The Impact of Risk Management on the Financial Performances and Expected Future Challenges of Banks in Kazakhstan

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Abstract

This study examines the financial performance of three selected commercial banks in Kazakhstan for the period from 2012 to 2022. This study uses a comprehensive quantitative approach to investigate the impact of various risk elements on the financial health of banks, with a particular focus on return on equity. These elements include credit, market, liquidity, and operational risks. The analysis is based on data from financial reports for the last decade of Kazakhstani banks. The study uses regression models to assess the significance of these risks and their impact on financial performance. The result of the study illustrates each risk factor's influence on indicators and it shows negative effects. For mitigating these risks the research highlights the importance of creating a sustainable risk management framework. It concludes with recommendations, suggestions, and regulators in Kazakhstan on improving risk management strategies to increase financial stability and resilience to future challenges presented below for banks.

Introduction

Background of the Study

Our study examines four different governance risks that commercial banks may face and pose

significant future challenges to their control. ISO defines risk management as the process of

establishing, assessing and structuring risk priorities in financial institutions. Therefore, based on this,

the control and application of resources in order to reduce probabilities or the impact on their mitigation

of adverse conditions may subsequently negatively affect the achievement of organizations' goals

(Mutuku, 2016).

Alexander (1963, p.15) examines the concept of financial risk and mentions M&M Preposition

II, which was written about earlier in this book and describes the reaction of investors to risks with debt

financing where financial risk refers to the increased uncertainty in the cash flows received by equity

owners due to the fixed financial commitments involved in debt financing and cash leasing.

Financial risks emerged alongside the introduction of monetary circulation and the

development of various monetary relationships, including those between investors and issuers, lenders

and borrowers, sellers and buyers, exporters and importers, and others. When an investor purchases

shares or equity in a company, they subject themselves to various risks. Certain types of risk may

pertain to only one or a few companies, categorized as "firm-specific risk", representing the risk related

to investments in a particular company.

Another type of risk, with a broader reach, influences many, if not all investments, known as

market risk. For instance, a rise in interest rates negatively affects all investments, albeit to varying

extents. Likewise, when the economy weakens, all companies experience the repercussions of the

recession. Nevertheless, financial institutions and their impact on financial performance need to take

into account other prevalent risks, such as operational, credit and liquidity risks.

Banking risk encompasses the likelihood that a banking organization will incur losses or

liquidity disruptions due to adverse events. These events can be related to both internal factors, such as

organizational structure, staff skill levels, changes in the organization and staff turnover, and external

factors, such as changes in economic conditions and applied technologies.

Commercial Banks in Kazakhstan

Commercial banks are crucial in stimulating economic development, not only in Kazakhstan

but also worldwide. Currently, there are approximately 21 second-tier banks in Kazakhstan, of which 12

work with foreign capital, including 8 subsidiaries (see Table 1). These data are obtained from the

agency of the Republic of Kazakhstan for Regulation and Development of Financial Market.

Commercial banks offer a wide range of financial services to both individuals and businesses.

Banking services such as loans, payment processing, asset management investment transactions and

financial assistance are provided by commercial banks. Moreover, commercial banks enhance the

financial system's stability and promote economic progress by acting as an intermediary between those

who seek financial resources and those who place funds on deposits.

Rating	Name of bank	Assets in '000 000	NPL in %	Deposit in '000 000	Own capital in '000 000	Country
1	Kaspi Bank	5087	5,2	4183	544	Kazakhstan
2	Народный Банк	13863	1,8	10341	1887	Kazakhstan
3	Банк ЦентрКредит	4347	2,6	3205	275	Kazakhstan
4	АО «Отбасы банк»	3440	0,1	2301	462	Kazakhstan
5	ForteBank	2914	4,5	2047	328	Kazakhstan
6	Евразийский банк	2360	5,7	1880	195	Kazakhstan
7	АО «Jusan Bank»	2844	11,5	1490	522	Kazakhstan
8	Altyn Bank	981	0,6	761	95	China
9	Bank RBK	1984	3,1	1349	122	Kazakhstan
10	Банк Китая в Казахстане	551	0	335	80	China
11	АО «Банк Фридом Финанс Казахстан»	1264	0	593	69	Kazakhstan
12	Ситибанк Казахстан	1335	0	1043	132	USA
13	ТПБ Китая в Алматы	290	0	168	49	China
14	Home Credit Bank	552	4,5	253	129	Czhech Republic
15	Нурбанк	469	5	318	50	Kazakhstan
16	КЗИ Банк	171	2,2	101	59	Republic of Turkey
17	Bereke Bank	1695	8,1	1065	131	Kazakhstan
18	Шинхан Банк Казахстан	126	0,6	82	20	Republic of Korea
19	Исламский банк Al Hilal	60	0	15	21	United Arab Emirates
20	Исламский банк «Заман-Банк»	36	1,4	15	13	Kazakhstan
21	Банк ВТБ (Казахстан)	193	8,1	53	45	Russian Federation

Table 1: (Rating of Banks in Kazakhstan, 2023).

According to the research of Salina, Zhang, and Hassan (2020), there was a significant decrease in the financial well-being of Kazakhstan's banking industry, resulting in structural changes. At the outset of 2008, there were no troubled banks, with risky banks constituting 44% and reliable banks 56%. By January 1, 2014, troubled banks had reached 16%, with 60% classified as risky and 24% as reliable. Notably, two of the six largest banks in Kazakhstan are financially unsound, collectively representing 40% of the banking system's total assets.

Banks are an important component of the economy of Kazakhstan, which is the country's link with the global economy. Market risk is one of the risks that may arise when providing banking services. Such a risk may have the consequences of a capital loss. There is also a credit risk that can lead to a default of the company, which can deprive Kazakhstan of entering the world stage. Therefore, it became necessary to identify the relationship between these risks and the banks of Kazakhstan.

Research Question and Research Hypotheses

This research is focused on the following hypotheses:

1. Companies' financial performance operating in banking in Kazakhstan depends on Credit risk.

2. Companies' financial performance operating in banking in Kazakhstan depends on Operational risk.

3. Companies' financial performance operating in banking in Kazakhstan depends on Liquidity risk.

4. Companies' financial performance operating in banking in Kazakhstan depends on Market risk.

5. Commercial banks in Kazakhstan expect future risk management challenges that will affect financial performance.

Nevertheless, to confirm or deny those hypotheses following research questions will be further established:

1. Did risk management factors impact the financial performance of companies operating in banking in Kazakhstan from 2012 to 2022?

2. What risk management factors affect stronger financial performances of companies operating in banking in Kazakhstan from 2012 to 2022 than other factors?

3. What future risk management challenges are expecting banks operating in Kazakhstan that will impact financial performance?

Purpose Statement and Significants of the Study

Currently, financial institutions provide a range of banking services for their clients, which consequently allows them to generate income. Nevertheless, banking activities are based in such a way that the deposits that their customers invest are directly used in circulation to obtain a loan to their borrowers. Consequently, based on these activities, commercial banks may be exposed to a decrease in their efficiency and show a negative impact on financial risks, which is a serious problem affecting future financial performance.

Accordingly, after analyzing various studies relevant to the current topic, it will be concluded that there is a lack of information about the risk management of banks specifically in Kazakhstan. Thus, this research will be useful for companies working in the banking sector to achieve effective financial performance and develop proposals for further overcoming risks. This research aims to investigate to pay special attention to risk management in financial institutions, since, as mentioned above, the reason for the decline in the efficiency of banking activities is directly related to its improper management. Thus, the current study focused on finding solutions and suggesting ways to identify risks and their impact on financial performance, allowing banks to avoid further economic losses. Therefore, based on this, the study will be guided by the objectives outlined below:

Identification and definition of such risks as operational, liquidity, market and credit, on commercial banks of Kazakhstan and their influence on the financial performance of future indicators.

Literature Review

A theoretical and empirical review of the financial risks will be provided in this chapter, as well as the main external and internal factors that impact the financial performance of the firm. It will include an indication of the conceptual framework of this research. The analysis of existing research will identify the literature gap on the Impact of Risk Management on the Financial Performances of commercial banks in Kazakhstan. It concludes by explaining the intent of this research and the approaches that will be used to fill those research gaps.

Theoretical Review

The theories provided by experts in the research field which are used as a foundational framework for analysing as well as for interpreting data, are a theoretical overview. In essence, it presents the main ideas and theories integrated into existing knowledge and provides a theoretical basis for data analysis and interpretation of research results. Identifying the existing theories will bring an understanding of what variables and to what extent they have an impact on the subject under the present study. As Kerlinger and Lee (2000, p. 11) stated, a theory is a collection of connected concepts, definitions, and propositions that, aim to define the relationships between variables and offer a methodical understanding of phenomena to both explain and forecast them. In this section of the study Shiftability Theory of Liquidity, Financial Distress Theory and Extreme Value Theory will be reviewed.

Shiftability Theory of Liquidity

In 1915 the theory of liquidity management which further will be named "Shiftability theory", was devised by Harold Moulton. The theory proposes that in the case of banks to be able to avoid large deposit withdrawals, they should have transferable assets, that can sell to investors or the Central Bank for cash without any significant capital loss. Chinweoda, Onuora, Ikechukwu, Ikechukwu, and Ngozika (2020) stated that these assets management is primarily utilised for short-term investment, such as treasury bills and bills of exchange, has the potential to be promptly liquidated by banks whenever the necessity arises to generate funds. Due to declining market confidence and potential creditworthiness

issues, banks may find it challenging to obtain liquidity when they have difficulty meeting their short-term obligations.

Understanding the theory of shiftability is crucial because it provides a clear understanding of how liquidity risk affects the financial performance of commercial banks. Therefore, the theory will be useful in further analyzing the impact of liquidity risk on banks in Kazakhstan.

Finance Distress Theory

There are several reasons for organizations to face financial distress. Therefore, as Younas, Uddin, Awan, and Khan (2021) stated, one of the reasons is an imbalance between the inflow and outflow of cash due to poor cash management. The ability of the company to take quick action in unstable market conditions to reduce its expenses and increase its sales would result in the further existence of the organization on the market. Nevertheless, credit risk is likewise vital for the company's effective functioning. Credit risk arises when the borrower's obligations are not fulfilled and loan applicants do not repay debt commitment. For banks, the ability to create strong credit risk management might strongly correlate with the financial well-being of the company. Furthermore, the organization's ability to assess the creditworthiness of the counterparty is an important aspect of avoiding financial distress (Ikpesu, Vincent, & Dakare, 2020).

Extreme Value Theory

Organizations including banks are facing significant changes, therefore extreme value theory takes an essential position in ensuring financial institutions of likelihood and the outcome of rare or extreme events which helps withing risk management. In risk management, extreme event risk is pervasive, spanning market, credit, operational, and insurance domains. The implementation of models capable of coping with rare but significant events and assessing their consequences is the primary challenge of risk managers. Extreme value theory emphasizes avoiding significant unexpected losses and unexpected crashes rather than extended sequences of moderate losses (Rocco, 2013). EVT (Extreme Value Theory) is gaining significance within credit risk management. Notably, major

investment banks are turning to actuarial techniques to determine reserve sizes for mitigating potential

credit losses (Embrechts, Resnick, & Samorodnitsky, 1999).

Conceptual Framework

      The conceptual framework serves as a research tool that helps to organize the agenda variables

and helps to identify the connections between them. Figure one presents two groups of variables,

dependent and independent variables. Nevertheless, the figure also shows ratios for each independent

variable that will be calculated further in research to understand the relationship with the dependent
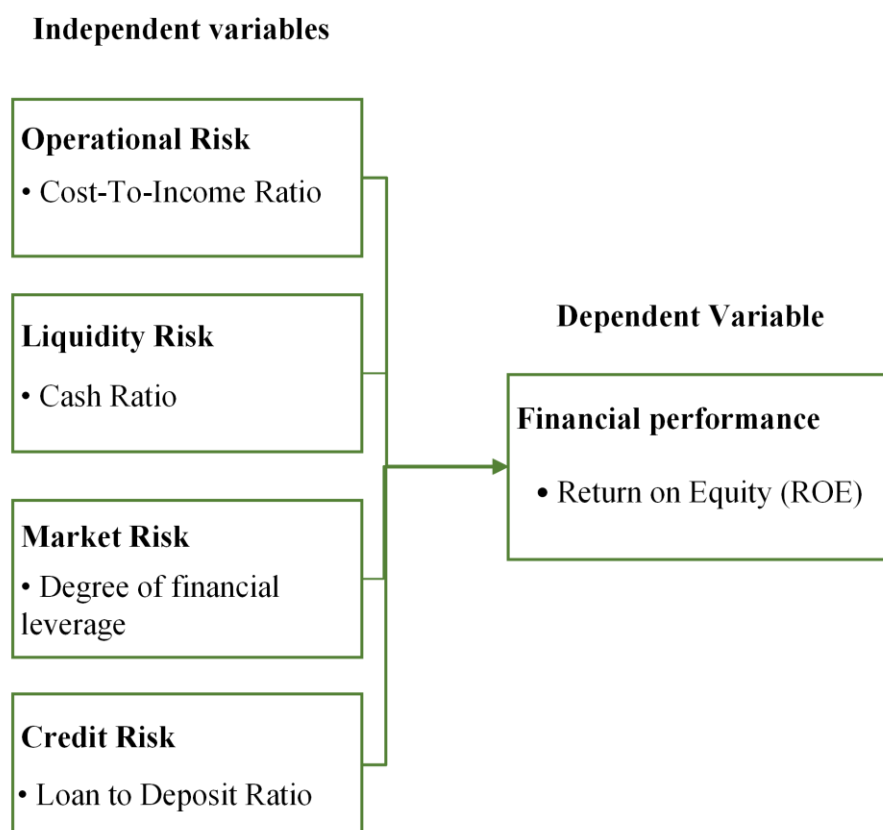
variable.

Independent variables

Operational Risk
• Cost-To-Income Ratio

Liquidity Risk
• Cash Ratio

Dependent Variable

Financial performance
• Return on Equity (ROE)

Market Risk
• Degree of financial leverage

Credit Risk
• Loan to Deposit Ratio

Figure 1: Conceptual Framework

Operational risk

      Operational risk management significantly impacts the financial outcomes of commercial banks

by directly influencing their overall financial health. Every institution first should have an extensive

strong foundation in operational risk understanding before developing the proper assessment and

management framework since operational risk and other types of risks are closely interconnected

(Epetimehin & Obafemi, 2015).

Existing factors influencing operational risk can be classified into two categories: internal and

external factors. On one hand, financial institutions and associated commercial banks must recognize

that while companies may strive to manage operational risk, they should also take into account internal

circumstances such as human factors, internal processes, systems, or fraud, which in turn are the cause

of loss. Therefore, internal factors directly play a decisive role in managing operational risk for the

stability of financial institutions. However, organizations can reduce their operational risks through

careful analysis of circumstances and risk monitoring (Meshack & Mwaura, 2016).

On the other hand, external Operational risk can not be underestimated because it can lead to

certain crucial consequences such as a decline in revenue and diminished net worth of banks. Moreover,

insufficient operational risk can lead to severe systemic implications as demonstrated by the role

operational risk played in the 2008 financial crisis (Thakor, 2015). Therefore, improper risk

management can adversely affect profitability and lead to capital expenditures.

Liquidity risk

Liquidity relates to the ability of the company to convert its assets without significant loss due

to market conditions into cash, to fulfil the mismatches between its revenue and its liabilities. In today's

economically fast development environment, any financial institution should understand the potential

risks of losing or significantly reducing cash inflows. Therefore, organizations have to carefully manage

their liquidity to repay financial obligations. A corporate treasurer's main concern is funding or cash

flow liquidity risk, which questions the firm's capability to cover its liabilities. The current ratio is a

well-established indicator of liquidity risk related to funding. In the balance sheet, current assets are

assets owned by a company that can be easily returned within a year by repurchase, disposal or sale.

Accounting for current assets is pivotal for assessing the liquidity and ability of a company to meet

short-term obligations. To calculate the current ratio, divide total current assets by the company's

liabilities.

Market risk

Market risk pertains to the potential unprofitability arising from external conditions, which include the effects of market fluctuations on a bank's profitability. Banks become more vulnerable to market risk when they actively participate in capital market investments or engage in the sales and trading of financial instruments. A bank is exposed to increased market risk if it manages a large trading department or plays a significant role as an intermediary in the market. This means that the company is exposed to changes in market prices, especially concerning changes in interest rates, exchange rates and the value of stocks and commodities (Onyegiri, Ibenta, & Okaro, 2024). Regarding Muriithi, Muturi, and Waweru (2016) commonly, higher market volatility corresponds to a greater likelihood of investment fluctuations, whether positive or negative. Market risks can be classified as interest rate risk and exchange rate risk, which include risks associated with gold, stock prices, and commodity prices. Therefore, these risks stem from the adverse of these factors respectively. A commonly used measure of risk is VaR, which stands for Value at Risk.

Credit risk

Credit risk in relation to commercial banks also plays a significant role, since the lender provides a number of financial services, including loans, acceptance of deposits, mortgages and other types of processes that are directly a source of income, therefore financial institutions are exposed to high credit risk in connection with the nature of their activities. This process occurs since banks cannot receive their principal amount with interest on the debt obligation from the borrower, thereby experiencing financial losses (Funso, Kolade, & Ojo, 2012). It should also be highlighted that in his analysis, which established the correlation between credit risk and financial performance, the researcher underscores that inadequate management of credit risk can adversely impact the financial outcomes of commercial banks (Catherine, 2020).

Thus, success for any commercial bank in the world is effective credit risk management in conjunction with other risks; therefore, to regulate the process, financial institutions can analyze and control the solvency of their borrowers to avoid losses.

Literature Gap

Based on the above literature review on the impact of risk management on the financial performance of commercial banks, the lack of information about risks and related financial indicators in relation to Kazakhstan banks over the past 10 years was found. In addition, we also noticed that based on the studies studied in this paper, most authors in their works describing risks and their impacts mainly focus on certain ones. Therefore, the purpose of the research is precisely to fill the gap of insufficient information regarding the Kazakhstan banking sector.

Methodology

This part of the study aims to provide the reader with a clear understanding of the research

design, population size and, most importantly data collection and calculations of all variables that were

used in this research. Moving towards the end of the chapter, collected data will be analyzed and

measured in correlation with the financial performances of the banks.

Research Design

A quantitative, nonexperimental design was utilized to explore the statistical relationship

between independent and dependent variables. The study's target population are twenty-one commercial

banks in Kazakhstan and the sample size is three. The investigated commercial banks operating in

Kazakhstan were selected randomly. Data from 2012 to 2022, collected from the financial statements of

commercial banks in Kazakhstan, is used to analyze financial risk ratios and their association with

financial performance. Financial statements were published on the official websites of the banks with an

approved audit from the external certified audit companies. Calculated ratios of financial risk were

computed using Excel and further presented as graphs and tables.

Measurement of Study Variables

The research focused on financial performance as the dependent variable, while credit risk,

market risk, liquidity risk, and operational risk were considered independent variables. This section

elaborates on the methods used to measure and operationalize each of these study variables.

Financial Performance

$$\text{Return on Equity} = \frac{\text{Net Income}}{\text{Shareholder's Equity Capital}}$$

The ability of the company to generate profits from its shareholders' equity can be measured by

Return on Equity. This ratio illustrates an assessment of the company's effectiveness in using the

financial resources to achieve earnings provided by the firm's investors.

ROE highlights the efficiency with which a company converts the equity invested by its

shareholders into net income therefore is particularly valuable for comparing the profitability of

companies within the same industry. This ratio shows how effectively a company uses its capital to

generate profit. In the banking sector, ROE plays an important role as this indicator is able to

demonstrate how a financial institution makes a profit from its capital. This indicator is crucial for

determining the effectiveness of the bank's capital management and its ability to bring profit to

shareholders. Elevated ROE figures generally signify proficient management and operational efficacy,

whereas lower figures may indicate potential areas for improvement or heightened risk levels.

A primary distinction between Return on Equity (ROE) and Return on Invested Capital is that

in ROE calculations, cash isn't subtracted; rather, interest income from cash is included in net income,

and the book value of equity reflects the firm's cash holdings. Consequently, for companies with

substantial cash balances, ROE may be lower due to the minimal, risk-free returns from cash, blending

with returns from operational assets. This makes ROE a comprehensive measure of returns from all

assets both cash and operational (Damodaran, 2007).

Bank A's ROE ranging between 19% and 29% indicates a strong performance in terms of

profitability and efficiency in utilizing equity. This level of ROE suggests that the bank is effectively

generating significant income from its capital, positioning it well above the average in the banking

sector. Such indicators demonstrate the success of operating activities and a reliable financial position.

The return on equity of Bank B was extremely unstable. It was significantly negative in 2013,

amounting to -31%, indicating significant losses concerning its capital. Nevertheless, this figure

increased significantly in 2014, reaching 51%, which indicates a rapid recovery and highly profitable

operations. Despite the fact that its share stabilized after this peak, it ranged from 2.3% to 28.3%. This

may indicate differences in financial and operational management strategies over the years and

profitability levels.

The growth of Bank C's indicators has been extremely unstable; it started from negative -2.8%

in 2012 and gradually improved to slightly positive in the early years. It continued to grow steadily,

peaking at 85.6% in 2022 and then reached a lower but even more favourable level of 53.0%. This

dynamic shows that during this time there have been significant changes in profitability and operational
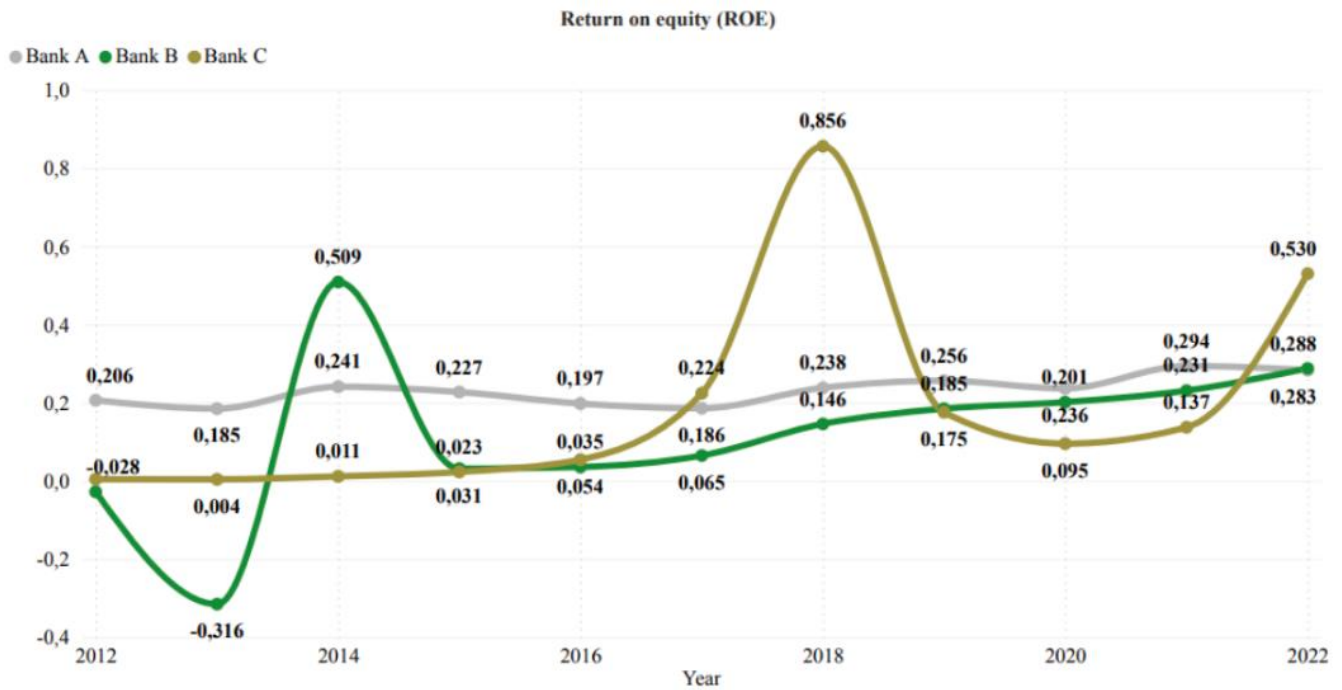
efficiency.

Figure 2: Return on Equity of Bank A, B, C

Banks Operational risk

$$\text{Cost income ratio} = \frac{\text{Operating Cost}}{\text{Income}}$$

The bank's profitability is indirectly correlated to the Cost-to-Income ratio, which is also

known as an efficiency coefficient. The increase in operational expenses will certainly lead to a

decrease in profitability. Therefore, the effect of this decline, which also means the inappropriate usage

of capital, will result in a diminished return on capital and thus negatively affect the profit. It can be

stated that the efficiency coefficient and return on capital are inversely related. The CIR allows us to

easily assess the company's strategy in managing the expenses based on their revenue. The lower the

CIR, the better the company in producing sufficient amounts of revenue to cover all financial needs

associated with the operation of the company. On the other hand, the higher coefficient indicates weak

management skills or low profitability, which is surpassed by respective expenses. This phenomenon is

potentially signalling a need for enhancements or revaluations of a strategy, which is vital for bank

companies that rely on attracting investors, who are seeking major capital returns. Due to this particular

reason, it is essential for bank companies to maintain a low CIR and provide a beneficial investment

opportunity, which will secure the necessary capital. In the table below Bank A and Bank B show very

high operational efficiency and profitability in the range from 11.8% to 25.9%, as the bank's operating

costs are significantly lower than its income. Bank C fluctuates around 50% which is considered

acceptable, because optimal ratios can range from 40% to 60%. Profitability is a key criterion in

determining the effectiveness of a company's activities. By monitoring it, the ability to identify

weaknesses promptly and adjust the plans according to them becomes easily feasible. In response to

reduced margins, banks have been lowering both costs and income, which suggests that fluctuations in

the Cost-to-Income ratio might more accurately reflect changes in efficiency in bank cost management.

The Cost-to-Income ratio is determined by dividing operating expenses, excluding provisions for bad

debts, by the total net interest income and non-interest revenue (Tripe, 1998). Non-interest costs, often

subject to managerial control, are considered more controllable within a bank's operations.

Incorporating net interest income in the denominator helps mitigate volatility from interest rate
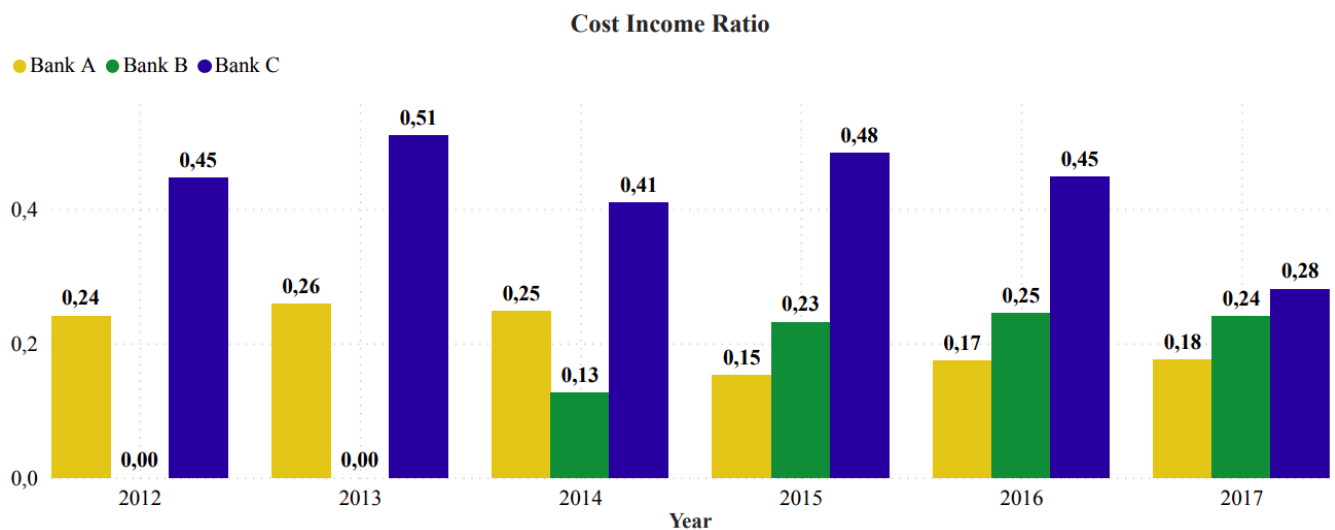
fluctuations.

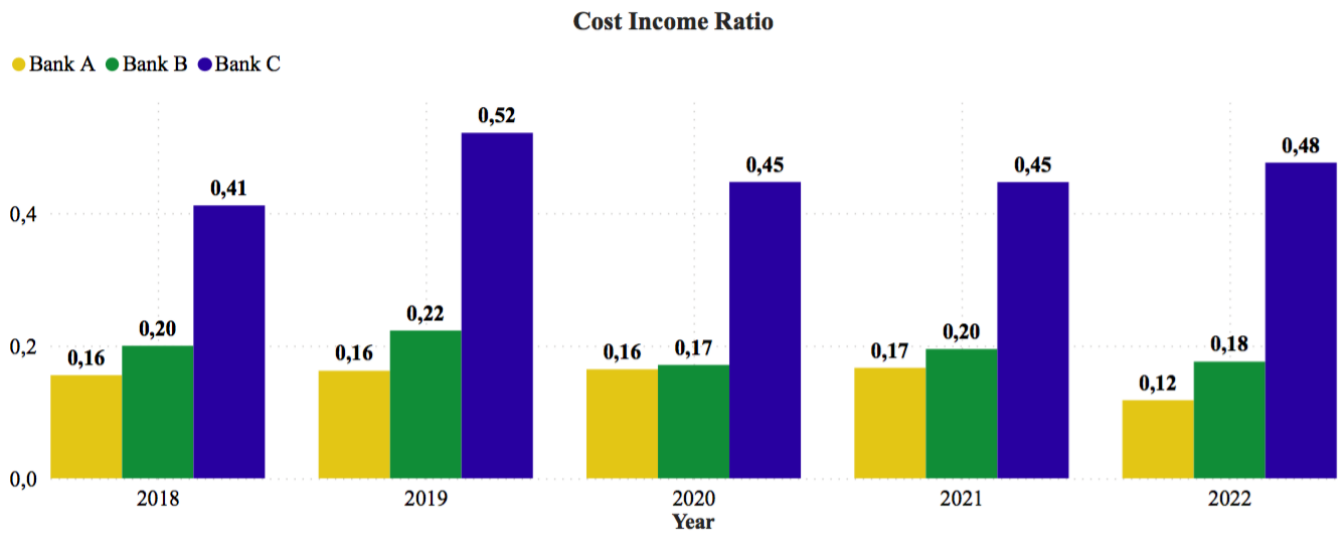Figure 3: Cost Income Ratio of Bank A, B, C from 2012 -2017

Figure 4: Cost Income Ratio of Bank A, B, C from 2018 -2022

Banks Market risk

$$DFL = \frac{EBIT}{EBIT-Interest}$$

The financial leverage ratio evaluates the proportion of borrowed funds used by a company in comparison to its equity, its own capital. This ratio indicates the degree to which a company depends on debt financing compared to equity financing. The degree of financial leverage is computed by dividing Earnings Before Interest and Taxes (EBIT) by the result of subtracting interest expenses from EBIT. The calculation method is employed because it accurately evaluates how interest impacts earnings before taxes (Gatsi, Gadzo, & Akoto, 2013). This ratio illustrates the extent of a company's debt obligations that it must repay, providing insight into its financial structure and leverage. A high level of financial leverage (DFL) indicates that the company uses borrowed funds instead of equity in its capital structure. Such tactics can increase financial risks for shareholders and increase profit volatility. On the contrary, a low DFL level allows the company to rely on equity financing and less on borrowed funds, which can lead to more stable profits and lower financial risks. A high level of leverage can lead to higher returns while increasing profits, but it can also lead to lower returns.

The level of financial leverage (DFL) of Bank A ranged from 1.41 to 2.3 over the next ten years. This range shows how conservative the bank's dependence on borrowed funds is compared to its

own capital. This shows that the bank uses financial instruments to increase profits without increasing

excessive risk. If a bank uses borrowed funds in this range, it should avoid excessive use of borrowed

funds and potentially increase its profits.

Bank B demonstrated relatively high financial leverage (DFL) from 2015 to 2018, peaking at

4.39 in 2016. In the period from 2019 to 2022, the DFL coefficient stabilized at about 2.5, which means

a significant decrease in leverage compared to the previous period. This turnaround indicates that the

bank has changed its financial policy towards a more cautious use of debt financing. This level shows

that the bank is heavily dependent on borrowed funds rather than equity to finance its operations. Under

favourable economic conditions, a high level of borrowed funds can bring great returns, but also great

risks. A high level of borrowed funds can lead to serious financial difficulties, as the bank may face

difficulties in meeting its debt obligations during an economic downturn or periods of financial

instability.

The DFL ratio of Bank C ranges from 1.001 to 1.158, which indicates that the use of borrowed

funds in comparison with equity is very conservative. These values may mean that the bank uses debt

and equity capital in approximately the same way to finance its operations. This conservative leveraging

strategy minimizes the financial risks associated with high debt levels and ensures a stable financial

position, prioritizing long-term stability rather than the potentially higher short-term returns that can be

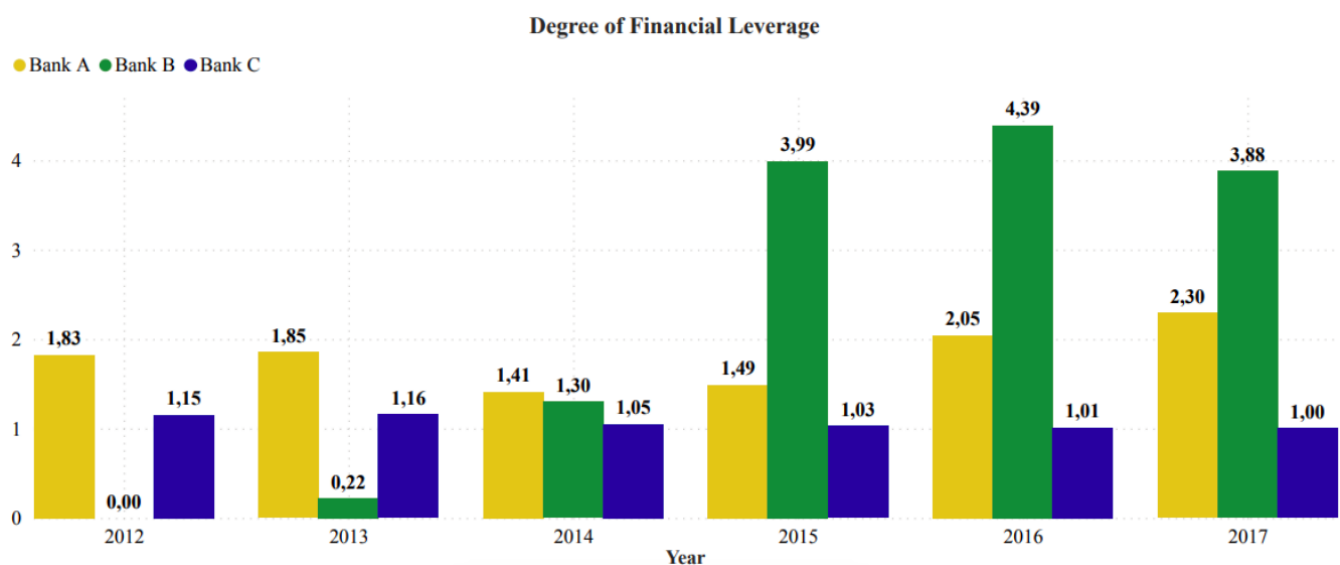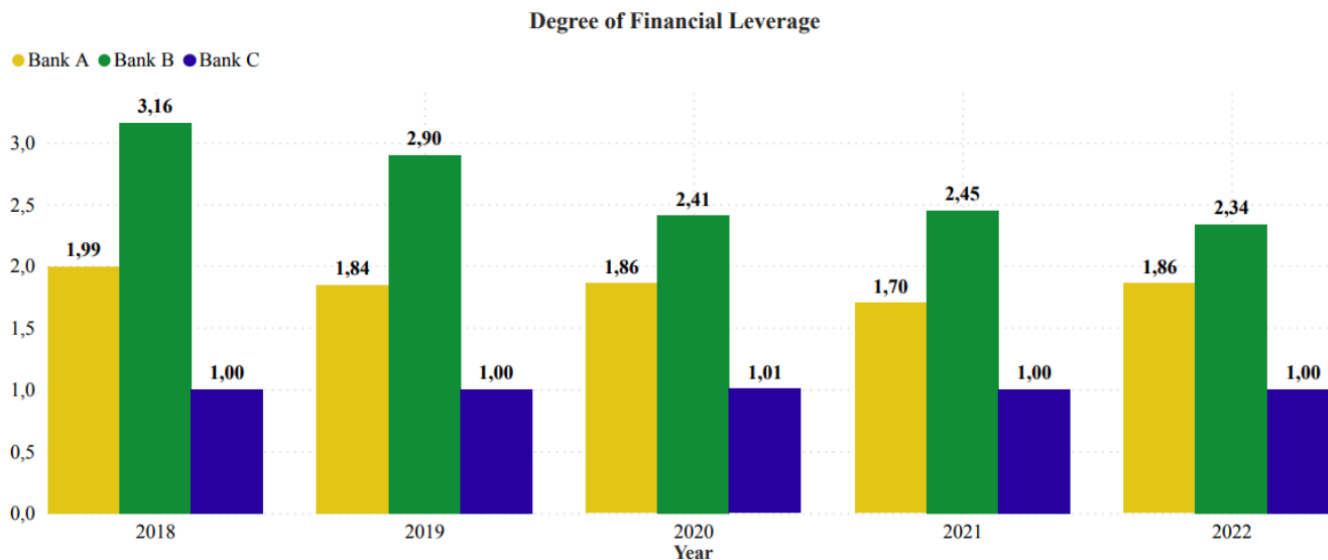achieved with more borrowing and associated risks.

Degree of Financial Leverage

Figure 5: Degree of financial leverage of Bank A, B, C from 2012 -2017

Degree of Financial Leverage

Figure 6: Degree of financial leverage of Bank A, B, C from 2018 -2022

Banks Liquidity risk

$$\text{Cash Ratio} = \frac{\text{cash and cash equivalents}}{\text{current liability}}$$

The liquidity of a balance sheet across different types of assets and liabilities shows how quickly a company's money can be converted into cash. This includes assessing how quickly various investments can be liquidated in order to meet financial obligations. In the study measurement of liquidity is the cash ratio which is focused exclusively on the company's cash and cash equivalent assets to establish its ability to meet financial obligations. Due cash ratio excludes other assets like accounts receivable from its calculation this makes it a more conservative assessment than other liquidity metrics. The enhancement of the ratio is propelled by an augmentation in long-term financing and a decline in the levels of non-current assets, inventories, and short-term accounts receivable liabilities. When a company's cash ratio is precisely one, it indicates that the available cash matches the total current liabilities. A falling cash ratio below one can determine that the company's cash is not enough to pay off short-term debt. Nevertheless, it does not necessarily mean that the firm uses its own cash inefficiently since such conditions are often occur and considered acceptable in financial practice. Should a company's cash ratio surpass one, this signifies that its holdings in cash and cash equivalents

exceed its current liabilities. This financial position enables the firm to fully settle its short-term

obligations and retain a surplus of funds. Nonetheless, this might also be indicative of inefficient capital

management, as the surplus capital could be more profitably deployed in ventures yielding returns

greater than those offered by current bank interest rates.

The bank's liquidity ratio fluctuated greatly over the decade from 2012 to 2022. Initially, this

indicator was relatively stable and amounted to about 0.75. However, in 2016 it peaked at 1,451, which

indicates the bank's strong liquidity position. However, after this peak, the ratio as a whole decreased,

reaching a significantly low value of 0.303 by 2022, which demonstrates a significant decrease in

liquidity compared to the bank's short-term liabilities. This trend indicates significant changes in the

bank's market and financial management.

The Bank's liquidity ratio was quite volatile from 2012 to 2022. It started at a low of 0.083 and

peaked at 0.803 in 2020. During this period, there were significant fluctuations, which indicates that

there have been changes in the bank's liquidity management. The upward trajectory in later years

suggests a strategic response to improving liquidity reserves, culminating in higher ratios towards the

end of the decade.

The cash ratio trends of Bank C from 2012 to 2022, which mostly hovered between 0.4 and

0.6, demonstrate a generally stable liquidity level with only minor fluctuations. The specific low point

in 2014 (0.27) and the higher value in 2022 (0.778) suggest occasional variations in cash availability.

These deviations might reflect changes in the bank's operational activities, investment decisions, or

responses to external economic conditions, affecting its capability to satisfy short-term obligations using

its cash holdings and other liquid assets.
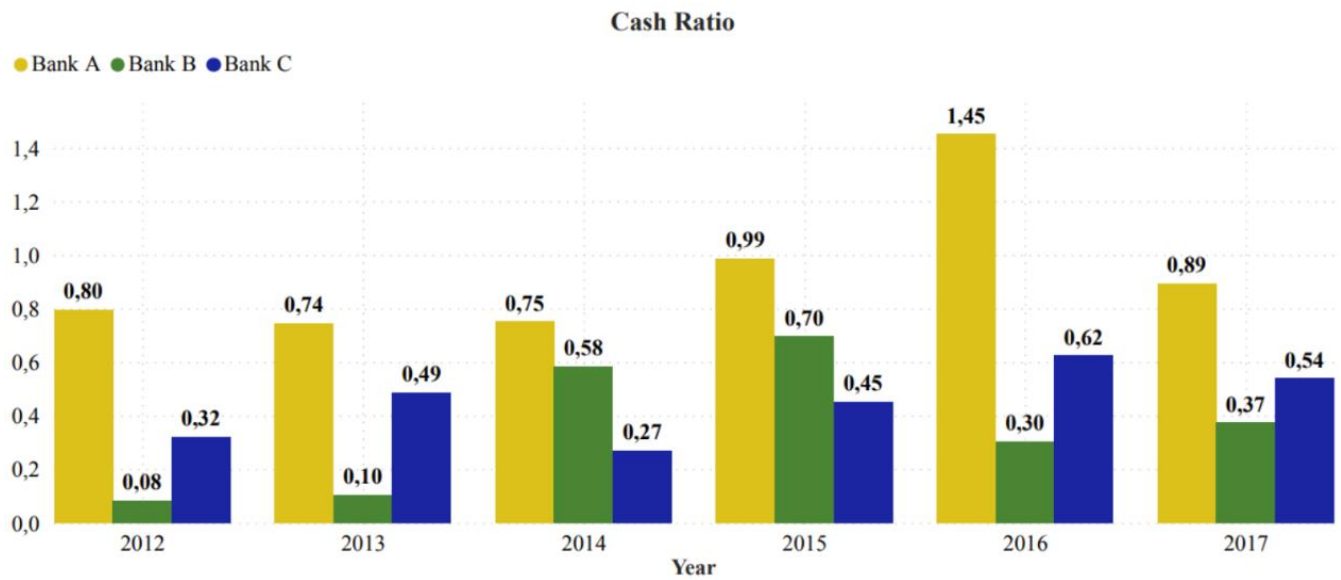
Cash Ratio

Figure 7: Cash Ratio of Bank A, B, C from 2012 -2017
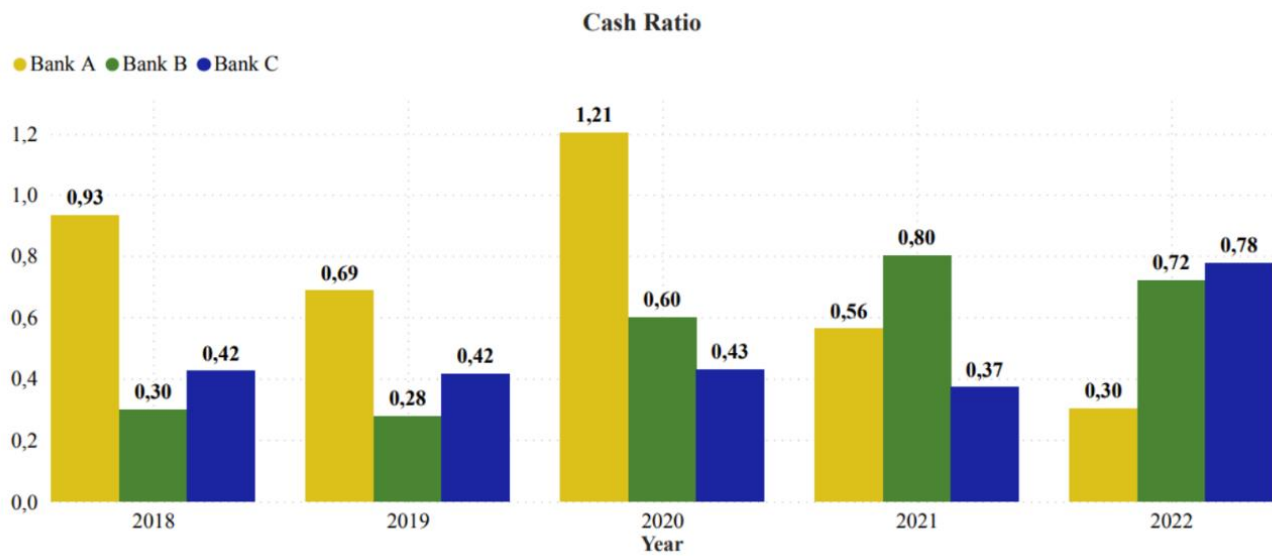
Cash Ratio

Figure 8: Cash Ratio of Bank A, B, C from 2018 -2022

Banks Credit risk

$$\text{Loan to Deposit Ratio} = \frac{\text{Total Loans}}{\text{Total Deposits}}$$

Credit risk pertains to the likelihood that a borrower will not honour their obligations as per the agreed terms. This risk specifically represents the potential for a lender, like a bank, to incur losses if a borrower fails to repay a loan or meet other contractual commitments. Due to the wide range of financial services such as loans, mortgages and credit lines, credit risk is an important part of

commercial banking. This risk directly affects the bank's profitability and financial stability. Increased

credit risk can lead to increased loan losses, which reduces profitability and affects the liquidity and

capital of the bank. In order to maintain financial health and ensure that banks can meet their obligations

to depositors and other stakeholders, it is important to effectively manage credit risk.

Although LDR is primarily used to assess liquidity risk, an excessively high LDR may also

indicate credit risk. This is because aggressive lending practices, which manifest themselves in high

credit ratings (LDRs), can increase the likelihood that customers will not repay the loan. A bank can

increase its credit risk by issuing most of its deposits in order to maintain the volume of lending. The

risk of non-repayment of loans increases for banks with high levels of loan debt, which may affect their

overall financial stability and performance. In order to balance profitability and risk, banks usually

strive to maintain the level of profitability in a certain range. The yield level of 80-90% is often

considered ideal, which allows you to use deposits efficiently while maintaining sufficient liquidity.

This range shows that the bank effectively uses its deposits to generate income through lending while

maintaining sufficient liquidity to meet withdrawal requirements and other obligations.

To maintain higher liquidity, some banks may prefer to operate with a lower LDR (for

example, below 80%), especially if they operate in a highly volatile market or have a more conservative

approach to risk. Other banks may operate with a higher LDR (over 90%) to increase lending and

profitability, but this is accompanied by higher risk, especially during an economic downturn or

liquidity crisis.

Bank A: The most significant changes occurred between 2015 and 2016. The value of indicator

A decreased from 71.49% to 60.71%, which represents a noticeable change.

Bank B: In this case, we can note a strong decrease in the indicator in the period from 2020 to

2021. The value of indicator B fell from 54.05% to 46.66%.

Bank C: The most significant changes occurred between 2014 and 2015. The value of indicator

C decreased from 102.61% to 84.14%.

2015 and 2016: In these years, there were significant changes for indicator A (decrease from 71.49% to 60.71%) and indicator C (decrease from 102.61% to 84.14%). However, for indicator B, the changes were not so significant.

2020 and 2021: In these years, there were significant changes for indicator B (decrease from 54.05% to 46.66%), but for other indicators, the changes were less significant.

2014 and 2015: In these years there were significant changes for indicator C (decrease from 102.61% to 84.14%), but for other indicators, the changes were less significant.
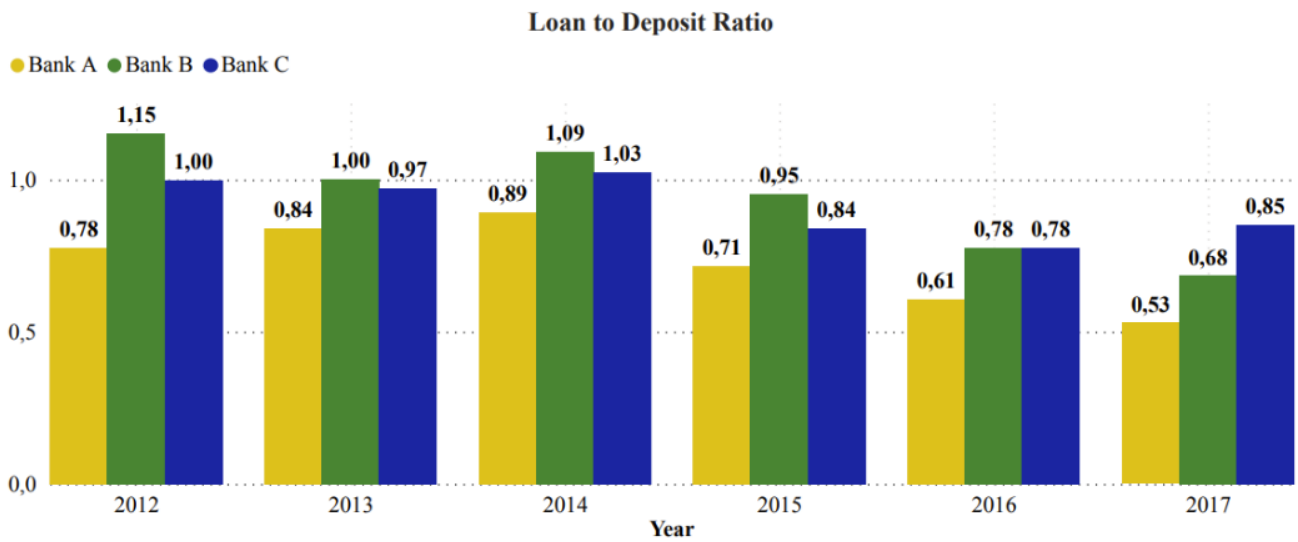

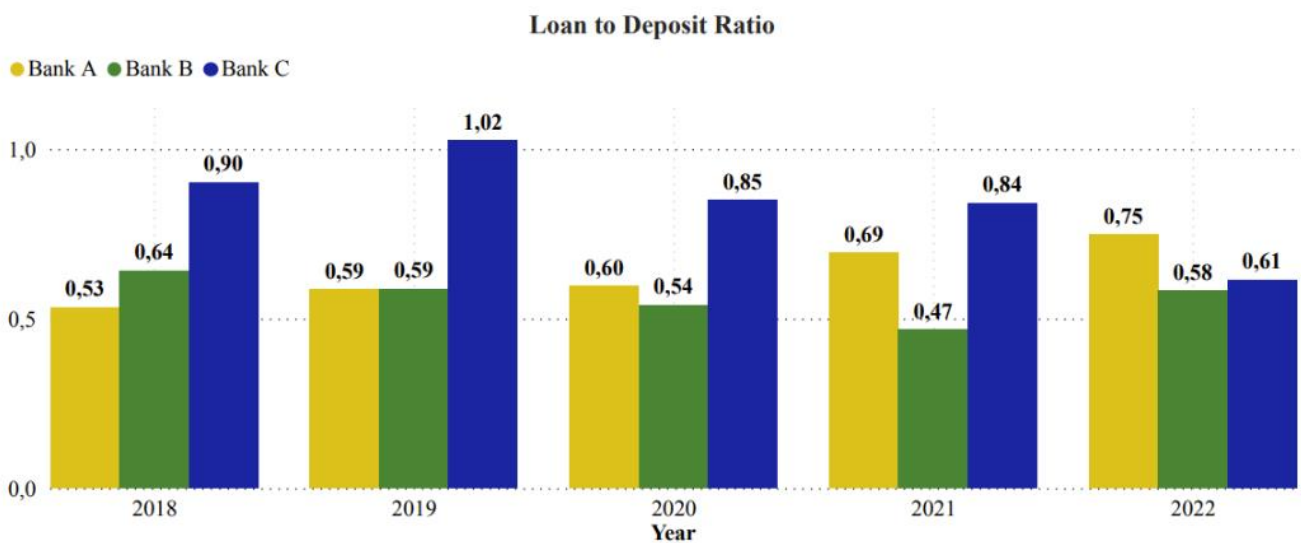*Figure 9: Loan to Deposit of Bank A, B, C from 2012 -2017*

Figure 10: Loan to Deposit of Bank A, B, C from 2018 -2022

Data Analysis Methods

Data was analyzed using both correlation and regression analysis. Initially, correlation analysis was used to assess the relationship between ROE and different types of risks which is further presented in tables of correlation matrices. The correlation matrix is a table containing the correlation coefficients between different variables. In the matrix, each cell shows the strength and direction of correlations between two variables. It can be no correlation (0), positive correlation (1) and negative correlation (-1). When p-values are calculated in correlation matrices, it shows the statistical significance between the independent and dependent variables.

Scatter plots were created to check for linearity, confirming that the relationships between variables were approximately linear. It is important to first understand if variables have a relationship with each other. In order to understand if a change in Return on Equity is assisted with a proportional change in financial risk management ratios. Understanding if the ratios are linear is important for further accurate interpretation of the results of correlation and regression analysis. In this step, the data matched the assumptions needed for further statistical testing.

To quantify the impact of various risks on financial performance, multiple linear regression analysis was performed after linearity was confirmed. Microsoft Excel regression tools were used to perform this analysis. Regression analysis not only determined the degree of interconnection but also helped to establish how risk management strategies are related to financial performance. This provides a better understanding of how it works.

Assumptions and Limitations

Financial data used in the research provided by annual reports are reliable and accurate. There are limitations of the study which include the specific context of Kazakhstan and potential variations in risk management practices across different banks. Selected banks had different external and internal factors influencing their financial performance over the past decade. Therefore, their financial statements can vary.

Ethical Considerations

The study ensures the confidentiality of any sensitive financial data and adheres to ethical standards in data analysis and reporting. All data used in this research were anonymized to protect the identity of the banks involved. All analyses were conducted honestly and without fabrication, falsification, or inappropriate data manipulation.

Research findings and discussion

Introduction

   This part of the research presents the findings from correlation analysis and regression analysis

of dependent and independent variables. All tables and graphs were explained and analyzed.

Financial Performance and Financial Risk Management Linearity

   The most appropriate way of presenting linearity is by creating a scatter plot with multiple

variables (Figure 10), where the Y-axis is data calculated for operations, market, liquidity and credit risk

ratios and the X-axis is calculated data for financial performance.
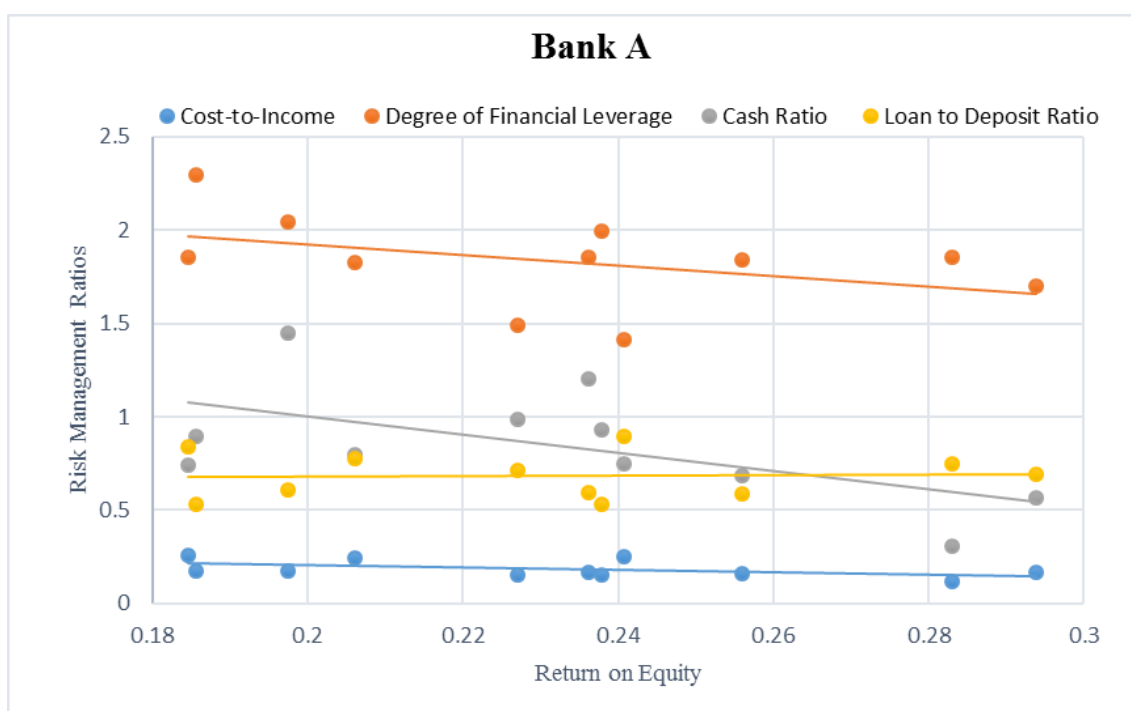
Figure 10: Linearity for Bank A

   First, the linearity for bank A was plotted (Figure 10). From the graph, it is noticed that Cost-

to-Income with weak negative linear relation and DFL with strong linear relation, both have a

downward trend suggesting that when values of financial risks decrease, the profitability ratio increases.

However, there is a weak or no linear relation with ROE for the cash and loan-to-deposit ratio. The

loan-deposit-ratio remained stable regardless of changes in ROE, this may indicate a stable risk profile

for Bank A when they do not get more or less aggressive with their lending strategies. Whereas the cash

ratio has a downward sloping trend, implying that Bank A hold less cash and cash equivalents compared

with its current liability.
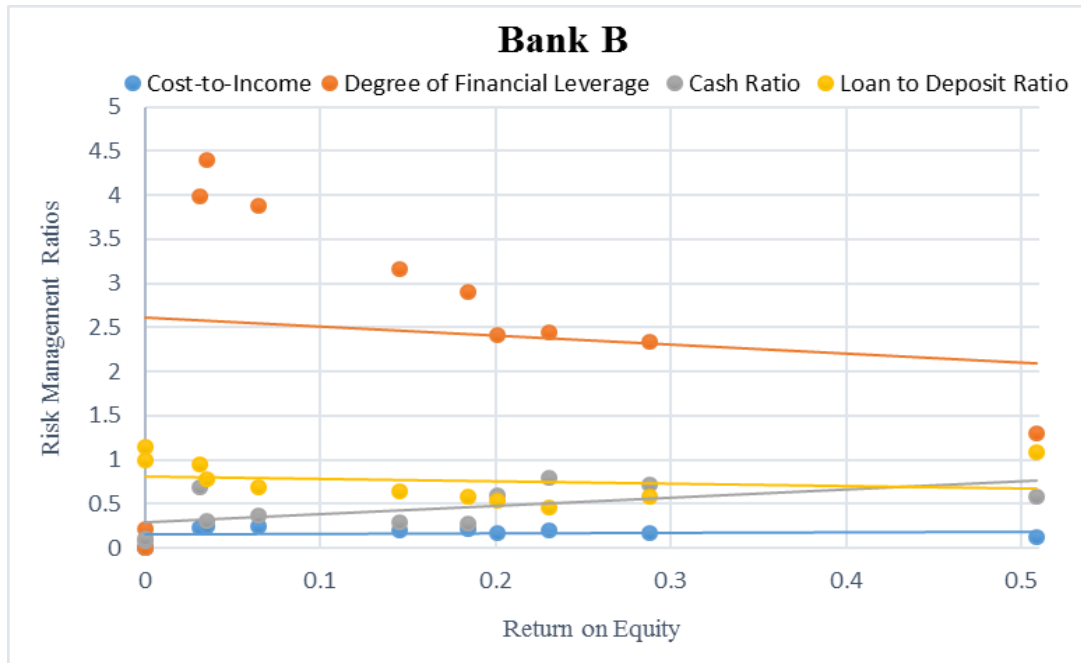
Figure 11: Linearity for Bank B

Secondly, the linearity between Bank B and financial risks (Figure 11) shows much more

linear relations in comparison with Bank A. Bank B has a linear relation with Cost-to-Income, cash and

loan-to-deposit ratios. These three ratios experience stable nearly flat lines, values do not differ much

from ROE. Although there are several reasons for such trends, they might indicate well-balanced risk

management strategies, however, it can also be a sign of limited growth potential. The DFL trend line is

slightly downward sloping and has weak linearity. The negative relationship between ROE and DFL

aligns with the concept that a financial structure with less debt can lead to higher returns.

Figure 12: Linearity for Bank C

The last scatter plot represents linearity for Bank C. The Cash ratio appears to have an upward-sloping linear trend, that represents the improvement of the bank's liquidity by holding more cash and cash equivalents compared to its current liability. Maintaining an upward trend can ensure shareholders, investors and other parties of the bank's ability to face various future challenges due to prudent liquidity management. Conversely, the remaining ratios show downward-sloping linear trends. For Bank A and C fi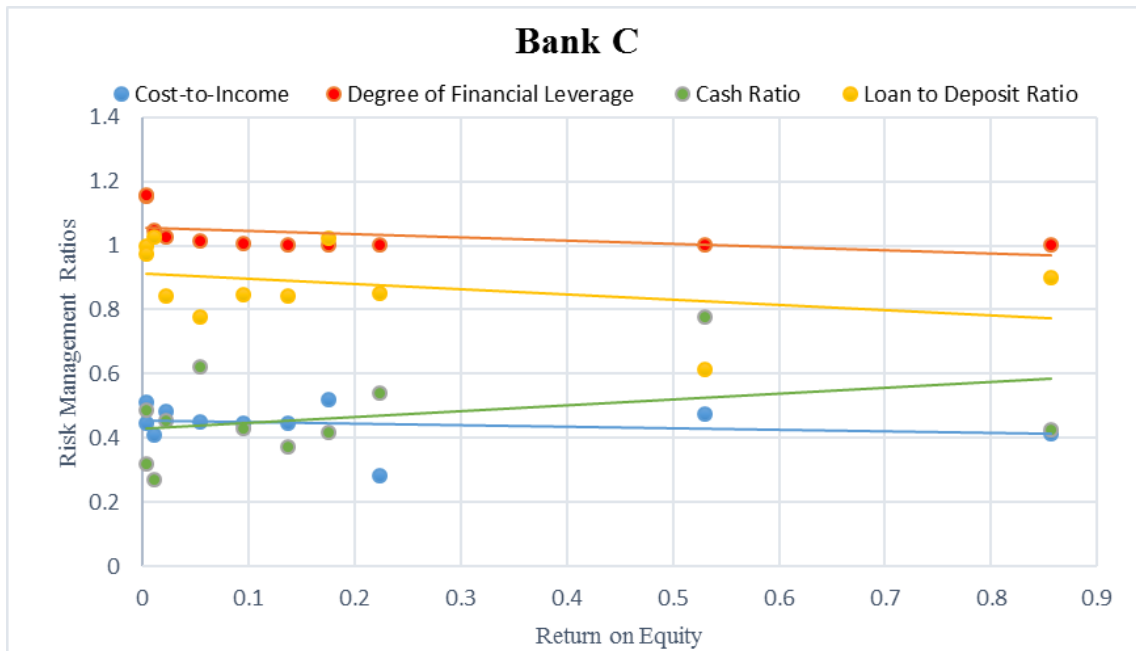nancial ratios are mainly linear with both upward and downward-sloping trends, which indicates predictable and consistent changes. However, for Bank B financial risk trends remain nearly flat, suggesting stable and proportional changes in financial risk ratios with return on equity. Overall, the linear trend for all three banks shows the relationship between the bank's financial performance with liquidity, operational, market and credit risks.

Although linearity may be weak or strong among some variables, this does not necessarily mean high or zero correlation. Therefore, other analyses further will be presented in the research.

Correlation Analysis for Bank A

The correlation matrix presented in Table 2, represents calculated values of the correlation coefficient between independent variables and dependent variables. Independent variables of Bank A include the Cost-to-Income ratio, which measures operational risk, the degree of financial leverage,

which measures market risk, the cash ratio, which measures liquidity risk and the loan-to-deposit ratio,

which measures credit risk. The dependent variable is Return on equity.

Bank A

	ROE	Operational risk	Market risk	Liquidity risk	Credit Risk
ROE	1				
Operational risk	-0,534723534	1			
	(0.09)				
Market risk	-0,415625591	-0,226604665	1		
	(0.203)	(0.502)			
Liquidity risk	-0,581145816	0,056772919	0,247305085	1	
	(0.06)	(0.868)	(0.463)		
Credit Risk	0,042296791	0,628920375	-0,699466259	-0,412831014	1
	(0.9)	(0.03)	(0.016)	(0.206)	

Key:
P-value in parenthesis
ROE represents Return on equity

Table 2: Correlation Matrix of Bank A

Interestingly, the results of the correlation analysis for Bank A show that the return on equity

(ROE) has different indicators concerning the types of risks presented. The correlation between

operational risk (Cost-to-Income ratio) and return on equity (ROE) has a negative value, which is -

0.5347 with a corresponding p-value of 0.09. Thus, the correlation is not statistically significant, since

with a p-value of 0.09, the value of 0.05 is higher. As a result of further analysis, return on equity

(ROE) is also negatively correlated with market risk (Degree of financial leverage) having a correlation

= -0.4156 and p-value = 0.203, as well as with liquidity risk (Cash ratio) including a correlation = -

0.5811 and p-value = 0.06, which consequently indicates the inverse relationship between risks and

return on equity. However, the significance of the correlation of these two risks varies, since market

risk is not statistically significant, while liquidity risk has a p-value slightly above 0.05, indicating an

almost significant correlation and its potential impact on bank profitability. The correlation with respect

to credit risk (Loan-to-deposit ratio) and return on equity (ROE) correlating =0.0422, p-value = 0.9

indicates that the value of p-value means no statistical significance, for this reason, the risk does not

have a significant impact on ROE in the case of Bank A.

Analyzing operational risk with other types of risks, it can be noted that the correlation with credit risk is 0.6289 and p-value = 0.03. The value of p-value has a lower indicator than 0.05, therefore the correlation has statistical significance. Therefore, this is a sign that this correlation demonstrates a significant positive relationship, suggesting that an increase in operational risk is associated with an increase in credit risk. In addition, the correlation between market risk and credit risk has a negative value = -0.6994 with p-value = 0.016, indicating that credit risk has a tendency to decrease while market risk increases.

Thus, the multiple regression analysis suggests that the coefficients of credit risk, market risk and operational risk of Bank A will be negative based on the correlation matrix. Nevertheless, liquidity risk, although negative, probably affects the return on equity.

Correlation Analysis for Bank B

Bank B

	ROE	Operational risk	Market risk	Liquidity risk	Credit Risk
ROE	1				
Operational risk	0.576791964	1			
	(0.063)				
Market risk	0.235720202	0.699246637	1		
	(0.485)	(0.016)			
Liquidity risk	0.639547136	0.528095273	0.466166407	1	
	(0.034)	(0.094)	(0.148)		
Credit Risk	-0.286176324	-0.565570839	-0.590009532	-0.443952765	1
	(0.393)	(0.069)	(0.056)	(0.171)	

Key:
P-value in parenthesis
ROE represents Return on equity

Table 3: Correlation Matrix of Bank B

A correlation analysis was also carried out with respect to Bank B, which provided information on the relationship between return on equity (ROE) and four types of risks, as well as the relationship between the types of risks themselves.

The correlation between return on equity (ROE) and operational risk has a positive relationship to a certain extent, which took place at 0.5768 with P-value = 0.063. This relationship shows a potential

trend in which an increase in operational risk contributes to an increase in the financial performance of

the bank. In addition, when considering the p-value, it can also be noted that the result does not

demonstrate a statistically significant relationship as the threshold is not significantly higher than 0.05.

The correlation of the coefficients between return on equity (ROE) and market risk is 0.2357 at p-value

=0.485, indicating a weak relationship between these two variables and the unlikely impact of risk on

ROE in the case of Bank B. However, it is possible to notice a positive correlation between ROE and

liquidity risk, which is 0.6395 at p-value = 0.034. In this case, based on the result, in which the p-value

is less than the standard level of 0.05 indicates the statistical significance of the variable, therefore,

better management of liquidity risk affects the financial efficiency of the bank. The following

correlation shows a weak negative relationship between credit risk and return on equity (ROE) with a

correlation = -0.2862 at p-value = 0.393, which is not statistically significant and as a result has minimal

impact on the profitability of Bank B.

Following this, considering the relationship between the types of risks, we can see that there is a

correlation between operational and market risk = 0.6992 with p-value = 0.016, which demonstrates a

positive correlation and its statistical significance. Consequently, correlations between other risks did

not show statistical significance, since the correlation between operational and liquidity risk is 0.5281

with p-value = 0.094, and the correlation between operational and credit risk is -0.5655 with p-value =

0.069, all this indicates the presence of moderate but insufficiently pronounced values. The correlation

of the coefficients between market and liquidity risk is 0.4662 at p-value = 0.148, showing a moderate

but small statistical relationship in the analysis, and -0.5900 between market and credit risk at p-value =

0.056 indicates a negative correlation and a practically significant relationship. Along with this, the ratio

between liquidity risk and credit risk is -0.4440 with p-value = 0.171, which expresses a negative

correlation and shows their non-statistical significance.

Thus, analyzing the correlation matrix for Bank B, it can be noted that liquidity risk has a

significant positive impact on the financial profitability of the bank, while other risks have no statistical

significance.

Correlation Analysis for Bank C

Bank C

	ROE	Operational risk	Market risk	Liquidity risk	Credit Risk
ROE	1				
Operational risk	-0.181802075	1			
	(0.592)				
Market risk	-0.456365661	0.262736051	1		
	(0.158)	(0.435)			
Liquidity risk	0.338588734	0.035278326	-0.314539364	1	
	(0.308)	(0.917)	(0.346)		
Credit Risk	-0.360552132	0.072096202	0.49553788	-0.847619463	1
	(0.276)	(0.833)	(0.121)	(0.000984)	

Key:

P-value in parenthesis

ROE represents Return on equity

Table 4: Correlation Matrix of Bank C

The correlation analysis of the matrix concerning Bank C demonstrates different indicators between return on equity (ROE) and types of risks, which as a result mainly shows an uncertain impact on the financial performance of Bank C.

The correlation coefficient between operational risk and ROE is -0.1818 with p-value = 0.592, which indicates a weak negative correlation, which in turn, with an increase in operational risk, tends to lower the profitability of Bank C by an insignificant value. In addition, in relation to p-value = 0.592, it is obvious that the number is higher than the standard statistical value, so it is not statistically significant. Consequently, the correlation between market risk and ROE = -0.4564 with p-value = 0.158, along with the correlation between credit risk and ROE = -0.3606 with p-value = 0.276, they have a slight negative value and are not statistically significant, therefore correlations tend to potentially reduce the profitability of Bank C due to increased risks. Regarding the analysis of the relationship between liquidity risk and ROE equal to 0.3386 at p-value = 0.308, it can be noted that the correlation has a positive relationship, however, when considering the p-value, it can be seen that the number exceeds the standard value, leading to the fact that this correlation is not statistically significant.

Regarding the relationship between risks, it can be noted that the correlation between operational and market risk is 0.2627 with p-value = 0.435, which indicates a positive, but not statistical relationship, moreover, along with these variables, the correlation between market and credit risk equal to 0.4955 with p-value = 0.121 has a similar the effect. The following variables demonstrate a similar effect on correlation: This is between operational and liquidity risk, which is 0.0353 with p-value = 0.917, as well as between operational and credit risk with a correlation equal to 0.0721 with p-value = 0.833, as a result, a weak positive relationship with non-statistical significance is indicated due to exceeding the parameters p-value = 0.05. Similarly, negative correlations can also be observed with respect to market and liquidity risk = -0.3145 at p-value = 0.346, as well as between liquidity and credit risk at -0.8476 with p-value = 0.000984, however, their statistical significance varies, since the correlation between market and liquidity risk does not show a statistical relationship, while time both liquidity and credit demonstrate the opposite.

Based on the analysis of the correlation matrix, it can be seen that for Bank C, at least at the correlation level, it is not unambiguous to determine significant factors affecting ROE, since risks do not have obvious statistical effects. Therefore, based on the results of Bank C, the variables will be examined in more detail in the regression model.

Regression analysis for Bank A

Regression Model For Bank A

Dependet Variable	P-value	
ROE		0.006292694
Independet Variable	P-value	
CTI		0.216373542
DFL		0.07939257
CR		0.06157826
LTD		**0.444856574**
R square		0.78915814

Key:
ROE represents Return on Equity
CTI represents Cost-To-Income
DFL represents Degree of Financial Laverege
CR represents Cash Ratio
LTD represents Loan-to-Deposite

Table 5: Regression Model for Bank A

Regression analysis is conducted in order to understand the effect of independent variables on dependent variables. Therefore, based on the construction of the initial multiple regression model in Excel, all four independent variables were included to identify factors confirming the results of the correlation analysis for Bank A. Thus, it can be noted from Table 5 that when all variables are included, R squared has an indicator equal to 0.7891 (78.92%), indicating what proportion of the variance of ROE determines the independent variables in the analysis. As a result, when considering the significance of independent variables, it was determined that LTD (p-value = 0.44) has a high indicator of the standard statistical value p-value = 0.05, indicating that the risk is not significant in the model and therefore justifies its exclusion from the model.

Regression Model For Bank A (Adjusted for Credit Risk)

Dependet Variable	P-value	
ROE		0.000124764
Independet Variable	P-value	
CTI		0.014456974
DFL		**0.055891611**
CR		0.055569959
R square		0,765670609

Key:
ROE represents Return on Equity
CTI represents Cost-To-Income
DFL represents Degree of Financial Laverege
CR represents Cash Ratio

Table 5.1: Regression Model for Bank A (Adjusted for Credit Risk)

Regression Model For Bank A (Adjusted for Market Risk)

Dependet Variable	P-value	
ROE		1.90779E-05
Independet Variable	P-value	
CTI		**0.057128114**
CR		0.040708373
R square		0,590277643

Key:
ROE represents Return on Equity
CTI represents Cost-To-Income
CR represents Cash Ratio

Table 5.2: Regression Model for Bank A (Adjusted for Market Risk)

After excluding credit risk from the regression model of Bank A (Table 5.1), one can notice a slight decrease in R squared, where the indicator decreased by 0.023 (2.3%), which confirms the insignificant impact of credit risk on profitability. However, the newly adjusted regression indicators of DFL and CR show a p-value in the region slightly exceeding 5%. Thus, the DFL indicator of 5.58% is excluded from the regression model since its impact on the profitability of the company is not significant.

Table 5.2 provides the remaining indicators of adjusted regression between liquidity and operational risks. Where the p-value for operational risk exceeds 0.05, amounting to 5.7% and the liquidity risk indicator is 4%. Thus, excluding operational risk, liquidity risk has more statistical significance in explaining the relationship between CR and ROE.

Regression Model For Bank A (Adjusted for Operational Risk)

Dependet Variable	P-value	
ROE		3.48774E-06
Independet Variable	P-value	
CR		**0.060789173**
R square		0,337730459
Significants F		0.060789173
Coefficients		-0.069171127

Key:
ROE represents Return on Equity
CR represents Cash Ratio

Table 5.3: Regression Model for Bank A (Adjusted for Operational Risk)

As a result of the analysis, it can be concluded that based on the exclusion of independent variables that do not correspond to the parameters of the regression model, the only significant variable turned out to be liquidity risk (CR) based on its interpretation of p-value. Since, compared with other independent variables, CR showed a slightly higher indicator of the standard statistical value of 0.05 at p-value = 0.0608, which demonstrates its small impact on the profitability of Bank A. In addition, in relation to the negative coefficient of the independent variable equal to -0.0692, it shows how CR affects the profitability of the bank, that is, with an increase in liquidity risk, ROE tends to decrease it. Therefore, R squared = 0.3377 (33.77%) It demonstrates a moderate variation in ROE with a variable, which also shows the importance of managing liquidity risk to increase the profitability of Bank A.

Regression analysis for Bank B

Regression Model For Bank B

Dependet Variable	P-value
ROE	0.570196627
Independet Variable	*P-value*
CTI	0.17512016
DFL	0.340596226
CR	0.14818773
LTD	**0.876862155**
R square	*0.580852307*

Key:
ROE represents Return on Equity
CTI represents Cost-To-Income
DFL represents Degree of Financial Laverege
CR represents Cash Ratio
LTD represents Loan-to-Deposite

Table 6: Regression Model for Bank B

A second regression model was estimated for Bank B (table 6). With variables explaining 58% of the Return on Equity, since R square is approximately 0.5809, this percentage indicates a significant explanatory power. However, further notice of high p-value indexes (higher than 0.05) of independent variables, where CTI at 15% and CR at 18% is relatively smaller than DFL at 34% and LTD at 88%, it can be clear that none of the risks are statistically significant in predicting ROE. Although the relationship according to regression analysis between variables was not strong enough to be conclusive, further investigation was conducted. Thereby, similarly to Bank A p-values with high results were excluded from the regression model. Adjusted for credit risk and market risk two regression models were calculated, therefore leaving adjusted for operational risk results presented in Table 6.1 as the final results for bank B.

Regression Model For Bank B
(Adjusted for Credit and Market risks)

Dependet Variable	P-value	
ROE		0.272462596
Independet Variable	P-value	
CTI		**0.298015829**
CR		0.15748927
R square		0.488265793

Key:
ROE represents Return on Equity
CTI represents Cost-To-Income
CR represents Cash Ratio

Table 6.1: Regression Model for Bank B (Adjusted for Credit and Market Risk)

Regression Model For Bank B (Adjusted for Operational Risk)

Dependet Variable	P-value	
ROE		0.324346207
Independet Variable	P-value	
CR		**0.034096681**
R square		0.409020539
Significants F		0.034096681
Coefficients		0.529312052

Key:
ROE represents Return on Equity
CR represents Cash Ratio

Table 6.2: Regression Model for Bank B (Adjusted for Operational Risk)

When building a better analysis of the regression model, a phased exclusion of independent variables was carried out based on their p-value, which did not have a ratio with the standard statistical value of 0.05. Therefore, as a result of the analysis (Table 6.1), liquidity risk based on its p-value = 0.0341 indicates its significance and impact on the profitability of Bank B. In addition, the variation of ROE, where R squared = 0.4090, also illustrates in the analysis the importance of liquidity risk with financial performance. It is also worth noting that concerning the positive coefficient of the

independent variable equal to 0.5293, this effect indicates the direct impact of liquidity risk on ROE,

explaining this by the fact that increased risk is a consequence of increased profitability.

Regression analysis for Bank C

Regression Model For Bank C

Dependet Variable	P-value	
ROE		0.450629143
Independet Variable	*P-value*	
CTI		0.798011211
DFL		0.408118786
CR		0.684015486
LTD		**0.914983372**
R square		*0.260364456*

Key:
ROE represents Return on Equity
CTI represents Cost-To-Income
DFL represents Degree of Financial Laverege
CR represents Cash Ratio
LTD represents Loan-to-Deposite

Table 7: Regression Model for Bank C

According to regression analysis calculated for Bank C, collectively independent variables

explain only approximately 26% of the variance in ROE. Although an index of 0.2604 may have some

explanatory power, the remaining significant portion is explained by other factors influencing return on

equity. Nevertheless, financial risk ratios indicate that there is no relation between dependent and

independent variables, considering significantly high p-values (higher than 0.005) lying between 0.68

and 0.915. Similar to Bank A and Bank B risks with high p-values were excluded from the regression

model in an attempt to find a statistically significant independent variable.

Regression Model For Bank C
(Adjusted for Credit and Operational Risks)

Dependet Variable	P-value	
ROE		0.295104161
Independet Variable	P-value	
DFL		0.262947551
CR		**0.520943848**
R square		0.250488626

Key:
ROE represents Return on Equity
DFL represents Degree of Financial Laverege
CR represents Cash Ratio

Table 7.1: Regression Model for Bank C (Adjusted for Credit and Operational Risk)

Regression Model For Bank C (Adjusted for Liquidity Risk)

Dependet Variable	P-value	
ROE		0.128045041
Independet Variable	P-value	
DFL		**0.158267177**
R square		0.208269616
Significants F		0.158267177
Coefficients		-2.034762029

Key:
ROE represents Return on Equity
DFL represents Degree of Financial Laverege

Table 7.2: Regression Model for Bank C (Adjusted for Liquidity Risk)

In considering Bank C in a multiple regression model, a similar procedure was performed as in banks A and B, where three independent variables including operational, liquidity and credit risks were excluded after the initial analysis. Results of the regression model (Table 7.1) show that after adjustments, values for market risk did reduce significantly from 0.40 to 0.15. However, it can be noted, that DFL is still statistically insignificant in explaining the profitability of Bank C, with p=0.1583. Also, this conclusion can prove the percentage of R square which is only 20 %. Based liquidity on this there can be an assumption that other indicators also might have an influence on ROE for further research to be conducted.

Conclusion and Recommendations

Introduction

  This section discusses the main results of the study and corresponds to the objectives of the research. This is based on the results of regression analysis, linearity and correlation matrix conducted to confirm or reject the hypotheses of the study. In addition, the chapter provides recommendations for banks to reduce potential losses caused by financial risk management factors and create stronger risk management strategies in facing future challenges.

Conclusion

Effect of Independent Variables on the Financial Performance of Bank A

  During the initial phase of research for Bank A, various statistical analyses were conducted. An analysis of Bank A's financial performance shows that numerous factors affect profitability. The Cost-to-Income ratio and the degree of financial leverage negatively correlate with profitability, which means that higher profits are associated with less financial risk. However, there is a small or no relationship between the cash ratio and loans to deposits regarding return on equity (ROE), which indicates that the bank's credit strategy remains stable. Concerning correlation analysis, there is a negative relationship between return on equity and operational risks, as well as liquidity and market risks. This may show that there is an inverse relationship between dependent and independent variables. Liquidity risk is the most important factor affecting return on equity, as shown by regression analysis. In fact, successful risk management is crucial to optimize financial performance and ensure sustainable profitability of the bank. The analyses carried out together show the need for Bank A to prioritize liquidity risk management, but also not to weaken control over other risk factors. The implementation of comprehensive risk management systems will help Bank A to cope with future uncertainties and maintain financial performance.

Effect of Independent Variables on the Financial Performance of Bank B

  In this conducted research, the factors were analyzed in order to identify the impact of independent variables on the financial performance of Bank B from 2012 to 2022. In the first step, a

linear analysis was conducted, and shows that Bank B has a stable linear relationship with respect to the three variables Cost-to-Income, Cash and Loan-to-Deposit Ratio. However, based on the analysis, the trend line of DFL has weak linearity, indicating its negative relationship with ROE. In the further step of correlation analysis, it is seen that there are both negative and positive coefficients among the independent variables on ROE concerning the detection of statistical significance. Consequently, it was observed that liquidity risk has a positive correlation with the corresponding p-value, which indicates that it is significant and to some extent influences the financial performance of Bank B. However for proving the results of the correlation matrix multiple regression model including all for risks was conducted. Sequential exclusion of variables with p-value exceeding significance continued with the model's reduction. As a result, only liquidity risk remains. Therefore, according to the analyses, liquidity risk is correlated with an increase in financial performance, but operational risk also showed closely significant results, demonstrating a likely impact on Bank B's profitability.

Effect of Independent Variables on the Financial Performance of Bank C

At the beginning of the research ratios for individual independent variables were calculated for Bank C, indicating relatively different results in comparison with other banks from the year 2012 to 2022. Those differences might have occurred due to some internal or external factors that have influenced Bank C to experience a low Degree of Financial Leverage Ratio or a high Cost-to-Income ratio. Nevertheless, in further research at the stage of identifying linearity between dependent and independent variables, results have shown a linear relation between all financial risks studied in this research and the financial performance of Bank C. Since some linearity is confirmed, correlation analysis can be conducted, showing the correlation coefficient between independent and dependent variables and among ratios of independent variables. The correlation matrix presented mixed results with strong positive and strong negative correlation coefficients. However, the calculations and model discussed earlier do not strongly prove or reject the hypothesis of this research, therefore regression analysis was performed. After analysing the multiple regression model between all risks examined in this research and ROE, it was concluded, that none of the independent variables affects the financial

performance of Bank C. Therefore, by excluding risks with the highest p-values, which were credit and operational risks, the remaining two risks still did not have statistically significant values, however, the conclusion that market risk and liquidity risk might have some effect on financial performance can be appropriate.

Recommendation

Based on the conducted comprehensive study of the impact of risk management on the financial performance of banks in Kazakhstan, it is noticeable that effective risk management is crucial for maintaining financial health and stability. Prioritizing strengthening of risk management systems, and paying particular attention to liquidity risk as it has a significant impact on financial performance are important for banks to have stability in the economic area. It is pivotal to implement comprehensive risk management systems to monitor and reduce credit, market, liquidity and operational risks. Stress testing should be carried out regularly to assess the potential impact of various risk factors and develop strategies to reduce these risks. In addition, compliance with international risk management standards and continuous improvement of this practice will help banks navigate future uncertainties. Although it is still difficult to predict future challenges, proactive risk management will enhance resilience and protect against adverse market conditions.

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