An Internship Report On

"Impact of Bank-Specific and Macroeconomic Determinants on Liquidity Risk: Empirical Evidence from Banking Sector of Bangladesh"

SUBMITTED TO

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Subject: Submission of the report on "**Impact of Bank-Specific and Macroeconomic determinants on Liquidity Risk: Empirical Evidence from Banking Sector of Bangladesh"**

Respected Sir,

With due respect, I am submitting my internship report on **"Impact of Bank-Specific and Macroeconomic Determinants on Liquidity Risk: Empirical Evidence from Banking Sector of Bangladesh ".** As per partial accomplishment of the requirement for the MBA degree, this internship has been carried out under the supervision of you. This report is an integral part of our academic courses in completion of the MBA program which has given me the opportunity to have an insight into the core part of this topic. I have tried my best to do the report properly and make the report in a fascinating way. Finally, I would like to express my sincere appreciation and thanks for your help while preparing the report.

I, therefore, pray and hope that you would be kind enough to accept my internship report and oblige thereby.

Sincerely,

…….

Monima Saha Tia

ID NO: 22317040

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Student Declaration

I am Monima Saha Tia, bearing ID:22317040, student of Department of Finance & Banking, Comilla University, do hereby declare that the internship report on "**Impact of Bank-Specific and Macroeconomic determinants on Liquidity Risk: Empirical Evidence from Banking Sector of Bangladesh**" represents the result of my own works, pursued under the supervision of **Md. Al-Amin**, Assistant Professor, Department of Finance & Banking, Comilla University, Cumilla. I also confirm that the report is only prepared for my academic requirements and didn't submit this report any other place before.

I also assure you that this report was not submitted for any other degree.

……..

Monima Saha Tia

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Supervisor Certificate

This is to certify that the report on **"Impact of Bank-Specific and Macroeconomic determinants on Liquidity Risk: Empirical Evidence from Banking Sector of Bangladesh"** is done by Monima Saha Tia, ID NO:22317040, Session: 2022-23, as the partial fulfillment of Master of Business Administration (MBA) degree from Department of Finance & Banking, Faculty of Business Studies, Comilla University, Cumilla. This report has been prepared under my guideline and is a report of the authentic work carried out successfully.

I wish her every success in life.

……..

Md. Al-Amin

Assistant Professor

Department of Finance & Banking

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Acknowledgement

At first, I want to express my deepest gratitude to Almighty, the most merciful for his kindness to give me the ability to complete this report successfully. I extend my deep gratitude to my supervisor **Md. Al-Amin**, Assistant Professor, Department of Finance & Banking, Comilla University, for his guidance, suggestions, and encouragement for the preparation of this report. Without his guidance I could not have finished this work on time. He provided me full support and ideas necessary in analyzing the industry and thus to accomplish my goal. I am also grateful to all of the respected teachers of the Master of Business Administration for their continuous inspiration and assistance throughout these years.

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Finally, I would like to express my wholehearted thanks to all those people who have shared their views about my work.

Experience Certificate

যৌতুক দেয়া-নেয়া শাস্তিযোগ্য অপরাধ

প্রিয়জনকে বই উপহার দিন

অগ্রণী ব্যাংক পিএলসি, টমছমব্রীজ শাখা, কুমিল্লা।

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Ref: ABL/Tomsom/Cirtificate/57/25 Date: 15/05/2025

TO WHOM IT MAY CONCERN

This is to certify that Monima Saha Tia, a student of Comilla University, Department of Finance & Banking, Program: MBA, Roll/ID No: 22317040 has been started her internship program from 15/04/2025 on Agrani Bank PLC, Tomsombridge Branch, Cumilla. She is sincere, dedicated and dutiful to her work.

I wish her every success in life.

With Regards

15/05/2025

(Md. Nazrul Islam Choudhury)

SPO & Manager

Md. Nazrul Islam Choudhury
SPO & Manager
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Executive Summary

The purpose of this study is to investigate into how bank-specific and macroeconomic factors affect Bangladeshi banks' liquidity risk. The relationship between macroeconomic and bank-specific factors and liquidity is demonstrated in this study using the Random Effect Model and the Pooled OLS Model. The Hausman test has been utilized in this study to determine which of the Random Effect Model and Fixed Effect Model is the best. It is evident from the Hausman test results that the random effect model outperforms the fixed effect model. In this context, ten banks' annual reports over the last ten years (2014–2023) have been used. The study shows that bank size and total loan to total asset have a statistically significant relationship with liquidity risk. This is supported by both models (Pooled OLS Model and Random Effect Model). Here, loan to deposit ratio is the measure of liquidity risk. GDP growth and inflation have a statistically significant positive relation with liquidity risk(Loan to Deposit Ratio). This decision is also supported by both models. Return on assets ,capital adequacy ratio and operating expenses to total assets ratio have statistically insignificant negative relationship with loan to deposit ratio. This study also show descriptive statistics, correlation matrix, multicollinearity test, and heteroscedasticity test .There is no multicollinearity and heteroscedasticity problem in the dataset. Very few studies have been conducted in Bangladesh addressing the issue. Liquidity risk in banks refers to the danger that a bank might not be able to fulfill its financial commitments when they become due, either by liquidating assets or securing new financing, without facing significant losses. This type of risk is critical for banks, as failure to manage it properly can result in insolvency, making it impossible to repay depositors and other creditors. The recent liquidity crisis in Bangladesh raises concerns about how banks handle their liquidity. A thorough examination of the variables influencing liquidity risk in Bangladeshi banks is provided in this study. Additionally, it makes suggestions that can be put into practice to enhance banks' procedures for managing liquidity risk, which will help to maintain the stability and efficacy of the nation's financial system. The information acquired from this study will be useful in understanding the factors that influence banks' liquidity in Bangladesh.

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Chapter One

Introduction

Chapter One

Introduction

1.1. Introduction

Liquidity refers to the capacity of the banks to meet their short-term financial obligations while avoiding significant losses. It ensures that banks can distribute loans quickly, make deposit withdrawals, and meet other payment commitments. Financial stability, depositor confidence, and effective banking operations are all dependent on liquidity. Lack of liquidity can put a bank at danger of solvency concerns, government fines, or even bankruptcy, as seen in various banking crises around the world. The management of liquidity risk is important for banks because it influences operational efficiency, profitability, and overall stability. A bank that fails to handle liquidity risk effectively may face solvency concerns, affecting the entire financial system. This makes understanding the determinants of liquidity risk critical for policymakers, regulators, and bank executives.

Bank liquidity risk is driven by both bank specific factors and macroeconomic conditions. Profitability, capital sufficiency, loan quality, and operational efficiency are all factors that influence a bank's capacity to retain liquidity. For example, a bank with a high capital adequacy ratio (CAR) may be better able to absorb liquidity shocks. On the other hand, macroeconomic factors such as GDP growth and inflation rates have a considerable impact on the overall economic climate in which banks operate. Liquidity risk is a major issue all the banks are now very serious about liquidity risk management, which involves the following two things: evaluating the necessity of funds to meet up those obligations and providing the availability of liquid assets to meet up those obligations in time (Nahar & Ima, 2022).

This study aims to give empirical evidence on how bank-specific and macroeconomic variables influence the liquidity of banks in Bangladesh. The goal of the study is to identify significant liquidity-influencing elements and make recommendations for enhanced liquidity risk management by examining financial data and economic indicators.

Bangladesh's banking industry has seen liquidity swings as a result of rapid credit growth, non-performing loans (NPLs), and external economic shocks. To ensure financial stability, policymakers, regulators, and bank executives must understand how these forces interact. The

purpose of this study is to empirically investigate how macroeconomic and bank-specific factors affect bank liquidity risk in Bangladesh. By analyzing financial data and economic indicators, the study aspires to provide a crystal-clear picture of the key elements influencing liquidity risk and to propose ways for improving liquidity risk management.

1.2 Background of the study

Effective liquidity risk management is critical for bank stability and efficiency since it affects their ability to meet immediate financial obligations while also preserving consumer trust. Understanding the factors that influence liquidity in Bangladesh is vital, given the banking sector's significant contribution to economic growth. The Loans to Deposit Ratio (LDR) serves as a widely used indicator for evaluating a bank's liquidity condition and funding strategy. This ratio reflects the extent to which a bank utilizes customer deposits to provide loans, thereby illustrating the balance between liquidity and profitability. A high LDR can indicate heightened liquidity risk, but it may also represent a bank's assertive investment approach. When the LDR is high, it signifies that the bank is actively converting deposits into loans. Although this strategy can enhance earnings, it may expose the bank to liquidity risk due to a lack of sufficient liquid assets to manage unexpected withdrawals. This study investigates the factors influencing liquidity risk in selected commercial banks in Bangladesh from 2014 to 2023. During this timeframe, there have been considerable changes in regulations, economic conditions, and technological advancements. While the Bangladeshi economy has demonstrated resilience and growth, the banking sector has encountered challenges such as non-performing loans and issues related to regulatory compliance. This research aims to furnish detailed insights into liquidity risk by analyzing macroeconomic elements and bank-specific characteristics. The outcomes will be advantageous for bank executives, policymakers, and stakeholders in improving liquidity risk management and ensuring the stability of Bangladesh's financial system.

1.3 Problem Statement

Effective management of liquidity risk is crucial for preserving the stability of the banking sector. In Bangladesh, banks frequently encounter liquidity challenges stemming from both internal operational factors and changes in the broader economic landscape. Factors specific to banks, including capital adequacy, asset quality, and profitability, as well as macroeconomic indicators like inflation, GDP growth, and interest rate fluctuations, significantly affect a bank's liquidity

status. However, there is a clear lack of empirical studies that analyze the simultaneous impact of these internal and external factors on liquidity risk within the context of Bangladeshi banks. This research aims to fill that gap by examining the joint effects of bank-specific and macroeconomic elements on liquidity risk, thus providing insights that can contribute to stronger regulatory frameworks and improve liquidity management strategies within the country's banking sector.

1.4 Significance of the study

This study is significant as it enhances the comprehension of the elements influencing liquidity risk in banks within Bangladesh, relevant both theoretically and practically. The findings will help bank executives devise more effective liquidity risk management strategies and support policymakers, including the Bangladesh Bank, in crafting better regulatory frameworks to improve financial stability in the nation by examining the impact of both bank-specific factors (capital adequacy, profitability, and asset quality) and macroeconomic indicators (GDP growth, inflation). Enhancing liquidity risk management will not only contribute to the stability and resilience of the banking sector but also fortify financial security and encourage sustainable economic development.

1.5 Scope of the Study

Examining the impact of bank specific and macroeconomic determinants on liquidity risk of the bank is the main purpose of the study. This study will explore the factors affecting liquidity risk management and the impact of this factor on the performance of the banking industry. The study includes state-owned banks, private commercial banks, and Islamic banks operating in Bangladesh. The outcome of this research will aid bank managers, policymakers, and regulators in constructing improved liquidity risk management strategies to improve the strength of the banking sector in Bangladesh.

1.6 Research Questions

1. How do profitability metrics such as Return on Assets (ROA) impact a bank's liquidity risk?
2. Is there any effect of capital adequacy ratio on the liquidity risk of the banks?
3. Do bank size and liquidity risk significantly correlate with one another?
4. How does the total loan to total asset ratio impact a bank's liquidity risk?

5. How does operating efficiency (measured by Operating Expenses/Total Assets) impact liquidity risk?
6. How does GDP growth affect liquidity risk in banks?
7. How does inflation impact liquidity risk of the banks?

1.7 Research Objectives

Broad Objective

1. The primary goal of the study is to determine and elucidate how macroeconomic and bank-specific factors affect the liquidity risk of Bangladeshi banks.

Specific Objectives

1. To identify the influence of bank profitability (measured by ROA) on liquidity risk in commercial banks in Bangladesh.
2. To assess the impact of capital adequacy (CAR) on the liquidity risk of banks.
3. To investigate the relationship between bank size (log of total assets) and liquidity risk.
4. To explore the effect of loan intensity (Total Loans to Total Assets ratio) on liquidity risk.
5. To investigate how bank liquidity risk is impacted by cost efficiency (the ratio of operating expenses to total assets).
6. To explain the influence of the GDP growth rate on liquidity risk in the banking sector.
7. To clarify how the rate of inflation affects the banking industry's liquidity risk.

1.8 Limitations of the Study

1. The study is constrained by the sample size being limited to 100 observations from 10 banks.
2. The lack of qualitative information, such as interviews with central bank officials or risk managers, restricts our ability to contextualize how banks actually manage liquidity.

Chapter Two

Literature Review

Chapter Two

Literature Review & Research Gap

2.1 Literature Review

Liquidity is the bank's ability to fulfill its obligations on the due date without suffering significant losses (Bessis, 2011). Liquidity is necessary for any bank because it ensures a bank can meet its short-term financial obligation. Liquidity risk is the risk of loss caused by failure to meet payment obligations in full and on time when they become due.

Al Hasan and Nasrin (2019) investigated problems associated with Liquidity Management of Commercial Banks of Bangladesh. Liquidity management is important for the operational stability of commercial banks, though it does not directly generate profits. A study on private commercial banks in Bangladesh, using Varimax Rotated Factor Analysis, found that Regulatory and Policy Issues, Debt Instrument Challenges, and Foreign Exchange Market Risks are major obstacle to effective liquidity management.

According to Imani and Pracoyo (2018), the capital efficiency ratio, nonperforming loans, and return on assets all have a significant impact on liquidity risk. Their research shows that capital and liquidity risk have little influence on profitability. However, credit risk (NPL) has a major impact on profitability.

Raad et al. (2023) explored the connection between liquidity and profitability in Bangladeshi banks, often focusing separately on conventional or Islamic banks. However, limited research addresses State-Owned Commercial Banks (SOCBs), especially after the COVID-19 pandemic. Using data from 2012 to 2021, one study applied an econometric model and found a significant positive relationship between liquidity risk and profitability. It also highlighted the influence of credit risk, capital efficiency, bank size, interest rates, inflation, and GDP on profitability, with minimal pandemic impact on SOCBs. These findings provide valuable insights for liquidity management and strategic planning.

Sopan and Dutta(2018) studied the factors influencing liquidity risk in Indian banks concentrated on both macroeconomic and bank-specific issues. Size, deposit rate, profitability, asset quality, funding cost, and capitalization rate are bank-specific criteria; macroeconomic factors include

inflation and GDP growth. The study, which used panel data from 45 Indian banks from FY 2005 to 2016, concludes that while deposit rate and capitalization rate raise liquidity risk, size, profitability, funding cost, and asset quality lower it. Liquidity is positively impacted by inflation and negatively by GDP growth.

Antony(2023) explored liquidity risk poses a major threat to financial stability, and its mismanagement can lead to significant losses or bank failures. This study investigates the key determinants of liquidity risk in Indian commercial banks from 2013 to 2022 using panel data regression techniques-pooled OLS, fixed effects, and random effects models. This study examines data from 2013 to 2022 to identify factors influencing liquidity risk in Indian commercial banks. It finds that bank age negatively impacts liquidity risk, while bank size and capitalization have positive effects. Macroeconomic variables like GDP and inflation also positively influence liquidity risk.

Nahar and Ima(2022) examined a study using a random effect model on Bangladeshi banks identified key determinants of liquidity risk. For conventional banks, significant factors include loan-to-asset ratio, cash ratio, equity ratio, size, ROA, ROE, and capital adequacy ratio. For Islamic banks, loan-to-asset ratio, ROA, cash ratio, and capital adequacy ratio were significant. Loan-to-asset ratio and ROA positively affect liquidity risk, while capital adequacy ratio, cash ratio, bank age, equity ratio, and size have a negative impact across both banking types.

Islam and Nasreen (2018) analyzed the macroeconomic and bank-specific factors affecting liquidity in 28 Bangladeshi banks from 2012 to 2016, using fixed and random effects models. Loan to Deposit ratio and liquid asset to total asset are the measure of liquidity. Results show that large banks, high-risk banks, and those with more off-balance sheet activities hold less liquidity, while profitability, deposits, and bank age positively influence liquidity. Adequately capitalized banks maintain fewer liquid assets. Higher GDP growth reduces bank liquidity. The study is the first to analyze liquidity in two different factors and highlight off-balance sheet exposure as a key factor.

Mazreku et al. (2019) analyzed the factors affecting liquidity of the bank in nine Balkan countries from 2000 to 2015. Using panel data techniques, it finds that capital adequacy, non-performing loans, deposit growth, GDP, unemployment, and marginal interest rates have significant influence on liquidity, while inflation and profitability do not.

Kajola et al. (2019) explored the elements that affect liquidity management in Nigeria. They proposed that, in developing an effective management of liquidity strategy, bank management should take into account both bank-specific factors (such as size and profitability) and macroeconomic indicators (like GDP growth and the inflation rate). Although many factors may have either a positive or negative correlation, the research indicates that banks need to thoroughly assess these elements to prevent a potential liquidity crisis in the future.

On the other hand, Badarin et al. (2024) showed that the financing-to-deposit ratio, inflation, economic growth, and return on assets have a positive impact on the liquidity risks of Islamic banks. The research also indicated that the liquidity challenges faced by Islamic banks were not influenced by non-performing financing, capital adequacy, operational efficiency, or size. To formulate policies for managing liquidity risk in Islamic banks, this article provided recommendations for the procedures and systems involved in liquidity risk management. It is concluded that establishing an optimal financing-to-deposit ratio is essential to safeguard Islamic banks from liquidity risks.

Al Homaidi et al. (2019) discovered that among the bank-specific factors, the net interest margin ratio, quality of assets ratio, return on equity ratio, and size of the bank negatively influenced LQD, whereas the capital adequacy ratio, deposits ratio, operational efficiency ratio, and return on assets ratio positively influenced it. The findings indicated that both interest and currency rates have a significant effect on LQD in relation to macroeconomic factors. The study recommended that bankers consider asset quality in a manner that improves the efficiency of their institutions.

Al-Qudah (2020) studied the effect of macroeconomic and bank-specific factors on the liquidity of 13 Jordanian banks from 2011 to 2018 using pooled least squares, fixed and random effects models. The outcome showed that inflation, capital adequacy, and deposit growth positively affect liquidity, while GDP, nonperforming loans, and bank size have negative effects. Profitability had a negative but insignificant impact. The research emphasized the importance of managing both economic and internal factors to maintain adequate liquidity.

Rafique et al. (2020) studied Pakistani banks from 2006 to 2016 and discovered the impact of macroeconomic and bank-specific factors on bank liquidity.

Ahamed (2021) investigated a few Bangladeshi commercial banks as examples to examine key macroeconomic and bank-specific liquidity risk indicators. The study looks at 23 listed banks between 2005 and 2018 using panel data and a fixed effect regression model. According to the study's findings, bigger banks have a detrimental impact on liquidity and are less vulnerable to liquidity risk. Liquidity risk was positively impacted by capital adequacy, return on equity, loan deposit ratio, GDP, and domestic credits, whereas inflation had the opposite effect.

Morina and Qarri (2021) investigated the banking sector's liquidity empathy for a number of key banking and macroeconomic parameters. The study employed regression analysis on data spanning eight years from 2012 to 2019. Figures for this study are gathered from Central Bank and World Bank publications (GDP figures), which are then examined for each quarter of the study period. After analyzing the available data, the study indicates that among the major elements that might affect the liquidity position of commercial banks, non-performing loans, capital adequacy, and credit interest rates have the most significant impact on the liquidity banking position.

Tasnova (2022) analyzed how both bank-specific and macroeconomic elements affect the liquidity of commercial banks in Bangladesh through panel data regression. The research indicated that external factors exert the most significant impact, with capital adequacy, GDP, and interest rate spread identified as crucial predictors. An increased capital adequacy enhances liquidity, enabling banks to better withstand financial shocks. Conversely, economic growth tends to decrease liquidity by elevating the demand for money. A wider interest rate spread prompts banks to maintain a higher level of liquid assets due to worries about possible funding crises. The study suggests enhancing bank-specific factors and enforcing stricter monetary policies to effectively manage liquidity.

Mdaghri and Oubdi (2022) investigated liquidity generation in 153 banks across 12 MENA nations from 2008 to 2017, applying the MMQR technique with fixed effects regression. They discovered that both internal and external elements impact liquidity generation. Specific factors pertaining to banks, as market concentration has no bearing on the importance of capital, size, risk, deposits, and profitability. In terms of macroeconomic factors, monetary policy, savings, unemployment, and inflation are significant, but GDP growth does not appear to be significant. The research emphasizes that increased bank capital may lead to a decrease in liquidity generation and stresses

the importance of financial stability. It offers fresh perspectives on the factors affecting bank liquidity generation in the MENA area.

Naoaj (2023) explored Pooled, Fixed Effect, and Random Effect models to analyze panel data from 28 banks in order to examine the determinants impacting liquidity risk in the banking industry. According to the study, bank size and the regulatory framework help to lower liquidity risk, whereas leverage raises it. The impact of the capital adequacy ratio (CAR) and return on assets (ROA) differs depending on the particulars of each bank. Furthermore, real GDP continuously lowers the danger of liquidity. These findings provide crucial advice for bank managers and legislators on how to successfully manage liquidity risk.

Suhartoko and Lara Aba (2019) conducted a study on five Indonesian commercial banks (2012–2016) found that Capital Adequacy Ratio (CAR) positively affects profitability (ROA), while Loan to Deposit Ratio (LDR) has a significant negative impact ($p = 0.026$), indicating that high LDR weakens bank liquidity and reduces profitability.

Zaghdoudi and Hakimi (2017) analyzed data from 10 banks (1980–2015) and finds that liquidity risk is driven by internal factors (loans, size, capitalization), market structure, and global crises. Economic growth reduces risk, while inflation has little effect.

Waemustafa and Sukri (2016) used time series regression analysis to examine how internal and external factors affected the liquidity risk of conventional and Islamic banks from 2000 to 2010. Results show that compared to conventional banks, Islamic banks often maintain higher levels of liquidity. The findings indicate that one macroeconomic factor and four of the fourteen bank-specific factors have a significant impact on liquidity risk for Islamic banks. On the other hand, five of the thirteen bank-specific criteria are significant for conventional banks. These variations show how the two banking systems differ in their structural features and approaches to risk management.

Wysocka (2023) examined how deposit insurance schemes influence liquidity risk in banks, highlighting cross-country differences and the role of bank-specific and macroeconomic factors. Due to limited research in the European context and the focus of prior studies on the U.S. and other regions, existing findings are difficult to apply to Europe. Using panel data from 28 EEA countries and a GLS estimator with random effects, the study finds that greater deposit insurance coverage

is associated with reduced liquidity risk, offering new insights for evaluating deposit insurance policies in Europe.

2.2 Research Gap

To the best of my knowledge, very few research have examined these factors in connection to liquidity risk in the context of Bangladesh. This emphasizes the significance of the current study, which aims to examine the impact of macroeconomic and bank-specific factors on bank liquidity risk in Bangladesh-an area that has not received much attention to far. The liquidity risk of Bangladesh's state-owned banks, private commercial banks, and Islamic banks was the main emphasis of this study.

2.3 Development of Hypothesis

H1: There is no significant relationship between ROA(Return on assets) and LDR (Loan to Deposit ratio).

H2: There is no significant relationship between CAR(Capital Adequacy Ratio) and LDR (Loan to Deposit ratio).

H3: There is no significant relationship between BS (Bank Size) and LDR(Loan to Deposit ratio).

H4: There is no significant relationship between TLTA(Total Loans to Total Assets) and LDR(Loan to Deposit ratio).

H5: There is no significant relationship between OETA(Operating Expenses to Total Assets) and LDR(Loan to Deposit ratio).

H6: There is no significant relationship between GDP(GDP Growth) and LDR(Loan to Deposit ratio).

H7: There is no significant relationship between INFR(Inflation) and LDR(Loan to Deposit ratio).

Chapter Three

Organizational Profile

Chapter Three

Organizational Profile

The banking sector of Bangladesh plays a vital role in the country's economic development, serving as the backbone of financial intermediation. It comprises a mix of state-owned commercial banks, private commercial banks, foreign banks, Islamic banks and specialized banks. Banks in Bangladesh provide deposit services, loans and credit, foreign exchange and trade support, remittance facilities, and digital banking (ATM, mobile, and internet banking). This section gives an outline of ten well known banks in Bangladesh that are used in this study. This portion includes short description of the banks.

1. Agrani Bank PLC

Established in 1972, Agrani Bank PLC is a commercial bank owned by the state of Bangladesh. Bangladesh's capital, Motijheel, Dhaka, is home to its main office. Md. Anwarul Islam is Agrani Bank's chief executive officer. On March 26, 1972, two Pakistani banks that had gone out of business-Commerce Bank and Habib Bank-merged to form Agrani Bank Limited. The Government of Bangladesh owns all of the bank. The bank's first managing director was M. Fazlur Rahman.

2. Janata Bank PLC

Bangladesh's state-owned commercial bank, Janata Bank PLC, was founded in 1972. Its main office is located in Bangladesh's capital city of Dhaka in Motijheel. It is Bangladesh's second-biggest commercial bank. It has four international branches in the United Arab Emirates in addition to its 925 domestic branches.

3. Mercantile Bank PLC

According to the Bank Companies Act of 1991, Mercantile Bank is a public limited company with limited liability. Its shares are traded on the Chittagong and Dhaka stock exchanges. The bank offers services and products in asset management, equity broking, corporate financing, Islamic finance, retail banking, and security.

4. AB Bank PLC

In 1981, AB Bank was established on December 31.This was Bangladesh's first private joint venture bank. The name change from Arab Bangladesh Bank to AB Bank was approved by Bangladesh Bank on November 14, 2007.

5. NCC Bank PLC

National Credit and Commerce Bank PLC, also known as NCC Bank PLC, is a private commercial bank in Bangladesh. The bank's current managing director and CEO is Mr. M. Shamsul Arefin. NCC Bank was founded in 1985 as an investment corporation first known as NCL (National Credit Limited).It started off as a scheduled commercial bank with Tk 390 million in paid-up capital after receiving central bank approval in 1993.

6. IFIC Bank PLC

The first-generation private commercial bank in Bangladesh is called International Finance Investment and Commerce Bank PLC, or IFIC Bank. A limited liability banking company, IFIC Bank PLC is situated in the People's Republic of Bangladesh. Md. Mehmood Husain now serves as the chairman of IFIC Bank PLC. On September 8, 2024, he was assigned the post.

7. Uttara Bank PLC

One of Bangladesh's biggest and most established private sector commercial banks is Uttara Bank PLC. There are 600 affiliates worldwide and 243 domestic branches. Uttara Bank PLC is chaired by Azharul Islam, the chairman of the Aftab Group. Founded in 1965, Uttara Bank PLC (UBPLC) is headquartered in Motijheel, Dhaka, East Pakistan.

8. City Bank PLC

Based in Dhaka, City Bank PLC is a private commercial bank in Bangladesh. Retail banking, corporate financing, SME finance, digital banking, asset management, equity brokerage, and securities are among the goods and services offered by the bank. It is one of the nation's oldest commercial banks and a first-generation private commercial bank. On March 28, 1983, twelve local businesspeople in the nation created what was then known as "City Bank PLC" and began operations.

9. Islami Bank Bangladesh PLC

Islami Bank PLC, also known as Islami Bank, is an Islamic banking firm established in Bangladesh. In accordance with the Companies Act of 1913, it was incorporated as a public limited company on March 13, 1983, and it began operations on March 30 of the same year. IBBPLC has a nationwide shared ATM network in addition to its own ATM booths. In Bangladesh, IBBPLC has been the biggest private banking network. Both the Chittagong Stock Exchange Ltd.

10. Al-Arafah Islami Bank PLC

Established on September 27, 1995, Al-Arafah Islami Bank PLC is a bank in Bangladesh that complies with shariah. The bank's shariah council is in charge of making sure all bank operations adhere to shariah regulations. The main office is situated in Dhaka's Motijheel. A project called "Krishi O Grameen Khudra Biniog Prokolpa (Microfinance)" has been started by Al-Arafah Islami Bank PLC. Al-Arafah Islami Bank PLC is attempting to alleviate poverty, promote agricultural growth, and create employment possibilities with this project.

Chapter 4

Research Methodology

Chapter Four

Research Methdology

4.1 Research Design

It explains the type of pattern the study plans to pursue. This is the overarching plan or approach to study. Research design is a methodical strategy for investigating a scientific issue. The framework developed to look for solutions to research questions is known as research design. The study's primary goal is to assess how macroeconomic and bank-specific factors affect Bangladeshi banks' liquidity risk. Because it aims to investigate the link between dependent and independent variables, the study is analytical. Because it relies on secondary data and a small number of previous empirical works, the research methodology is quantitative and empirical. In order to understand the present and forecast and manage the future, this assisted the researcher in drawing conclusions on the influence of macroeconomic and bank-specific factors on the liquidity risk of Bangladeshi banks. The quantitative research strategy used in the study provided answers to the "How many?" questions, enabling the systematic and statistical measurement of the correlations between the variables.

4.2 Character of the study

This explanatory study explores at how bank-specific and macroeconomic factors affect liquidity risk as defined by the Loan to Deposit ratio of ten Bangladeshi banks from 2014 to 2023.

4.3 Types and Sources of Data

This study will use data from secondary sources. The data will be collected from the annual reports of 10 banks in Bangladesh over the last decade (2014-2023). The information on macroeconomic variables will be collected from reliable sources like the World Bank and Bangladesh Bank websites. For simplicity, secondary data have been collected from 10 banks' annual reports from 2014 to 2023, utilizing convenience sampling under a non-probabilistic technique, resulting in a panel data with an observation size of 100.

4.4 Variables Identified

The following is a list of all the dependent and independent variables utilized in the analysis.

Table 1: Description of Variables included in empirical result of the study

Variables	Definition	Calculation Procedure	Prior Studies
Dependent Variable(Liquidity Risk Measure)			
Loan to Deposit Ratio(LDR)	A financial metric known as the Loan-to-Deposit Ratio (LDR) compares a bank's total loans and advances to its total deposits to assess its liquidity and show how much of its deposits are being used to finance loans.	Total Loans&Advnces / Total Deposits	El Khoury (2015); Chagwiza(2014); Moussa (2015)
Independent Variables(Bank- Specific Determinants)			
Return on Assets (ROA)	Return on Assets (ROA) is a financial metric that compares a company's income to its total assets. It demonstrates how effectively a corporation uses its assets to generate profits.	Net Income / Total Assets	Moussa (2015); Roman and Sargu (2015)
Capital Adequacy Ratio(CAR)	The Capital Adequacy Ratio (CAR) is a critical financial metric that measures a bank's ability to sustain losses while remaining stable. It assesses whether a bank has enough capital to cover risks and be solvent, especially during economic downturns or financial crises.	Regulatory Capital / Risk-Weighted Assets	Naoaj(2023); Ahamed (2021)
Size of the Bank (Size)	The size of a bank refers to how big a bank is in terms of its total assets, capacity.	Log of Total Assets	Abdul Rahman and Saeed (2015);

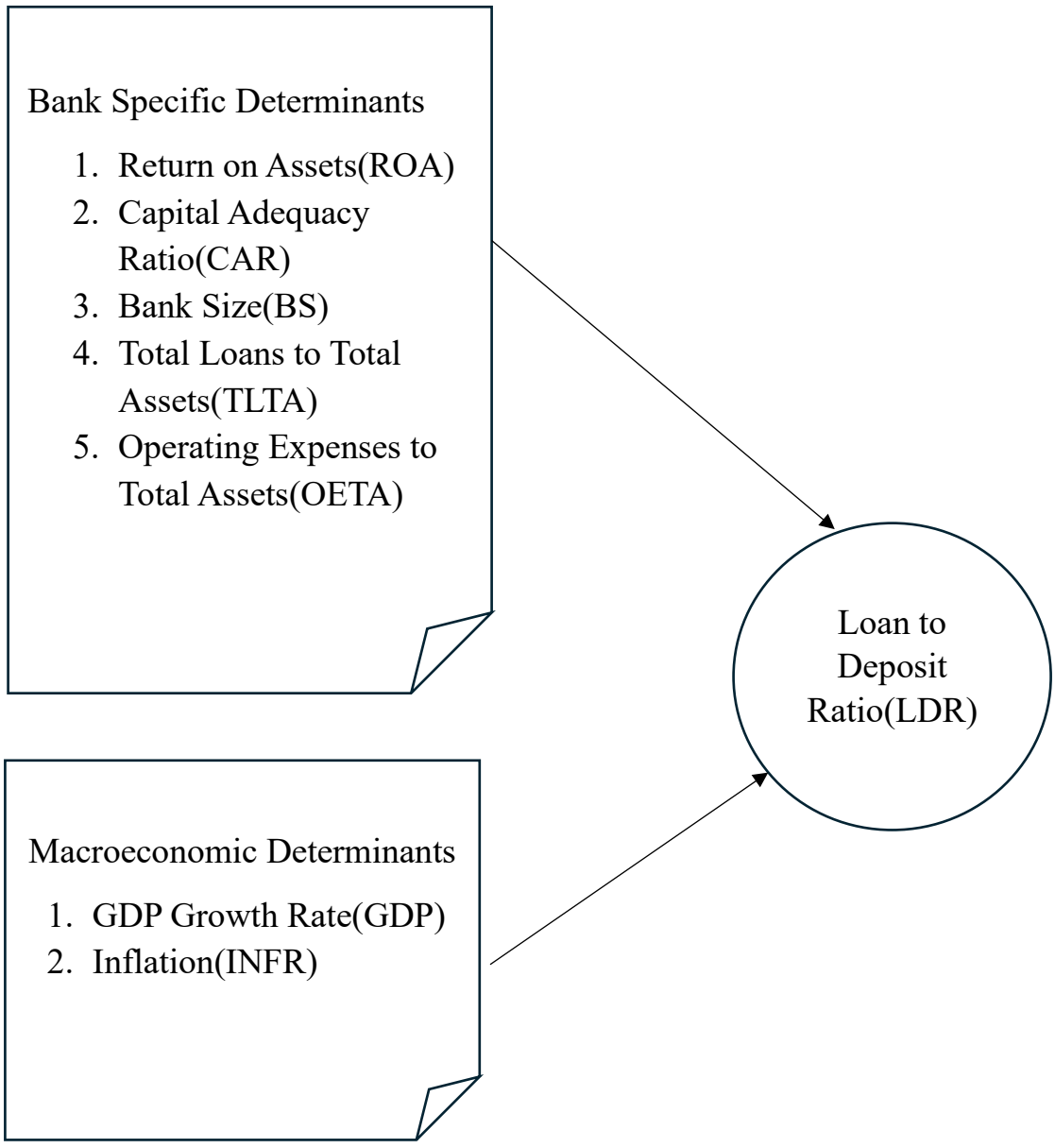
Total Loans to Total Assets Ratio (TLTA)	The Total Loans to Total Assets Ratio is a commonly used bank-specific financial ratio that evaluates the proportion of a bank's assets that are devoted to loans. . It reflects the risk exposure and lending aggressiveness of a bank.	Total Loans & Advances / Total Assets	Yeasin(2023); Chaarani (2019); Ahamed (2021)
Operating Expense to Total Assets Ratio (OETA)	The Operating Expenses to Total Assets Ratio is a bank efficiency ratio that shows the ratio of a bank's operating expenses to its total assets. It displays the effectiveness of the bank's resource management.	Operating Expenses/ Total Assets	Lalon et. al. (2023)
Independent Variables (Macroeconomic Determinants)			
GDP Growth Rate (GDP)	The GDP Growth Rate measures how fast a country's Gross Domestic Product (GDP) is growing or shrinking over time. It reflects the overall health and direction of the economy.	GDP Growth Rate from One Year to Another Year	Bordeleau and Graham (2010); Al Khouri (2012)
Inflation (INFR)	The Inflation Rate measures how much an economy's overall level of prices for goods and services rises over a given time frame, usually a year. It shows how a currency's purchasing power has decreased.	Average Inflation per Year	Peters et al. (2014); Wysocka(2023)

4.5 Model Specification and Econometric Framework

To explore the impact of bank-specific and macroeconomic variables on selected Bangladeshi banks liquidity risk, the following equation is formulated:

$$LDR_{it}=\beta_0+\beta_1 ROA_{it}+\beta_2 CAR_{it}+\beta_3 BS_{it}+\beta_5 TLTA_{it}+\beta_6 OETA_{it}+\beta_7 GDP_{it}+\beta_8 INFR_{it}+€_{it}$$

4.6 Conceptual Framework



Chapter 5

Data Analysis

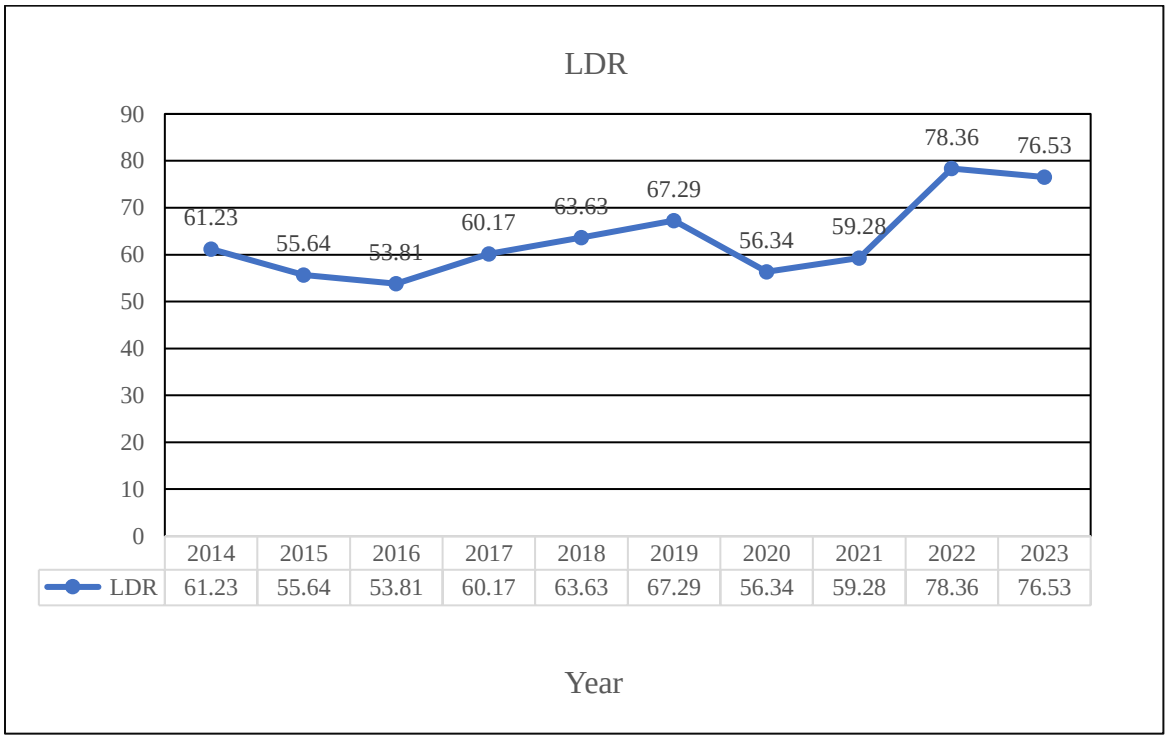
Chapter Five

Data Analysis

5.1 Trend Analysis of Liquidity Risk(Loan to Deposit Ratio)

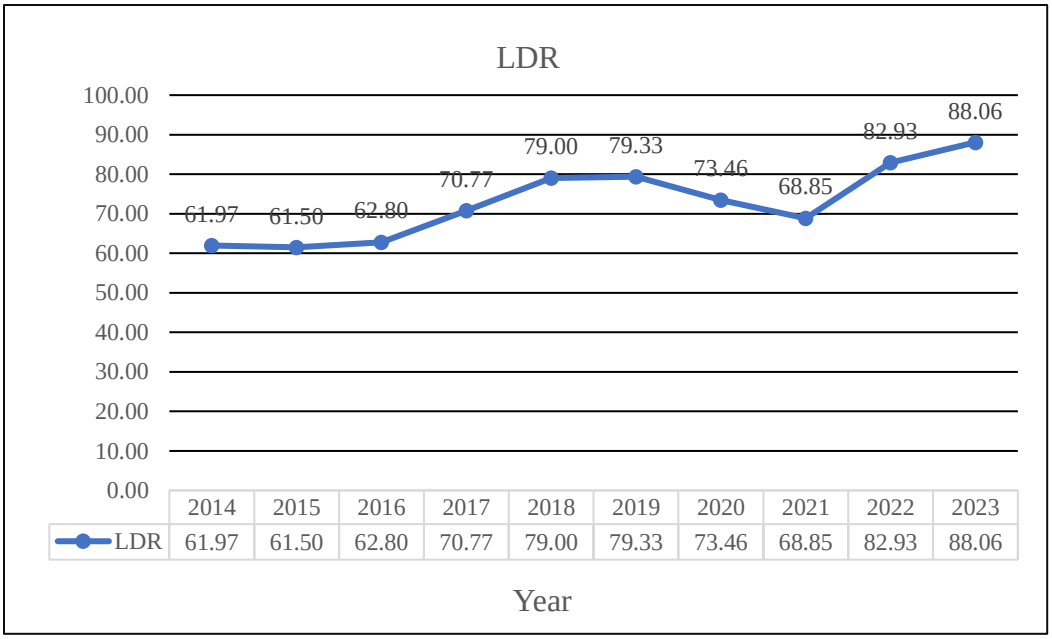
In business, finance, and data analytics, trend analysis is a method used to assess past data and spot patterns or trends across time. Analysts can aid in strategic planning and decision-making by forecasting future movements based on historical performance.

1. Agrani Bank PLC



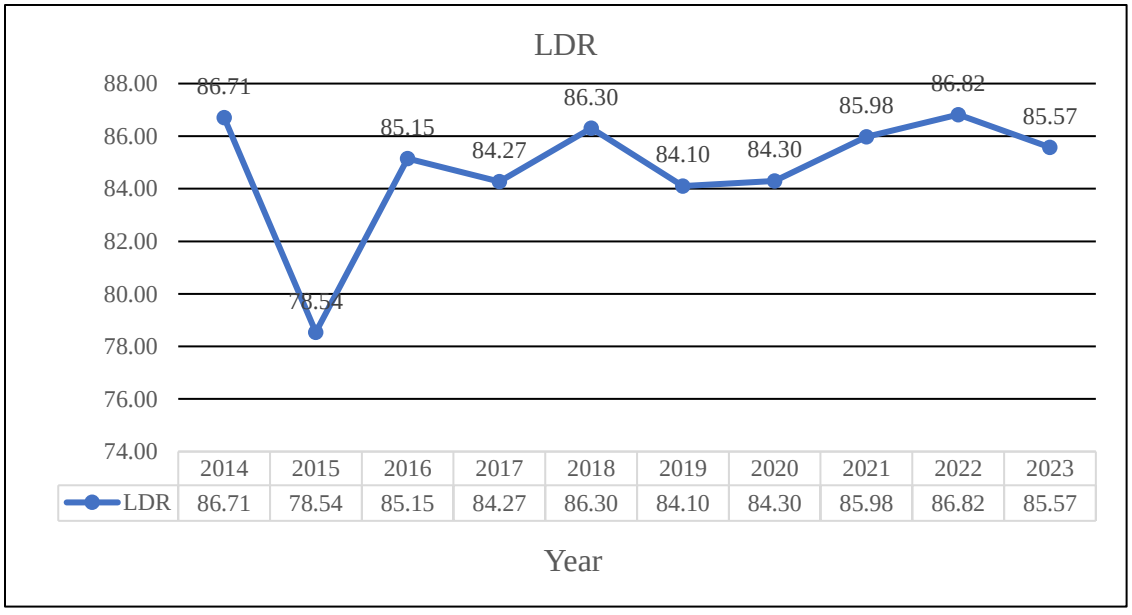
Interpretation: The Loan to Deposit Ratio (LDR) of Agrani Bank PLC has been fluctuating from 2014 to 2023. It showed cautious lending as it fell from 61.23 in 2014 to a low of 53.81 in 2016. LDR steadily rose from 2017 to 2019, hitting 67.29, indicating more robust credit expansion. It fell precipitously to 56.34 in 2020 as a result of COVID-19's economic effects. It did, however, rise sharply in 2022, reaching a peak of 78.36. LDR marginally decreased to 76.53 in 2023, indicating a more cautious or balanced lending strategy.

2. Janata Bank PLC



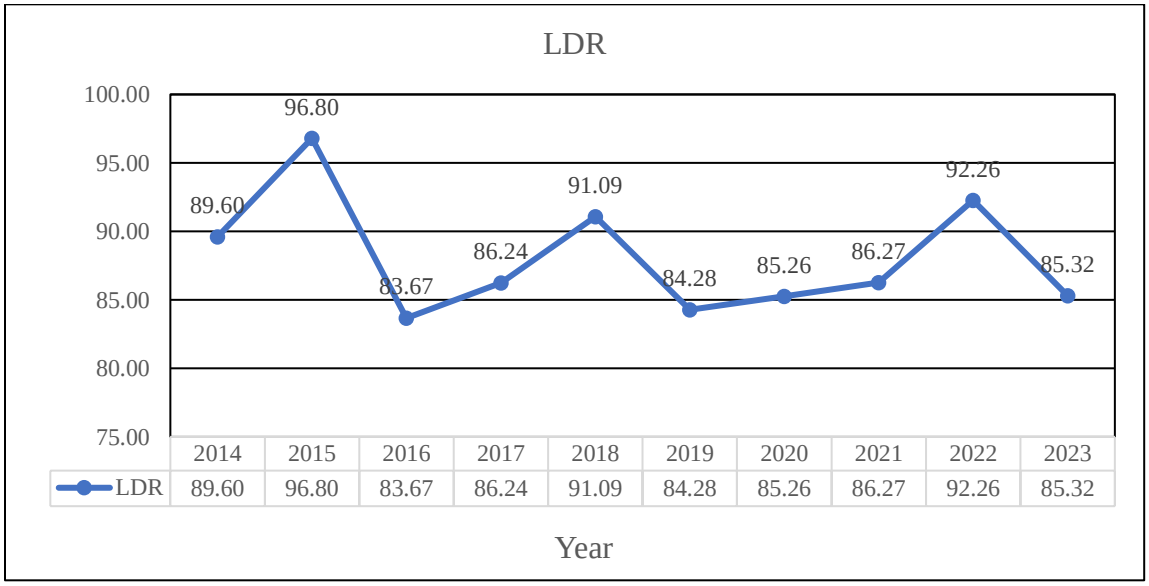
Interpretation: It can be said that the LDR trend of Janata Bank PLC has been fluctuating steadily over the ten-year period of 2014 to 2023. It reached the peak point in 2023 with 88.06%. LDR was in declining trend since 2019, it was 68.85 in 2021. However, it increased to 82.93 in 2022. The loan to deposit ratio is high in 2023.

3. Mercantile Bank PLC



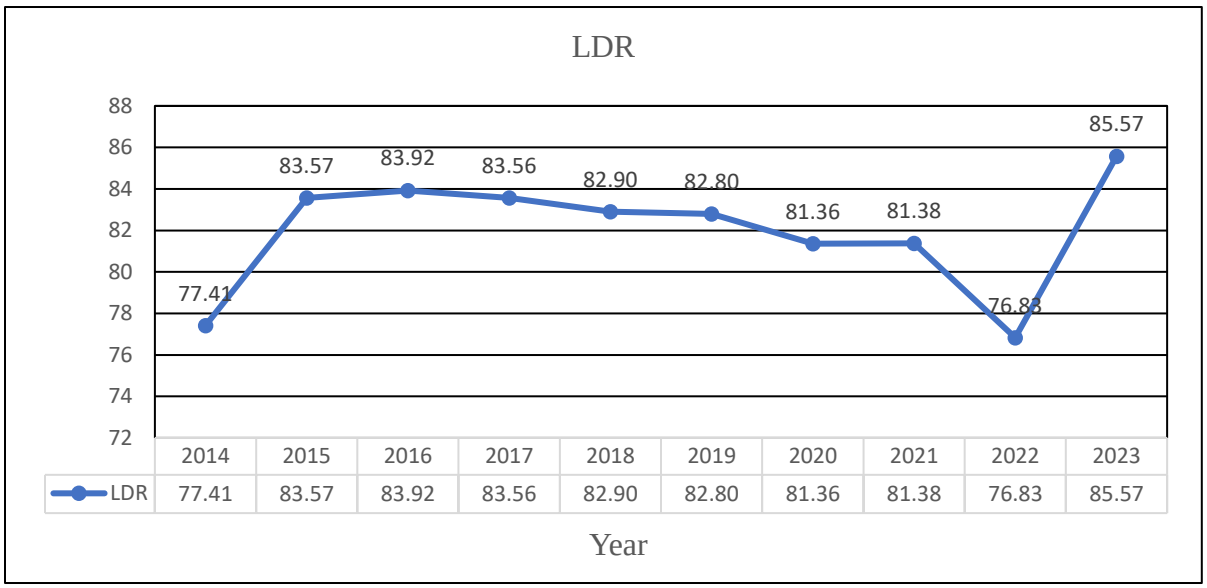
Interpretation: The LDR trend of Mercantile Bank PLC shows fluctuations over the ten-year period with significant drop in 2015 and a notable peak in 2021. The general trend shows varying financial strategies and lending behaviors, with periods of both increase and decrease in the LDR, reflecting changes in how the bank manages its loan to deposit ratio. The overall pattern shows a recovery in the latter years after the low in 2015.

4. AB Bank PLC



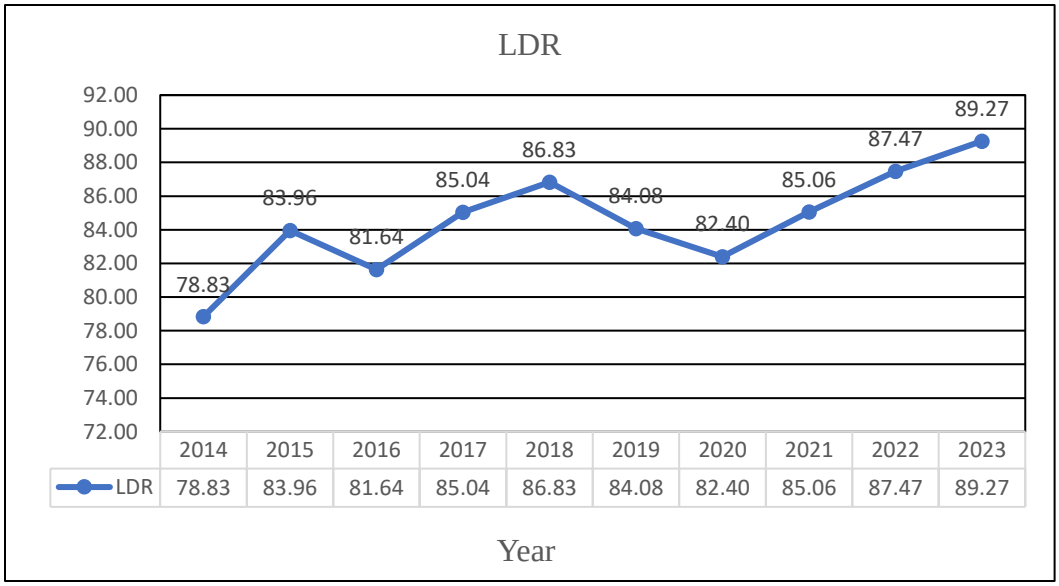
Interpretation: Between 2014 and 2023, AB Bank PLC's Loan to Deposit Ratio (LDR) varied, reaching a high of 96.80% in 2015 and falling to 83.67% in 2016. Over time, it had modest increases and decreases, peaking at 92.26% in 2022 and then falling to 85.32% in 2023. This illustrates how AB Bank has adjusted its lending procedures and liquidity management in reaction to shifting market and regulatory circumstances.

5. NCC Bank PLC



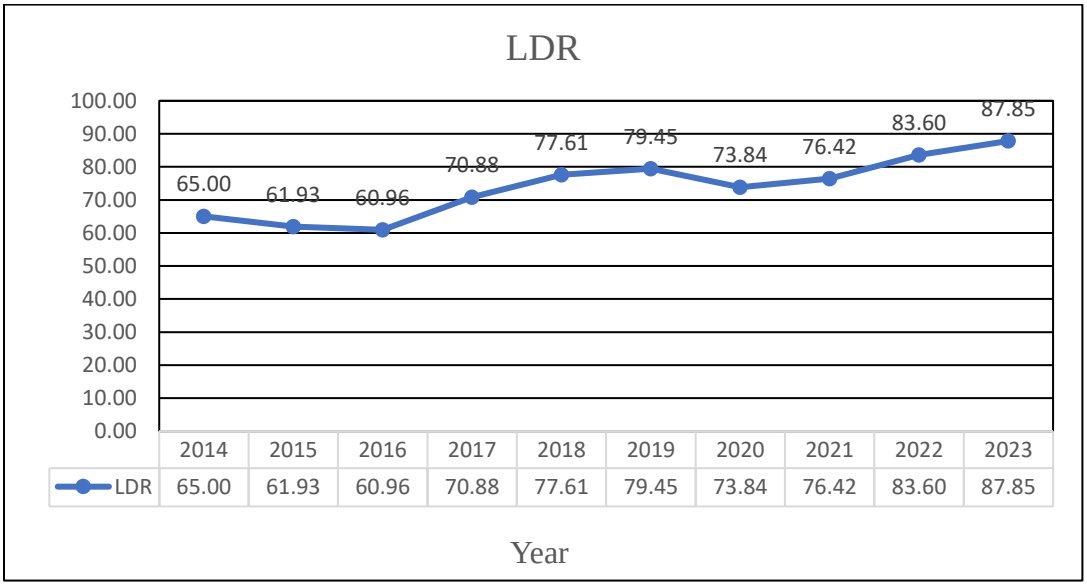
Interpretation: The Loan to Deposit Ratio (LDR) of NCC Bank from 2014 to 2023 remained relatively stable with minor fluctuations. It grew steadily from its 2014 starting point of 77.41% to its 2016 peak of 83.92%. The ratio modestly decreased and remained between 81 and 83% between 2017 and 2021, indicating steady lending practices. It fell to 76.83% in 2022, suggesting either increased deposit inflow or a conservative approach to lending. The LDR, however, grew significantly to 85.57% in 2023, indicating a rise in loan disbursement. With a recent increase suggesting more active lending, NCC Bank was able to maintain a balanced LDR overall.

6. IFIC Bank PLC



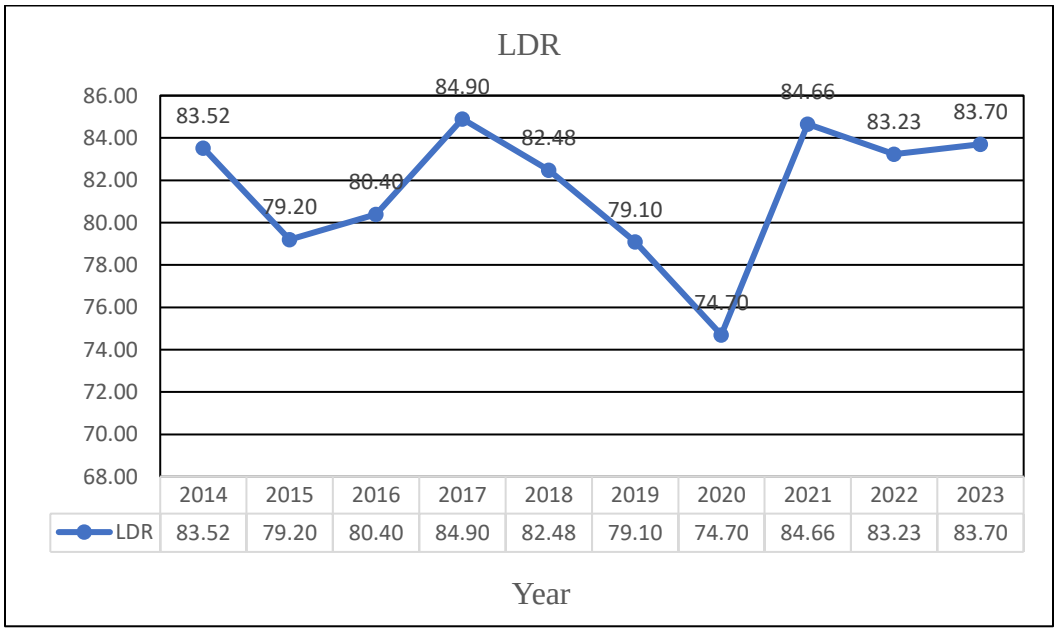
Interpretation: The Loan to Deposit Ratio (LDR) of IFIC Bank shows a typically growing trend from 2014 to 2023. It increased gradually from 78.83% in 2014 to 86.83% in 2018. The ratio increased once more in the ensuing years, reaching 89.27% in 2023, despite a minor decline in 2019 and 2020. This increasing trend shows that IFIC Bank has been steadily increasing lending operations in comparison to deposits, which is indicative of a more aggressive loan strategy and increased deposit base usage.

7. Uttara Bank PLC



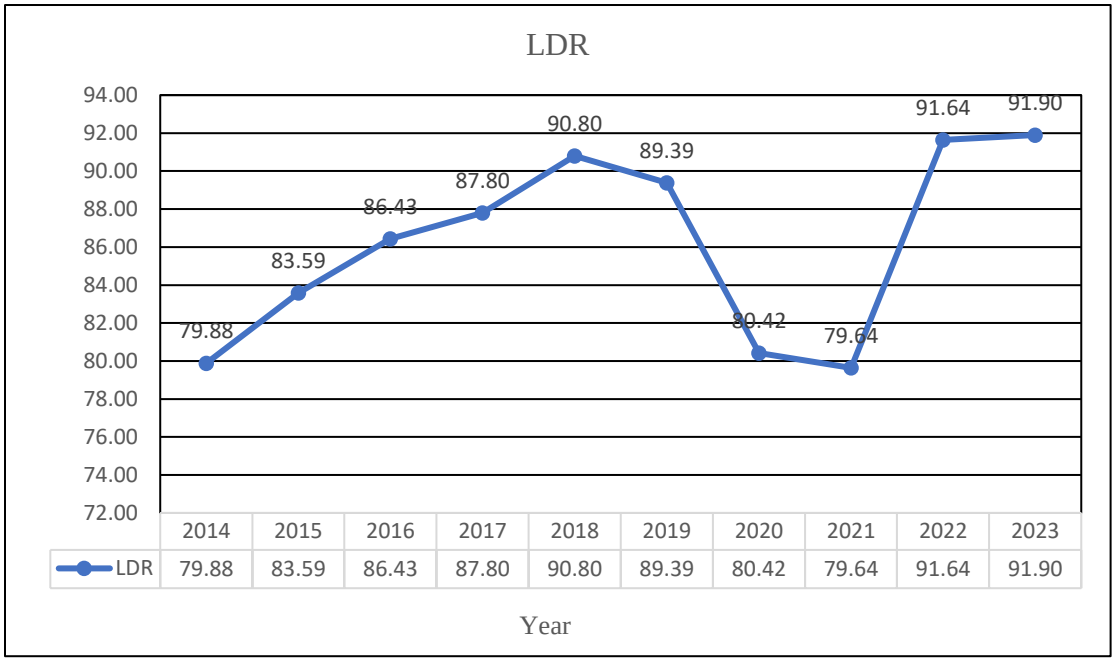
Interpretation: From 2014 to 2023, Uttara Bank PLC's Loan to Deposit Ratio (LDR) clearly indicates an increased tendency. The ratio, which indicates conservative lending, began at 65.00% in 2014 and decreased marginally until 2016, when it reached 60.96%. But starting in 2017, the LDR rose gradually, reaching a high of 87.85% in 2023. This increase implies that Uttara Bank has gradually boosted its lending activities in comparison to deposits, which is indicative of a change in recent years toward a more aggressive loan strategy and higher credit growth.

8. City Bank PLC



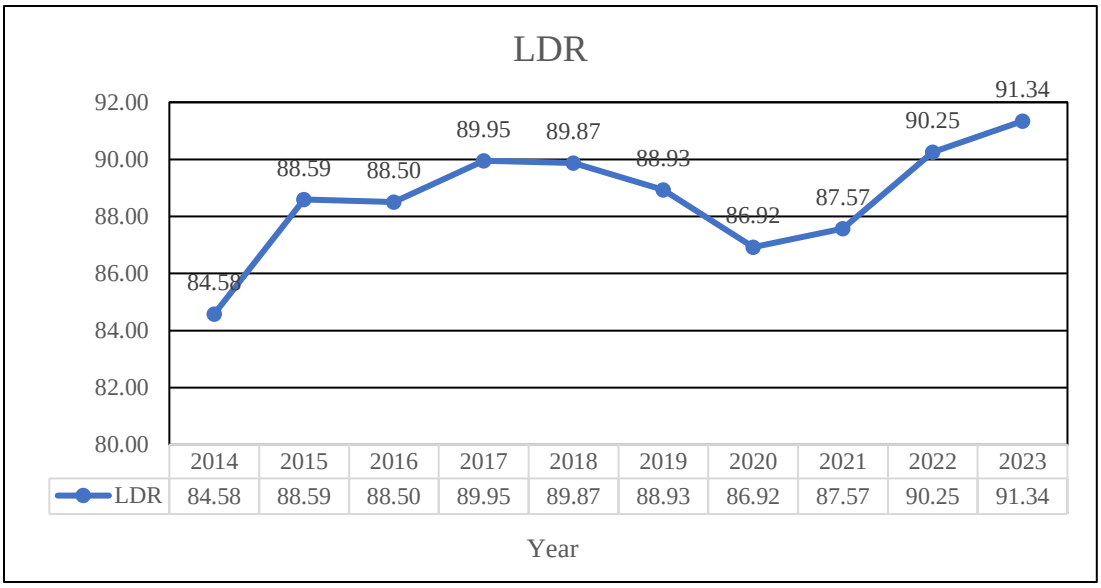
Interpretation: There are moderate variations in City Bank PLC's Loan to Deposit Ratio (LDR) between 2014 and 2023. In 2014, it was 83.52%; in 2015, it dropped to 79.20%; and in 2017, it grew steadily to 84.90%. The ratio fell to a low of 74.70% in 2020 after a minor dip in 2018 and 2019, most likely indicating cautious lending amid uncertain times. But in the years that followed, it made a remarkable comeback, staying above 83% from 2021 to 2023. The LDR was steady overall, suggesting steady lending practices with a modest uptick in recent years.

9. Islami Bank Bangladesh PLC



Interpretation: The Loan-Deposit Ratio (LDR) of Islami Bank Bangladesh PLC shows fluctuating trends from 2014 to 2023. Initially, the LDR rose steadily, peaking at 90.80% in 2018, indicating aggressive lending. However, it dropped sharply to 80.42% in 2020 due to reduced loan demand during COVID-19. Post-pandemic, the LDR surged to 91.90% in 2023, its highest in a decade, suggesting strong credit growth but also potential liquidity risks if deposit growth doesn't keep pace. This trend reflects the bank's shifting strategies in response to economic conditions and regulatory changes.

10. Al-Arafah Islami Bank PLC



Interpretation: As lending activity gradually grew, Al-Arafah Islami Bank PLC's Loan-Deposit Ratio (LDR) rose from 84.58% in 2014 to 91.34% in 2023. Prior to a minor decline in 2020 (86.92%) as a result of COVID-19, the ratio was steady at 88–90%. Following the pandemic, it saw a significant recovery, reaching 91.34% in 2023. Given that the bank is lending a greater percentage of its deposits, this increased trend indicates a stronger exposure to credit risk, which could put pressure on liquidity should the economy deteriorate.

5.2 Statistical Analysis

5.2.1 Descriptive Statistics

Variables	Obs.	Mean	Median	Max.	Min.	Std. Dev.	Skewness	Kurtosis
Loan to Deposit(LDR)	100	80.521	83.595	92.260	55.64	9.324	-1.214	3.57
Return on Assets (ROA)	100	.656	.675	1.700	-.01	.415	.151	2.33
Capital Adequacy Ratio (CAR)	100	12.302	12.625	15.910	6.28	2.212	-.482	2.915
Bank Size (BS)	100	26.739	26.615	28.340	25.67	.685	.538	2.389
Total Loans to Total Assets(TLTA)	100	68.041	70.79	83.500	43.3	9.325	-.985	3.258
Operating Expenses to Total Assets(OETA)	100	2.033	1.885	3.500	1.24	.537	.962	3.276
Gross Domestic Product(GDP)	100	6.478	6.765	7.880	3.45	1.169	-1.541	4.87
Inflation(INFR)	100	6.434	5.695	9.880	5.51	1.352	1.624	4.487

Source: Based on the output generated from STATA 14.2

Interpretation: The study focused on ten banks in Bangladesh from 2014 to 2023. For every variable utilized in the study, the mean, standard deviation, median, minimum, maximum, skewness, and kurtosis are displayed in the table. To mitigate the influence of extreme outliers 1% winsorization is applied to the variables. For all the variables, the Mean and median values are not exactly matched but they are quite similar. In terms of skewness, LDR, CAR, TLTA, and GDP have negative skewness, indicating their distributions are slightly shifted to the left. In contrast, ROA,BS, OETA, and INFR have positive skewness, suggesting their distributions are shifted to the right. The kurtosis values of the variables in the dataset can be categorized into three types. Variables such as LDR, TLTA,OETA,GDP and INFR have kurtosis greater than 3, making them

leptokurtic. On the other hand, ROA, CAR and BS have kurtosis values below 3, classifying them as platykurtic.

5.2.2 Correlation Matrix

Variables	LDR	ROA	CAR	BS	TLTA	OETA	GDP	INFR	VIF Factor
Loan to Deposit(LDR)	1.000								-
Return on Assets (ROA)	0.139	1.000							2.608
Capital Adequacy Ratio (CAR)	0.354	0.637	1.000						2.085
Bank Size(BS)	-0.119	-0.638	-0.443	1.000					1.88
Total Loan to Total Asset (TLTA)	0.939	0.158	0.399	-0.029	1.000				1.869
Operating Expenses to Total Assets(OETA)	-0.196	0.578	0.349	-0.539	-0.188	1.000			1.46
Gross Domestic Product(GDP)	0.086	0.066	-0.051	-0.060	0.036	0.108	1.000		1.103
Inflation(INFR)	0.228	-0.083	-0.011	0.189	0.164	-0.121	-0.168	1.000	1.073

Source: Based on the output generated from STATA 14.2.

Interpretation: The correlation matrix is employed to analyze the linear relationships between the independent variables and identify multicollinearity. LDR and ROA have a somewhat positive correlation, indicating that banks with higher profitability typically have higher loan-to-deposit ratios. LDR and CAR are positively correlated, which means that banks with greater capital adequacy typically have higher loan-to-deposit ratios. The association between BS and LDR is

rather inverse. LDR and TLTA have a very strong favorable association. The link between LDR and OETA is somewhat inverse. LDR and GDP have a very slight positive relationship. LDR and INFR have a little positive association. Additionally, the variance inflation test reveals that the mean value of VIF is 1.726, which further supports the idea that there is no multicollinearity among the variables because a VIF greater than 10 denotes a problem with multicollinearity.

5.2.3 Hausman Specification Test

In panel analysis, fixed effects and random effects models can be distinguished using the Hausman test.

From the result of Hausman test,

Chi square test value =11.405

P value= 0.122

Source: Based on the output generated from STATA 14.2.

Here, H0: Random effect model is better than Fixed Effect Model

H1: Random effect model is not better than Fixed Effect Model

As p value is more than 0.05 , null hypothesis is accepted. Random effect model is better than fixed effect model.

5.2.4 Regression Analysis

To explore the impact of bank specific and macroeconomic determinants on liquidity risk, pooled OLS , random effect panel regression and fixed effect panel regression are used. The dependent variable in this instance is the loan-to-deposit ratio, whereas the independent factors are the following: return on assets (ROA), capital adequacy ratio (CAR), bank size (BS), total loans to total assets (TLTA), operating expenses to total assets (OETA), GDP growth rate (GDP), and inflation (INFR). It is evident from the Hausman Test that the Random Effect Model outperforms the Fixed Effect Model.

Impact of Bank Specific and Macroeconomic Determinants on Liquidity Risk

Variables	**Pooled OLS Model**	**Random Effect Model**
	LDR (T- stat)	LDR (T-stat)
Return on Assets(ROA)	-1.608 (-1.48)	-0.814 (-0.74)
Capital Adequacy Ratio(CAR)	-0.121 (-0.66)	-0.171 (-0.90)
Bank Size (BS)	-2.862*** (-5.10)	-2.496*** (-2.78)
Total Loan to Total Asset (TLTA)	0.92*** (25.32)	1.026*** (20.15)
Operating Expenses to Total Assets(OETA)	-1.37* (-1.92)	-0.608 (-0.62)
Gross Domestic Product(GDP)	0.564** (2.27)	0.463** (2.17)
Inflation (INFR)	0.785*** (3.60)	0.672*** (3.45)
Constant	91.067*** (5.72)	74.007*** (2.98)
F stat	0.000 (144.766)	
Chi2		0.000 (552.93)
R-squared	0.917	0.913
No of Observation	100	100

**** p<.01, ** p<.05, * p<.1*

Source: Based on the output generated from STATA 14.2.

In pooled OLS Model, the coefficient of ROA is -1.608 (t=-1.48, p>0.10). In Random Effect Model, the coefficient of ROA is -0.814 (t=-0.74, p<0.10).In both model, the relation between return on assets and liquidity risk is negative. The negative suggests that higher profitability may be associated with lower liquidity risk. However, the result is statistically insignificant in both models. The coefficient of CAR is -0.121 (t=-0.66, p<0.10). In Random Effect Model, the coefficient of CAR is -0.171 (t=-0.90, p<0.10).The relation between capital adequacy ratio and liquidity risk is negative and statistically insignificant indicating that capital strength does not significantly affect the loan-to-deposit ratio in this dataset. Banks with higher CAR are often more conservative in lending because they prioritize maintaining strong capital buffers. As a result, they lend less, which reduces the loan amount relative to deposits-leading to a lower LDR. In pooled OLS Model, the coefficient of BS is -2.862 (t=-5.10, p<0.01). In Random Effect Model, the coefficient of BS is -2.496 (t=-2.78, p<0.01).In both models, the coefficient of bank size is negative and strongly significant. This means that larger banks tend to have lower LDRs, likely because they have more diversified and stable funding sources. In pooled OLS Model, the coefficient of TLTA is 0.92 (t=25.32, p<0.01). In Random Effect Model, the coefficient of ROA is 1.026(t=20.15, p<0.01).The coefficient of TLTA is highly significant and positive, meaning that banks with more loans in their total assets usually have a higher loan-to-deposit ratio. This suggests that these banks may face more liquidity risk because a larger share of their assets is tied up in loans, which are not easily converted to cash. In pooled OLS Model, the coefficient of OETA is -1.37 (t=-1.92, p<0.10). In Random Effect Model, the coefficient of OETA is -0.608 (t=-0.62, p<0.10).The coefficient of OETA is negative but statistically insignificant. High operating expenses may reduce banks' capacity to maintain liquidity. In pooled OLS Model, the coefficient of GDP is 0.564 (t=2.27, p<0.01). In Random Effect Model, GDP has a coefficient of 0.463 (t=2.17, p<0.05).The GDP coefficient is positive and statistically significant . It indicates that in periods of economic growth, banks may increase their lending, which raises the LDR. In pooled OLS Model, the coefficient of INFR is 0.785 (t=3.60, p<0.01). In Random Effect Model, the coefficient of INFR is 0.672 (t=3.45, p<0.01).The coefficient for inflation is positive and highly significant in both models, indicating that rising inflation is associated with an increase in the loan-to-deposit ratio. This suggests that during inflationary periods, banks may face higher funding pressures and consequently depend more on deposit mobilization to support their lending activities.

The F-test result is 144.766 with a p value of 0.000 which suggests that the independent variables collectively have a significant impact on the dependent variable. This means that the model is statistically significant. From the table , we can see that the value of R- squared is 0.917 in pooled OLS Model and 0.913 in Random Effect Model. The R-squared (R^2) value represents the proportion of the variance in the dependent variable (LDR) that is explained by the independent variables in the model. Both models are statistically significant.

5.2.5 Test of Heteroscedasticity

In regression analysis, a situation known as heteroscedasticity occurs when the variance of the error terms, or residuals, varies across all levels of the independent variable or variables.

The hypothesis for the analysis is:

H0:Variance of the residuals is not heteroscedastic

H1: Variance of the residuals is heteroscedastic

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of wldr

chi2(1) = 0.08

Prob > chi2 = 0.7767

Source: Based on the output generated from STATA 14.2.

Interpretation: Here the p value is more than 0.05. The null hypothesis is accepted. So, it can be said the model does not suffer from heteroscedasticity.

Chapter 6

Findings & Discussion

Chapter Six

6.1 Findings & Discussion

The primary goal of the research topic is to determine how macroeconomic and bank-specific factors affect liquidity risk. I have chosen seven independent variables to use in this study. These include GDP growth rate, inflation, bank size, total loans to total assets, return on assets, capital adequacy ratio, and operational expenditures to total assets ratio. LDR (loan to deposit ratio) is the dependent variable. It serves as a gauge of banks' liquidity risk. Our hypothesis is tested at the 5% significance level (0.05).

H1: There is no significant relationship between LDR(Loan to Deposit ratio) and ROA (Return on Assets).

The calculation in the pooled OLS Model yields a significance value of 0.144, which exceeds 0.05. And in Random Effect Model, the significance value is 0.460, which is more than 0.05. So, the null hypothesis is accepted which indicate that there is no significant relationship between LDR(Loan to Deposit ratio) and ROA (Return on Assets).

H2: There is no significant relationship between LDR(Loan to Deposit ratio) and CAR(Capital Adequacy Ratio).

The calculation in the pooled OLS Model yields a significance value of 0.509, which above the significance level of 0.05. From the calculation in Random Effect Model, the significance value is 0.367, which is more than the significance level 0.05. For this the null hypothesis is accepted. That means there is no significant relationship between LDR(Loan to Deposit ratio) and CAR(Capital Adequacy Ratio).

H3: There is no significant relationship between LDR(Loan to Deposit ratio) and BS (Bank Size).

The calculation in the pooled OLS Model yields a significance value of 0.000, which is less than our 0.05 level. The Random Effect Model computation generated a significance value of 0.000, which is less than our 0.05 limit. So, the null hypothesis is rejected, indicating a significant relationship between LDR (Loan to Deposit ratio) and BS (Bank Size).

H4: There is no significant relationship between LDR(Loan to Deposit ratio) and TLTA(Total Loans to Total Assets).

The calculation in the pooled OLS Model yielded a significance value of 0.000, which is less than the 0.05 level. The calculation in the Random Effect Model yields a significance value of 0.000, which is less than the 0.05 level. For this, the null hypothesis is rejected. That instance, there is a significant relationship between the LDR (Loan to Deposit ratio) and TLTA (Total Loans to Total Assets).

H5: There is no significant relationship between LDR(Loan to Deposit ratio) and OETA (Operating Expenses to Total Assets).

From the calculation in pooled OLS Model, the significance value is 0.058 which is more than the significance level 0.05. From the calculation in Random Effect Model, the significance value is 0.533 which is more than the significance level 0.05. For this the null hypothesis is accepted. That means there is no significant relationship between LDR(Loan to Deposit ratio) and OETA(Operating Expenses to Total Assets).

H6: There is no significant relationship between LDR(Loan to Deposit ratio) and GDP Growth rate.

From the calculation in pooled OLS Model , the significance value is 0.026 which is less than the significance level 0.05. From the calculation in Random Effect Model , the significance value is 0.030 which is less than the significance level 0.05. For this the null hypothesis is rejected. That means there is a significant relationship between LDR(Loan to Deposit ratio) and GDP Growth rate.

H7: There is no significant relationship between LDR(Loan to Deposit ratio) and INFR(Inflation).

From the calculation in pooled OLS Model , the significance value is 0.001 which is less than the significance level 0.05. From the calculation in Random Effect Model , the significance value is 0.001 which is less than the significance level 0.05. For this the null hypothesis is rejected. That means there is a significant relationship between LDR(Loan to Deposit ratio) and INFR(Inflation).

6.2 Hypothesis Summary

	P value		
	Pooled OLS Model	Random Effect Model	
1	0.144	0.460	No Relationship
2	0.509	0.367	No Relationship
3	0.000	0.005	Significant Relationship
4	0.000	0.000	Significant Relationship
5	0.058	0.533	No Relationship
6	0.026	0.030	Significant Relationship
7	0.001	0.001	Significant Relationship

6.3 Theoretical Interpretation

In both the Pooled OLS and Random Effects models, the regression findings indicate a negative but statistically insignificant link between Return on Assets (ROA) and Loan to Deposit Ratio (LDR). This means that by abstaining from overlending, more successful banks may be able to retain reduced liquidity risk. In both the Pooled OLS and Random Effects models, the regression findings show a negative but statistically insignificant link between the Capital Adequacy Ratio (CAR) and the Loan to Deposit Ratio (LDR). This implies that banks with greater capital may lend more cautiously, which would lower LDR. The regression analysis shows a strong, negative, and statistically significant relationship between bank size and liquidity risk (measured by the Loan to Deposit Ratio). This implies that larger banks, due to diversified funding options and stronger operational capacity, maintain lower liquidity risk compared to smaller banks. The regression results show a strong, positive, and statistically significant relationship between the Total Loan to Total Asset (TLTA) ratio and the Loan to Deposit Ratio (LDR). This implies that banks with a higher proportion of their assets in loans face greater liquidity risk, as more of their funds are tied up in less liquid assets. The evidence clearly supports that high lending intensity increases liquidity pressure. GDP growth reflects overall economic expansion, increased investment, and stronger credit demand. The regression results show a positive and statistically significant relationship between GDP and the Loan to Deposit Ratio (LDR), suggesting that higher economic growth

increases liquidity risk in banks. This may occur because during economic expansion, loan demand rises faster than deposit inflows, putting pressure on banks' liquidity positions. The regression results reveal a positive and highly significant relationship between inflation and the Loan to Deposit Ratio (LDR), indicating that higher inflation levels are associated with increased liquidity risk in banks. This suggests that inflationary conditions may reduce deposit growth and increase funding pressures, pushing banks to rely more on loans to manage their liquidity needs.

Chapter 7

Recommendations & Conclusion

Chapter Seven

Recommendations& Conclusion

7.1 Recommendations

1. As larger banks tend to have lower liquidity risk, regulatory agencies should motivate smaller banks to adopt stronger liquidity risk management strategies, including improved asset-liability matching, contingency funding strategies, and a wider range of funding sources.
2. The strong positive correlation between the Total Loan to Total Asset (TLTA) ratio and liquidity risk implies that banks should avoid excessive exposure to illiquid loan portfolios. Regulatory bodies may want to consider instituting stricter loan concentration limits or liquidity coverage stipulations to promote a healthier balance between loans and liquid assets.
3. Considering the notable influence of GDP growth and inflation on liquidity risk, banks ought to incorporate macroeconomic indicators into their liquidity risk forecasting models. Routine stress-testing and scenario analysis based on inflationary or rapid growth conditions should be integral to risk assessments.
4. Although the link between Operating Expenses to Total Assets (OETA) and liquidity risk was not significant, banks should still strive to minimize inefficiencies within their cost structure. Enhancing cost controls can bolster overall financial stability and alleviate indirect liquidity pressures.
5. Banks need to adopt flexible asset-liability management practices that swiftly respond to fluctuations in the loan-to-deposit landscape, particularly during economic upturns or inflationary periods. Maintaining a balanced loan-to-deposit ratio is crucial for long-term liquidity sustainability.
6. Regulators should develop early warning systems that flag banks with rapid growth in TLTA or deteriorating LDR. Regular stress tests and liquidity risk reviews should be conducted, especially during periods of economic volatility.
7. Overdependence on a single funding channel can heighten liquidity risk. Banks should aim to diversify their funding base by accessing multiple instruments—such as interbank loans, capital markets, and institutional borrowings and by expanding across different maturities and geographies to mitigate concentration risk.

8. Each financial institution should have a clearly defined contingency plan that specifies strategic responses for various liquidity stress situations. This plan should identify dependable emergency funding sources, establish communication protocols, and outline step-by-step actions for different levels of liquidity strain.

7.2 Conclusion

This study examined the influence of bank-specific and macroeconomic factors on liquidity risk in the banking sector, using the Loan to Deposit Ratio (LDR) as the measure of liquidity risk. The analysis used both Pooled OLS and Random Effects models on a panel dataset of 100 observations, covering key variables such as Return on Assets (ROA), Capital Adequacy Ratio (CAR), Bank Size (BS), Total Loan to Total Asset ratio (TLTA), Operating Expenses to Total Asset (OETA), Gross Domestic Product (GDP), and Inflation (INFR).

The findings reveal that bank size and total loans to total assets are the most influential bank-specific factors. Bank size shows a strong negative and statistically significant relationship with liquidity risk, suggesting that larger banks tend to manage their liquidity more efficiently, possibly due to diversified funding sources and better risk management. In contrast, TLTA showed a positive and highly significant impact on LDR, indicating that banks with a higher proportion of loans in their asset base face greater liquidity pressure due to the illiquid nature of loans.

Among the macroeconomic variables, both GDP and inflation had a positive and significant effect on liquidity risk. Higher GDP levels may encourage more lending, which can outpace deposit growth and increase liquidity strain. Similarly, inflation appears to raise liquidity risk, possibly by eroding depositors' real income and increasing funding pressures on banks.

Other variables such as ROA, CAR, and OETA displayed expected directional signs but were statistically insignificant, indicating that their influence on liquidity risk was not strong enough to draw firm conclusions within the scope of this dataset.

Overall, the results give a crystal-clear idea about the importance of maintaining a balanced asset structure, monitoring macroeconomic conditions, and enhancing capital and operational efficiency to ensure sound liquidity risk management in the banking sector.

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Appendices

Appendix -01: List of Banks in Bangladesh whose data were used in this report.

Serial No.	Name of the Banks
1	Agrani Bank PLC(AB PLC)
2	Janata Bank PLC(JB PLC)
3	Mercantile Bank PLC(MB PLC)
4	AB Bank PLC(ABB PLC)
5	National Credit and Commerce Bank PLC(NCCB PLC)
6	International Finance Investment and Commerce Bank PLC(IFICB PLC)
7	Uttara Bank PLC(UB PLC)
8	City Bank PLC(CB PLC)
9	Islami Bank Bangladesh PLC(IBB PLC)
10	Al-Arafah Islami Bank PLC (AAIB PLC)

Appendix -02: Data of liquidity Risk Ratio(Loan to Deposit Ratio) and Bank Specific Factors for years 2014-2023

Bank Name	Year	LDR	ROA	CAR	BS	TLTA	OETA
AB PLC	2014	61.23	0.40	10.44	26.93	47.5	1.77
AB PLC	2015	55.64	0.12	9.54	27.06	43.3	1.97
AB PLC	2016	53.81	-1.12	10.03	27.16	39.45	2.44
AB PLC	2017	60.17	1.00	10.24	27.24	47.35	2.29
AB PLC	2018	63.63	0.13	10.09	27.39	50.15	2.09
AB PLC	2019	67.29	0.13	10.02	27.47	54.55	1.95
AB PLC	2020	56.34	-0.01	9.74	27.72	47.52	1.61
AB PLC	2021	59.28	0.12	7.55	27.81	50.03	1.46

AB PLC	2022	78.36	0.10	6.28	27.77	63.44	1.45
AB PLC	2023	76.53	0.06	4.57	27.84	61.5	1.47
JB PLC	2014	61.97	0.61	10.30	27.17	50.89	1.55
JB PLC	2015	61.50	0.70	10.16	27.25	50.66	1.59
JB PLC	2016	62.80	0.33	10.69	27.38	51.76	1.69
JB PLC	2017	70.77	0.33	10.06	27.42	57.02	1.74
JB PLC	2018	79.00	0.03	10.09	27.49	61.63	1.61
JB PLC	2019	79.33	0.03	10.03	27.52	61.26	1.57
JB PLC	2020	73.46	0.01	10.05	27.67	58.02	1.39
JB PLC	2021	68.85	0.26	8.98	27.85	55.99	1.24
JB PLC	2022	82.93	0.09	7.83	27.87	66.83	1.27
JB PLC	2023	88.06	0.04	6.75	27.96	70.93	1.21
MB PLC	2014	86.71	0.76	12.95	25.85	69.48	2.13
MB PLC	2015	78.54	0.79	11.87	25.93	69.11	2.19
MB PLC	2016	85.15	1.15	13.03	26.04	73.93	2.77
MB PLC	2017	84.27	1.3	11.93	26.28	76.74	2.03
MB PLC	2018	86.30	1.09	13.28	26.40	76.95	1.89
MB PLC	2019	84.10	0.78	13.92	26.48	74.88	1.84
MB PLC	2020	84.30	0.73	13.61	26.52	75.27	1.99
MB PLC	2021	85.98	0.99	14.09	26.61	74.22	2.02
MB PLC	2022	86.82	0.59	14.35	26.67	73.47	2.15
MB PLC	2023	85.57	0.52	14.79	26.72	70.82	2.07
ABB PLC	2014	89.60	0.54	10.32	26.23	72.09	2.12
ABB PLC	2015	96.80	0.48	11.09	26.38	73.59	1.97
ABB PLC	2016	83.67	0.44	10.79	26.48	69.49	1.91
ABB PLC	2017	86.24	0.01	10.80	26.47	73.00	1.87
ABB PLC	2018	91.09	0.01	10.03	26.50	74.74	1.73
ABB PLC	2019	84.28	0.05	10.12	26.62	70.17	1.76
ABB PLC	2020	85.26	0.10	10.84	26.68	71.18	1.47
ABB PLC	2021	86.27	0.16	10.74	26.74	70.79	1.39

ABB PLC	2022	92.26	0.17	10.31	26.74	76.28	1.47
ABB PLC	2023	85.32	0.17	10.26	26.80	73.02	1.40
NCCB PLC	2014	77.41	1.16	13.42	25.63	67.27	2.13
NCCB PLC	2015	83.57	0.97	13.52	25.71	71.64	2.11
NCCB PLC	2016	83.92	1.3	11.97	25.87	72.96	1.78
NCCB PLC	2017	83.56	0.94	11.51	26.03	72.48	1.87
NCCB PLC	2018	82.90	0.82	12.62	26.21	72.29	1.75
NCCB PLC	2019	82.80	0.86	13.41	26.27	69.69	1.88
NCCB PLC	2020	81.36	0.87	13.21	26.27	69.14	1.89
NCCB PLC	2021	81.38	0.98	15.86	26.35	68.90	1.88
NCCB PLC	2022	76.83	0.92	14.82	26.43	69.49	1.83
NCCB PLC	2023	85.57	0.74	15.91	26.49	71.70	1.96
IFICB PLC	2014	78.83	1.1	10.14	25.78	65.42	2.83
IFICB PLC	2015	83.96	0.5	10.07	25.91	69.12	2.46
IFICB PLC	2016	81.64	0.7	11.25	26.01	69.59	2.57
IFICB PLC	2017	85.04	0.9	12.57	26.27	70.79	2.11
IFICB PLC	2018	86.83	0.6	12.63	26.38	73.10	1.80
IFICB PLC	2019	84.08	0.81	12.8	26.48	72.12	1.89
IFICB PLC	2020	82.40	0.17	12.24	26.62	73.05	1.55
IFICB PLC	2021	85.06	0.52	13.1	26.73	75.16	1.64
IFICB PLC	2022	87.47	0.68	12.78	26.87	76.18	1.79
IFICB PLC	2023	89.27	0.51	11.82	26.99	78.87	1.93
UB PLC	2014	65.00	0.99	12.04	25.67	52.69	2.69
UB PLC	2015	61.93	0.99	12.76	25.74	50.05	3.50
UB PLC	2016	60.96	0.94	13.57	25.81	50.65	3.92
UB PLC	2017	70.88	0.87	12.94	25.91	58.84	3.37
UB PLC	2018	77.61	0.9	12.46	25.97	62.51	3.27
UB PLC	2019	79.45	0.97	13	25.99	64.54	3.37
UB PLC	2020	73.84	0.96	14.05	26.13	60.13	2.69
UB PLC	2021	76.42	0.85	15.24	26.20	62.17	2.61

UB PLC	2022	83.60	1.1	15.38	26.23	66.74	2.79
UB PLC	2023	87.85	1.22	15.5	26.30	69.04	2.45
CB PLC	2014	83.52	1.4	14.3	25.90	67.58	3.12
CB PLC	2015	79.20	1.9	13.2	26.09	68.07	2.90
CB PLC	2016	80.40	1.7	13.2	26.26	68.70	2.69
CB PLC	2017	84.90	1.4	14.7	26.34	71.35	2.92
CB PLC	2018	82.48	0.7	13.4	26.51	71.25	2.84
CB PLC	2019	79.10	0.7	15.2	26.59	69.62	2.82
CB PLC	2020	74.70	1.1	15.5	26.67	70.04	2.53
CB PLC	2021	84.66	1.2	14.2	26.76	68.69	2.50
CB PLC	2022	83.23	1	14.5	26.95	70.00	2.52
CB PLC	2023	83.70	1.2	15.8	27.04	71.27	2.54
IBB PLC	2014	79.88	0.67	11.83	29.51	71.04	1.85
IBB PLC	2015	83.59	0.44	11.66	27.31	73.05	1.86
IBB PLC	2016	86.43	0.59	10.82	27.40	77.27	2.22
IBB PLC	2017	87.80	0.55	11.3	27.53	78.97	2.08
IBB PLC	2018	90.80	0.64	11.97	27.63	80.78	1.94
IBB PLC	2019	89.39	0.50	12.95	27.76	83.50	1.86
IBB PLC	2020	80.42	0.35	13.55	27.98	78.30	1.76
IBB PLC	2021	79.64	0.30	13.54	28.12	78.61	1.64
IBB PLC	2022	91.64	0.34	12.54	28.24	84.43	1.70
IBB PLC	2023	91.90	0.32	12.62	28.34	83.10	1.86
AAIB PLC	2014	84.58	1.10	14.03	26.05	69.73	1.48
AAIB PLC	2015	88.59	1.08	16.65	26.14	70.93	1.52
AAIB PLC	2016	88.50	1.23	14.91	26.31	72.01	1.46
AAIB PLC	2017	89.95	0.99	13.06	26.47	73.89	1.60
AAIB PLC	2018	89.87	0.73	14.68	26.53	77.37	1.77
AAIB PLC	2019	88.93	0.64	14.58	26.65	75.71	1.64
AAIB PLC	2020	86.92	0.61	15.74	26.75	73.78	1.58
AAIB PLC	2021	87.57	0.46	15.46	26.84	72.81	1.50

AAIB PLC	2022	90.25	0.39	14.17	26.99	76.07	1.49
AAIB PLC	2023	91.34	0.41	14.05	27.06	77.99	1.66

Source: Annual Reports of Selected Banks (2014-2023)

Appendix -02: Data of Macroeconomic Factors for years 2014-2023

Year	Name of Macro Economic Factors	
	GDP (%)	INFR(%)
2014	6.06	6.99
2015	6.55	6.19
2016	7.11	5.51
2017	6.59	5.70
2018	7.32	5.54
2019	7.88	5.59
2020	3.45	5.69
2021	6.94	5.55
2022	7.10	7.70
2023	5.78	9.88

Source: World Bank, Bangladesh Bank

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