial health of a bank by regulatory bodies, investors, and customers.

Accounting conservatism and long-term liquidity level

The negative relationship between accounting conservatism and long-term liquidity was found. Since accounting conservatism prevents managers from transferring potential risks in the future periods, we may conclude that in the long-run conservative accounting results has a beneficial effect on the liquidity position and guarantees that a bank will have enough cash holdings to meet its long-term obligations. In other words, the more conservative practices are applied in the bank, the lower the long-run liquidity ratio is. It proves the idea that accounting conservatism provides better estimates for banks to account for their assets and liabilities so that banks are able to operate efficiently without facing unexpected liquidity risks in the long-run.

3.4 Managerial Implications

This paper has some direct implications for the regulatory bodies and the standard setters in the Russian Federation that are responsible for the regulation of accounting practices in Russia (Ministry of Finance) and that monitor and control the Russian banking sector (Central Bank of Russia). The main findings of this paper suggest that conservatism is applied to the greater extent in the banks that have relatively low levels of capital adequacy ratio and instant liquidity ratio. Thus, increasing degree of the accounting conservatism indicates than managers seek to estimate potential gains and losses in the more conservative manner when facing the risks of non-complying with the minimum capital adequacy and liquidity requirements.

The regulatory bodies may request banks to disclose additional information on the accounting practices of the banks regarding accounting conservatism in order to increase transparency and fairness of the financial reporting. It is important to provide incentives to the bank managers to apply conservative accounting practices on the constant basis and not only when they face threat of not meeting the minimum requirements because accounting conservatism is considered an important accounting principle that contributes to more cautious representation of the financial position of an entity.

Investors and financial analysts may also benefit from the findings of this paper. Knowing that accounting conservatism is a mechanism of communicating the exposure to solvency and liquidity risks of the banks, investors and financial analysts may then better utilize accounting conservatism as a tool of investment risk analysis. This could potentially improve the investors' and financial analysts' investment and risk management effectiveness.

Bank owners represent another group of people who may benefit from the result of the research. The may monitor accounting practices the bank managers use and make sure that these practices reflect the current state of the bank in an adequate manner. Moreover, they may demonstrate to the public that the accounting conservatism is a principle that they adhere to all the time and that it means that all the potential gains and losses are estimated in the cautious way. Thus, the exposure to the potential liquidity and solvency risks is better managed. For example, bank owners may focus on the fact that accounting conservatism is recommended by International Accounting Standards Board, a regulatory accounting body that strives for the transparency and reliability of the financial reporting on the global scale.

On the one hand, bank owners are concerned with the possible litigation, regulatory, and debt costs. Moreover, they seek to avoid shareholder wealth transfer, thus they may be interested in the applying of the accounting conservatism.

On the other hand, as the research revealed, the higher degree of accounting conservatism is inversely related to the solvency level and short-run liquidity level. Thus, more attention of the regulatory bodies may be attracted. That is why it is of paramount importance to establish such accounting practices that reveal both net worth and exposure to liquidity and solvency risks of the bank accurately. For example, an additional section regarding conservative estimates and their beneficial impact in the long run on the funding liquidity can be presented in press releases and quarterly and annual financial reports.

In the table below, we summarize the main recommendations to the key stakeholders in the banking industry. We propose the following actions in order to enhance conservative accounting practices in the banking sector and provide incentives for managers to use such conservative practices not only when the solvency and instant liquidity ratios decline in order to guarantee stable long-term solvency and liquidity positions.

Table 3.4.1 Recommendations for the key stakeholders in the banking industry

Key stakeholders	Proposed actions
State regulatory bodies	Issue additional press releases on the importance of the constant and consistent application of the conservative accounting practices in order to estimate net worth in the fair manner; Emphasize positive relationship between long-term liquidity ratio and accounting conservatism; Establish best accounting practices for banks where specific cases of applying accounting conservatism practices are mentioned.
Bank owners	Regularly check the estimations for potential gains and losses to

	make sure that accounting conservatism principle is applied on the constant basis.
Bank managers	Communicate clearly to the bank owners the accounting conservatism practices used; Collaborate with the state regulatory officials to elaborate the most adequate conservative practices to better estimate potential gains and losses in order to guarantee adequate measurement of solvency and liquidity ratios.
Bank clients	Pay attention to the conservative accounting estimates used by banks to choose the one with better long-run liquidity level.

All the recommendations provided in the table above are aimed to increase awareness about conservative accounting practices, provide guidance on their usage, and, eventually, enhance financial reporting and solvency and liquidity management in the banking sector by applying conservative accounting.

3.5 Limitations and suggestions for further research

One of the important limitations of the research is that financial reports complied in accordance with the Russian GAAP is used. Thus, it is difficult to compare the results of the study with the results of other studies on the similar topic where IFRS reports were used for the analysis.

The topic of different accounting practices applied in the banking sector is not widely studied in the existing empirical research. However, increased attention of the regulatory bodies internationally and political scrutiny are important factors that may influence financial reporting practices applied in the financial sector. Hence, it is important to address this research gap by conducting other analyses related to the accounting procedures in the financial industry.

For example, there is an opportunity for the further research on accounting conservatism and other requirements, for example, maximum risk per borrower and maximum amount of large credit risk. In other words, there are various obligatory requirements in the banking industry that can be examined from the perspective of financial reporting and accounting conservatism.

Moreover, the relationship of accounting conservatism and operational risk, market risk, bank performance, earnings management, and quality of the financial reporting can be studied.

Summary of Chapter 3

In the third chapter, we present and discuss the research findings and provide managerial implications of the analysis. Three out of four hypotheses were confirmed and the negative relationship between accounting conservatism and 1) capital adequacy ratio; 2) instant liquidity ratio; and 3) long-run liquidity ratio was found out. However, we did not reveal any significant

relationship between accounting conservatism and current liquidity. We may conclude that the effect of applying conservative estimates is presented in the following cases. First, when the capital adequacy ratio and instant liquidity ratio decline, bank managers tend to apply more conservative estimates to meet the minimum requirements. Second, we believe that in the long run, accounting conservatism provides better estimates for the liquidity since banks reporting the higher liquidity levels tend to adhere to conservative principle. Hence, banks have enough cash holdings when its long-run obligations come due tend to use conservative accounting. Based on the findings, we provide a number of managerial implications to various stakeholders in the banking industry.

Conclusion

The research was devoted to studying the accounting conservatism and solvency and liquidity levels in the banking industry. The research goal of the paper was to determine the relationship between accounting conservatism and solvency and liquidity levels, using the evidence from the Russian banking sector. The goal was accomplished and the stated objectives were achieved.

The first step of the research was aimed to examine the theoretic background on the topic of accounting conservatism, namely its nature, possible ways to measure this accounting phenomenon, and its impact on the important financial indicators and decision-making processes in businesses. Study of the existing research revealed that the topic of accounting conservatism is widely discussed by a number of researchers. However, the researchers mainly focus on the application of the conservative accounting practices in the non-financial industries. Taking into account the increased attention of the regulatory bodies to the financial sector and introduction of new international standards aimed to enhance banking managerial practices and increase transparency of the financial reporting in the banking industry, we find it relevant to study the application of accounting conservatism in the banking sector. Thus, our main contribution to the existing body of the research on the topic is related to the study of accounting conservatism principle applied in the banking sector and its relationship with the key solvency and liquidity ratios.

We proceed further in the research by developing and testing four hypotheses using regression analysis. The hypotheses were developed on the basis of the nature of accounting conservatism (cautious estimate of the potential gains and losses) and possible economic reasons explaining the existence of accounting conservatism (e.g. tool to mitigate agency costs and regulatory costs) with the focus on the specifics of the banking industry (high regulation and obligation to comply with a number of minimum requirements). Data needed for the regression analysis were collected from the financial reports of the banks presented on the official webpage of the Central Bank of Russia. Minimum capital adequacy and liquidity requirements are also published on the constant basis by the Central Bank of Russia.

We found out that there exists a negative relationship between accounting conservatism and capital adequacy ratio that we use as a proxy for solvency level of a bank. We may explain the existence of such relationship by the fact that managers use conservative accounting practices as an accounting tool to more cautiously estimate potential risks for a bank when their solvency level declines. At the same time, managers seem reluctant to apply conservative estimates for potential gains and losses when the solvency level is relatively high.

Moreover, we discovered the negative relationship between accounting conservatism and two liquidity ratios: instant liquidity ratio and long-term liquidity ratio. On the one hand, declining of the instant liquidity ratio leads to the increase of the usage of accounting conservatism in the banking sector. We may conclude again that a threat of non-complying with the minimum requirement (in this case the liquidity requirement N2) acts as a trigger for managers to use more cautious estimates. On the other hand, negative relationship between accounting conservatism and long-run liquidity ratio indicates that conservative accounting leads to the better long-run liquidity position for the banks. The declining long-run liquidity ratio implies that banks better match their liabilities that come due in more than a year and their short-run assets. The revealed negative relationship between the studied phenomena indicates that the lower the long-run liquidity ratio is, the more conservative accounting practices are used.

We did not find any significant relationship between accounting conservatism and current liquidity in the Russian banking sector. It indicates that the current liquidity level of a bank (liquidity measured for a period of 30 days) has no influence on the accounting practices used by managers.

All the research findings are used to provide managerial implications for the key stakeholders in the banking industry: regulatory bodies, bank owners, bank managers, and bank clients. The major implication of the research findings is related to the regulation of the banking sector. Accounting conservatism is one of the principles that are stated in the Regulation № 302 – P devoted to the financial accounting in the financial institutions and issued by the Central Bank of Russia. The negative relationship between application of the accounting conservatism practices and a number of basic minimum requirements (capital adequacy ratio, instant liquidity ratio, and long-run liquidity ratio) indicates that banking managers tend to adhere to accounting principle to the greater extent when the ratios related to the capital adequacy and instant liquidity and long-run liquidity decline. Thus, the regulatory bodies should pay additional attention to the accounting practices used by banks that show the decreasing values of the minimum requirements mentioned above. For example, regulatory bodies may issue additional standards regarding the application of accounting conservatism by banks if the official bodies want to stimulate the application of this principle in the banking sector overall.

The limitations and data availability constraints of the research should be taken into account when interpreting the research findings and providing suggestions for the further research. It seems difficult to compare the results of this study based on the data extracted from the financial reports under the Russian GAAP with the studies based on the data taken from the reports under IFRS, US GAAP or any other national accounting standards.

It is relevant to study further impact of accounting practices, in general, and accounting conservatism, in particular, in the financial industry. Study of the relationship between accounting conservatism and other requirements, for example, maximum risk per borrower (requirement N6) and maximum amount of large credit risk (requirement N7) may contribute to the current research to better understand the relationship between such important accounting principle as conservative accounting and various obligatory requirements in the banking industry. Another possible area of the further research is examination of the relationship between accounting conservatism and bank performance. For example, the research on the relationship between accounting conservatism, return on assets, return on equity, and net interest margin may be conducted. Moreover, it seems relevant to investigate the relationship between accounting conservatism and different types of risks faced by banks e.g. operational, market, and credit risks.

References

1. Ahmed, A. S., R. M. Morton, and T. F. Schaefer (2000). Accounting conservatism and the valuation of accounting numbers: Evidence of the Feltham-Ohlson (1996) model. Journal of Accounting, Auditing & Finance 15(3), 271.

2. Ahmed, A. S., R. B., Morton, R. M., & Stanford Harris, M. (2002). The role of accounting conservatism in mitigating bondholder-shareholder conflicts over dividends policy and in reducing debt costs. TheAccountingReview, 7 (4), 867-890.

3. Ahmed, A. S., Bruce, K. B., Morton, R. M., & Stanford-Harris, M. (2002). The role of accounting conservatism in mitigating bondholder-shareholder conflicts over dividends policy and in reducing debt costs. The Accounting Review, 77(4), 867-890.

4. Bagnoli, M. and S. G. Watts (2005). Conservative accounting choices. Management Science 51(5), 786–801

5. Ball, R. and L. Shivakumar (2005). Earnings quality in UK private firms: Comparative loss recognition timeliness. Journal of Accounting and Economics 39(1), 83–128.

6. Ball, R. and L. Shivakumar (2006). The role of accruals in asymmetrically timely gain and loss recognition. Journal of Accounting Research 44, 207–242.

7. Basel Committee on Banking Supervision (2004) "International Convergence of Capital Measurement and Capital Standards:A Revised Framework",June, Bank for International Settlements.

8. Basu, S. (1997). The conservatism principle and the asymmetric timeliness of earnings. Journal of Accounting and Economics 24(1), 3–37.

9. Bauman, M. P. (1999). An empirical investigation of conservatism in book value measurement. Managerial Finance 25(12), 42.

10. Beatty, A. (2007). Discussion of "asymmetric timeliness of earnings, market-to-book and conservatism in financial reporting". Journal of Accounting and Economics 44(1-2), 32–35.

11. Beatty, A., J. Weber, and J. J. Yu (2008). Conservatism and debt. Journal of Accounting and Economics 45(2-3), 154–174.

12. Beaver, W., W. Landsman, and E. Owen (2008). Asymmetry in earnings timeliness and persisitence: A simultaneous equations approach. Working Paper, Stanford University.

13. Beekes, W., F. P. Peter, and S. Young (2004). The link between earnings timeliness, earnings conservatism and board composition: Evidence from the UK. Corporate Governance: An International Review 12(1), 47–59.

14. Brown, W. D., H. He, and K. Teitel (2006). Conditional conservatism and the value relevance of accounting earnings: An international study. European Accounting Review 15(4), 605 – 626.

15. Bushman, R. M. and J. D. Piotroski (2006). Financial reporting incentives for conservative accounting: The influence of legal and political institutions. Journal of Accounting and Economics 42(1-2), 107–148.

16. Chami, R. and Cosimano, T. F. (2003) The Nature of Capital Adequacy Constraints under the Basel Accord, SSRN Working Paper.

17. Chen, Q., T. Hemmer, and Y. Zhang (2007). On the relation between conservatism in accounting standards and incentives for earnings management. Journal of Accounting Research 0(0).

18. Choi, W. (2007). Bank relationships and the value relevance of the income statement: Evidence from income-statement conservatism. Journal of Business Finance & Accounting 34(7-8), 1051–1072.

19. Choi, Y.-S., J. F. O'Hanlon, and P. F. Pope (2006). Conservative accounting and linear information valuation models. Contemporary Accounting Research 23(1), 73–101.

20. Dietrich, J. R., K. A. Muller, and E. J. Riedl (2007). Asymmetric timeliness tests of accounting conservatism. Review of Accounting Studies 12(1), 95–142.

21. Dutta, S., & Reichelstein, S. (2005). Accrual accounting for performance evaluation. Review of Accounting Studies, 10, 527–552.

22. Fan Q, Zhang X, 2012. Accounting Conservatism, Aggregation and Information quality. Contemporary Accounting Research. 29: 38-56.

23. García Lara, J. M. and Mora, A. (2004). Balance Sheet versus Earnings Conservatism in Europe, European Accounting Review, 13(2) 261-292.

24. García Lara, J. M. and Mora, A. (2003). La incorporación asimétrica de noticias al resultado contable en un contexto europeo: Evidencia empírica, Revista Española de Financiación y Contabilidad, (116) 235-264.

25. Gassen, J., uuml, R. U. lbier, and T. Sellhorn (2006). International differences in conditional conservatism: The role of unconditional conservatism and income smoothing. European Accounting Review 15(4), 527 – 564.

26. Gigler, F., C. Kanodia, and R. Venugopalan (2009). Accounting conservatism and the efficiency of debt contracts. Journal of Accounting Research 47(3)(0), 767– 797.

27. Gigler, F. B. and T. Hemmer (2001). Conservatism, optimal disclosure policy, and the timeliness of financial reports. The Accounting Review 76(4), 471.

28. Giner, B. and W. Rees (2001). On the asymmetric recognition of good and bad news in France, Germany and the United Kingdom. Journal of Business Finance & Accounting 28(9/10), 1285–1332.

29. Givoly, D. and C. Hayn (2000). The changing time-series properties of earnings, cash flows and accruals: Has financial reporting become more conservative? Journal of Accounting & Economics 29(3), 287–320.

30. Givoly, D., C. K. Hayn, and A. Natarajan (2007). Measuring reporting conservatism. Accounting Review 82(1), 65–106.

31. Grambovas, C. A., B. Giner, and D. Christodoulou (2006). Earnings conservatism: panel data evidence from the european union and the united states. Abacus 42(3/4), 354.

32. Huijgen, C. A. and M. J. Lubberink (2005). Earnings conservatism, litigation and contracting: The case of cross-listed firms. Journal of Business Finance & Accounting 32(7-8), 1275–1309.

33. Jackson, P. (1999). Capital Requirements and Bank Behaviour: The Impact of the Basel Accord, Basel Committee on Banking Supervision Working Paper, (1).

34. Kordestani GhR, Haddadi M, 2009. The Relationship between conservatism in accounting and cost of capital, Journal of Financial Accounting and Auditing. 1(3): 23-50.

35. Krishnan, G. V. (2007). Did earnings conservatism increase for former Andersen clients? Journal of Accounting, Auditing & Finance 22(2), 141–163.

36. Kwon, Y., D. P. Newman, and Y. S. Suh (2001). The demand for accounting conservatism for management control. Review of Accounting Studies (6), 29–51.

37. LaFond, R. and S. Roychowdhury (2008). Managerial ownership and accounting conservatism. Journal of Accounting Research 46(1), 101–135.

38. LaFond, R. and R. Watts (2008). The information role of conservatism. The Accounting Review 83(2), 447–478.

39. Lara, J. M. G. and A. Mora (2004). Balance sheet versus earnings conservatism in Europe. European Accounting Review 13(2), 261–292.

40. Lara, J. M. G., B. G. Osma, and F. Penalva (2009a). Accounting conservatism and corporate governance. Review of Accounting Studies 14(1), 161–201.

41. Lara, J. M. G., B. G. Osma, and F. Penalva (2009b). The economic determinants of conditional conservatism. Journal of Business Finance and Accounting 36(3-4), 336–327.

42. Mason, L. (2004). The impact of accounting conservatism on the magnitude of the differential information content of cash flows and accruals. Journal of Accounting, Auditing & Finance 19(3), 249–282.

43. Mensah, Y. M., X. Song, and S. Ho (2004). The effects of conservatism on analysts' annual earnings forecast accuracy and dispersion. Journal of Accounting, Auditing & Finance 19(2), 159–183.

44. Monahan, S. (2005). Conservatism, growth and the role of accounting numbers in the fundamental analysis process. Review of Accounting Studies 10, 227–260.

45. Moyer, S. E. (1990).Capital adequacy ratio regulations and accounting choices in commercial banks, Journal of Accounting and Economics, 13 (2) 123-154.

46. Narayanamoorthy, G. (2006). Conservatism and cross-sectional variation in the post-earnings announcement drift. Journal of Accounting Research 44(4), 763– 789.

47. Nichols, C. D., Wahlen, J. M. and Wieland, M. M. (2009). Publicly Traded Versus Privately Held: Implications for Conditional Conservatism in Bank Accounting, Review of Accounting Studies, 14 (1) 88-122.

48. Pae, J. (2007). Unexpected accruals and conditional accounting conservatism. Journal of Business Finance & Accounting 34(5-6), 681–704.

49. Pae, J., D. B. Thornton, and M. Welker (2005). The link between earnings conservatism and the price-to-book ratio. Contemporary Accounting Research 22(3), 693–717.

50. Penman, S. H. and X.-J. Zhang (2002). Accounting conservatism, the quality of earnings, and stock returns. The Accounting Review 77(2), 237–264.

51. Pope, P. F. and M. Walker (1999). International differences in the timeliness, conservatism, and classification of earnings. Journal of Accounting Research 37, 53.

52. Rajan, M. V., S. Reichelstein, and M. T. Soliman (2007). Conservatism, growth, and return on investment. Review of Accounting Studies 12, 325–370.

53. Raonic, I., McLeay, S. and Asimakopoulos, I. (2004). The Timeliness of Income Recognition by European Companies: An Analysis of Institutional and Market Complexity, Journal of Business Finance & Accounting, 31 (1-2) 115-148.

54. Roychowdhury, M., & Watts, R. (2007). Asymmetric timeliness of earnings, market-to-book and conservatism in financial reporting. Journal of Accounting and Economics, 44, 2–31.

55. Ryan, S. (1995). A model of accrual measurement with implications for the evaluation of the book-to-market ratio. Journal of Accounting Research, 33, 95–112.

56. Setayesh MH, Karimipour E, 2013. The effect of conditional and unconditional conservatism accounting on the risk of financial distress in the Tehran Stock Exchange listed companies, Journal Stock Exchange. 24: 5-39.

57. Tosi L. A., Paidar G. A. (2015). The relationship between Accounting Conservatism and Leverage Ratio and Current Ratio in the Companies Listed in Tehran Stock Exchange, International Research Journal of Management Sciences. Vol., 3 (11),573-581.

58. Wang, R. Z., O hOgartaigh, C., & van Zijl, T. (2009). Measures of accounting conservatism: A construct validity perspective. Journal of Accounting Literature, 28, 165-203.

59. Wang, R. Z., O hOgartaigh, C., & van Zijl, T. (2010). A signaling theory of accounting conservatism. In Proceedings of the 2010 European Accounting Association Annual Meeting.

60. Watts, R. L. (2003a). Conservatism in accounting part i: Explanations and implications. Accounting Horizons, 17(3), 207-221.

61. Watts, R. L. (2003b). Conservatism in accounting part ii: Evidence and research opportunities. Accounting Horizons, 17(4), 287-301.

62. Zhang, J. (2008). The contracting benefits of accounting conservatism to lenders and borrowers. Journal of Accounting and Economics, 45(1), 27-54.

63. Zhang, X.-J. (2005). Discussion of "conservatism, growth and the role of accounting numbers in fundamental analysis process". Review of Accounting Studies, 10(2-3), 261.

Appendix 1: Russian banks included in the sample

№	Name of the bank	Total assets as of 1.03.2017, '000 rub
1	Sberbank of Russia	22 821 577 989
2	VTB	9 668 959 852
3	FK Otkrytie	2 818 766 239
4	Promsvyaz Bank	1 333 602 026
5	Moskovsliy Kreditniy Banks	1 316 904 922
6	Unikredit Bank	1 192 932 461
7	Binbank	1 151 861 725
8	Raiffaizenbank	836 464 723
9	Rosbank	814 416 421
10	Rossiya	791 842 026
11	Rost bank	614 732 648
12	Bank "Sankt-Peterburg"	577 372 742
13	Sovkombank	560 967 682
14	Mosoblbank	466 602 352
15	Citibank	459 452 938
16.	AK Bars	458 153 718
17	Russkiy Standart	419 835 251
18	Trast	407 933 371
19	Uralskiy Bank Rekonstruktsii y Razvitiya	390 331 324
20	Vserossiysliy Bank Razvitiya Regionov	365 792 227
21	Rossiyskiy Kapital	345 956 869
22	SMP Bank	339 101 462
23	Yugra	319 135 795
24	Svyaz Bank	287 754 411
25	Absolut Bank	278 612 620
26	Bank Zenit	277 417 174
27	Vostochniy Express Bank	268 686 616
28	Moskovskiy Industrialniy Bank	267 716 974
29	Vosrozhdeniye	246 907 737
30	Novikombank	243 889 721
31	Nordea Bank	229 737 110
32	ING Bank Evraziya	225 360 925
33	Surgutneftegazbank	175 100 906
34	Delta Kredit	162 532 403
35	MTS Bank	
36	Transkapitalbank	216 487 652
37	Globeks	198 543 243
38	Avangard	143 157 442
39	OTP Bank	142 622 023
40	Aziatsko-Tikhookeanskiy Bank	139 346 577
41	CKB Bank	135 408 355

42	Investtorgbank	134 038 715
43	MSP Bank	124 594 631
44	Setelem Bank	110 951 189
45	Zapsibkombank	115 137 728
46	Rusfinans Bank	107 762 988
47	Baltiyskiy Bank	105 590 169
48	Tesentr-Invest	98 691 813
49	Tavricheskiy	94 619 918
50	Finservis	87 320 916
51	Rossiyskiy Natsionalniy Kommercheckiy Bank	84 782 408
52	Loko-Bank	84 632 892
53	Soyuz	98 691 813
54	Tsentrokredit	79 050 897
55	Baltinvestbank	74 443 759
56	Roseximbank	73 210 710
57	Metkombank	68 837 982
58	Expobank	66 816 424
59	RN Bank	66 075 267
60	Metalinvestbank	65 546 434
61	BKS Bank	61 989 700
62	Bank Inteza	61 221 905
63	OFK Bank	59 800 254
64	Krayinvestbank	58 974 920
65	Credi Agricol	57 852 402
66	Sotsinvestbank	55 183 843
67	SDM Bank	54 711 179
68	BBR Bank	54 012 732
69	Mezhtopenergobank	49 249 608
70	Gazenergobank	48 479 296
71	Primsotsbank	48 003 734
72	Chelindbank	47 227 380
73	Levoberezhniy	47 147 731
74	Interprogressbank	45 129 726