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MASTER THESIS

Basel III and its Impact on the Banking Sector in Russia

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Declaration of Authorship

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Prague, May 2018

Signature

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Abstract

Crisis phenomena in the world banking system clearly indicated the problem of effective regulation of banking activities in order to minimize banking risks, avoid further stress such as that of the financial and economic crisis of 2007-2008. Today, an urgent issue for the banking sector is the application of the international standards of Basel III. On the basis of information from open sources such as regulatory body reports, reports by the banks and available previous research, this work analyzes the impact of Basel III standards on the Russian banking sector. The very process of implementing the main provisions of the Basel III agreement in Russia is explained, and positive and negative trends in their implementation are also reflected. On one hand, some general indicators are examined for the whole banking sector. On the other hand, a closer look has been taken on the more detailed performance indicators of domestic systematically important banks of Russian Federation. This work later concludes that the domestic banking sector has gained more stability and is performing well in the application of Basel III rules. Furthermore, the work proposes ways to achieve better results of regulatory indicators in order for the banking sector to be able to meet the requirements by 1 January 2019 without having a continuously shrinking banking sector.

Keywords: Basel III, banking sector, Russian banking sector, Russia, Russian Federation, Banking sector in Russia, Systematically important banks of Russian Federation

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Abbreviations

AA – Adjustment to high-quality liquid assets

A-IRB – Advanced internal ratings-based

ASA – Alternative Standardized Approach

ASF – Available stable funding

BCBS – Basel Committee on Banking Supervision

BI – Business Income

BIA – Basic Indicator Approach

BIS – Bank of International Settlements

CBR – Central Bank of Russia

CET1 – Common Equity Tier 1

CSR – Credit Spread Risk

DRC – Default risk charge

EAD – Exposure at default

ER – Equity risk

ES – Expected shortfall

F-IRB – Foundation internal ratings-based

FX – Foreign Exchange

FX – Foreign exchange

GDP – Gross domestic product

GI – Gross Income

GIRR – General Interest Rate Risk

G-SIB – Global systematically important bank

HQLA – High quality liquid assets

ICAAP – Internal Capital Adequacy Assessment Process

ILM – Internal loss multiplier

IMA – Internal models approach

IR – Interest rate risk

IRB – Internal ratings-based

LCR – Liquidity coverage ratio

LGD – Loss given default

MR – Market risk

NSFR – Net stable funding ratio

OBS – Off-balance sheet

OR – Operating Risk

PD – Probability of default

RCAP – Regulatory Consistency Assessment Programme

RSF – Required stable funding

RWA – Risk-weighted assets

SA – Standardized approach

SES – Stressed capital add-on

SIB – Systematically important bank

TECI – Total expected cash outflows

TECO – Total expected cash outflows

TNCO – Total net cash outflow

TSA – The Standardized Approach

1. Introduction

The world financial and economic crisis of 2007-2009, which jeopardized the sustainability of financial systems in many countries, gave push to revise the mechanisms of financial regulation. At the international level, the response to the crisis became the proposal in 2009 made by the Basel Committee on Banking Supervision (from now on BCBS) under the Bank for International Settlements (from now on BIS), which introduced new standards for banking regulation, known as Basel III. It should be recalled that this is the third stage of the review of the rules and norms of banking regulation, initialized by the BCBS.

In December 2009 the BCBS published a consultative document “Strengthening the resilience of the banking sector”. The proposals in this document supplemented the earlier changes to the Basel II framework which had been adopted in July 2009. This document was approved at the G20 summit in Seoul in 2010 and named "Basel III".

The not yet fully implemented Basel II was supplemented by the provisions that formed Basel III, which develops the provisions of the previous document. The new Basel, which was developed and adjusted for long 6 years, runs the risk of becoming the most controversial document of all created by the BCBS for its entire existence. Although lively discussions have been held since 2010, it was not until June 2013 that United States and European regulators decided to move from words to actions.

Like all BCBS standards, Basel III standards are minimum requirements which apply to internationally active banks. Members are committed to implementing and applying standards in their jurisdictions within the time frame established by the BCBS. (“Basel III: international regulatory framework for banks,” 2017)

Of course, Basel III approaches will be implemented in Russia as well. Bankers have many questions about the standards and their application, the timing of implementation, the possible consequences of these changes. This also determines the relevance of the study.

The aim of the work was an attempt to understand how these innovations correspond to Russian realities and what consequences will be for the banking system in Russia.

The research question is:

- How Basel III affects the banking sector in Russia?

Furthermore, the paper addresses the following sub-questions.

- How does Russia adjust the regulations to its comparably specific market?
- How well are Russian banks performing with regards to capital and liquidity adequacy?

Basel III addressed the capital, liquidity, leverage and the net stable funding of the banks. The first two of the core regulatory indicators have been implemented in Russia since 2013 and 2015 respectively. Due to the fact that a more concentrated implementation and integration of leverage requirements and net stable funding requirements will be performed and reported starting from 2018, these two indicators will not be addressed in the empirical analysis of this thesis. The empirical analysis is concentrated solely on the structure of the banking sector, the capital adequacy and liquidity requirement compliance of Russian banking sector.

The structure of this master thesis proceeds as follows. The first section of the paper outlines the foundations of the Basel III framework and its importance. In the following chapters, empirical evidence regarding the specifics of the banking sector in Russia and the process of framework implementation are discussed. The paper then focuses on recent developments in the Russian banking sector and the potential difficulties awaiting Russian banks. As a conclusive section, recommended actions toward full implementation of the regulation in the appropriate time frame are presented.

2. Literature Review

The following chapter will bring into the reader's attention the main principles of Basel regulations, their specific application in the banking sector of Russia and the theoretical framework of the Basel III implementation.

2.1 Basel III as the Third Stage of Banking Regulations

The first global document about banking regulations was the development of the first Capital Adequacy Agreement (Basel I) by the BCBS in 1988. Initially, the agreement was seen as a recommendation, but since 1992 it has become an obligatory rule for G-10 countries. To date, more than 100 countries have joined Basel I (including Russia).

The main purpose of Basel I is to limit credit risks (losses from default of borrowers, etc.) by developing a number of principles of supervision. The main thing in the document is the definition of capital adequacy. In the package of Basel I (1988), a methodology was developed for calculating the indicator to ensure the adequacy of bank capital on the basis of differential of the bank's assets taking into account their quality and degree inherent in their risk.

According to the provisions of Basel I, the total value of regulatory capital, which is checked for sufficiency, consists of two levels of capital:

- Tier 1, which includes the most stable elements of capital (ordinary shares, undistributed profits, etc.)
- Tier 2, which is the additional capital, which includes which includes the less reliable articles, the low-quality capital, hidden reserves available to the bank in accordance with the laws of the country, etc.

Accordingly, there was a calculation of the two coefficients capital adequacy ratios (4% of assets weighted according to their risk - for the first level capital, and 8% for the total capital of the bank). Moreover, a restriction was intruded, according to which the capital of the second level should not exceed 100% of the capital of the first level.

But further practice has shown that meeting the minimum capital requirement cannot ensure the reliability of the bank and the entire banking system. Basel I defined capital requirements formally, without taking into account the real (economic) needs of banks.

Since 1993, taking into account the criticism of the banking community and the views of a number of economists, Basel I was subject to refinement, and in 2004 the updated framework approached and Basel II was published.

In 2004, the BIS introduced an updated version of the regulatory requirements (Basel II). Here, in addition to previous standards, methods of assessing the risks of banking assets were implemented, when calculating those capital adequacy ratios (*standard* – using the ratings of

international rating agencies and *advanced*, calculated by the analytical service of the bank itself with the sanction of the regulator). Also tougher scrutiny of banking supervision and measures were foreseen, aimed at increasing market discipline and transparency of financial transactions.

Basel II consists of three main components: minimum capital requirements, supervisory process and market discipline.

Basel II maintains capital adequacy requirements at 8%. At the same time, together with credit risk, market and operational risks are taken into account.

The second (Pillar II) component is the supervisory process. The main principles of the supervisory process, risk management, as well as transparency of reporting to the banking supervisory authorities in application to banking risks are considered.

The third component (Pillar III) is market discipline. It complements the minimum requirements for capital adequacy and supervisory process. Market discipline is stimulated by setting a number of standards for information openness of banks, standards of their relations with supervisory authorities and the outside world.

The events of 2007-2009 clearly showed that the regulatory measures recommended by the BCBS and implemented in many countries, had not been able to prevent the onset of a financial crisis that to a large extent was associated with excessively risky credit policy of banks in the previous years. ("Money and Credit. 'Basel III: Influence on Economic Growth (Overview of Empirical Studies)', 2013," n.d.). The BCBS developed and proposed for discussion a new package of measures aimed at strengthening the capital base of the banks, regulating the liquidity and minimizing systemic risks. At the meeting in June 2012 in Los Cabos, Mexico the leaders of the "Group of 20" countries endorsed the implementation of new standards and expressed intention to achieve full realization of these propositions. ("G20 Los Cabos Summit Leaders' Declaration. The Group of Twenty. 18–19 June 2011," n.d.)

Gradual transition to new standards began in 2013.

2.1.1 Capital Requirements

The appearance of the Basel III standards began with the introduction of additional requirements for the capital adequacy of banks (equity, Tier 1 capital, Tier 2 capital, capital buffers, total capital). Basel III tightens the requirements for the composition of Tier 1 capital by excluding the amount of deferred taxes and securitized assets from it.

In addition to the increased requirements for the base capital, Basel III establishes the need for credit institutions to form an additional backup buffer at the expense of net profit. Basel III foresees the creation of special capital buffers that allow corrections and adjustments of banks' own funds, in order to counteract the cyclical fluctuations of domestic economic conjuncture. In the event of a systemic crisis and a reduction in the capital adequacy ratio below the minimum

acceptable, the banks will be able to obtain additional liquidity without the regulator's sanction. However, after the crisis, credit institutions are obliged to restore this capital.

With the latest reforms of Basel III in 2017, more details were addressed concerning the capital ratio.

Let us look at the formula of the capital ratio:

$$\text{Capital ratio} = \frac{\text{Regulatory capital}}{\text{Risk-weighted assets}} \quad (1)$$

Put in words, if the bank has rising amount of risk-weighted assets, it should possess more regulatory capital, and vice versa.

Regulatory Capital

The initial phase of Basel III (from 2013) was very much concentrated on the regulatory capital (the numerator) part of the capital ratio.

In order to be able to have sufficient fund for the growth of lending operations, the banks should have more regulatory capital that incorporates:

- Common Equity Tier 1 – the sum of common shares, retained earnings and other reserves

$$\frac{\text{CET1 capital}}{\text{RWA}} \geq 4.5\% \quad (2)$$
- Additional Tier 1 – the capital instruments that do not have fixed maturity

$$\frac{\text{Additional Tier 1 capital}}{\text{RWA}} \geq 6\% \quad (3)$$
- Total regulatory capital

$$\frac{\text{Total regulatory capital}}{\text{RWA}} \geq 8\% \quad (4)$$

Relating to the capital buffers mentioned earlier, Basel III introduced another important ratio, Leverage Ratio. The capital ratio presented above addresses the risk-based capital rules. The Leverage ratio illustrates the non-risk-based buffer, which is to limit the excessive leverage not only in global systematically important banks, but in all banks that are active internationally. More precisely, CET1 capital of the banks must be at least 2.5% of the bank's on- and off-balance sheet exposures. Additionally, Tier 1 capital of the bank must be at least 3% of the bank's on- and off-balance sheet exposures.

$$\text{Leverage ratio 1} = \frac{\text{CET 1 capital}}{\text{On and off-balance sheet exposures (including derivatives, repos and other securities)}} \geq 2.5\% \quad (5)$$

$$\text{Leverage ratio 2} = \frac{\text{Tier 1 capital}}{\text{On and off-balance sheet exposures (including derivatives, repos and other securities)}} \geq 3\% \quad (6)$$

Risk-weighted assets (RWA)

With the latest Basel III reforms of 2017, the attention was drawn more onto the risk-weighted assets (RWAs) (denominator) part of the formula. The idea is that the banks should retain more capital to cover their riskier assets exposures and they need less capital to cover the exposure of safer assets.

Firstly, the aim was to make the capital ratios of the banks more comparable and to make the capital ratios more reliable. This is expected to be reached by tackling the big variations between risk-weighted assets (RWAs) across different banks.

Secondly, although there are standardized approaches offered by the supervisors, for the banks to have more sophisticated risk assessment, it is suggested that the banks develop internal models that will allow an even better risk assessment methods. Nevertheless, there are incentives when it comes to using internal models for setting of minimum capital requirements. As there are certain types of assets that are considered hard to model reliably, the reforms proposes certain constraints when the banks use their internal models for regulatory capital purposes. In some cases the use of internal models is removed. (“Basel Committee on Banking Supervision ‘Finalising Basel III - In brief’, 2017,” n.d.)

The RWA include the following assets. Each asset type has its own weight of risk.

- Cash
- Securities
- Loans to individuals
- Loans to businesses
- Loans to other banks
- Loans to governments

Each value of asset exposure is multiplied by its risk weight. In the end, the sum of these multiplication leads to the result of RWA of the bank. These RWAs are calculated for Credit risk (CR), Market risk (MR), Operational risk (OR) and other risks.

RWA for Credit risk

Credit risk arises when the borrower is not able to repay the debt fully or partly. As mentioned above, RWAs are separately calculated for credit risk. There exist two approaches for this:

- Standardized approach (SA)
- Internal ratings-based approach (IRB approach)

The SA is used broadly by most of the banks around the world for the credit risk calculation. Under SA, the risk weights applied to banks’ asset exposures are decided by the supervisors. In this case, the internal models of the banks are not used for determination of RWAs.

Apart from enhancing the risk sensitivity, the reforms' goal is to as much as possible avoid external credit ratings.

In 2017 the BCBS made Basel III reforms that were aimed at restoring “the credibility in the calculation of risk-weighted assets (RWAs) and improve the comparability of banks' capital ratios”. (“Basel Committee on Banking Supervision ‘Finalising Basel III - In brief’, 2017,” n.d., p. 1)

The internal ratings-based (IRB) approach for credit risk allows banks, under certain conditions, to use their internal models to estimate credit risk, and therefore RWAs. (“Basel Committee on Banking Supervision ‘Finalising Basel III - In brief’, 2017,” n.d., p. 4)

The suggested IRB approaches are the following:

- Foundation IRB (F-IRB)
- Advanced IRB (A-IRB)

Under the F-IRB, as a general rule, banks provide their own estimates of PD and rely on supervisory estimates for other risk components. Under the A-IRB, banks have to provide their own estimates of probability of default (PD), loss given default (LGD) and exposure at default (EAD), and their own calculation of Maturity. For retail exposures, banks must provide their own estimates of PD, LGD and EAD even when applying the F-IRB. (“Ernst and Young. Implementing Basel II/ III in Russia, 2013,” n.d., p. 9)

What the Basel III reforms of 2017 addressed, were some constraints regarding how the use of particular approach when estimating risk parameters. Table 1 illustrates in short the image of usage of approaches after the reforms.

Table 1. RWA for Credit Risk calculation methods according to the class of exposure

Exposure class	Methods available under the new credit risk standards	Change in available methods relative to current credit risk standard
Banks and other financial institutions	SA or F-IRB	A-IRB removed
Corporates belonging to groups with total consolidated revenues exceeding EUR 500m	SA or F-IRB	A-IRB removed
Other corporates	SA, F-IRB or A-IRB	No change

Specialised lending	SA, supervisory slotting, F-IRB or A-IRB	No change
Retail	SA or A-IRB	No change
Equity	SA	All IRB approaches removed

Source: (“Basel Committee on Banking Supervision ‘Finalising Basel III - In brief’, 2017,” n.d., p. 4)

RWA for Market risk

Market risk is the risk of loss, which can be caused by the movement of market prices. The risks contained in market risk exposure are the following, but of course are not limited to only these:

- Default risk, interest rate risk, credit spread risk, equity risk, foreign exchange risk and commodities risk for trading book instruments
- Foreign exchange risk and commodities risk for banking book instruments

The banks that are subject to Basel regulations implementation, are entitled to choose between two methods of market risk calculation:

- Standardized approach
- Internal models approach (IMA)

The standardized approach for market risk is the simple sum of three components: the risk charges under the sensitivities based method, the default risk charge, and the residual risk add-on. (“Basel Committee on Banking Supervision ‘Minimum capital requirements for Market Risk’, 2017,” 2017, p. 14)

The sensitivities-based method of calculating the risk charge incorporates the sum of the following risk measures:

- Delta - based on sensitivities of a bank’s trading book to regulatory delta risk factors.
- Vega- based on sensitivities to regulatory vega risk factors
- Curvature - captures the incremental risk not captured by the delta risk of price changes in the value of an option. Curvature risk is based on two stress scenarios involving an upward shock and a downward shock to a given risk factor. The worst loss of the two scenarios is the risk position to be used as an input into the aggregation formula which delivers the capital charge. (“Basel Committee on Banking Supervision ‘Minimum capital requirements for Market Risk’, 2017,” n.d.)

The Delta, Vega and Curvature capital charges are to be shown by the banks for the risk classes:

- General Interest Rate Risk (GIRR)
- Credit Spread Risk (CSR): non-securitization

- CSR: securitization
- CSR: securitization correlation trading portfolio
- Foreign Exchange (FX) Risk
- Equity Risk
- Commodity Risk

The Default Risk Charge is standardized to the credit risk treatment in the banking book to decrease the potential disparity in capital requirements for similar risk exposures across the banking book and trading book. Like the sensitivities based method, the Default Risk Charge allows some limited hedging recognition. (“Basel Committee on Banking Supervision ‘Minimum capital requirements for Market Risk’, 2017,” n.d.)

Default risk charge is to be shown for the risk classes:

- Default risk: non-securitization
- Default risk: securitization
- Default risk: securitization correlation trading portfolio

The Residual Risk Add-on is presented to show any other risks beyond the main risk factors already represented in the sensitivities based method and the Default Risk Charge. It provides for a simple and conservative capital treatment for the more sophisticated trading book instruments, which were not addressed by the Committee in detail under the standardized approach, in order to limit excessive risk-taking and regulatory arbitrage incentives. (“Basel Committee on Banking Supervision ‘Minimum capital requirements for Market Risk’, 2017,” n.d., p. 3) The residual risk add-on incorporates risk weights applied to notional amounts of instruments with non-linear payoffs.

The internal models approach can be executed if the banks have an internal model approval for capital requirements for non-securitizations in the trading book. The total IMA capital requirement is the sum of Expected Shortfall (ES), the default risk charge (DRC) and stressed capital add-on (SES) for risk that cannot be modelled.

The Expected shortfall illustrates weighted average of diversified ES and non-diversified partial ES capital charges for specified risk classes.

The DRC captures default risk of credit and equity trading book exposures with no diversification effects allowed with other market risks (including credit spread risk).

The SES assumes an aggregate regulatory capital measure for non-modellable risk factors in model-eligible desks. (“Basel Committee on Banking Supervision ‘Minimum capital requirements for Market Risk’, 2017,” n.d.)

RWA for Operational risk

Operational risk is or the risk of loss, if internal processes of the bank, people, systems are inadequate or failed. This type of risk can arise from external events as well. The problem was

that the bank can comply with the capital requirements, but this is not enough, because these funds might not be able to cover the losses.

The current formula is as follows:

OR = BI x ILM (7), where:

OR - Operational risk capital

BI - Business indicator component

ILM - Internal loss multiplier

In 2014 the BCBS published a Consultative Document “Operational risk – Revisions to the simpler approaches”. This document announced that the simpler approaches of operational risk do not correctly estimate the operational risk capital requirements of a wide spectrum of banks. The at that time known approaches (Basic Indicator Approach (BIA), Standardized Approach (TSA) with its variant Alternative Standardized Approach (ASA)) were considered weak because they used the Gross Income (GI) as a proxy indicator for operational risk exposure. The assumption was that banks’ operational risk exposure increases linearly in proportion to revenue. According to BCBS, this assumption is not reliable, because:

- When there is a decline in banks GI, that can arise because of different events, that can also include operational risk losses, the bank’s operational risk capital should be increasing and not the opposite
- The relationship between the bank’s size and its operational risk does not remain constant
- Operational risk exposure increases with the bank’s size non-linearly
- If the company changes its operational risk profile, this can lead to calibration which will be based on changes in the behavior of variables that are unfit for the future

The BCBS presented the revised Standardized Approach (SA) that tried to solve the issues of the weakness of the existing approaches. Knowing the fact that the size of the bank is the dominant factor in the operational risk exposure and that having a refined proxy indicator will enhance the risk sensitivity. The BCBS tried to replace the GI with a more superior indicator.

As the Committee tries to present as much as possible simple and comparable approaches, the decision was made that there should be only one approach, based on a single proxy indicator and not based on the model. This one and only approach, however would have different coefficients according to the size of the bank.

According to the document of BCBS on Operational risk – Revisions to the simpler approaches, October 2014, the new indicator that would replace GI was Business Indicator (BI), because:

- BI comprises the three macro-components of a bank’s income statement: the “interest component”, the “services component”, and the “financial component”.

- The BI's power, as compared with GI and other potential indicators, lies in its superior ability to capture a bank's exposure to the operational risk inherent in a bank's mix of business activities.
- The BI includes items sensitive to operational risk that are omitted or netted from the GI definition.
- In addition, the BI uses the absolute values of its components, thereby avoiding counterintuitive results based on negative contributions of components to capital charges from net losses under the existing framework.
- Moreover, the BI reduces the relative weight or contribution of components of the financial statement that are associated with activities traditionally less exposed to operational risk, and increases that of the components associated with activities more closely associated with operational risk (e.g. gains and losses on traded and sold portfolios, commissions from services payments, fees received from securitization of loans and origination and negotiation of asset-backed securities, penalties from mis-selling and inadequate market practice). Many of these components proved to be at the core of the financial crisis.”(“BCBS. Operational risk – Revisions to the simpler approaches, October 2014,” n.d.)

2.1.2 Liquidity Requirements

At the same time, Basel III introduces standards aimed at limiting the financial leverage (leverage - the ratio of debt to equity), which is acceptable for financial intermediaries. In particular, it will be a question of reviewing current and long-term liquidity ratios. The innovation is the introduction of liquidity ratios that must provide the banks with sufficient stock of liquid assets in conditions of crisis and a sudden massive withdrawal of deposits.

Until this point, Basel III was simply giving more specificity and more detailed focus on already established requirements and standards by Basel II. The biggest novelty offered by Basel III was the liquidity requirements and their supervised monitoring. Two main ratios introduced were:

- Liquidity coverage ratio (LCR), which is to require banks to always have sufficient funds (liquid assets) to meet short-term liquidity shortages. This incorporates having a scenario for funding that can last up to 30 days. The LCR is made of two components: High quality liquid assets (HQLA) and net cash outflows.
- Net stable funding ratio (NSFR), which is a long-term ratio that is able to cover the whole balance sheet and provide stable funding sources. (“Central Bank of Russia ‘Registration of Credit Institutions and the Licensing of Banking Activities,’” n.d.)

This liquidity framework of Basel III also puts accent on the supervisory monitoring of the liquidity risk.

The minimum requirements of the LCR that was introduced on 1 January 2015 were set as follows (Table 2), year by year. This graduated approach, coupled with the revisions made to the 2010 publication of the liquidity standards, are designed to ensure that the LCR can be

introduced without material disruption to the orderly strengthening of banking systems or the ongoing financing of economic activity. (Basel Committee on Banking Supervision, 2013)

Table 2. Minimum requirement of LCR

	1 January 2015	1 January 2016	1 January 2017	1 January 2018	1 January 2019
Minimum LCR	60%	70%	80%	90%	100%

The LCR is to be calculated using the following formula:

$$\frac{\text{Stock of HQLA}}{\text{Total net cash outflows over the next 30 calendar days}} \geq 100\% \quad (8)$$

The numerator of the LCR is the “stock of HQLA”. Under the standard, banks must hold a stock of unencumbered HQLA to cover the total net cash outflows (as defined below) over a 30-day period under the prescribed stress scenario.

In order to qualify as “HQLA”, assets should be liquid in markets during a time of stress and, ideally, be central bank eligible.

There are two categories of assets that can be included in the stock. Assets to be included in each category are those that the bank is holding on the first day of the stress period, irrespective of their residual maturity. “Level 1” assets can be included without limit, while “Level 2” assets can only comprise up to 40% of the stock.

Supervisors may also choose to include within Level 2 an additional class of assets (Level 2B assets). If included, these assets should comprise no more than 15% of the total stock of HQLA. They must also be included within the overall 40% cap on Level 2 assets.

The denominator part of the Formula (8) represents the difference between the total expected cash outflows and the less of the total expected cash inflows and 75% of total expected cash outflows.

Total net cash outflows over the next 30 calendar days = Total expected cash outflows – Min {total expected cash inflows; 75% of total expected cash outflows} (9)

The NSFR is formulated as the amount of available stable funding relative to the amount of required stable funding. “Available stable funding” is the portion of capital and liabilities expected to be reliable over the time horizon considered by the NSFR, which extends to one year. The “Required stable funding” of a specific institution is a function of the liquidity characteristics and residual maturities of the various assets held by that institution as well as those of its off-balance sheet (OBS) exposures. (“Basel Committee on Banking Supervision ‘Basel III the net stable funding ratio’, 2014,” n.d.)

The formula for NSFR is as follows:

$$\frac{\text{Available amount of stable funding}}{\text{Required amount of stable funding}} \geq 100\% \text{ (10)}$$

The amount of available stable funding (ASF) is dependent on the stability of an institution's funding sources. The amount of ASF is calculated by first assigning the carrying value of the institution's capital and liabilities to one of five categories as presented in Appendix 1. The amount assigned to each category is then multiplied by an ASF factor, and the total ASF is the sum of the weighted amounts. ("Basel Committee on Banking Supervision 'Basel III the net stable funding ratio', 2014," n.d.) 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 amount of required stable funding (RSF) is defined based on the characteristics of the liquidity risk profile of the institution's assets and OBS exposures. The amount of required stable funding is calculated by first assigning the carrying value of an institution's assets to the categories listed presented in Appendix 2. The amount assigned to each category is then multiplied by its associated required stable funding (RSF) factor, and the total RSF is the sum of the weighted amounts added to the amount of OBS activity (or potential liquidity exposure) multiplied by its associated RSF factor. Definitions mirror those outlined in the LCR, unless otherwise specified. ("Basel Committee on Banking Supervision 'Basel III the net stable funding ratio', 2014," n.d.)

2.2 Specifics of Russian Banking Sector

As of 1 February 2018 the number of registered credit institutions in Russia was 917, of which 558 were operating credit institutions, in other words, credit institutions that hold banking licenses and have the right to conduct banking operations. ("Central Bank of Russian Federation. Review of the Banking Sector of the Russian Federation, 2018," n.d., p. 5). Of this 558 operating credit institutions, 44 are non-banks and the remaining 514 are banks. This number keeps shrinking compared to the pervious year, because the the Central Bank of the Russian Federation (CBR, "Bank of Russia") is withdrawing 80-90 bank licenses per year.

The CBR is the main regulatory authority for the banking sector and is also in charge of the implementation of monetary policy in Russian Federation.

The hierarchy of laws and regulatory instruments is presented in the following Table 3.

Table 3. Russian laws and regulatory instruments hierarchy

Laws that empower the CBR as banking supervisor	▪ Constitution of the Russian Federation (Article 75) 1993
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	<ul style="list-style-type: none"> ▪ Federal Law no 86-FZ on the Central Bank of the Russian Federation (the Bank of Russia) (2002) ▪ Federal Law no 395-1 on Banks and Banking Activities (1990)
Supervisory regulations derived from laws	<ul style="list-style-type: none"> ▪ CBR Regulations (“P”) ▪ CBR Instructions (“I”) ▪ CBR Ordinances (“U”)
Non-binding supervisory documents	CBR Letters, methodological guidelines and recommendations

The primary pieces of banking legislation are:

- the Civil Code of the Russian Federation,
- Federal Law No. 395-1 “On Banks and Banking Activities,” dated 2 December 1990,
- Federal Law No. 86-FZ “On the Central Bank of the Russian Federation,” dated 10 July 2002;
- Federal Law No. 177-FZ “On the Insurance of Deposits of Individuals in the Banks of the Russian Federation,” dated 23 December 2003,
- Federal Law No. 353-FZ “On Consumer Credits (Loans),” dated 21 December 2013 and
- Federal Law No. 115-FZ “On Combating Money Laundering and the Financing of Terrorism,” dated 7 August 2011. (“Baker McKenzie. ‘Doing Business in Russia’, 2017.pdf,” n.d., pp. 358–373)

2.2.1 Banks and Credit Organizations

Credit organizations are set up as economic entities in the form of banks and non-bank credit organizations (Federal Law No. 395-1 “On Banks and Banking Activities”).

A bank is a credit institution having the exclusive right to conduct all of the following banking operations: to take personal and corporate funds on deposit, to place these funds on its own behalf and at its own expense on a collectible and serviceable basis for a specified period of time and open and keep personal and corporate bank accounts. (“Central Bank of Russia ‘Registration of Credit Institutions and the Licensing of Banking Activities,’” n.d., p. 2)

A non-banking credit institution is allowed to perform a limited number of specified banking operations. The permissible combinations of banking operations for non-bank credit institutions are established by the Bank of Russia. Banking operations that credit institutions may conduct under license are listed in Part 1 of Article 5 of the Federal Law “On Banks and Banking Activities.”

Both banks and non-banking credit organizations are entitled to carry out banking operations from the moment of receipt of a banking license issued by the Bank of Russia.

Banking groups and bank holding companies may be set up in Russia.

A banking group is an association of credit institutions, not a corporate entity itself, in which one (parent) credit institution exerts directly or indirectly (through a third party) material influence on decisions taken by the management bodies of another credit institution (other credit institutions). A bank holding company is an association of corporate entities, not a corporate entity itself, comprising a credit institution (credit institutions), in which a corporate entity other than a credit institution (a parent organization of the bank holding company) can exert directly or indirectly (through a third party) material influence on decisions taken by the management bodies of the credit institution (credit institutions). (“Central Bank of Russia ‘Registration of Credit Institutions and the Licensing of Banking Activities,’” n.d., p. 13)

2.3 Basel III Implementation in Russia

Russia did not stay away from international tendencies of reforms of the banking regulation system. In March 2013, the Position of Bank of Russia № 395-P from 28.12.2012 entered into force “On the method of determination of the size and assessment of the adequacy of equity (capital) of credit institutions (“Basel III)”, which obligates Russian banks to indicate in their reports as of April 1, 2013 the calculation of capital requirements taking into account the Basel methodology. According to clarification of the Department of Banking Regulation of the Bank of Russia, within 6 months Russian banks would simultaneously calculate capital according to both the new methodology (Bank of Russia Regulation No. 395-P “On Methods for Calculation of the Capital of Credit Organizations,” dated 27 February 2013), and the current rules, settled by the Regulation No. 215-P of the Bank of Russia from 10.02.2003 taking into account recent changes (Instruction of the Bank of Russia from 04.03.2013 № 2975-I and Instruction of the Bank of Russia from 03.12.2012 № 139-I).

Synchronization of the new domestic regulatory requirements for the calculation capital and the standard of its sufficiency with the recommendations of the European Union and the United States was planned to be realized from January 1, 2014. In July 2013, the Bank of Russia accepted decision to determine the level of sufficiency of the basic capital (5%) and the level of fixed capital of Russian banks in 5,5% with the increase of the latter to 6% from January 1, 2015. (“Money and Credit. ‘Basel III: Influence on Economic Growth (Overview of Empirical Studies)’, 2013,” n.d.)

It is important to point out that the new capital adequacy rules are tighter than the rules by BCBS.

Under Russian law, the minimum capital adequacy ratio that banks are required to maintain is calculated (on an unconsolidated basis) as the ratio of a bank’s owned funds (its capital) to the total amount of its risk-weighted assets. From the beginning of 2012 the minimum capital adequacy ratio required by the Bank of Russia is 10% for banks whose capital is RUB 300 million. If the capital adequacy ratio of a bank drops below 2%, then the Bank of Russia should revoke its banking license.

From the beginning of 2012 the minimal capital of newly registered banks must be RUB 300 million.

The Bank of Russia adopted Instruction No. 154-I “On the Procedure for Assessment of Compensation in Credit Organizations and Rectifying Violations of the Rules on Compensation,” dated 17 June 2014, which became effective on 1 January 2015. This instruction regulates the remuneration of the management and employees of banks who affect the risk profile of the bank. This regulation provides that at least 40% of such remuneration should be variable and paid taking into account the level of risk management and overall performance of the employee. However, banks are allowed to introduce higher thresholds for the variable part of remuneration for a wider range of employees. Banks should prepare remuneration policies, which should be approved by the Bank of Russia. (“Baker Mckenzie. ‘Doing Business in Russia’, 2017.pdf,” n.d., pp. 306–319)

2.3.1 Capital Adequacy

The CBR Instruction N139-I “On Statutory Ratios of Banks” describes the procedure of capital adequacy ratio calculation as the ratio of bank’s own funds (equity, capital; N1.0) (defined by the CBR Regulation N395-P “On the method of determining the value of the own funds (capital) of the credit institutions (“Basel III”)), bank’s basic capital (common equity; N1.1) and bank’s main capital (Tier 1 capital; N1.2) to the sum of the following:

- 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 other words, for the calculation of each of the capital ratios (N1.0, N1.1, or N1.2), the value of the appropriate capital (own capital/equity, common equity, or Tier 1 capital) is divided by the RWA. (“Bank of Russia Instruction No 139-I ‘On Statutory Ratios for Banks’, 2012,” n.d.)

The minimum acceptable numerical value of the Regulatory capital ratio (N1.0) was set at 10 % (per cent). However according to the later amendments, the value was set at 8% (per cent) (Ordinance N3855-U dated 30 November 2015). (“Ordinance No. 3855-U ‘On Amending the Instruction of the Bank of Russia of December 3, 2012 No. 139-I’ On Mandatory Banking Standards ”, 30 November 2015,” n.d.)

The minimum N1 ratio for non-bank credit institutions is set at 12% under Instruction No. 129-I; for non-bank credit institutions conducting deposit and lending operations it is 15% under Regulation No. 153-P; for non-bank credit institutions having a right to make money transfers without opening banking accounts and to conduct related banking operations it is 2% under Bank

of Russia Instruction No. 137-UI, dated September 15, 2011, “On Required Ratios of Non-bank Credit Institutions Having a Right to Make Money Transfers without Opening Banking Accounts and to Conduct Related Banking Operations and the Specifics of Bank of Russia Supervision of their Compliance” (hereinafter referred to as Bank of Russia Instruction No. 137-I) (“Bank of Russia Instruction No 139-I ‘On Statutory Ratios for Banks’, 2012,” n.d.)

The minimum acceptable numerical value of the Common Equity ratio (N1.1) was set to 5% (per cent), but according to the Ordinance N3855-U (dated 30 November 2015), the requirement was changed to 4.5% (per cent). (“Ordinance No. 3855-U ‘On Amending the Instruction of the Bank of Russia of December 3, 2012 No. 139-I’ On Mandatory Banking Standards ”, 30 November 2015,” n.d.)

The minimum acceptable numerical value of the Tier 1 Capital ratio (N1.2) was set at 5.5% (per cent), however according to the Ordinance N3497-U (dated 18 December 2014), the permissible minimum value was increased to 6% (per cent) starting from 1 January 2015.

Pillar I

Credit Risk

In 2012 CBR announced N192-T “Guidelines to measure credit risk on the basis of internal rating models”. This letter describes the requirements for banks that intend to apply for the certification of their Internal Rating models under Basel II IRB Approaches. The capital requirement for credit risk is calculated according to CBR instruction N139-I “On Statutory Ratios for Banks” and further documents.

RWA that are calculated on the basis of internal estimations of probability of PD, LGD and EAD will be included in the denominator of the formula of minimum capital requirements N139-I “On Statutory Ratios for Banks”. (“Ernst and Young. Implementing Basel II/ III in Russia, 2013,” n.d., p. 9)

The CBR has implemented minimum requirements for the banks’ internal rating models and they need to be certified by CBR. The IRB approach implementation will require prominent investments, because the banks will need to develop their internal rating models properly.

Market Risk

In 2012 CBR started taking action towards the calculation of market risk (MR) according to the Basel II Standardized approach. The first regulation was N387-P “On the procedure for credit institutions to calculate market risk”. The results of the calculation are included in the capital adequacy ratio regulated by N139-I “On Statutory Ratios for Banks”.

Market risk exposure for trading book positions is estimated in the following way:

$$\mathbf{MR = 12.5 \times (IR + ER) + FX} \text{ (11)}$$

where

12.5 – the coefficient, which was adjusted (instead of the coefficient of 10 before), to align to the Basel II minimum requirement of 8%.

MR — market risk exposure,

IR — interest rate risk capital charge,

ER — equity risk capital charge,

FX — foreign exchange and commodity risk exposure.

The N387-P regulates more the internal rate risk (IR) and the equity risk (ER). The risk of derivatives is regulated by N372-P “On the Derivative Financial Instruments Accounting Procedure”. The FX risk and commodity risk are regulated by CBR instruction N124-I “On setting amounts (limits) on open foreign exchange positions, the methodology for calculating them and the specifics of supervision over their compliance by credit institutions”. (“Ernst and Young. Implementing Basel II/ III in Russia, 2013,” n.d., p. 10)

Operational Risk

The CBR regulation N346-P “On the procedure for calculating the amount of operational risk” directed the calculation of the operational risk according to the Basic Indicator Approach (BIA). Using the Gross Income (GI) as a proxy indicator, each bank held capital for operational risk equal to the amount of a fixed percentage (15%), multiplied by its individual amount of GI. (“Ernst and Young. Implementing Basel II/ III in Russia, 2013,” n.d., p. 11)

The formula for the calculation of Operational Risk was as follows:

$$OR = 0,15 \times \frac{\sum_{i=1}^n I_i}{n}$$

(12) ,

where

OR is the amount of operational risk;

I_i is the income received during the n-th year for the purposes of calculating the amount of capital to cover the operational risk. Annual I_i value for the purposes of calculating the amount of capital to cover operational risk is comprised of net interest income and net non-interest income.

n is the number of years preceding the calculation date of the operational risk (should not exceed three years). (“Regulation № 346-P of November 3, 2009 ‘On The Procedure For Calculating The Amount Of Operational Risk,’” n.d., p. 2)

The Standardized Approach and the Advanced Measurement Approach were not allowed to be used.

Since August 2012 the results of this calculation with coefficient of 10 are included in the capital adequacy ratio regulated by the instruction N139-I “On Statutory Ratios for Banks”.

Pillar II

As there are risk factors that are not covered by Pillar I, Pillar II introduces the qualitative requirements regarding the capital adequacy of the risk factors missing in Pillar I.

More precisely, the Pillar II is very much addressed the corporate governance, risk management, incentives for better performance, compensations, stress-testing, etc.

Regarding this, the CBR introduced the document N96-T “Methodological recommendations for organization of the Internal Capital Adequacy Assessment Process (ICAAP) in credit institutions” to meet the minimum requirements regarding the ICAAP.

For a more motivated risk management, the CBR included the financial incentive of risk management in the evaluation of the bank’s management quality Central Bank Regulation N 2894-U dated 1 October 2012 introduces corresponding amendments to its Regulation “On Bank Economic Position Assessment”. (“Ernst and Young. Implementing Basel II/ III in Russia, 2013,” n.d., p. 12)

In 2012 a new Letter N193-T “Methodological recommendations on development of recovery plans in credit institutions” was adopted by CBR. This regulation brings forward the requirement for Russian banks to develop recovery plans under stress conditions and leads to the purpose of ensuring there is enough capital and liquidity adequacy without the support from CBR.

The base stress scenario recommended by CBR contains the following conditions:

- 1.5% decline in Russian GDP
- 30-50% drop in Russian stock market indices
- Sharp increase in yields on government (200-300 bp) and corporate (500-1000 bp) bonds
- 20-30% deterioration rate of the currency basket

The banks must be able to develop recovery plans related to capital and liquidity adequacy, without the support of CBR.

The financial aid provided by CBR will be included if necessary in the recovery plans of the banks that are systematically important for the Russian banking system. These support plans will be developed by CBR itself and these plans will be strictly confidential. Besides preparation of recovery plans, CBR recommends developing systems of early warning indicators, for instance, persistent decline of capital adequacy ratio, persistent substantial growth of problem loan fraction of credit portfolio, persistent client run-off and substantial decline of credit rating. (“Ernst and Young. Implementing Basel II/ III in Russia, 2013,” n.d., p. 8)

Pillar III

The third Pillar relates to the market discipline. This concerns the disclosure requirements of securitization exposures and sponsorship of off-balance sheet vehicles. Enhanced disclosures on the detail of the components of regulatory capital and their reconciliation to the reported

accounts will be required, including a comprehensive explanation of how a bank calculates its regulatory capital ratios. (“Principles for Sound Liquidity Risk Management and Supervision: (Published by BIS Basel Committee on Banking Supervision, September 2008),” n.d.).

According to Basel III, there are four main groups of disclosures:

- Scope of application
- Capital structure
- Capital adequacy
- Risk exposure and assessment

Basel III adds more specificity to the existing requirements. More specifically, it implements remuneration practice disclosures and broadens disclosures on capital structure. The Committee believes that these additional Pillar III requirements on remuneration will support effective market discipline and will allow market participants to assess the quality of the compensation practices and the quality of support for a firm’s strategy and risk posture. The requirements have been designed to be sufficiently granular and detailed to allow meaningful assessments by market participants of a bank’s compensation practices, while not requiring disclosure of sensitive or confidential information.

2.3.2 Liquidity

The Bank of Russia has prepared Regulation No. 421-P “On the Calculation of the Liquidity Coverage Ratio,” dated 30 May 2014 (the “LCR”) which became effective on 1 July 2015. The LCR is aimed at showing a bank’s ability to properly perform its monetary and other obligations within 30 calendar days from the moment of calculation of the liquidity coverage ratio in times of economic instability. At first only domestic systemically important banks will be subject to the LCR rules. However, in the course of time the Bank of Russia will subject more Russian banks to the LCR rules.

The LCR is calculated using the following formula:

$$\text{LCR} = (\text{HQLA} - \text{AA}) / \text{TNCO} \times 100\% \quad (13)$$

where:

HQLA - high-quality liquid assets;

AA - the adjustment to high-quality liquid assets;

TNCO - the total net cash outflows.

The TNCO is calculated as the difference between total expected cash outflows and the lesser of total expected cash inflows and 75 % of total expected cash outflows, using the formula:

$$\text{TNCO} = \text{TECO} - \min(\text{TECI}; 0.75 \times \text{TECO}),$$

where:

TECI is the total expected cash inflows,

TECO is the total expected cash outflows.

High-quality liquid assets are calculated as the sum of Level 1 (HQLA-1) and Level 2 (HQLA-2) assets.

HQLA-2 consist of HQLA-2A and HQLA-2B assets. Assets are included in the calculation of high-quality liquid assets at their fair (market) value after the following haircuts have been applied:

HQLA-1 — 0 %;

HQLA-2A — 15 %;

HQLA-2B — 25 % for residential mortgage-backed securities; 50 % — for all other debt obligations and stocks.

Starting from 1 January 2016, the minimum accepted indicator of LCR was 70%. This requirement was put on only for systematically important banks. Until the beginning of the year 2019, the minimum LCR should be 100%.

Through the Instruction No. 139-I, the CBR established three ratios, to control banks' liquidity.

The quick bank liquidity ratio (N2) regulates the risk of loss of liquidity of the bank within one business day and sets the minimum ratio of the value of the bank's highly-liquid assets to the amount of the bank's on-call accounts obligations (liabilities), adjusted for the value of the minimum cumulative balance of on-call individual and corporate accounts. ("Bank of Russia Instruction No 139-I 'On Statutory Ratios for Banks', 2012," n.d., p. 56)

The Quick bank liquidity ratio (N2) is calculated by the following formula:

$$H2 = \frac{\text{Лам}}{\text{ОБМ} - \text{ОБМ}^*} \times 100\% \geq 15\% \quad (14)$$

where:

Лам (Lam) is highly liquid assets, which must be received within the next calendar day

ОБМ (Ovm) is liabilities on demand accounts, for which the investor and (or) the creditor may be claimed to provide the immediate repayment

ОБМ* (Ovm*) is the value of minimum aggregate balance of funds on the demand accounts of individuals and legal entities

The current bank liquidity ratio (N3) regulates the risk of the bank's loss of liquidity within the nearest 30 calendar days to the ratio calculation date and sets the minimum ratio of the amount of the bank's liquid assets to the amount of the bank's on-demand accounts obligations (liabilities) maturing within the next 30 calendar days, adjusted for the amount of the minimum cumulative balance on on-demand personal and corporate accounts under which the obligations will mature within the next 30 calendar days. ("Bank of Russia Instruction No 139-I 'On Statutory Ratios for Banks', 2012," n.d., p. 58)

The current bank liquidity ratio is calculated using the following formula:

$$H3 = \frac{Лат}{ОВТ - ОВТ^*} \times 100\% \geq 50\% \quad (15)$$

where:

Лат (Lat) is liquid (financial) assets, which must be received by the bank, and (or) can be claimed within the next 30 calendar days;

ОВТ (Ovt) is liabilities on demand accounts, for which the depositor or creditor may be claimed the immediate redemption, and the bank's liabilities to creditors (depositors) of fulfilment of its obligations within the next 30 calendar days;

ОВТ* (Ovt*) is the minimum value of the total balance on the demand accounts of individuals and legal entities for a period of performance of obligations within the next 30 calendar days.

The Quick bank liquidity ratio (N2) and the Current bank liquidity ratio (N3) represent the short-term liquidity of the bank. If these two ratios are not compliant with the requirements, it means that the banks do not possess enough liquidity to meet the required minimum level of Liquidity coverage ratio (LCR).

The long-term bank liquidity ratio (N4) regulates (limits) the risk of the bank's loss of liquidity as a result of investing money in long-term assets, and defines the maximum permissible ratio of credit claims of the bank maturing in more than 365/366 calendar days to bank equity (capital) and liabilities maturing in more than 365/366 calendar days, adjusted for the amount of the minimum cumulative balance on accounts maturing within up to 365 calendar days and on-demand accounts of natural persons and legal entities. ("Bank of Russia Instruction No 139-I 'On Statutory Ratios for Banks', 2012," n.d., p. 61)

The long-term liquidity ratio (H4) is calculated by following formula:

$$H4 = \frac{Крд}{Кo + ОД + O^*} \times 100\% \leq 120\% \quad (16)$$

where:

Крд (Krd) is credit claims with a remaining term to maturity in excess of 365 or 366 days, after deduction of a formed reserve for possible losses on these credit requirements

Кo (Ko) is own funds (capital of the bank);

ОД (Od) is liabilities of the bank on loans and deposits received by the bank, except for the amount received subordinated loans to banks (loan, deposit) in the part of the residual value included in the calculation of own funds (capital) of the bank, as well as a marketable bank's debts with a remaining maturity of more than 365 or 366 calendar days;

O* (O*) is the value of minimum aggregate balance of accounts for a period of performance of the obligations up to 365 calendar days and demand accounts of individuals and entities not included in the calculation of index.

3. Hypotheses

As Russia started taking the Basel approach implementation late (only from April 2013), it happened so that the implementation of Basel III was in parallel with the implementation of Basel II, although the official start of the Basel III implementation was postponed to January 2015. This chapter presents the three main hypotheses that were built by the author based on the review of previous research in the Russian banking sector and on the literature review presented in Chapter 2.

Hypothesis 1. Basel III will bring more stability to Russian banking sector.

To the extent of the whole banking sector, it is expected that Russia is on the correct path. It is of utmost importance, especially in today's vulnerable globalized economy, to walk in line with the actual reforms, learn from the mistakes of others and act accordingly.

"Russia's economy has returned to growth, supported by improved oil price and a more stable foreign exchange rate," says Olga Ulyanova, a Vice President and Senior Credit Officer at Moody's. "This and a more favorable interest rate policy provide a more predictable environment for banks and their customers." ("Moody's: 'Russian banking system outlook is stable despite high profile bank failures', October 2017," n.d.) According to Moody's forecast, the Russian economy will grow 1.5% in 2018. This will lead to a more robust revenue generation, which will improve the bank capitalization, lower credit costs and will gradually prevent the existing loan growth.

Furthermore, trying to comply with Basel III requirements, the banks will also drive forth the creation of capital buffers, which can also bring a great stability to the banking sector and to increase the insurance of safety in case of unexpected losses or economic stress in the country.

Hypothesis 2. Russian banks will meet Basel III capital requirements.

With CBR always having a very prominent role in the Russian banking sector, performing active intervention when needed, it is expected that, regarding the capital adequacy, the banks will comply with the requirements easily. On one hand, any small banks that will not comply, will be merged with others, in order to be compliant and continue operations in the banking sector. On the other hand, the CBR will not let the more important banks or the larger banks to confront for too long the challenges, caused by the actual economic situation, taking into account the sanctions. It will keep injecting funds into the banking sector and will continuously take measures to avoid having a shrinking banking sector in Russia.

Moreover, given the fact that the CBR requirements for capital were stricter than those of Basel III, the banks will even be relieved in some ways after full implementation of Basel III.

Hypothesis 3. Russian banks will not meet Basel III liquidity requirements.

Partly given the comparably short time to full implementation of Basel III, Russian banks' compliance with the liquidity requirements is the most questioned part of the Basel III integration.

The main reason for this is the claimed prominent differences between the structures of banking systems. As of today, the Russian banking system is based on the model of the EU banking system, however this does not mean that the structure is the same, because:

- The modern Russian banking system was constructed on the remains of the soviet banking system
- The model of the soviet banking system was the American banking system

Russian banks are very much loan and deposit oriented and very little debt security oriented. Moreover, they have more supply of capital, because of the large number of non-performing loans. ("D. Valko ' Russian Banking System. A Basel II-Like Approach in Basel III Framework', 2013," n.d., p. 3) According to D. Valko's research, Russian banks have a lot of short-term debt in their liabilities. The existing high number of loans will require high liquidity to be able to cover the liabilities and compensate the quality impact on HQLA.

It should be noted that especially after Western sanctions on Russia, Russian economy has confronted many difficulties. Loans have been incorporating a very significant part of every bank's operations. Hence, is expected that Russian banks will not be compliant with the liquidity requirements. The number of banks in Russian Federation is very high and most of them are of small or middle size. For many banks, it will be very costly or even impossible to implement especially the short-term liquidity requirements, because of the lack of liquid assets (and, of course, because of high number of loans).

4. Methodology

This chapter summarizes the methods used for data collection and data analysis, to reach to a research result that could show whether the hypotheses discussed in the previous chapter is appropriate or not.

4.1 Research Purpose, Design and Strategy

The purpose of this research is to analyze and discuss the banking sector of Russia and to try to understand how the latter is affected by the changes in the Basel regulations. By looking more into details of performance of the main players in the Russian banking sector, it becomes more clear how the changes were implemented, how the specifics were adapted to standards and how can the Basel III requirements be fully met until the specified deadline.

To address the research question, key ratios and indicators calculations are presented, analyzed and described. The analysis was very much dependent on theoretical framework and statistical data.

Consequently, the appropriate design for this work would be considered as an explanatory study. To reach the possible answer of the research questions, the strategy of sampling was taken into action. Sampling helped to narrow down the data to more important, detailed and relevant information.

As most of the strict regulations apply to SIBs of the countries, the Russian banking sector, having no G-SIBs, was studied by looking at the 11 D-SIB of Russia. All the numerical analysis and descriptions were achieved by looking into the performance of these banks.

4.2 Methods of the Data Collection

As the fulfillment of Basel requirements and their impact on the banking sector is more intensively based on numerical figures of the banks, it is appropriate to use the quantitative approach method for data collection. Only having the necessary numerical analysis, the research question presented in the first chapter can be answered.

The necessary quantitative data for a sophisticated literature review was collected mostly from journal articles. Moreover, for the analysis of the banking sector of Russia and the changes that took place in it, the official websites of the banks in the targeted sample were used. The government publications, including the data from CBR, played also a very crucial role in analyzing deeply the specifics of the banking sector and its performance under the effect of Basel III implementation.

5. Empirical Findings

This chapter addresses the empirical findings relating to the Basel III implementation in Russia. The three sections of this chapter (subchapters 5.1, 5.2 and 5.3) address Hypothesis 1, Hypothesis 2 and Hypothesis 3 respectively, defined in Chapter 3. To have the general opinion about the whole banking sector, the size of the banking sector and the structure of the balance sheet of the banks are discussed. Furthermore, to provide with a deeper understanding of the situation regarding the capital and liquidity adequacy, a detailed analysis of D-SIBs of Russia is presented.

5.1 General Indicators of Russian banking sector

The CBR has put a lot of effort in cleaning up the Russian Banking Sector. During the past five years hundreds of banks lost their licenses. The Table 4 below shows the incredibly shrinking banking sector of Russia.

Table 4. The structure of the Russian banking sector

Structure Banking Sector of Russia						
Indicator	1 January 2014	1 January 2015	1 January 2016	1 January 2017	1 January 2018	1 February 2018
Registered Credit Institutions	1071	1049	1021	975	923	917
Operating Credit Institutions (Credit institutions that have right to conduct banking operations)	923	834	733	623	561	558
Credit institutions with their banking licenses being revoked (cancelled)	148	215	288	352	362	359
Credit institutions holding general licenses	270	256	232	205	189	186

Compiled by the author based on the data provided by CBR

When the current governor of the CBR entered the office in 2013, the banking sector had over 900 banks. The number of operating credit institutions has fallen from 923 as on 1 January 2014 to 558 as of 1 February 2018. During the last four years (from 1 January 2014 until 1 February 2018), more than 300 lost their licenses, including some among the top 100 credit institutions by assets. Since then, many banks have been rescued as well, including the bank FC Otkritie, which was once the biggest private lender by assets. After CBR brought under its stewardship the bank FC Otkritie, Alfa Bank has become the largest private bank in Russia.

The CBR's actions have been praised, as it is putting effort preventing crisis and undertaking strict actions towards cleaning up the banking sector. Taking over some banks, however raises concerns as well. The banks are disturbed about the fact that, as of today, the CBR has about 65% of share in the banking sector. However, the CBR governor Elvira Nabiullina admits as well, that the share of the state in the banking sector must be brought down.

Looking at Table 5, it can be concluded that there is a prominent positive trend in the own funds of the banks in Russian banking sector. Due to the fact that the assets of the banking sector keep rising (from 1st of January 2014 until 1st of January 2018 the own funds have risen from 57,423.10 bil. RUB to 85,191.80 bil. RUB), the portion of own funds in the assets keeps staying more or less around 11%.

Russian banking sector is greatly dependent on loans and deposits. The always existing rising capital can be associated with the continuous existence of non-performing loans that require capital to cover themselves. Moreover, there is the growth in the individual deposits is very important (from 29.50% to 47.60% of liabilities during the last five years), which might be one of the results of rising number of foreign currency accounts in the banks by individuals.

It is important to mention that even though Russia continues to have high dependency on loans, the proportion of the latter as part of the assets has decreased considerably during the last five years. From 1st of January 2014 until 1st of January 2018 the proportion of the loans in the assets of the banking sector has decreased from 56.50% to 49.70%. This can be due to the high importance given to the control of banking sector in order to implement the requirements of Basel III and to increase the liquidity of the banks as much as possible.

Another important trend is the continuously increasing portion of securities in the assets of the banks. In absolute numbers, the difference is very great (by almost 57% in percentage) between the amount of securities acquired by credit institutions as of 1st of January 2014 and that of 1 January 2018 (from 7,822.30 bil. RUB to 12,310.90 bil. RUB). The increase of proportion of securities in the total banking sector assets is not very fast (from 13.60% as of 1 January 2014 to 14.5% as of 1 January 2018), however the most important thing is that the growth is continuous. Because the total assets of the banking sector increase faster (due to other components included in the assets) than the securities do, that is why even though having a very big difference between absolute amounts of securities, the proportion of them in the assets is still small.

Table 5. Key Balance Sheet indicators of Russian Banking Sector

	Key Indicators of Banking Sector of Russia	1 January 2014	1 January 2015	1 January 2016	1 January 2017	1 January 2018
1	Banking sector Assets (bil RUB)	57,423.10	77,653.00	82,999.70	80,063.30	85,191.80
2	Banking sector own funds (capital) (bil. RUB)	7,064.30	7,928.40	9,008.60	9,387.10	9,397.30
	as % of banking sector assets	12.30	10.20	10.90	11.70	11.00
3	Loans and other placements with non-financial organisations and individuals, including overdue claims (bil. RUB)	32,456.30	40,865.50	43,985.20	40,938.60	42,366.20
	as % of the banking sector assets	56.50	52.60	53.00	51.10	49.70
4	Securities acquired by credit institutions (bil. RUB)	7,822.30	9,724.00	11,777.40	11,450.10	12,310.90
	as % of the banking sector assets	13.60	12.50	14.20	14.30	14.50
5	Individual deposits (bil. RUB)	16,957.50	18,552.70	23,219.10	24,200.30	25,987.40
	as % of the banking sector liabilities ¹	29.50	23.90	43.40	44.70	47.60

Compiled by the author based on the data provided by CBR

¹ In this table «liabilities» stand for «bank funds and profits (capital items in the balance sheet) plus liabilities» or right side of accounting equation (total resources); this value is traditionally used in economic analysis in Russia as well as «pure liabilities»

On 11 August 2017 the CBR issued Directive No. 4487-U amending Instruction No. 135-I “On the Procedure for the Bank of Russia to Make Decisions on the State Registration and Licensing of Credit Institutions”. Starting from 1 January 2017 this regulation has been put into effect.

According to the instruction No. 135-I, the banking system of Russia is divided into three types of banks:

- Systemically important banks
- Banks with a universal license (minimum capital requirement of RUB 1 billion)
- Banks with a basic license (capitalized at between RUB 300 million and RUB 3 billion)

Banks with a universal license are allowed to perform the full scope of banking operations and must comply fully with the regulatory requirements. The banks with a basic license will have a limited scope and simplified regulations, will receive significant regulatory relief, and they will have a simplified reporting procedure, the Central Bank said.

During 2018, banks will have to make a decision - either to raise capital to 1 billion rubles and work under a universal license, or switch to a basic license (the minimum capital is 300 million rubles). The transition period will be completed by January 1, 2019.

Let us take a look at the 10 largest banks of Russia in as of 1 January 2018 according to their Assets and Capital. The banks presented in the two tables below are sorted according to their ranking inside the banking sector of Russia.

**Table 6. 10 Largest Banks of Russia
according to Assets**

Top ten banks in Russia as of 1 January 2018		
	Banks	Assets (bil. RUB)
1	Sberbank	24,416.07
2	Bank VTB	10,023.22
3	Gazprombank	5,742.10
4	VTB-24	3,800.93
5	Rosselkhozbank	3,268.59

**Table 7. 10 Largest Banks of Russia
according to Capital**

Top ten banks in Russia as of 1 January 2018		
	Banks	Total Capital (bil. RUB)
1	Sberbank	3,694.40
2	Bank VTB	1,061.71
3	Gazprombank	705.40
4	Rosselkhozbank	420.59
5	Alfa-Bank	335.02

6	Bank Natsionalny Kliringovy Tsent	2,782.03	6	Moscow Credit Bank	252.20
7	Alfa-Bank	2,700.85	7	FC Otkritie	222.19
8	Bank FC Otkritie	2,347.98	8	UniCredit Bank	200.87
9	Moscow Credit Bank	1,933.72	9	Raiffeisenbank	129.14
10	Promsvyazbank	1,417.56	10	Russian regional development bank	123.62

Compiled by the author based on the data provided by CBR

It should be noted that, the total assets of the banks in Russia as of 1 January 2018 were accounted for 84,948.25 bil. RUB, which means that only the first three banks in the list cover about 47% of the assets of the banks of Russia. If we take into account the fact that during January 2018 the merger of VTB-24 and Bank VTB was completed into VTB Group, which means that only Sberbank, VTB Group and Gazprombank account more than 51% of the total assets of banks (561 of them as of 1 January 2018).

Although the VTB-24, the bank Natsionalny Kliringovy Tsent (National Clearing Center) and Promsvyazbank are in the list of largest 10 banks according to assets, but are not included in that of according to capital, the case of Promsvyazbank deserves more attention than the others. As of 1st of January 2018 Promsvyazbank had negative capital. Due to the increasing number of non-performing loans, Promsvyazbank started getting into challenges. The assets that were collateral for the loans given, were shifted to other parts of the bank by its owners. Consequently, Promsvyazbank needed more money to cover all the holes in different parts of banking operations. Promsvyazbank had turned into a large lender, financing its owners. The amount of loans exceeded the bank's total capital.

Also, a good result was demonstrated by the large amount of subordinated loans and shareholders' funds raised within the Moscow Credit Bank. The significant increase in equity capital of the MCB allowed it to strengthen its positions in the top ten, and on 1 January 2018, it ranks 6th place. The list of banks with largest capital, already takes into account the merger of Bank VTB and VTB-24.

As Russia annexed Crimea in 2014, the banking sector penetrated through high negative pressure firstly because of the Western sanctions on Russia, and secondly because of the strong economic impact of the decrease in oil prices on Russia's foreign currency earnings. These events brought forward increasing amount of especially bad loans and continuous deposit outflows.

To prevent the further weakening of the banking sector, the CBR started shutting down tens of small lenders every year and rescued the private banks FC Otkritie, B&N Bank (12th largest banks by assets in Russia) and Promsvyazbank in 2017.

All together the CBR provided more than 1.5 trillion RUB to address the improvements of the liquidity and capital adequacy of these three banks. Some part of this money has already been reimbursed but FC Otkritie claims that the banks needs more to recover. It was under discussion to inject another additional money to support the liquidity of FC Otkritie and B&N Bank. The CBR is ready to provide the required amount not because it is very much eager to save the banks themselves, but because it wants to avoid the domino effect and to make sure that the banking sector will not penetrate through another crisis. The CBR's discussed approach to this issue was the probable merger of Otkritie and B&N Bank. At the end, in March 2018, the CBR has agreed to spend another almost 57 billion RUB to recover B&N Bank. If the merger of Otkritie and B&N Bank is achieved, it is expected that the banks will be sold to the market. In contrast, the Promsvyazbank is now being converted into defense sector bank.

5.1.1 Systemically Important Banks

The Bank of Russia annually approves a list of systemically important credit institutions. Before, it included 10 credit institutions, and in 2018 their number increased to 11. The last bank that joined the list of SIBs was Moscow Credit Bank. The SIBs account for more than 60% of the total assets of the Russian banking sector. Special requirements will be extended to these largest banks of Russia. As of today, in Russian banking system there is not credit institution classified as global systematically important bank (G-SIB).

Obviously, the status of systemically important credit institutions can say that the Central Bank will not let them burst even in the most difficult times, since their economy depends on their work. And, accordingly, this can serve as an indicator of the reliability of credit institutions that have got the list of banks of the Central Bank.

For the first time the SIBs of Russia were reported by the CBR on the 15 July 2015. The Bank of Russia also reported on the introduction of several important innovations for systemically important banks, accounting for over 60% of the assets of the Russian banking sector. For them, the regulator introduces the second of the two liquidity ratios envisaged by Basel III, the structural liquidity norm (the norm of pure stable funding, NSFR). This indicator is calculated as the ratio of the available stable funding to its required volume. The minimum value of the standard is set at 100%. The requirement to calculate NSFR was to take effect on 31 March 2017. In 2017, SIBs were reporting data on NSFR to the Bank of Russia on a quarterly basis for indicative purposes. The requirement to comply with the minimum level of NSFR on a constant basis and to provide quarterly reports on NSFR was planned to take effect on 1 January 2018.

As Russia adopted the Basel timetable for Basel III implementation regarding the capital framework, many changes were brought forward regarding the eligible capital starting from

January 2016. D-SIBs needed to observe the liquidity coverage ratio and the additional systemic capital buffer. D-SIBs had to comply with the Internal Capital Adequacy Assessment Process (ICAAP) on a solo basis by end-2016 and on a consolidated basis by 2017. Through its Supervisory Review and Evaluation Process (SREP), the CBR is able to determine bank-specific capital buffer requirements under Pillar 2 of the Basel II framework.

Finally, Russia plans to introduce Total Loss Absorbency Capital (TLAC) requirements for Russian subsidiaries of G-SIBs in line with FSB's recommendation and phase-in arrangements starting in 2019. As in many countries, preparations are at a preliminary stage. ("International Monetary Fund. Russian Federation - Financial Sector Assessment Program, 2016," n.d., p. 21)

Table 8. Domestic Systematically Important Banks of 2018

D-SIB in Russia (2018) as of 1 January 2018				
	Banks	Assets (mil. RUB)	Total Capital (bil. RUB)	Registration No.
1	Unicredit	1,238.40	252.20	1
2	Gazprombank	5,742.10	705.40	354
3	Bank VTB	10,023.22	1,061.71	1000
4	Alfa-Bank	2,700.85	335.02	1326
5	Sberbank	24,416.07	3,694.40	1481
6	Moscow Credit Bank	1,933.72	252.20	1978
7	Bank FC Otkritie	2,347.98	222.19	2209
8	Rosbank		118.10	2272
9	Promsvyazbank	1,417.56	-121.60	3251
10	Raiffeisenbank	898.66	129.10	3292
11	Rosselkhozbank	3,268.59	420.60	3349

Compiled by the author based on the data provided by CBR

The SIBs presented above are sorted not according to the size of assets or capital, but by ascending principle relating to the Registration number of the institutions, just as they are presented by CBR. Let us look closer to the credit organizations included in the list of systemically important banks in 2018 according to the Central Bank:

UniCredit Bank is a commercial bank operating in Russia since 1989. Today UniCredit Bank is the representative of the European banking group UniCredit in Russia.

Gazprombank is one of the most reliable banks in Russia. It was created to finance infrastructure projects in the oil and gas industry. Today Gazprombank offers its customers a full range of banking products, including deposits of individuals.

Bank VTB is one of the largest and most reliable banks in Russia. In terms of equity capital, the size of assets and the amount of VTB's contributions is second only to Sberbank.

Alfa-Bank is one of the largest private banks in Russia. International rating agencies traditionally assign Alfa-Bank high reliability ratings.

Sberbank is the largest bank in Russia both in terms of equity and in terms of assets.

Moscow Credit Bank operates in the Russian banking services market since 1992. Provides a full range of services for corporate clients and individuals, offering universal products and services to a wide audience, and developing special programs tailored to individual needs and customer requirements. This bank joined the list of SIBs in the end of 2017. It expands the group of SIBs to 11.

Bank Otkritie is a large bank in Russia and the eighth largest in terms of assets among all Russian banking groups. It has been working in the financial market since 1993. In August 2017 the central bank took control of Otkritie, Russia's biggest private bank by assets. This event constitutes Russia's biggest bank bailout in history.

Rosbank is part of the Societe Generale group, a universal European bank with more than 150 years of history.

Promsvyazbank is one of the top 3 private banks in Russia and is a universal commercial bank, whose history has been around for 20 years. Today the bank is state owned and is aiming at concentration of Russia's defense sector.

Raiffeisenbank is a subsidiary of the European Raiffeisen Bank International AG. The bank has been operating in Russia since 1996.

Rosselkhozbank was established to finance the villagers and stimulate the development of agriculture. The bank today offers a wide range of services for villagers, lends to farmers, issues money for infrastructure projects in the village.

5.2 Capital Adequacy

The information included in this part of Chapter 5 helps the reader to have a detailed view of how the D-SIBs of Russia adjusted their Capital Adequacy Ratios to the required measures.

Before analyzing the ratios, let us take a look at the absolute figures of total capital (regulatory capital, own funds) of the 11 domestic systematically important banks of Russia.

The leader of the list is, obviously, the giant of Russian banking sector, Sberbank.

During the last five years a prominent increase in the capital of all the banks shows how active the banking sector was operating towards the capital adequacy. Especially the Moscow Credit bank showed a four times larger capital as of 1st of January 2018 than as of 1st of January 2014.

One of the main reasons for this is the subordinated loan of USD 700 mil. (40 bil. RUB) that was approved by CBR in 2017. This amount received was eligible to be included in Tier 1 capital and consequently had a huge impact on performance of the bank in terms of capital. This bank was the last to join the list of SIBs of Russia.

Table 9. Total Capital of 11 D-SIBs of 2018 of Russia

	Own funds (bil. RUB)					
	11 D-SIBs of 2018	01.01.2014	01.01.2015	01.01.2016	01.01.2017	01.01.2018
1	Sberbank	2,003.10	2,277.94	2,678.96	3,143.4	3,694.4
2	Bank VTB	627.25	771.04	1,014.67	1,017.8	1,061.7
3	Gazprombank	413.27	502.99	646.06	689.6	705.4
4	Rosbank	89.10	114.25	126.88	119.2	118.1
5	Rosselkhozbank	245.21	275.21	411.94	395.8	420.6
6	Alfa-Bank	199.97	251.15	359.64	357.3	335.0
7	Bank FC Otkritie	113.98	147.34	213.93	270.4	222.2
8	Moscow Credit Bank	60.07	80.92	154.53	141.2	252.2
9	UniCredit Bank	130.48	134.03	173.96	179.2	252.2
10	Raiffeisenbank	94.41	113.32	124.83	136.5	129.1
11	Promsvyazbank	96.22	119.72	151.27	152.7	-121.6

Compiled by the author based on the data provided by CBR

Table 9 also indicates the negative capital that Promsvyazbank had in January 2018. The capital declined due to the bank's high amount of losses. Promsvyazbank had notified the holders of subordinated bonds to write off these instruments. The authorized capital of Promsvyazbank in January 2018 was written off to 1 ruble. This procedure of reduction of capital is part of financial recovery. It was expected that after write-off of capital, Bank will be capitalized. The regulator previously estimated the need for recapitalization of the Bank in the 100-200 billion. In December 2017 the CBR announced the approval to the plan of improving the financial stability of the Bank.

The numbers presented in Table 10, 11 and 12 are based on the Formulas (4), (2) and (3) respectively, presented in Chapter 2.

Looking deeper into the Regulatory Capital Ratios of the SIBs, it can be concluded that the banking sector is in continuous improvement and is performing very well in capital adequacy requirements implementation. In terms of N1.0 ratio, the best result is presented by Moscow Credit Bank, which is connected with the large loan that it received that was eligible for Tier 1 Capital. The dramatically increased capital brought to a very high regulatory capital ratio of 20.50%. The largest bank, Sberbank, is the fourth in place in terms of N1.0 ratio.

Table 10. Total/Regulatory Capital Ratios (N1.0) of Russia's 11 D-SIBs of 2018

	Total Capital Ratio (N1.0) (%)					
	11 D-SIBs of 2018	01.01.2014	01.01.2015	01.01.2016	01.01.2017	01.01.2018
1	Sberbank	12.96	11.5	11.89	13.71	15.00
2	Bank VTB	12.41	12.65	13.15	11.11	11.30
3	Gazprombank	11.43	12.45	13.64	13.92	12.70
4	Rosbank	13.26	13.45	15.33	14.07	13.10
5	Rosselkhozbank	15.28	13.04	16.63	16.35	15.60
6	Alfa-Bank	12.65	11.01	15.57	14.37	12.00
7	Bank FC Otkritie	12.09	12.98	13.35	13.15	11.90
8	Moscow Credit Bank	12.12	14.20	16.07	12.62	20.50
9	UniCredit Bank	14.51	13.65	12.94	16.66	18.20
10	Raiffeisenbank	13.51	12.43	13.9	16.30	13.30
11	Promsvyazbank	11.96	12.32	13.86	13.45	-

Compiled by the author based on the data provided by CBR

Overall, Russian banking sector complies with the capital adequacy requirements, as the requirement minimum level is 8%. The difficulties of Promsvyazbank and its process of recovery is seen in the Table 10 as well. As of 1 January 2018 there was no information available regarding the regulatory capital ratio of the bank, most probably due to the ongoing procedure of capitalization, resulted from the bailout.

Table 11 addresses the next important ratio, Common Equity Tier 1 capital ratio, denoted as N1.1 in CBR regulations. As Russian banking sector started actively implementing Basel III regulations from 2015, the data for CET1 ratio for the year 2014 was not available. With upwards and downwards movements, the N1.1 ratios of the SIBs are fully compliant with the regulation, as the minimum accepted level is 4.5%. Promsvyazbank's CET1 capital adequacy ratio in December 2017 fell below 2%, and on 25 December 2017 was 0%, as reported by the bank. The best performance in this ratio belongs to UniCredit Bank, which is followed by the rescued FC Otkritie, having high amount of injected funds from the government.

Table 11. Common Equity Tier 1 Capital (CET1) Ratios (N1.1) of Russia's 11 D-SIBs of 2018

	CET 1 Capital Ratio (N1.1) (%)					
	11 D-SIBs of 2018	01.01.2014	01.01.2015	01.01.2016	01.01.2017	01.01.2018
1	Sberbank	N/A	8.28	7.88	9.93	10.72

2	Bank VTB	N/A	10.48	11.71	9.53	8.87
3	Gazprombank	N/A	7.92	8.77	8.01	8.70
4	Rosbank	N/A	7.60	8.51	9.52	9.22
5	Rosselkhozbank	N/A	10.48	9.3	9.66	10.41
6	Alfa-Bank	N/A	7.48	7.53	8.33	7.88
7	Bank FC Otkritie	N/A	7.80	6.44	6.80	11.81
8	Moscow Credit Bank	N/A	7.60	8.17	7.28	8.35
9	UniCredit Bank	N/A	12.11	9.38	12.43	14.11
10	Raiffeisenbank	N/A	9.20	8.89	10.21	9.94
11	Promsvyazbank	N/A	5.88	6.09	6.75	-

Compiled by the author based on the data provided by CBR

Among the D-SIBs, the lowest N1.1 ratio as of 1 January 2018 is presented by Alfa-Bank.

The last, but not least important capital ratio of the banks is Tier 1 Capital ratio, presented in Table 12. With some banks being close to the accepted minimum level of 6%, the overall picture of the banking sector is convincing that the banking sector is in right direction to Tier 1 capital regulations. The best results are performed again by UniCredit Bank.

Table 12. Tier 1 Capital Ratios (N1.2) of Russia's 11 D-SIBs of 2018

	Tier 1 Capital Ratio (N1.2) (%)					
	11 D-SIBs of 2018	01.01.2014	01.01.2015	01.01.2016	01.01.2017	01.01.2018
1	Sberbank	N/A	8.28	7.88	9.93	10.72
2	Bank VTB	N/A	10.80	12.07	9.72	9.10
3	Gazprombank	N/A	8.23	8.97	8.17	9.10
4	Rosbank	N/A	7.60	8.51	9.52	9.22
5	Rosselkhozbank	N/A	10.48	9.3	10.22	10.90
6	Alfa-Bank	N/A	7.48	7.53	8.99	9.10
7	Bank FC Otkritie	N/A	7.80	7.77	8.87	11.85
8	Moscow Credit Bank	N/A	7.60	8.17	7.28	11.60
9	UniCredit Bank	N/A	12.12	9.38	12.43	14.11
10	Raiffeisenbank	N/A	9.90	9.89	11.06	10.60
11	Promsvyazbank	N/A	7.14	7.44	8.10	-

Compiled by the author based on the data provided by CBR

Even though the data for the year 2014 for N1.2 ratio was not available, it is enough to conclude even by looking at only the last four years of this ratios movement among the D-SIBs. If we compare the data of 1 January 2015 and 1 January 2018, not counting Promsvyazbank's case

which was already discussed, the only SIBs that failed to increase the ratio is the Bank VTB, the second largest bank in the sector (falling from 10.80% to 9.10%). The biggest improvement is seen in Bank FC Otkritie and Moscow Credit Bank. The N1.2 ratio of these two banks improved by around 4 percentage points between 1 January 2015 and 1 January 2018.

5.3 Liquidity Adequacy

To further have a clear understanding of the Basel III implementation impact, the liquidity ratios are presented in this part of the chapter. The numbers presented in Table 13, 14 and 15 are based on the Formulas (14), (15) and (16) respectively, introduced in Chapter 2.

Table 13 presents the Quick liquidity ratio of D-SIBs during the last five years. With the minimum accepted level of this ratio being 15%, it is clear that all the SIBs have been outperforming. For some of the D-SIBs of Russia there have been seen lower Quick bank liquidity ratios in 2018 than in 2017, such as Sberbank, Rosbank, Alfa Bank, UniCredit Bank and Raiffeisenbank. The reason for this was the drop in portfolios, the increase of non-performing loans, the drop in investments in high quality liquid assets. Most of these banks participated in repurchase transactions with the CBR, in order to gain more liquidity.

Table 13. Quick Liquidity Ratios (N2) of D-SIBs

Quick Bank Liquidity Ratio (N2) (%)		1 January 2014	1 January 2015	1 January 2016	1 January 2017	1 January 2018
	11 D-SIBs of 2018					
1	Sberbank	53.67	74.46	116.35	217.00	161.89
2	Bank VTB	37.39	27.27	61.46	34.54	137.19
3	Gazprombank	42.19	32.66	50.06	48.82	106.22
4	Rosbank	67.32	87.02	120.8	163.49	85.76
5	Rosselkhozbank	53.96	55.87	148.29	92.33	126.27
6	Alfa-Bank	43.32	61.68	132.16	150.21	108.28
7	Bank FC Otkritie	40.95	39.13	274.5	144.14	226.07
8	Moscow Credit Bank	67.49	70.96	107.19	59.88	122.55
9	UniCredit Bank	74.62	112.89	107.58	145.6	117.09
10	Raiffeisenbank	42.46	48.54	96.15	138.86	68.32
11	Promsvyazbank	40.45	41.54	84.91	108.18	189.83

Compiled by the author based on the data provided by CBR

However as a general picture of the banking sector, looking at the indicators of the N2 ratio for the last five years, it is clear how active was the concentration of the banks on the improvement of the short term liquidity.

The other short term liquidity indicator that is calculated in Russian banks is the current bank liquidity ratio. The performance of the D-SIBs regarding this ratio is presented in Table 14. According to the CBR regulation, this ratio should be at least 50% for all Russian banks.

Table 14. Current Bank Liquidity Ratios (N3) of D-SIBs

Current Bank Liquidity Ratio (N3) (%)		1 January 2014	1 January 2015	1 January 2016	1 January 2017	1 January 2018
	11 D-SIBs of 2018					
1	Sberbank	58.59	66.52	154.37	301.60	264.90
2	Bank VTB	73.53	54.47	98.95	81.64	144.72
3	Gazprombank	80.81	76.76	151.69	88.00	115.62
4	Rosbank	79.21	84.00	176.37	133.83	115.48
5	Rosselkhozbank	84.87	103.42	285.53	198.32	181.62
6	Alfa-Bank	66.04	93.58	162.99	128.55	148.51
7	Bank FC Otkritie	89.12	80.84	113.05	108.23	286.37
8	Moscow Credit Bank	124.34	154.82	328.96	106.25	206.06
9	UniCredit Bank	87.60	66.71	281.51	220.25	224.92
10	Raiffeisenbank	77.18	58.72	144.46	271.73	161.08
11	Promsvyazbank	73.73	72.82	143.03	139.72	321.77

Compiled by the author based on the data provided by CBR

The progress in D-SIBs for this ratio is obvious during the last five years. For most of the banks presented in Table 14, the N3 ratio in 2018 is at least two times higher than that of 2014. The incredibly high indicator is seen for the Promsvyazbank, having a record 321.77% of current liquidity ratio. The second highest performance is at bank FC Otkritie. It should be noted that, not surprisingly, these are the banks that have been rescued by the CBR in 2017. The dramatic increase in the current liquidity ratio of these banks is tightly connected with the high amount of funds injected by the CBR.

The last liquidity ratio refers to the banks' long-term capability to liquidate. Table 15 represents the long-term bank liquidity ratio of D-SIBs, which should be not more than 120%. It can be concluded from the table below that the banks performed very well in decreasing this indicator as much as possible. UniCredit Bank is the only D-SIBs for which the N4 ratio has increased during the last five years. This can be due to the unproportioned increase in the long-term credit claims and own funds or the liabilities on loans and deposits.

Table 15. Long-term Bank Liquidity Ratios (N4) of D-SIBs

Long-term Bank Liquidity Ratio (N4) (%)						
	11 D-SIBs of 2018	1 January 2014	1 January 2015	1 January 2016	1 January 2017	1 January 2018
1	Sberbank	102.3	111.56	65.49	55.40	57.52
2	Bank VTB	110.58	87.98	58.04	61.27	63.10
3	Gazprombank	105.3	105.38	52.79	48.79	59.45
4	Rosbank	80.47	66.29	44.56	38.70	42.98
5	Rosselkhozbank	98.24	86.87	67.66	51.41	53.82
6	Alfa-Bank	69.95	99.41	54.49	44.17	53.52
7	Bank FC Otkritie	70.29	68.99	79.21	43.08	26.15
8	Moscow Credit Bank	65.57	67.21	60.01	46.75	44.05
9	UniCredit Bank	51.31	96.96	65.59	58.81	64.48
10	Raiffeisenbank	90.87	112.99	50.14	46.55	45.86
11	Promsvyazbank	53.21	102.7	47.47	36.49	0.00

Compiled by the author based on the data provided by CBR

It is not to a surprise, that the N4 ratio for Promsvyazbank was 0% as of 1 January 2018. The reason for this number is the negative own funds that the bank had for 2018, as it was rescued by the CBR. The bank that performs the best in terms of long-term bank liquidity is the Banks FC Otkritie with 26.15%, as its capital increased dramatically thanks to CBR, and at the same time there was a great drop in long-term credit claims. UniCredit Bank has the highest N4 ratio, which means that it is highly based on the long-term credit claims in contrast to its capital or liabilities. Non-compliance with N4 suggests that the bank abuses the placement of short-term liabilities in long-term assets (for example, the bank issues a mortgage for a period of 25 years, while borrowing money for these loans from counterparty banks for 30 days).

Looking at the development of 11 D-SIBs of Russian Federation, one can conclude that the banks themselves, and the CBR to its own extent as well, have worked very hard towards the improvement of regulatory ratios, in order to fulfill the requirements and walk in line with other already Basel III compliant banks around the world. It should be noted that according to the latest assessment program of BCBS published in March 2016, Russian banks are fully compliant with the capital and liquidity regulations.

6. Conclusion and Recommendations

6.1 Conclusion

In this last chapter of the paper, conclusions will be drawn resulting from the analyses performed in Chapter 5 and touching points will be sought with the hypotheses discussed earlier in Chapter 3. As for the capital and liquidity requirements only 11 banks of Russia were analyzed, the conclusions regarding the capital and liquidity adequacy will be based only on the empirical results of the analyzed banks.

The Hypothesis 1 mentioned in Chapter 3, which discusses the influence of Basel III on the stability of Russian banking sector, is supported. Russian banking sector is on the road of a steady growth and continuous structural stability. The analysis presented in sub-chapter 5.1 shows that first of all, the strict regulations of CBR resulted in a more compact and easy-to-regulate banking sector. Having the non-compatible banks continuously eliminated from the system, Russian banking sector performs stable increase in assets, which includes stable gradual increase in own funds. Having continuously diminishing proportion of loans and steadily increasing securitization and individual deposits, helps the banking sector to perform more effectively in the process of implementation of banking regulations, which, in its own turn, makes the banking sector more stable.

The analysis performed in sub-chapter 5.2 led into results that reconcile Hypothesis 2 about the capital adequacy in Chapter 3. As of 1 January 2018 all of the banks, with the exception of Promsvyazbank still being in process of capitalization, have performed a gradual steady increase in the capital ratios and, in the end, outperformed the standards set. As expected, some banks reached the desired results with the CBR's continuous support.

The sub-chapter 5.3, analyzing the liquidity adequacy of Russian banks, refutes the Hypothesis 3 discussed in Chapter 3. Russian banks are compliant with the liquidity requirements. Although to some extent (concerning the high proportion of loans), this hypothesis was justified, however the banking sector has put a lot of effort into decreasing the loans and increasing the as much as possible highly liquid assets in the system. Except for the Promsvyazbank being rescued by the CBR, all the banks have, similarly to the capital adequacy ratios, outperformed the standards.

Overall, the final image of the Russian banking sector shows that it is compliant with the Basel III regulations. The values of capital adequacy ratios and liquidity ratios correspond to those required. In addition, the banking industry currently has some margin of safety, and the dynamics of the reported capital adequacy indicators are steadily rising, which could positively affect the development of the financial sector in the short and mid-term.

6.2 Recommendations

It should be noted that Basel III standards not only oblige banks to improve the mechanism of managing their capital, but also set requirements for liquidity management, which forces management of banks to review the development strategies of credit institutions and develop plans for diversifying funding, and to develop or roll back (depending on efficiency) certain lines of business or product line. Below are presented the recommendations regarding the further development of capital and liquidity management of the banks. It should be noted that these two management are very tightly connected and to reach a better result, both must perform efficiently.

First, looking at the indicators that have to be calculated to reach the final required regulatory capital, it has already been mentioned that the CBR is using the standardized approach and has not yet implemented the IRB approach.

The transition to IRB approach will allow credit organizations to improve the accuracy of estimating the amount of credit risk. As the banks will increase the sensitivity to risk, this can provide opportunity to optimize the use of capital. The optimization, in its turn, can lead to the facilitated paths to reach the capital requirements, thus broadening the business growth opportunities.

Switching to the IRB approach, the capital adequacy requirements might be reduced and there can be increased savings on capital. For banks that lack capital, this saving will be an important factor. In respect of the latter, the Bank of Russia standardized approach is limiting the possible savings of capital.

In addition to the likely decrease in the amount of credit risk, the transition to IRBs will increase the bank's competitiveness and improve its reputation in world markets. The introduction of IRB approach involves significant investment in the creation of a reliable IT infrastructure, improved models and risk assessment systems, and the integration of risk indicators into business processes and strategic planning. Such investments in quality credit risk management systems are an important signal for international partners, which may lead to an improvement in the credit rating of the bank, reducing the cost of borrowing and additional capital injections.

Despite the expected benefits from the introduction of Basel standards, transition to IRB approaches is associated with significant time and financial costs. To create an integrated risk management system and remove existing discrepancies between banks will require significant investments in the development of new instruments, as well as staff development and reorganization of internal processes.

One of the main difficulties in transition to IRB approaches is the lack of a full understanding of the requirements and principles of Basel. Many banks use out-of-date approaches to risk management and do not have sufficient knowledge and experience for a quick transition to new rules.

Therefore, the first step in the implementation of a compliant credit risk assessment, should be methodology and tools for risk management, relevant to Basel agreements. When switching to

IRB approach, banks will need a thorough understanding of the basics of risk management and practices in calculation of capital.

Second, capital requirements have become tougher throughout the financial sector, so mutual investments in the financial sector will decrease. Of course, this will affect first of all the value of small and regional banks, and at the level of their competitiveness. Possible solution could be a short-term concentration of banks in the high-yield lending market on the indicator of regulatory capital (which also means an automatic increase in transaction risks, followed by a possible increase in the unpaid or overdue debt burden of banks' customers, as well as a decrease in the bank's profitability in the medium term) and the subsequent reduction of the risks of active operations, for example, by means of selling mortgage loans.

Third, with Russian banking sector being especially loan dependent, should develop activities to restore liquidity in case of unforeseen events. The actions should be performed under the effect of high-level management and timing. Possible components of the list of actions are obtaining more subordinated loans (loans), attraction of short- and long-term deposits, or limitation (termination) of loans for a certain period.

Being able to have a higher quality risk assessment and to optimize the capital of the banks will, in its turn, facilitate the procedure of meeting the liquidity requirements of the banks.

Consequently, the banking sector will not continue shrinking and the proportion of state owned banks will not be as prominent.

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Appendix

Appendix 1

ASF Factor	Components of ASF category
100%	<ul style="list-style-type: none"> ▪ Total regulatory capital (excluding Tier 2 instruments with residual maturity of less than one year) ▪ Other capital instruments and liabilities with effective residual maturity of one year or more
95%	<ul style="list-style-type: none"> ▪ Stable non-maturity (demand) deposits and term deposits with residual maturity of less than one year provided by retail and small business customers
90%	<ul style="list-style-type: none"> ▪ Less stable non-maturity deposits and term deposits with residual maturity of less than one year provided by retail and small business customers
50%	<ul style="list-style-type: none"> ▪ Funding with residual maturity of less than one year provided by non-financial corporate customers ▪ Operational deposits ▪ Funding with residual maturity of less than one year from sovereigns, PSEs, and multilateral and national development banks ▪ Other funding with residual maturity between six months and less than one year not included in the above categories, including funding provided by central banks and financial institutions
0%	<ul style="list-style-type: none"> ▪ All other liabilities and equity not included in the above categories, including liabilities without a stated maturity (with a specific treatment for deferred tax liabilities and minority interests)

	<ul style="list-style-type: none"> ▪ NSFR derivative liabilities net of NSFR derivative assets if NSFR derivative liabilities are greater than NSFR derivative assets ▪ “Trade date” payables arising from purchases of financial instruments, foreign currencies and commodities
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Source: Basel Committee on Banking Supervision ‘Basel III the net stable funding ratio’, 2014

Appendix 2

RSF Factor	Components of RSF Category
0%	<ul style="list-style-type: none"> ▪ Coins and banknotes ▪ All central bank reserves ▪ All claims on central banks with residual maturities of less than six months ▪ “Trade date” receivables arising from sales of financial instruments, foreign currencies and commodities
5%	<ul style="list-style-type: none"> ▪ Unencumbered Level 1 assets, excluding coins, banknotes and central bank reserves
10%	<ul style="list-style-type: none"> ▪ Unencumbered loans to financial institutions with residual maturities of less than six months, where the loan is secured against Level 1 assets as defined in LCR paragraph 50, and where the bank has the ability to freely re-hypothecate the received collateral for the life of the loan
15%	<ul style="list-style-type: none"> ▪ All other unencumbered loans to financial institutions with residual maturities of less than six months not included in the above categories ▪ Unencumbered Level 2A assets
50%	<ul style="list-style-type: none"> ▪ Unencumbered Level 2B assets ▪ HQLA encumbered for a period of six months or more and less than one year

	<ul style="list-style-type: none"> ▪ Loans to financial institutions and central banks with residual maturities between six months and less than one year ▪ Deposits held at other financial institutions for operational purposes ▪ All other assets not included in the above categories with residual maturity of less than one year, including loans to non-financial corporate clients, loans to retail and small business customers, and loans to sovereigns and PSEs
65%	<ul style="list-style-type: none"> ▪ Unencumbered residential mortgages with a residual maturity of one year or more and with a risk weight of less than or equal to 35% under the Standardised Approach ▪ Other unencumbered loans not included in the above categories, excluding loans to financial institutions, with a residual maturity of one year or more and with a risk weight of less than or equal to 35% under the standardised approach
85%	<ul style="list-style-type: none"> ▪ Cash, securities or other assets posted as initial margin for derivative contracts and cash or other assets provided to contribute to the default fund of a CCP ▪ Other unencumbered performing loans with risk weights greater than 35% under the standardised approach and residual maturities of one year or more, excluding loans to financial institutions ▪ Unencumbered securities that are not in default and do not qualify as HQLA with a remaining maturity of one year or more and exchange-traded equities

	<ul style="list-style-type: none"> Physical traded commodities, including gold
100%	<ul style="list-style-type: none"> All assets that are encumbered for a period of one year or more NSFR derivative assets net of NSFR derivative liabilities if NSFR derivative assets are greater than NSFR derivative liabilities 20% of derivative liabilities as calculated according to paragraph 19 All other assets not included in the above categories, including non-performing loans, loans to financial institutions with a residual maturity of one year or more, non-exchange-traded equities, fixed assets, items deducted from regulatory capital, retained interest, insurance assets, subsidiary interests and defaulted securities

Source: Basel Committee on Banking Supervision 'Basel III the net stable funding ratio', 2014