

Internship Report

On

“Analyses the Impact of Deposit Growth Rate on Bank Stability: An Empirical study of Commercial Banks in Bangladesh”



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Letter of Transmittal

Date: 20 April, 2026

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Subject: Submission of internship Report titled on “Impact of Deposit growth rate on bank stability on the profitability of commercial Bank in Bangladesh.”

Honorable Madam,

It is my exuberant great pleasure and privilege to apprise you that I'm Mohammad Roni, want to submit my internship report on the topic " Impact of Deposit growth rate on bank stability on the profitability of commercial Bank in Bangladesh''. The purpose of this report will be examined how impact of deposit growth rate influences banking profitability by the bank stability. Utmost effort was taken to gather relevant information and make this report as analytical and reliable as possible. I convey my deepest appreciations to honorable madam for his continuous guidance and whole- hearted supervision and supports in preparing this. I express my sincerest gratitude for having been given opportunity to prepare this and like to share that I enjoyed doing so. It was both a pleasure and a challenge as well for me to work under your supervision and I can never repay my indebtedness to you. It has been a very positive and uplifting experience, as I have learnt a lot that wouldn't have been possible otherwise. The final report is based on data from various sources and basis on relevant findings.

I, therefore, would be grateful if you kindly can enlighten me with your perspective on the internship report and asses the report keeping the limitations in mind. I will be glad to answer any queries that you may have in this regard.

Sincerely Yours,

Mohammad Roni

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Acknowledgement

At the very beginning I would like to express my deepest gratitude to my almighty for giving me the strength and the composure to finish the task. Project is an essential part of the BBA program. It is a great pleasure to prepare project report on “ Impact of deposit growth rate on Bank stability on the profitability of Commercial Bank in Bangladesh. On this manner I would like to express my deepest gratitude to my honorable academic supervisor **Aklila Rubaiyath**, along with all other respected teachers for their all-time support and guidelines during BBA program. Department of Finance and Banking, Comilla University for permitting and guiding me to prepare the report

Letter of Certification

This is to certify that the project report titled "**Analysing the Impact of Deposit Growth rate on Bank stability on the profitability of the Commercial Banks in Bangladesh**" has been completed by Mohammad Roni, Session 2020-21, as a partial fulfillment of the requirements for the Bachelor of Business Administration (BBA) degree from the Department of Finance and Banking, Faculty of Business Studies, Comilla University. This project report has been prepared under my supervision and reflects the authentic and successful work carried out by the student.

Signature of Supervisor

.....

Akila Rubaiyath

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Student Declaration

Thereby sincerely declare that this internship report on "**Analysing the Impact of Deposit growth rate on Bank stability on the profitability of commercial Banks in Bangladesh**" is my original work, that has been completed by me under the supervision of Akila Rubaiyath. Lecturer, Department of Finance & Banking, Comilla University. No part of this report has been submitted previously to any other university, college, institution, or organization for any academic certificate, degree, or diploma. This work is free from any copyright infringement, and no portion has been copied from any previous work submitted for any degree. All information derived from published or unpublished sources has been properly acknowledged in the text and references.

I further undertake to identify the department against any lost or damage arising from breach of the forgoing obligation, If any.

Signature of the student

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Executive summary

This report highlights how the growth rate of deposits in Bangladesh affects the stability of commercial banks. Currently, private commercial banks are playing a major role in the economic growth of Bangladesh, as they help in the transfer of money between the surplus and the scarce capital. The banking sector controls 17.80% of the market capitalization of the economy. Commercial banks, if well managed, can ensure the growth of the country. Operating efficiency is the term for how well private commercial banks can make the most money while spending the deposit. This study analyzes data from the 2015-2024 ten years of these banks to realize how the deposit growth rate impact on Bank stability. This study looks at how the Deposit Growth Rate (DGR) affects bank stability in Bangladesh's commercial banking industry. The vital role that deposit mobilization plays in guaranteeing liquidity, assisting lending activities, and upholding general financial stability in the banking system is what spurred the study. Understanding this relationship has become more crucial in light of recent variations in deposit growth brought on by inflation, interest rate changes, and economic concerns. In the First part , I address the primary objective and the study's scope, as well as the justification behind choosing this specific topic. Furthermore, I talk about the crucial nature of the study and the challenges I possessed during working on it. In my second part, I explain previous studies related to this topic , identifying gaps in the existing literature. In the third part, describe the sample size , observation ,the variables included, the shorts of data used and the use of software tools for analysis. Using Stata software, the analysis incorporates use of panel data econometric approaches such as linear regression, robust regression, fixed effects model, and FGLS. Bank stability is measured using Z-score, where the key explanatory variables include deposit growth rate (DGR), non-performing loans (NPL), capital adequacy ratio (CAR), loan-to-deposit ratio (LDR), and bank size. In the last part of the study, I have completed a statistical analysis and explained the results. This report provides essential information for bank managers, legislators, and regulators who want to make the banking sector in Bangladesh more stable. Finally, I have suggested a deposit growth rate that will help banks remain stable and operate more efficiently. I will then present the conclusions of this analysis report.



অগ্রণী ব্যাংক পিএলসি

টমছমব্রীজশাখা, কুমিল্লা।

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TO WHOM IT MAY CONCERN

This is to certify that MdRoni, a student of Comilla University, Department of Finance and Banking, Program: BBA, Roll/ID No: 12117022 has been started his internship program From 24/12/2025 on Agrani Bank PLC, Tomsombridge Branch, Cumilla. He is sincere, dedicated and dutiful to his work.

I wish him every success in life.

With Regards


(Md. Nazrul Islam Choudhury)

SPO & Manager
Md. Nazrul Islam Choudhury
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Chapter one




Introduction

1.0 Introduction

Banking sector is one of the most important sectors of financial system of a country. It is extremely crucial in ensuring that people save money, credit and stimulate the economy. The Banks play a vital role in the industrial growth, the trade growth and employment of Bangladesh. The major source of money to banks is deposits. Banks rob the money of the individuals, companies and institutions and lend it and invest. Thus, the development of deposits is closely related to the bank operations and profitability. Constant and consistent increase in the deposit base ensures that there is adequate liquidity, a reduction in dependence on external borrowing and the increase in financial stability. The increase in deposits can be stagnant, lumpy or unpredictable that can erode the liquidity, increase the risk of finance and decline the trust of the populace. The state contributes significantly to industry growth, trade and generation of jobs by leading to movement of money between the deficit sector and the deficit sector of the economy.

The central bank primarily invests their funds in deposits which can be used to finance their remittances and other important activities. Consequently, liquidity needs to be kept, the pressure on the external supply of energy resources needs to be decreased, and the entire finance system needs to be improved all of which exert pressure on the deposit growth. Slow, declining or interrupted growth in the deposit collection can lead to an increase in the financial conditions, liquidity crisis and loss of consumer confidence in the banking system. The banking industry has in the past year witnessed a widespread variation in the increase of deposits. To provide an example, high interest rates, a steep departure off alternatives, economic uncertainty brought about by volatility and changes in the saving activity will be the first to occur during this period and the growth of deposits (often below 9%-market) to 2025. However, there was an improvement noticed in the mid-2025, with the growth of year-over-year deposit growth increasing to around 10 percent in August and September of that year, the highest in over a year, because of relatively attractive deposit rates compared to decreasing inflation, flight to quality to more stable banks, and stabilized macroeconomic indicators.

Despite these developments, there is yet to be a systematic empirical research on the causes, patterns and effects of a deposit growth volatility in Bangladesh. The paper will fill this gap by discussing recent deposit mobilization trends, the key driving forces, and the effects on the stability and performance of the banking industry. This one is more comprehensible, more entertaining, utilizes more recent data to make it more topical and more articulately explains why it is necessary to conduct research. Comment on it in case you would like me to make

some more changes, e.g. add some specific statistics, shorten it or emphasize more on some of its details. The banking industry in Bangladesh has been subjected to the variability in the deposit growth in the past years in the wake of the inflation effect, alteration in interest rates, competition and economic uncertainty. Such fluctuations may have repercussions on the stability of the banks. Nevertheless, there are few empirical studies in Bangladesh which examine this problem systematically. This research paper tries to address this research gap.

1.1 Background of the Study:

The financial system of Bangladesh has developed and improved remarkably ever since attaining full independence. The emergence of privately owned commercial banks, foreign banks and Islamic banks has made the process of collecting deposits by the banks to be complicated. In order to increase the stability of this financial sector the Bangladesh bank has come up with some rules such as Basel III, capital adequacy rules and risk management recommendations. Even with these measures, some of the banks have problems of liquidity, high levels of bad loans and bad governance. The deposits development plays a pivotal role in solving such problems. With many deposits, banks are able to counter shocks, embrace risks, and remain profitable. Hence it is important to learn how to correlate expansion in deposit and stability so that it can be important to expand banking in a sustainable manner.

1.2 Statement of the Problem:

The trend of deposit development does not align with most of the commercial banks in Bangladesh. Some of these banks are experiencing a rapid deposit growth and others have reached their level or even declined. The causes of these differences can be the management quality, innovation of services, customer trust, and network of branches, and economic conditions. Reduction in deposits growth may force the banks to borrow at high costs that may make the operations risky. On the other hand, the deposit growth left uncontrolled and the risk not controlled adequately may give rise to the aggressive lending which in the future will lead to loan defaults. Although this issue is critical, there are limited studies on how the growth of deposits impacts the stability of banks in Bangladesh. In the paper, this correlation will be explored on the basis of the empirical data.

1.3 Research Problem:

Despite the theoretical links between deposit growth and bank stability, there is limited empirical evidence especially in developing countries that clearly quantifies this relationship.

Research Questions

- ✓ Does the deposit growth rate significantly influence bank stability?
- ✓ What is the nature (positive or negative) and strength of this relationship?
- ✓ Do other factors (e.g., bank size, capital adequacy, economic conditions) mediate this relationship?

1.4 Significance of the study:

The stability of banks in Bangladesh is greatly influenced by the rate of deposit growth and this paper will attempt to delve further on this relationship. The economic growth of a country and inflation control would not be possible without a stable banking system and therefore this research would be vital in the understanding of the impacts of deposit growth on bank stability. This study could be used to resolve this question by analyzing the correlation between the increase in deposits and the stability of a bank to find out whether an increase in deposits poses new risks to banks or can make them more stable.

This plays a crucial role in ensuring stability within the financial system and can guide bank managers in their lending, risk management, and use of deposits. Future corporate research studies can also make reference to the findings of this research and give important information to depositors, investors, regulators and policy makers. Further, the research can be used to contribute to the knowledge gap with regards to the impacts of deposit growth on the stability of a bank and eventually lead to the facilitation of financial stability and generally the well being of the banking system in Bangladesh. This research can contribute to the economic growth and development in the country and its implications might be far-reaching and impact the banking regulations and supervision. On the whole, the present research can contribute to our knowledge of the banking system and its role in the economic growth and stability significantly. This study will enable the stakeholders to make informed decisions by illuminating on the relationship between deposit growth and bank stability, which in turn will allow the banking system to be more stable and resilient in Bangladesh.

1.5 Research Objectives

Broad Objective:

A research on how the rate of deposit growth affects the stability of the private commercial banks in Bangladesh.

This study has some other extra objectives as follows:

- ❖ To test the correlation between deposit growth rate and bank stability.
- ❖ To examine how the increase in deposits can improve or decrease financial stability measures.
- ❖ To determine the relationship between the risk factors and deposits behavior in banks.
- ❖ To determine the importance of deposit expansion on the performance and stability of the bank.
- ❖ To conduct diagnostic tests in order to determine the validity and reliability of the regression model.
- ❖ To choose the best model with model specification tests.
- ❖ To verify and examine the dataset with accuracy and consistency.

1.5.1 Specific Objectives:

To assess the correlation between deposit growth rates and specific bank stability metrics. To evaluate the effects among various bank categories (e.g., commercial versus Islamic banks). To assess the impact of control variables, including bank size and macroeconomic condition.

1.6 Scope of the Study:

As the report is entitled as “Impact of deposit growth rate on bank stability”, So, it will mostly focus on deposit growth rate using selected commercial banks in Bangladesh. the banks included in this analysis are Eastern Bank, city bank, Dutch Bangla bank PLC, BRAC Bank PLC, Islamic Bank PLC, NRBC Bank PLC, Dhaka Bank PLC, IFIC Bank PLC, Bank Asia PLC, And Jamuna Bank PLC. The study examines patterns in deposit growth and bank stability over time over a given time frame (e.g., 2015–2024).

Factors Taken Into Account: Along with control factors including NPL, Bank Size, LDR, ROA, and CAR, it looks at Deposit Growth Rate (DGR) as the primary independent variable and Bank Stability (Z-score) as the dependent variable.

Source of Data: The study makes use of secondary data gathered from the chosen institutions' financial statements and annual reports.

Methodological Range: The study is limited to quantitative methods, using software such as Excel or Stata to do regression analysis to ascertain the relationship between deposit growth and bank stability. Each of the above areas would be critically analyzed in order to determine impact of deposit growth rate on bank stability of commercial Bank.

1.7 Limitation of the Study:

Nevertheless, despite the tremendous efforts, there are a few limitations of this study. To begin with, the three months of practical training limited the scope of the study and did not enable a deeper examination and a more profound study of the variables of the study. Secondly, the study has made use of all the secondary data of ten well-chosen commercial banks. The use of secondary sources like annual reports and published financial statements could cast doubt on the accuracy, consistency, and completeness of the data. Additionally, secondary data limits the possibilities of the banking industry to separate the information about the existing and real events and internal processes. Along with the previously stated limitations, my sample size was 10 banks with 100 observations per bank, so it was not possible for me to complete an observational study on all of the banks in one sitting. Additionally, there were frequent changes to the banks' policies issued by Bangladesh Bank, so it was difficult for me to get current information and strategies. Even with the above limitations, every effort was made to ensure that the report would be accurate and will have value for others.

Chapter Two



Literature Review and Research Gap



2.0 Literature Review

2.1 Financial Inclusion:

The relationship between deposit growth rates and bank stability is one of the most important aspects of modern banking. Since deposits constitute the bulk of banks' primary funding source, their growth patterns play a critical role in determining the organization's long-term viability and well-being. Banks are able to make more money, lend more money, and strengthen their capital positions when deposits increase at sustainable rates. These factors all contribute to the stability of the economy as a whole. To determine how changes in deposits impact the bank's risk and performance, bank management, regulators, and investors must comprehend these intricate relationships.

2.2 Determinants of Bank Deposits and Deposit Growth

Many researchers analyze macroeconomic environment and more bank-specific factors to identify elements that trigger the increase of the bank deposits. Yakubu and Abokor (2020) have pointed out several macroeconomic factors to determine the growth of bank deposits in Turkey. They considered such issues as the overall money supply, inflation levels, the level of economic growth and the stability and health of the banks. Their study revealed that deposits are likely to increase with an increase in the amount of money in circulation. This implies that as there is increased money circulating, individuals will be motivated to deposit it in banks. However, when deposits went on an expansion spurt only two factors were significant, that is, more branches by banks, and the money. Likewise, Kamugisha (2022) also found that the overall economic conditions and individual factors in the banks in Rwanda influence growth in deposits. The government spending and the growth rate of GDP were higher than average in the short term, and the bank size, and external financing were also positively correlated with the level of deposits. They would look at the money in circulation, price growth rate, economy growth, bank performance and stability. What they found was that as the amount of money in circulation increases, the amount of deposits normally increase. It would seem, then, that the greater amount of money in circulation in the economy the more people want that money in the banking system saved. But in the matter of acquiring more deposits in a short time the number of open bank branches and the sum of money in circulation were the only things of any real importance.

Equally, Kamugisha (2022) found out that the rate of deposit growth in Rwanda is dependent on both the economic environment at large and the bank specific factors. The report also observes that raising the interest rates might not be enough to spur deposits and, on the contrary, it would raise the costs of doing business by banks. Also, Khusnia and Wardana (2024) show that financing activities, size of the firm, and good corporate governance also positively contribute to the increase in the amount of deposits in Islamic banking across the continent of Asia. Interestingly, profit-sharing rates did not have a close relationship with deposit growth and this implies that, institutional credibility may work better in deposit attraction compared to monetary policy

2.3 Direct effects of deposit growth rate on bank stability:

Deposits help banks stay stable because when they get more deposits, they can lend out more money. This increases their earnings from interest and helps keep their financial operations steady (Fekadu Zerihun et al, 2024). But the situation gets a bit more complicated when you look at how fast deposits grow and how much they fluctuate. Studies tell us that deposits don't always impact bank stability in a straightforward way. For example, if deposits grow too quickly in some types of banks, it could actually make them riskier, even as research still confirms that deposits usually help keep banks steady (Penczar et al., 2023). Financial inclusion research also shows that cutting down on big ups and downs in how fast deposits grow is good for bank stability. Banks tend to be more stable when their deposit growth is more consistent and less erratic (Nguyen & Du et al, 2022)

2.4 Mechanisms Through which Deposit Growth Affects stability:

This liquidity phenomenon is a major one as the difference between the speed of the increase in loans and the speed of the increase in deposits directly informs us about the risk of a bank that does not have enough cash (Wang et al., 2024). When the deposits are continuous, the money that comes to the banks is used to issue more loans and increase the assets of the banks. But as the loans grow faster than the capital of the bank, the Capital Adequacy Ratio (CAR) of the bank can start decreasing progressively. The importance of such an entire process is because the banks are in fact operating on deposits to survive. They must carry in deposits and once again they must be wary when carrying cash in their hands. This is because, unless they possess sufficient cash, it can deny them the chance to get more deposits, and even cause a bank to collapse (Banke & Yitayaw, 2022). This is also boosted by government policies. Interest rates set by the central bank, along with other government spending and tax decisions, interact and

affect the health of the banks, which is dictated by the current economic situation. Another factor that can predispose the banks to be more or less stable is the degree of development of the financial system and the perceived uncertainty of the economy (Chigozie Agu & Ohonba, 2025).

2.5 Financial Inclusion and Banking Stability

The relationship between supporting financial inclusion through access to deposit accounts and banking industry stability is yet another area of interest discussed in many literature sources. Han and Melecky (2013) note that increased ability to access deposit accounts increases confidence in using deposit funding sources, particularly under times of stress in the financial system. In fact, deposit growth during the global financial crisis was lower in those countries that had a higher level of financial inclusion than in those countries with lower levels of financial inclusion. This suggests that increasing the number of depositors can improve the stability of banks. But there isn't always a clear connection between stability and financial inclusion. Financial inclusion can have a negative impact on bank stability when it is implemented in weak institutional frameworks, according to Ha and Nguyen (2023). report that financial inclusion can negatively affect bank stability when implemented in weak institutional environments. Their findings indicate that institutional quality such as political stability, corruption control, and the rule of law plays a crucial role in moderating the impact of financial inclusion

2.6 Performance and profitability effects

The growth rate of deposits has both positive and negative consequences for banks' stability. Banks may be able to take advantage of economies of scale by having higher deposit growth rates, enabling them to cut their net interest margin, which would also allow them to keep or even improve their overall profitability (Fatih Kansoy, (2025)). Among other things, deposit growth creates competitive pressure on banks and may become an issue during periods of economic downturn when the "war for deposits" forces many banking institutions into aggressive policies that will negatively impact their profit margins. To attract depositors, banks tend to offer higher rates, which in turn reduces their financial margins and negatively affects their institutional profitability (Neves et al., (2020)).

2.7 Regulatory and Institutional Aspects Impacting Bank Stability

Many different studies indicate that the institutional and regulatory framework are important to the preservation of stability in the banking industry. Suljić Nikolaj et al. (2022) suggest that enhancing deposit insurance regimes substantially reduce risk in banks and increase financial stability. Deposit insurance is a key part of the overall resilience of the financial system because it protects small depositors and prevents bank runs. Following a similar theme, Odero and Fredrick (2023) found in their analysis that deposit levels, capital adequacy, and size of deposit-taking SACCOs in Kenya are strong indicators of financial stability. The best predictor of stability among these variables was capital adequacy, indicating that organisations with adequate capital are more resilient to financial shocks. Furthermore, Elshani (2025) finds a complicated connection between deposits, non-performing loans (NPLs), and financial stability. The study demonstrates a positive correlation between NPLs and deposit levels, despite the fact that NPLs have a detrimental impact on stability. This could be because depositors in developing economies have fewer financial options.

2.8 Deposit Growth Rate Determinants and market Dynamics

Determining deposit growth is made more difficult by the characteristics of market rivalry. Competition for retail deposits can both strengthen and weaken the stability of the financial sector from the standpoint of macroprudential regulation. Even though retail deposits are relatively immune to Financing shocks, increased competition for retail deposits has the potential to negatively impact the overall stability of the financial sector (Mashamba,(2021). In modern banking environments, deposit growth dynamics are increasingly influenced by external factors. The significance of a well-adapted deposit policy in balancing savings and investments, reducing financial risks, and fostering sustainable economic growth is highlighted by research that shows how external factors, such as geopolitical instability, affect deposit growth and economic development (Plesca & Stratulat, (2025)

2.9 Interest Rates, Depositor Behaviour, and Deposit Flows

It is well known that interest rates can greatly affect deposit flows and depositor behaviour. Li, et al., (2024) indicate that deposit flow sensitivity is also variable over time – particularly during low interest rates and periods with expansionary monetary policies. Based on their findings, they also found that depositors who change banks often also tend to take out money to fund alternate investments due to the opportunity for investment and prevailing interest rates, which illustrates how both can factor into depositor behaviour. Additionally, Narayanan and

Ratnadiwakara (2024) also highlight how the characteristics of a depositor (such as income level, level of education, and financial knowledge) can also have an effect on the movement of deposits. Furthermore, Ansori et al. (2024) show that benchmark deposit interest rates have a major impact on banking lending dynamics. According to their findings, unpredictable lending behaviour may result from improper interest rate levels, underscoring the significance of rigorous monetary policy design.

2.10 Risk Factors and negative Factors

Under certain circumstances, deposit growth can enhance the stability of banks; however, it creates major risk factors that could endanger the health of financial institutions. The relationship between different types of deposits and their growth rates creates significant challenges for maintaining financial stability, based on studies examining the annual rate of growth of total deposits and several types of depositors (Buchkovskaya et al., (2021). When banks see concentrated development in particular deposit categories without equivalent advancements in risk management skills, these difficulties become very noticeable. Market concentration effects represent a critical risk factor associated with deposit growth patterns. Studies demonstrate that negative effects on bank stability can arise from market share concentration of mobilized capital, where excessive focus on deposit acquisition without proper diversification creates vulnerabilities (Pham et al., (2021) arities of deposit operations' impact on financial stability require careful analysis and management of growth patterns across different deposit categories (Buchkovskaya et al., (2021) arities of deposit operations' impact on financial stability require careful analysis and management of growth patterns across different deposit categories (Buchkovskaya et al., (2021).

2.11 Research Gap:

The reviewed literature demonstrates that deposit growth rate influences bank stability through multiple channels: Based on the reviewed literature, several gaps remain:

Almost all research considers increasing the volume of loans instead of depositing funds. Very little evidence currently exists that investigates deposit growth alone in emerging markets. More research is needed to examine how deposit growth relates to capital adequacy and liquidity together; there is no published panel data on commercial banks in developing countries. The relationship between deposit growth and competition has not yet been adequately studied

Many studies emphasize profitability rather than comprehensive stability measures such as Z-score. Liquidity effects (Andros et al., 2020). Moral hazard and insurance design (Ngalawa et al., 2016a; 2016b). Volatility and depositor behavior (Aniemeke, et al (2024). Market competition and concentration (Ferreira, et al (2023)

The steady and medium deposit growth enhances the liquidity and capacity to lend one out and stabilizes the financial system. However, extremely rapid or volatile deposit growth, particularly in loose regulatory systems, may encourage an atmosphere of overconfidence in risk-taking and encourage insolvency risk. Despite the fact that some of the earlier scholars view the three factors independently (deposit insurance, deposit volatility, and competition), little literature directly quantifies the cause-effects relationship between the growth rate of deposits alone and the measures of bank stability (e.g., Z-score, NPL ratio, or insolvency probability). This is the gap that leads to need to carry out more Previous studies have not sufficiently examined the effects of the growth rate of deposits on the stability of the banks using a comprehensive model that considers the use of Z-Score in relation to the commercial banks of Bangladesh. Although much research has been conducted globally, empirical evidence examining the effect of deposit growth rate on bank stability with Z-score and various bank-specific variables on this effect in the framework of commercial banking sector in Bangladesh is lacking.

2.12 Hypothesis Development

This study focuses on the following five hypotheses, which were derived from the literature review, to determine the factors that influence operating efficiency for ten private commercial banks.

Null Hypothesis (H_0): There is no significant relationship between Deposit Growth Rate (DGR) and Bank Stability (Z-score).

Alternative Hypothesis (H_1): There is a significant relationship between Deposit Growth Rate (DGR) and Bank Stability (Z-score).

Chapter Three

Research Methodology

3. Research Methodology

The impact of deposit growth rates on commercial bank stability in Bangladesh is the focus of this quantitative research study. This quantitative research was undertaken with multiple independent banks that are in the same sector, have similar deposit, and loan characteristics, as well as similar number of employees. The overall goal of this study is to explain the relationship between deposit growth, other financial variables and the implications for long-term bank stability. Through an explanatory research design, the researchers will be able to obtain an understanding of how different financial variables are connected to each other and what is the degree to which deposit growth has an effect on the bank's ability to sustain long-term financial stability. A quantitative research design will be used in order to analyze the relationships between deposit growth rate and the long-term sustainability of banks through the utilization of numerical and statistical data. As a result, the outcome of this study will be presented through descriptive-analysis approaches.

3.1 Research Type:

This investigation is of quantitative nature. It is based on quantitative data gathered by secondary sources, e.g. published by Bangladesh Bank and annual reports of particular commercial banks). The paper looks at how the rate of growth of deposits is related to the stability of a bank through statistical and econometric techniques, including regression analysis. This makes its research methodology quantitative, i.e. the methodology that concentrates on measurable things and statistical testing.

3.2 Design of Research:

An explanatory (causal) research design is used in this study. The cause-and-effect link between the Deposit Growth Rate (DGR) and Bank Stability (Z-score) is explained by this design. The study analyzes the data of ten commercial banks during a period of ten years (2015-2024) using a panel data approach.

The research uses a number of econometric models and they include:

OLS regression pooled

Model of Fixed Effects

Sturdy regression

Feasible Generalized Least Squares, or FGLS.

This approach helps in understanding the influence of changes in the independent variables (DGR, NPL, CAR, LDR, and bank size) on the dependent variable (bank stability) over time.

3.3 Population and Sample:

All scheduled private commercial banks in Bangladesh make up the study's population. However, a sample of ten commercial banks has been chosen for investigation due to time restrictions and data availability.

3.4 Sampling Design:

Only designated commercial banks in Bangladesh are included in the sample to guarantee consistency and validity in comparison. This sample was specifically selected because, in contrast to Bangladesh's thriving private commercial banks, private commercial banks are experiencing deteriorating performance and growing difficulties. The aim is to explore the impact of deposit growth rate determination specifically within the private commercial Banking sector, where issue is more critical and less researched.

3.5 Sample and Sample Size:

A sample of 10 commercial banks was chosen for the study based on the availability of data. The study period spans ten years, from 2015 to 2024. As a result, 100 banks-year observations make up the entire sample size.

3.6 Data Source and Collection:

This research is solely using secondary sources obtained from various Bangladesh Bank publications, the annual reports of the selected commercial banks, and the official websites of those banks. The source of macroeconomic data will be obtained via the Bangladesh Bank website, while financial data such as total deposits, assets, and capital adequacy ratios (CARs) will be obtained from the annual reports of the banks. The time frame covered in this study spans from 2015 to 2024, ensuring a comprehensive and up-to-date analysis of the banks' financial trends. Data are gathered from the following: Annual Reports of Eastern Bank, City Bank, Dutch- Bangla Bank, IFIC Bank, and BRAC Bank Islamic bank Bangladesh , Bank Asia, Jamuna Bank Dhaka Bank, (2015–2024) All collected data are numerical, quantitative, and suitable for panel data analysis.

3.7 Method of Data Analysis and tools:

The study applies a quantitative research approach to examine the relationship between deposit growth rate and bank stability among selected commercial banks in Bangladesh. Multiple

regression analysis was used to ascertain the connection between deposit growth rate and bank stability. Bank stability (Z-score) was used as Stata and Microsoft Excel are used to analysis the secondary data that has been gathered. To test the hypotheses and assess how the independent factors affect bank stability, descriptive statistics, regression analysis, and correlation analysis are employed.

3.8 Conceptual Framework:

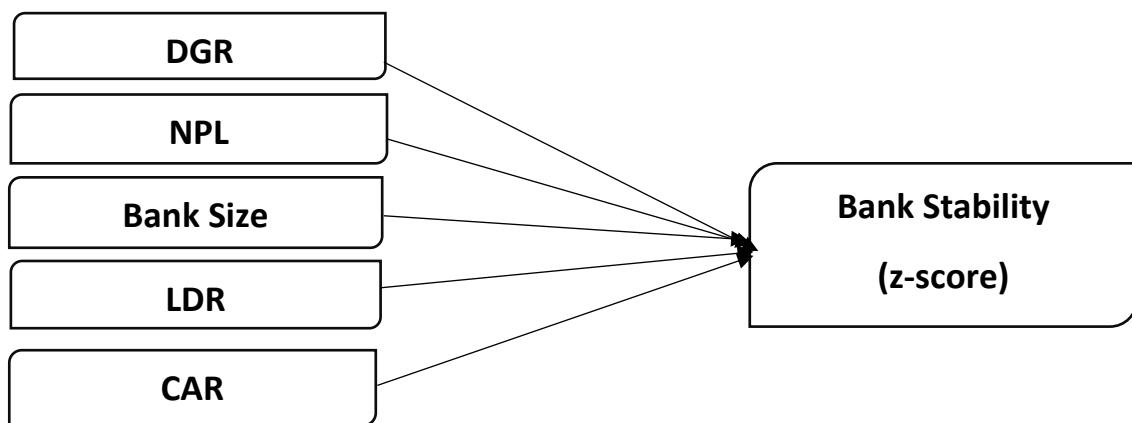


Figure:1 Conceptual Framework

The purpose of this research project was to examine the effect of changes in deposit volume at banks on the stability of those banks. Increased volume of deposits increases the amount of capital a bank has available for making loans and investing in other assets, thus helping a bank's ability to withstand financial pressures. Therefore, banks with a higher volume of deposit growth would be expected to have improved overall stability as well. However, bank stability has its own influences on other financial measures. The analysis included control variables such as loan-to-deposit ratio (LDR), capital adequacy ratio (CAR) and non-performing loans (NPL) as part of the study.

Where:

Bank Stability (Z-score) = Dependent Variable

Deposit Growth Rate (DGR) = Main Independent Variable

LDR, CAR, NPL, and BSIZE = Control Variable

3.9 Model Specification:

As per the earlier studies, this current study utilized multiple linear regression for the purpose of studying the relationship between bank stability and Rates of Deposit Growth (DGR). A Multiple Regression (MR) model was used to investigate how DGR influence(s) banks' overall stability, where the DGR is defined as the independent variable and based upon Z-scores the dependent variable would be used to quantify bank stability. Additional variables or control variables were also included.

This study applies a panel data multiple regression model to examine the impact of deposit growth rate on bank stability.

The econometric model is specified as follows:

Where,

$$\text{(Bank Stability) Z-Score} = \beta_0 + \beta_1 \text{DGR}_{it} + \beta_2 \text{NPL}_{it} + \beta_3 \text{Bank size}_{it} + \beta_4 \text{LDR}_{it} + \beta_6 \text{CAR}_{it} + \varepsilon(1)_{it}.$$

Explanation of the Model;

Z-Score = Bank stability of bank i at time t (dependent variable)

$\beta\alpha$ = Constant term

GDR = Deposit Growth Rate (main independent variable)

NPL = Non-Performing Loan ratio

Bs = Bank size (log of total assets)

LDR = Loan-to-Deposit Ratio

CAR= Capital Adequacy Ratio

$\varepsilon(1)_{it}$ = Error term

i = Bank

t = Time (year)

3.10 Variables Identified

All of the dependent and independent variables used in the analysis are listed below. Furthermore, economic theory has been used to establish predicted relationships.

Table:1 Description of Variable included in the models

Variable	Type	Description & Calculation procedure	Expected Relationship	Data Source
Z-score	Dependent	Indicator of Bank Stability= (calculated as $(ROA + Equity/Assets)/\sigma(ROA)$)	Rapid deposit growth	Annual Report
DGR	Independent	Deposit Growth Rate Deposit Growth Rate (DGR) = (Current Year Deposit – Previous Year Deposit) / Previous Year Deposit	Positive or negative	Annual Report
NPL	Independent	Non-Performing Loan Ratio=Non-performing loans / Total loans	Negative (-)	Annual Report
Bank size	Independent	Bank Size (Natural log of total assets)	Positive larger (+)	Annual Report
LDR	Independent	Loan to Deposit Ratio Total loans / Total deposits	Negative excessive (-)	Annual Report
CAR	Independent	Capital Adequacy Ratio = Capital / Risk-weighted assets	Positive(+)higher	Annual Report

Z-score (Dependent): Bank stability is measured by the Z-score higher values suggest better stability.

DGR (Independent): Deposit Growth Rate is positively correlated with stability.

LDR (Independent): Loan to Deposit Ratio; inverse link (high lending → risk).

CAR (Independent): Capital Adequacy Ratio has a positive correlation with stability.

NPL (Independent): Non-Performing Loans Ratio has a negative correlation (more bad loans = less stability).

BANK SIZE (Independent): Natural log of total assets; positive relationship (larger banks → more stable).

Chapter Four



Data Analysis & Findings



4.0 Data Analysis Empirical Result

This stage initially focuses on the presentation, analysis and interpretation of data . The data is examined using various statistical tools such as Descriptive analysis, Correlation ,VLF Test, Linear Regression , Robust Regression. Autocorrelation test, heteroskedasticity test, Hausman test, Fixed Effect Regression. All of these analysis are discussed in this chapter.

4.1 Summery Statistics

Table -1: Descriptive Statistics Analysis

Descriptive Analysis shows important information about statistical measurement such as:

variable	Mean	Min	Max	Observation	Skewness	Kurtosis
Score	65.329	14.14	114.68	100	-.038	1.974
DGR	14.027	4.87	27.02	100	0.492	2.126
NPL	4.391	2.93	6.46	100	0.459	1.981
LGR	87.958	74.41	101.75	100	0.104	1.831
CAR	14.128	11.86	16.64	100	0.137	1.724
SIZE	394318.2	178334	837145	100	1.061	3.025

Source: Authors self-contribution based on the output generated from STATA-18 and Excel.

Interpretation

The table showing statistical analyses illustrates the way in which each variable in the study has distributions about its mean and how each variable compares to others in terms of its main characteristics. For the stability of the banks, the Z-score varies between 14.14 and 114.68, with the mean score being 65.329, indicating that bank stability has a significant amount of variation overall within the sample. There is a large standard deviation (31.483) for the regression table, which is considered a high standard deviation, this also supports that bank stability is not universally or consistently recognized. The deposit growth rate has a mean of 14.027 and each institution experiences deposit growth of between 4.87 to 27.02, therefore there is an average of moderate levels of variability in deposit growth across all institutions in the sample. In addition, the average number of non-performing loans across all institutions has an average of 4.391; with non-performing loans ranging from 2.93 to 6.46, indicating a level of credit risk with an average degree of predictability. The average loan-to-deposit ratio, which

is a measure of how banks are utilizing their deposit funds through loans, has an average loan-to-deposit ratio (LDR) of 87.958, meaning banks are heavily utilizing their deposit funds to issue loans. Lastly, the average capital adequacy ratio (CAR) of all banks has a mean of 14.128, indicating the banks are in good financial condition. There is significant variation in the size (SIZE) of the various banks that can show differences of magnitude to other banks. Most of the variables seem to be approximately regularly distributed, but this depends on the levels of skewness and kurtosis.

4.2 Pairwise correlations Test:

A statistical method of quantifying the relationship between two variables is called pairwise correlation. It displays the direction (either negative or positive) and strength of the relationship. The outcome is a correlation coefficient (r) that takes the values of -1 to +1. It is common in research to examine relationships among variables prior to further analysis.

Table- 2: Correlation statistics test

Variables	SORE	DGR	NPL	LDR	CAR	SIZE
SCORE	1.000					
DGE	-0.197	1.000				
	0.049					
NPL	-0.296	-0.272	1.000			
	0.003	0.006				
LDR	0.069	-0.192	-0.047	1.000		
	0.495	(0.056	0.640			
CAR	0.157	0.096	-0.290	-0.232	1.000	
	0.118	0.342	(0.003	(0.020		
SIZE	0.367	-0.020	-0.080	-0.143	0.070	1.000
	0.000	0.847	0.429	0.156	0.487	

Source: Authors' self-contribution based on the output generated from STATA-18 and Excel.

Interpretation

A correlation analysis provides an understanding of how variables are interrelated. The analysis demonstrates a significant negative correlation ($r = -0.197$, $p < 0.10$) between bank stability and deposit growth rates (DGR), meaning that there may be negative consequences for bank stability when deposit growth is high. Additionally, a significant negative correlation ($r = -0.296$, $p < 0.01$) exists between bank stability and the presence of non-performing loans (NPL),

meaning that the higher number of non-performing loans in a bank, the less stable the bank's operational activities. The positive and significant correlation between bank size (SIZE) and stability ($r = 0.367$, $p < 0.01$) suggests that larger banks are more stable. Nonetheless, there are no meaningful connections between LDR and CAR and bank stability. For independent variables, the multicollinearity and correlation coefficients are both 0.8

4.3 Linear Regression:

Linear Regression Analysis is a statistical technique that is employed to study the relationship between a dependent variable and one or more independent variables. It demonstrates the influence of the variations in the independent variables on the dependent variable. The relationship between the variables is represented by a best-fit line. It has been widely applied in predicting and to quantify the magnitude and direction of relationships in research work.

Table- 3: Output of Regression test

Variables	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
DGR	-1.214	.416	-2.92	.004	-2.04	-.387	***
NPL	-8.464	2.585	-3.27	.001	-13.50	-3.332	***
LDR	.25	.329	0.76	.45	-.404	.903	
CAR	1.654	1.835	0.90	.37	-1.99	5.299	
SIZE	0	0	3.86	0	0	0	***
Constant	53.51	50.823	1.05	.295	-47.4	154.421	
Mean dependent var		65.329		SD dependent var		31.483	
R-squared		0.290		Number of observation		100	
F-test		7.674		Prob > F		0.00	
Akaike crit. (AIC)		950.442		Bayesian crit. (BIC)		966.073	
*** $p<.01$, ** $p<.05$, * $p<.1$							

Source: Authors' self-contribution based on the output generated from STATA-18 and Excel.

Interpretation

Deposit Growth Rate (DGR) coeff. = -1.214 (p-value = 0.004 - significant at 1%) implies that for every 1-unit increment in DGR there is a 1.214 unit decrease in bank stability, and therefore, generally that increased growth in deposits decreases bank stability and increases overall risk of financial loss from depositors. Very similar findings can be seen looking at coefficient for Non-Performing Loans (NPL) (p-value = .001 - very significant) where there was a coefficient of -8464. This indicates that increased credit risk (indicated by NPL) increases the likelihood that the bank's subsequently will lack the stability to remain in business. Further banks incorporating Loan to Deposit Ratio (LDR) & Capital Adequacy Ratio (CAR), while not yielding any meaningful results (all were > 0.05), had so significance on the overall stability of the bank. Conversely, banks exhibiting larger total asset bases (SIZE) had a significantly positive correlation, which would be indicative of banks being generally stable from 1) greater economies to scale and 2) cash flow stability. The model's R-squared value (.290) shows that the model describes approximately 29% of total variability of bank stability and thus has an overall strong F statistic p-value (.000), thus showing statistical validation of this model.

4.4 Linear Regression VC (Robust test)

Table -4: Robust test

Score	Coef.	Robust std. err	t-value	P> t	[95%conf. interval]
DGR	-1.214	.467	-2.60	0.011	-2.142 - .286
NPL	-8.46407	2.899	-2.92	0.004	-14.220 - 2.708
LDR	.250	.355	0.70	0.484	-.455 .954
CAR	1.654	1.753	0.94	0.348	-1.826 5.134
SIZE	.0000525	.0000127	4.12	0.000	.0000272 .0000778
Constant	53.510	54.01004	0.99	0.324	-53.72812 160.748
R-squared		0.2899	Number of observation		100
F-test		10.32	Prob > F		0.0000
*** $p<.01$, ** $p<.05$, * $p<.1$					

Source: Authors self-contribution based on the output generated from STATA-18 and Excel.

Interpretation

To account for possible heteroskedasticity or autocorrelation in the model, this table displays the results of a linear regression analysis using the VC robust standard error (variance-

covariance robust test). The results of a robust linear regression analysis examining the effects of five independent variables deposit growth rate (DGR), non-performing loan ratio (NPL), loan-to-deposit ratio (LDR), capital adequacy ratio (CAR), and logarithm (size) of total assets are shown in the table. The bank's performance or stability score is likely the dependent variable. This model explains 28.99% of the score's variance ($R\text{-squared} = 0.2899$), based on 100 total observations. The whole model's substantial statistical significance ($F\text{-test} = 10.32$, $\text{Prob} > F = 0.0000$) shows that the independent components together explain the dependent variable beyond chance. GR has a negative and statistically significant coefficient of -1.214 (robust std. err. = 0.467, $t = -2.60$, $p = 0.011$). A one-unit rise in DGR is associated with a 1.214-unit decrease in Score, all other things being equal. Significance at the 5% level (**) is confirmed by the lack of zero in the 95% confidence interval [-2.142, -0.286].

NPL is very significantly negatively related to score, it has a significant negative relationship evidenced by a regression coefficient of -8.46407 which resulted in a robust t-statistic of -2.92 ($p=0.004$). For every one-unit movement in NPL, there would be, on average, an approximate movement in score of -8.46. These results also have a 95% confidence interval which ranges from [-14.220, -2.708] indicating results being statistically significant at the 1% significance level (**). There was no statistically significant relationship for LDR or CAR. The coefficients for LDR (0.250) and CAR (1.654) had p-values of .484 and .348 respectively and both had confidence intervals containing 0 at a 95% level after adjusting for all other independent variables in the model. Based on these results, both the size of the bank have a positive correlation to the bank's score; however, the last two independent variables related to deposits' growth and asset quality (NPL's) will produce the best estimates of the lower-performance rating of the banks. Robust standard errors provide reliable inferences as to both LDR and CAR even though there may be heteroskedasticity in relation to a given independent variable and as a result the reliability of the inferences are not negatively impacted.

4.5 Test of Multicollinearity:

Multicollinearity test in regression analysis is to determine whether independent variables are very correlated with one another. It arises when two or more variables of explanation are in a similar direction. This may complicate the determination of individual effects of each of the variables on the dependent variable. It may also result in untrustworthy and unstable regression outcomes. The VIF (Variance Inflation Factor) test is the most frequently used in detecting it. When VIF is large (typically greater than 10), then there is a problem of multicollinearity.

Table- 5: VIF Test (Variance Inflation Factor)

Variable	VIF	1/VIF
DGR	1.14	0.877
NPL	1.220	0.821
LDR	1.170	0.854
CAR	1.150	0.868
SIZE	1.040	0.966
Mean VIF	1.14	

Source: Authors' self-contribution based on the output generated from STATA-18 and Excel.

Interpretation

Based on analysis results, it appears that the variables analyzed for commercial banks' deposit growth rate and financial stability do not show signs of high multicollinearity. The VIF values for all measures are relatively low-to-moderate and the mean is less than an acceptable value; therefore, all measures would generally be viewed as having no multicollinearity. independent variables (DGR, NPL, LDR, CAR, SIZE) were evaluated for multicollinearity using the VIF test. All multicollinearity values are low; LDR (1.170) DGR (1.110) NPL (1.320) CAR (1.1700); Measures = (1.040). VIF value below 5 (10 frequently used to imply absence of multicollinearity), however the mean VIF = 1.140, and all 1/VIF reciprocal values are high (all>0.82) ($p < 2$). There is no strong linear relationship between the independent variables. Therefore; knowing how each explanatory variable affects the dependent variable is necessary to identify the effect; as such; the standardized regression coefficients are stable & not affected by multicollinearity. All four regression diagnostics & standard regressions indicate that this model has a sound statistical basis; that it violates no major assumptions (i.e.No HOR, No Autocorrelation, No M-C); & can be used with accuracy to make inferences regarding the effects of the independent variables on the dependent variable (Scores).

4.6 Diagnostic test

4.6.1 Test of Heterosdasticity

Heteroscedasticity is a regression model phenomenon where the error term variance does not vary with the observations. It contravenes one of the most important assumptions of the

Ordinary Least Squares. The typical ones are BreuschPagan test and White test. In its presence, it may cause inefficient estimates and standard errors that are biased.

Table 6: Output of Weisberg Test

Breusch–Pagan/Cook–Weisberg test for heteroskedasticity	
Assumption: Normal error terms	
Variable: Fitted values of score	
Null hypothesis H0: Constant variance	
chi2(1) =	0.13
Prob > chi2 =	0.7222

Source: Authors’ self-contribution based on the output generated from STATA-18 and Excel.

Interpretation

In this diagnostic approach, we will assess the homoskedasticity (equal variance) of the estimated standard regression model by evaluating the residuals produced by that model. The null hypothesis (H0) is that error variance is equal across all values of x. The Chi-square statistic is $\chi^2(1) = 0.13$; we reject the null hypothesis if our p-value is < 0.05 . Since our p-value (0.7222) is much greater than the conventional 5% level of statistical significance, we fail to reject the null hypothesis and conclude that there is no evidence of heteroskedasticity in our regression model. Our assumption of heteroskedastic error variance has been met; therefore, the standard errors and t-statistics presented in the summary of the main regression table can be relied upon as accurate measures. Thus, the robust regression results have been generated without correcting for excess variation.

4.6.2 Test of Autocorrelation

Autocorrelation is present when there is a correlation between error terms, particularly in time series data. It also violates a basic assumption of the Ordinary Least Squares model. Durbin Watson test is a test that is commonly used to identify autocorrelation. It may lead to erroneous statistical conclusions and false testing of hypotheses.

Table 7: output of Wooldridge test for autocorrelation

Wooldridge test for autocorrelation in panel data**Null hypothesis, H0: there is no first-order autocorrelation**

F(1, 9) =	4.217
Prob > F =	0.0702

Source: Authors' self-contribution based on the output generated from STATA-18 and Excel.

Interpretation

The goal of this test is to see if there is any correlation among the panel data residuals. We used a method to find out. The results show $F(1, 9) = 4.217$ and the p-value is 0.0702. This means we cannot say that the null hypothesis is wrong. The null hypothesis says there is no first-order autocorrelation. We did not find any significant evidence of first-order autocorrelation in the panel data. This is because the p-value is a little higher than 5%, which is the threshold we usually use. The p-value is close to 0.10 which suggests that there might be a chance of serial correlation. So, it might be an idea to do more studies with bigger samples or try different methods. The panel data structure does not seem to have any problems with autocorrelation. This is also supported by the fact that the regression estimates are reliable. The panel data residuals do not show any first-order serial correlation, which is good. The results of the test give us confidence, in the panel data dataset.

4.7: Cross-sectional time-series FGLS regression

Cross-section time-series FGLS (Feasible Generalized Least Squares) regression is a panel data methodology that is employed when data has both cross-sectional (e.g., firms, banks) and time-series dimensions. It is used to correct such problems as heteroskedasticity and autocorrelation of the error terms. FGLS is used to estimate the variance covariance structure of the errors and transform the model appropriately. This results in more efficient and reliable coefficient estimates than ordinary least squares (OLS). It is widely applied in both economic and financial studies that deal with panel data.

Table 8 outcome of Cross- Section time - series

SCORE	Coef.	St. Err.	t-value	p-value	[95%Conf	Interval	Sig
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DGR	-1.214	.404	-3.01	.003	-2.005	-.423	***
NPL	-8.464	2.506	-3.38	.001	-13.376	-3.552	***
LDR	.25	.319	0.78	.434	-.376	.875	
CAR	1.654	1.78	0.93	.353	-1.834	5.142	
SIZE	0	0	3.98	0	0	0	***
Constant	53.51	49.275	1.09	.278	-43.067	150.087	
Mean dependent var		65.329	SD dependent var		31.483		
Number of observation		100	Chi-square		40.821		
Prob > chi2		1.000	Akaike crit. (AIC)		950.442		
*** $p<.01$, ** $p<.05$, * $p<.1$							

Source: Authors' self-contribution based on the output generated from STATA-18 and Excel.

Interpretation

Feasible Generalized Least Squares is portrayed by the acronym FGLS. This pooled regression takes into consideration the heteroskedasticity and time and bank-wise serial correlation. It takes into account all observations as cross-sections and offers panel construction. It is applicable when you desire the aggregate (between + within) effects and the standard errors are desired to be strong. DGR: Correlation = -1.214 ($p = 0.003$, *) Every time the deposit growth rate increases, the SCORE decreases by a -8.464 point. Banks actively increasing their deposits may be relying on more risky funding sources or increasing their growth too fast, which will have a negative impact on overall performance and stability (a frequent effect in emerging economies where high rate. For each percentage point increase in the NPL ratio, SCORE is reduced by 8.464 points. Incredibly powerful detrimental impact. SCORE is lowered by 8.464 points for every percentage point increase in the NPL ratio. The biggest cost to the health of banks is in terms of non-performing loans based on the banking research. Increased bad loans also increase higher concentration of regulation, reduced profitability and higher costs of provisioning. LDR: Coefficient = 0.25 (insignificant $p = 0.434$) No close relationship. There are no effects of the loan interest coverage ratio of this pooling model on SCORE. CAR: Positive, non-significant with a coefficient of 1.654 ($p = 0.353$). SIZE: Coefficient = 0

(although $t = 3.98$, $p = 0$, $SD = 31.483$, mean SCORE = 65.329 (huge range between banks). There are 100 observations.

4.8 Hausman specification test:

The Hausman Test is an econometrics statistical test applied to select between two models typically between a fixed effects and a random effects model. It tests the individual effects of the unique errors (individual effects) to the regressors. The null hypothesis: The model of choice is the random effects (there is no correlation). In case of a significant result in the test, the null hypothesis is dropped, and the fixed effects model is better suited. It helps ensure consistent and unbiased estimation in panel data analysis.

Table 9: Output of Hausman test

	Coef.
Chi-square test value	41.951
P-value	0

Source: Authors' self-contribution based on the output generated from STATA-18 and Excel.

Interpretation:

The Fixed effects and Random Impact models were compared using the Hausman (1978) specification test. The yielded a p-value of 0.000 and a chi-square value of 41.951. The null hypothesis is rejected because the p-value is very significant (less than 0.01. the Random Effects model is suitable, according to null hypothesis (the explanatory variables are uncorrelated with the individual specific effects) For this panel data study, the test findings suggest that the Fixed Effects model should be preferred over the Random Effects model.

4.9 Regression Result fixed Effect

A Fixed Effects Model (FEM) is a panel data analysis that is employed to examine data through time in the same individuals such as firms or countries. It is based on the assumption that the entities possess distinctive traits which do not evolve with time. These time-invariant characteristics may affect the dependent variable. FEM adjusts these individual differences which are not observed. It concentrates solely on the changes in each entity with time. It is normally utilized in cases where these individual effects are correlated with explanatory variables

Table- 10 Output of fixed Effect Regression

Variable	Coef.	Robust Std.Err.	t- value	P> t	[95%Conf.	Interval]
DGR	2.642	.206	12.82	0.000	2.175779	3.108
NPL	-1.863	.398	-4.68	0.001	-2.762452	-.963
SIZE	13.530	6.763	2.00	0.076	-1.769021	28.830
LDR	-.272	.289	-0.94	0.372	-.9266006	.383
CAR	3.595	1.393	2.58	0.030	.4448268	6.746
Constant	-47.422	97.484	-0.49	0.638	-267.9464	173.102
R-Squared		0.0704	Number of Observation		100	
F-test		99.48	Prob > F		0.0000	
*** $p<.01$, ** $p<.05$, * $p<.1$						

Source: Authors' self-contribution based on the output generated from STATA-18 and Excel.

Interpretation

Fixed Effect Regression Analysis shows that the overall model fit is 7.04, and the Statistically Significant F-Test ($F=99.48$, $p<0.01$). Any characteristics that are specific to banks do not vary over time, and are addressed using the fixed effects model and the within bank variance. Important Findings (Sturdy SE): DGR: +2.642 ($p = 0.000$) is a very very big coefficient. Bank stability (SCORE) goes up by 2.642 points with a 1 percent increase in deposit growth. This means that the greater the deposit growth the better the stability in the same bank. NPL Stability is negatively affected and significantly. CAR Positive and significant → enhances stability. SIZEP positive statistically non-significant at the 10% level. LDR Not very significant. DGR becomes very critical and positive when bank-specific effects are considered, implying that deposits must be increased to enhance the stability of the banks.

Discussion and Findings from Data Analysis

This research will seek to determine the impact of expansion of the bank in terms of deposit as a consequence of the bank stability level of a bank, using the panel data of the ten commercial banks in Bangladesh. These ten banks are Eastern bank PLC, BRAC Bank PLC, Islami bank Bangladesh PLC, city bank PLC, Jamuna bank PLC and bank Asia PLC. When determining

the relationship between the level of stability of bank in terms of Z scores and deposit growth rate (DGR) in the bank, three statistical methods were used: Fixed Effect Models, Robust Regression and Linear Regression. The results support an estimation of a positive relationship that is statistically significant positive between DGR and bank's level of stability. What is meant by this is that the higher the DGR of a bank the more stable the bank will be. Effective management of bank deposits will contribute to more bank stability. The study findings can be used by the researchers, bank regulators and bank managers as a source of information. The positive and statistically significant effect of DGR on the bank stability The Deposit Growth Rate (DGR) has a positive and statistically significant impact on the bank stability This finding is consistent with other researchers, such as Drechsler et al. (2017, 2021) and Li et al. (2023) who find that deposit-based funding increases the bank stability by improving its funding resilience. Chowdhury et al. (2024) have pointed out that high growth in stable deposits is an important factor in the stability of banks, as it contributes to financial soundness and reduces the risk of funding. Similarly, Ghosh and Magotra (2025) find that deposit growth brings about a positive financial stability through depositor confidence and stability of funding supply in the banking system. This positively supports our research.

Furthermore, institutional evidence also supports this finding. Bangladesh Bank's (2024) Financial Stability Report explains that one of the most stable and reliable sources of funding is deposit-based funding, which helps banks maintain liquidity and protects them from the impact of external shocks. DGR positively and statistically significantly affects the bank stability Bank stability is positively and scientifically influenced by the Deposit Growth Rate (DGR).). The rate of deposit growth (DGR) has a mean of 65.33% with moderate skewness (-.038) indicating that there is a reasonable symmetry in the data and kurtosis (1.97) indicates a more flattened distribution with fewer extreme values with a stable distribution within the data and less extreme values. This distributional stability enhances the dependability of the results obtained and means that DGR has a consistent effect on the stability of the banks in different observations. Moreover, the high correlation supports the importance of maintaining continuous increases in deposits as one of the key aspects of maintaining long-term financial stability and reducing the risk in the banking sector. Although winsorization or other outlier handling techniques are recommended for DGR, most variables (e.g., NPL, LDR, size, CAR) are robustly distributed, making the dataset generally acceptable for regression analysis. Larger banks are more stable due to the normally correlated size (0.157) of better diversification, a

stronger capital base, and better risk management. Milder loan defaults, or NPLs (0.296), are associated with a lower DGR.

Mean VIF=1.14: All variables are below the critical threshold (typically 5 or 10) So, No significant multicollinearity, regression results are reliable. In the linear and robust regression, deposit growth rate shows a negative and significant on bank stability. this indicate that excessive or rapid DGR may increase risk as well as mitigate stability. In the robust test regression mean DGR = (-1.214) in where p-values is 0.011 positively significant influence to the bank stability and NPL is -8.464 that indicates moderate loan defaults. Capital requirements (CAR), and survey Data on Bank Size. Evidence suggests that NPLs have the Most severe negative impact on Depository institutions' stability. Even a small increase in Non-Performing Loans Can greatly diminish the stability of depository institutions. Moreover, the study concludes that Non-Performing Loans (NPL) has negative and significant effects on the bank stability, which implies that the more risky the bank, the less stable it is financially. This finding is corroborated by Agu and Ohonba (2025), who show that the increasing trend of NPL ratios affects bank stability adversely by putting them at a greater risk of default and lower profitability. Apart from, bank stability is positively related with bank size implying that the larger the bank size, the more risk management processes, economies of scale, and diversification, and the more stable the banks are. Wang et al. (2024) show that larger banks are typically more robust and financially stable, which is consistent with this finding. On the other hand, the Loan-to-Deposit Ratio (LDR) and Capital Adequacy Ratio (CAR) are statistically not significant in the study and this implies that they have minimal effects on stability of the banks in the sample. Thus, The most serious threat to the stability of depository institutions is Credit risk. Capital adequacy ratios have an insignificant but Positive effect on depository institution Stability, While There is Evidence that strong Capital improves stability in Fixed-Effects Models, The Degree of improvement is dependent upon the method used for the analysis. the R-Squared Value of Fixed-Effects regression is .0704 reflects the lower amount of explained variance due to the control for unobserved heterogeneity in the data sets.

The number of non-performing loans (NPL) is an extremely significant predictor (-1.863, $p < 0.001$). The model has been verified to end with a reliability level that does not indicate problems with low VIFs, as there is no evidence of heteroskedasticity. There was no evidence of strong autocorrelation; the Hausman test shows that the fixed effect model was appropriate. Each of four approaches (fixed effects, random effects, pooled OLS and GLS) was considered and all of them presented a positive correlation between CIRs and bank size, NPL: bank

stability, capital adequacy ratios and total loans/total deposits. Implications on bank sustainability were greatest due to the highest level of implication caused by the bank growth rate. Generally, large banks are more complex in their operations compared to smaller banks in terms of their management structure, branch network and the entire business model. The model selection testing of the Hausman test informs us that the most suitable data to use in this study is a random effects model. Breusch-Pagan Lagrange Multiplier test also indicates that random effects modeling is better than pooled OLS. Thus, it is concluded that random effects modeling is the most suitable technique to use in this study. Additionally, various other diagnostic tests will also be considered in this study before making any adjustments based on output from the above tests. Nevertheless, previous studies suggest that such factors may influence stability, depending on the economic and regulatory conditions.

Chapter Five

Recommendation, Conclusion and Reference

5.1 Recommendations:

Based on the empirical results, proposed the following:

1. The investment sectors need to be diversified to allow managers to reduce the amount of non-performing loans of the DGR (Non -performing loan) and establish a stable banking system, through increased deposits.
2. Commercial banks are supposed to devise new strategies to minimize the proportion of non-performing loans and prevent over- or aggressive growth of deposits. Attention to steady and long-term deposits growth.
3. Promote a balanced deposit growth policy. Rather than concentrating on the speed of growth, the banks are supposed to concentrate on the stable and continuous deposit flows. Unless there are improvements in risk management and quality of assets, the stability can be adversely impacted because of the high growth in deposits. A target range of growth in deposit is advised to be in line with the lending capacity and capital adequacy.
4. Commercial banks have not a good debt ratio hence commercial banks should work towards ensuring profitability and bank stability through deposits insurance of lenders. Besides, enhance credit risk management: To lower the non-performing loans (NPLs) ratio, banks should increase their credit evaluation procedures, diversify the loan portfolio, and create early warning systems because the non-performing loans are a significant negative influence on the stability of the bank.
5. Since a significant negative or positive relationship between deposit growth rate and bank size has been found, therefore, improve both deposit and management efficiency of the bank through internal efficiency audit and monitoring to eliminate unnecessary processes. In addition, maximize loan-deposit ratios (LDR): Banks must maintain their LDR at the optimum level to ensure that they use their deposits well, and at the same time avoid over-lending which would place unnecessary strain on liquidity. It is recommended to conduct stress testing of liquidity holdings regularly.
6. Create long term and sustainable growth and this has meant that there is positive growth in deposit and minimal non-performing loans. The management must therefore be keen to regulate large deposits and small deposits. Big deposits are not to be permitted.
7. Concentrate on quality rather than quantity. Banks are not only supposed to increase their deposits, but also make sure that the money is being utilized accordingly. The rate of increase in the deposits has both positive and negative effects. It is a consequence of surplus liquidity to avoid unnecessary loans.
8. Bangladesh Bank is one of the most vital government agencies.

To provide some recommendations to regulators: The tendency of increasing deposits rapidly should be observed by Bangladesh Bank. Be tighter in an attempt to contain non-performing loans and financial discipline in all banks.

5.2 Conclusion:

Based on the 2015-2024 data, the paper discusses how the rate of deposit growth affects the stability of commercial banks in Bangladesh. The research involves the analysis of panel data via a regression model to investigate the influence of the deposit growth rate (DGR) on the stability of the chosen commercial banks in Bangladesh in the period between 2015 and 2024. This research employs Z-score as a multidimensional measure of bank stability, and incorporates the key supervisory variables including: DGR as the key variable, regulatory variables LDR, CAR and NPL and bank size. In light of the results of the study, several important suggestions can be given to increase the stability and profitability of private commercial banks in Bangladesh. To begin with, banks ought to have a good capital adequacy ratio (CAR) in terms of deposits and utilize deposits in profitable investments. The rate of growth of deposits may negatively or positively affect the stability of banks. The results of the study indicate a statistically significant negative correlation between deposit growth rate and bank stability, or in other words, an overly fast or unlimited deposit expansion may only render a bank weaker as opposed to stronger. Yet, although large banks are beneficial to stability, large non-performing loans are a great threat to financial health. Comprehensively, this report finds that accruing deposits, good banking habits, risk management and good capital cover are necessary to make the banking sector in Bangladesh sustainable. Moreover, the regulators have a crucial role in the stability of banks. The growth of deposits continues to be a significant source of funds yet its sustainability and quality are of more significance than its quantity. The findings offer valuable data to the bank management and regulators and fill a big research gap in the Bangladeshi context. In order to gain better understanding of the dynamics of deposits and banking stability in emerging economies, future studies can elaborate on this approach by adding more banks, more time, or additional macroeconomic factors. This paper indicates that sustainable economic growth and development of Bangladesh is pegged on a strong and stable banking system. The study concludes that private commercial bank in Bangladesh accumulated more deposit from the customers and disburse these to the profitability sectors but NPL negatively impact on bank stability.

5.3 Reference:

- Alhalboni, a. & baldwin, r., 2025. market power of islamic banks during global crises. journal of islamic accounting and business research. doi:10.1016/j. econlet.2025.11258
- Ansori, A., Nugroho, L. & Wardana, A., 2024. Deposit benchmark interest rate and banking loan dynamics: evidence from numerical simulations. Journal of Economic Modelling.
- Banke, N. K., & Yitayaw, M. K. (2022). Deposit mobilization and its determinants: Evidence from commercial banks in Ethiopia. Future Business Journal, 8(1), 32. <https://doi.org/10.1186/s43093-022-00144-6>
- Buchkovskaya, Y., Samaricheva, T., & Humeniuk, D. (2021a). deposit portfolio of a commercial bank: analysis and ways of optimization. pryazovskyi Economic Herald, (1(24)). <https://doi.org/10.32840/2522-4263/2021-1-31>
- Buchkovskaya, Y., Samaricheva, T., & Humeniuk, D. (2021b). deposit portfolio of a commercial bank: analysis and ways of optimization. Pryazovskyi Economic Herald, (1(24)). <https://doi.org/10.32840/2522-4263/2021-1-31>
- Chigozie Agu, O., & Ohonba, A. (2025). Economic Policy, Institutional Quality, and Bank Deposit Growth in Nigeria. Interciencia. <https://doi.org/10.59671/jNKpU>
- Fekadu Zerihun, M. (2024). Internal determinants of bank deposit flows under different market conditions in Ghana. Banks and Bank Systems, 19(1), 221–230. [https://doi.org/10.21511/bbs.19\(1\).2024.19](https://doi.org/10.21511/bbs.19(1).2024.19)
- Mashamba, T. (2021). Liquidity regulations and bank behavior: An emerging markets perspective. Journal of Governance and Regulation, 10(4, special issue), 194–211. <https://doi.org/10.22495/jgrv10i4siart1>
- Neves, M. E., Proença, C., & Dias, A. (2020). Bank Profitability and Efficiency in Portugal and Spain: A Non-Linearity Approach. Journal of Risk and Financial Management, 13(11), 284. <https://doi.org/10.3390/jrfm13110284>
- Nguyen, T. D., & Du, Q. L. T. (2022). The effect of financial inclusion on bank stability: Evidence from ASEAN. Cogent Economics & Finance, 10(1), 2040126. <https://doi.org/10.1080/23322039.2022.2040126>
- Penczar, M., Kujawski, L., & Liszewska, M. (2023). Has the Stabilizing Nature of Deposits Changed after the Crisis? Impact of Funding Structure on Bank's Risk.

Annales Universitatis Mariae Curie-Skłodowska, Sectio H – Oeconomia, 56(5), 185–205. <https://doi.org/10.17951/h.2022.56.5.185-205>

- Pham, T. T., Dao, L. K. O., & Nguyen, V. C. (2021). The determinants of bank's stability: A system GMM panel analysis. *Cogent Business & Management*, 8(1), 1963390. <https://doi.org/10.1080/23311975.2021.1963390>
- Plesca, A., & Stratulat, O. (2025). Deposit policy in the national banking system. *Simpozion Științific al Tinerilor Cercetători*, Editia 23, Vol. 2, 261–265. <https://doi.org/10.53486/sstc2025.v2.61>
- Wang, R., He, Z., & Yang, S. (2024). FinTech Monopoly and Systemic Risk: Evidence From China. *Sage Open*, 14(4), 21582440241305450. <https://doi.org/10.1177/21582440241305450>
- Benmelech, E., Kumar, N. & Rajan, R., 2023. Branch density and deposit flows during banking crises. *Journal of Financial Economics*.
- Elshani, A.N., 2025. Non-performing loans, deposits and financial stability in developing European banking systems. *Economic Systems*.
- factors Adeyemi-Tijani, A.A., 2025. Macroeconomic and the loan-to-deposit ratio: implications for economic growth and banking performance. *Journal of Financial Economics and Policy*.
- Ha, N.T. & Nguyen, H.T., 2023. Financial inclusion, institutional quality and bank stability in ASEAN countries. *Journal of Asian Economics*.
- Han, R. & Melecky, M., 2013. Financial inclusion for financial stability: access to bank deposits and the growth of deposits in the global financial crisis. Policy Research Working Paper No. 6577. Washington DC: The World Bank.
- Kamugisha, J., 2022. Determinants of bank deposit growth in Rwanda: the role of macroeconomic and bank-specific factors. *African Journal of Economic and Management Studies*.
- Khusnia, F. & Wardana, A., 2024. Corporate governance, company size and deposit growth in Islamic banking in Asia. *Journal of Islamic Economics and Finance*.
- Li, Y., Wang, H. & Chen, L., 2024. Deposit flow sensitivity, monetary policy and bank run risk. *Journal of Banking and Finance*.
- Liao, G. & Carmichael, J., 2022. Stablecoins and the future of banking and credit intermediation. *Journal of Financial Stability*.
- Narayanan, P. & Ratnadiwakara, D., 2024. Depositor characteristics and deposit flows under rising interest rates. *Journal of Financial Intermediation*.

- Ng'humbu, P., 2025. Deposit growth and profitability: evidence from CRDB Bank Plc. *International Journal of Banking and Finance*.
- Odero, J. & Fredrick, M., 2023. Determinants of financial stability among deposit-taking SACCOs in Kenya. *International Journal of Finance and Accounting*.
- Olowofela, O., Adeyemi, K. & Adebayo, T., 2025. Sustainable banking practices and financial stability in Nigeria. *Journal of Sustainable Finance and Investment*.
- Pathak, B., 2022. Interest rate elasticity of bank deposits in Nepalese commercial banks. *NRB Economic Review*.
- Suljić Nikolaj, S., Brkić, S. & Kovačević, A., 2022. Deposit insurance systems and banking stability: evidence from European banking sectors. *Economic Research-Ekonomska Istraživanja*.
- Wartoyo, B. & Haida, N., 2024. Government sukuk and its impact on deposit and financing growth in Islamic banks. *Journal of Islamic Monetary Economics and Finance*.
- Yakubu, I.N. & Abokor, A.H., 2020. Factors determining bank deposit growth in Turkey: an empirical analysis. *Rajagiri Management Journal*, 14(2), pp.121–132.
- Soehaditama, J.P., 2023. Market discipline and depositor behaviour in banking institutions. *Journal of Financial Management Studies*.
- Bangladesh Bank (2024) Financial Stability Report 2023. Dhaka: Bangladesh Bank. (No DOI available – institutional report)
- Chowdhury, T., Rahman, M. and Karim, A. (2024) 'Bank size, risk and stability: Evidence from emerging economies', *Journal of Risk and Financial Management*, 12(4), pp. 1–15. DOI: <https://doi.org/10.3390/jrfm12040125>
- Ghosh, A. and Magotra, A. (2025) 'Financial inclusion and bank stability: Evidence from developing economies', *Cogent Economics & Finance*, 13(1), pp. 1–18. DOI: <https://doi.org/10.1080/23322039.2025.2483865>.
- Agu, C. and Ohonba, N. (2025) 'Credit risk and financial stability in banking sector', *Journal of Financial Stability*.

Annual Report:

- ✓ Annual report of Eastern Bank 2015-2024
- ✓ Annual report of IFIC Bank 2015-24
- ✓ Annual report of Brac Bank 2015-2024
- ✓ Annual report of City Bank 2015-2024
- ✓ Annual Report of bank Asia 2015-2024
- ✓ Annual Report of Dutch Bangla Bank 2015-2024
- ✓ Annual Report of Islamic Bank Bangladesh 2015-2024
- ✓ Annual Report of NRBC Bank 2015-2024
- ✓ Annual Report of Dhaka Bank 2015-2024
- ✓ Annual Report of Jamuna Bank 2015-2024

Data Description

```

.
end of do-file

. do "C:\Users\User\AppData\Local\Temp\STD53f0_000000.tmp"

. tabstat score dgr npl ldr car size, statistics (mean max min n range kurtosis skewness media

```

Stats	score	dgr	npl	ldr	car	size
Mean	70.3085	15.3868	5.3415	86.0057	14.1399	444433.2
Max	181.89	85.7	54.97	112.78	20.42	2225233
Min	4.51	-5.63	.27	27.4	7.27	36259
N	100	100	100	100	100	100
Range	177.38	91.33	54.7	85.38	13.15	2188974
Kurtosis	3.61443	13.95108	43.7965	7.473478	3.952939	10.81488
Skewness	.878646	2.736368	6.236903	-1.785063	.0153218	2.669901
p50	66.26	12.305	4.1	86.97	14.08	335257

```

. winsor size, gen(wsize) p(0.10)

.
end of do-file

. do "C:\Users\User\AppData\Local\Temp\STD57b8_000000.tmp"

. tabstat wscore wdgr wnpl wldr wcar wsize, statistics (mean max min n range kurtosis skewness median)

```

Stats	wscore	wdgr	wnpl	wldr	wcar	wsize
Mean	65.3287	14.0266	4.3909	87.9581	14.1279	394318.2
Max	114.68	27.02	6.46	101.75	16.64	837145
Min	14.14	4.87	2.93	74.41	11.86	178334
N	100	100	100	100	100	100
Range	100.54	22.15	3.53	27.34	4.78	658811
Kurtosis	1.973744	2.126071	1.980555	1.830738	1.723639	3.025479
Skewness	-.0376742	.4921274	.4588451	.1037465	.1370005	1.060777
p50	66.26	12.305	4.1	86.97	14.08	335257

```

.
end of do-file

```

```
. pwcorr wscore wdgr wnpl wldr wcar wsize, sig
```

	wscore	wdgr	wnpl	wldr	wcar	wsize
wscore	1.0000					
wdgr	-0.1972 0.0493	1.0000				
wnpl	-0.2957 0.0028	-0.2722 0.0061	1.0000			
wldr	0.0691 0.4948	-0.1917 0.0560	-0.0473 0.6401	1.0000		
wcar	0.1575 0.1177	0.0960 0.3421	-0.2901 0.0034	-0.2323 0.0200	1.0000	
wsize	0.3675 0.0002	-0.0195 0.8470	-0.0801 0.4285	-0.1429 0.1561	0.0703 0.4871	1.0000

```
.
end of do file
```

Linear Regression

```
end of do-file
```

```
. do "C:\Users\User\AppData\Local\Temp\STD53f0_000000.tmp"
```

```
. reg wscore wdgr wnpl wldr wcar wsize
```

Source	SS	df	MS	Number of obs	=	100
Model	28445.2638	5	5689.05275	F(5, 94)	=	7.67
Residual	69683.1611	94	741.310224	Prob > F	=	0.0000
				R-squared	=	0.2899
				Adj R-squared	=	0.2521
Total	98128.4249	99	991.196211	Root MSE	=	27.227

wscore	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
wdgr	-1.213858	.4162618	-2.92	0.004	-2.040356	-.3873606
wnpl	-8.46407	2.584768	-3.27	0.001	-13.59619	-3.331952
wldr	.249593	.3290634	0.76	0.450	-.40377	.9029561
wcar	1.654128	1.835499	0.90	0.370	-1.990298	5.298553
wsize	.0000525	.0000136	3.86	0.000	.0000255	.0000795
_cons	53.51009	50.82309	1.05	0.295	-47.40035	154.4205

```
.
```

VIF Test:

```
. do "C:\Users\User\AppData\Local\Temp\STD53f0_000000.tmp"
```

```
. estat vif
```

Variable	VIF	1/VIF
wnpl	1.22	0.820841
wcar	1.17	0.853852
wldr	1.15	0.867732
wdgr	1.14	0.877460
wsiz	1.04	0.966178
Mean VIF	1.14	

```
.
end of do-file
```

```
. do "C:\Users\User\AppData\Local\Temp\STD53f0_000000.tmp"
```

```
. asdoc estat vif
```

Linear Robust Test:

```
. reg wscore wdgr wnpl wldr wcar wsiz , vce (robust)
```

Linear regression	Number of obs	=	100
	F(5, 94)	=	10.32
	Prob > F	=	0.0000
	R-squared	=	0.2899
	Root MSE	=	27.227

wscore	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]	
wdgr	-1.213858	.4673975	-2.60	0.011	-2.141887	-.2858294
wnpl	-8.46407	2.898913	-2.92	0.004	-14.21993	-2.70821
wldr	.249593	.3549102	0.70	0.484	-.4550895	.9542755
wcar	1.654128	1.752696	0.94	0.348	-1.82589	5.134146
wsiz	.0000525	.0000127	4.12	0.000	.0000272	.0000778
_cons	53.51009	54.01004	0.99	0.324	-53.72812	160.7483

```
.
end of do-file
```

Cross-sectional Time -series FGLS Regression:

Cross-sectional time-series FGLS regression						
Coefficients: generalized least squares						
Panels: homoskedastic						
Correlation: no autocorrelation						
Estimated covariances	=	1	Number of obs	=	100	
Estimated autocorrelations	=	0	Number of groups	=	10	
Estimated coefficients	=	6	Time periods	=	10	
			Wald chi2(5)	=	40.82	
Log likelihood	=	-469.221	Prob > chi2	=	0.0000	
wscore	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
wdgr	-1.213858	.4035808	-3.01	0.003	-2.004862	-.4228543
wnpl	-8.46407	2.506026	-3.38	0.001	-13.37579	-3.55235
wldr	.249593	.3190388	0.78	0.434	-.3757115	.8748975
wcar	1.654128	1.779582	0.93	0.353	-1.833789	5.142044
wsiz	.0000525	.0000132	3.98	0.000	.0000266	.0000783
_cons	53.51009	49.27481	1.09	0.278	-43.06677	150.087

Hausman Test:

```

. . . . .
. hausman f1 r1, sigmamore

Note: the rank of the differenced variance matrix (4) does not equal the number of coefficients being
the output of your estimators for anything unexpected and possibly consider scaling your varia

```

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) Std. err.
	(b) f1	(B) r1		
wdgr	.0816977	-.0118657	.0935635	.0281881
wnpl	-1.570691	-2.299115	.7284248	.2200811
wldr	-.0647376	.0146221	-.0793597	.0628084
wcar	4.272831	3.558544	.7142868	.2817877
wsiz	-2.13e-06	.0000112	-.0000134	4.15e-06

b = Consistent under H0 and Ha; obtained from **xtreg**.
B = Inconsistent under Ha, efficient under H0; obtained from **xtreg**.

Test of H0: Difference in coefficients not systematic

```

chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 41.95
Prob > chi2 = 0.0000

```

Heteroskedasticity:

```
. estat hettest
```

Breusch-Pagan/Cook-Weisberg test for heteroskedasticity

Assumption: Normal error terms

Variable: Fitted values of **wscore**

H0: Constant variance

chi2(1) = 0.13

Prob > chi2 = 0.7222

```
.
```

Autocorrelation Test:

```
. xtset banksname_id year
```

Panel variable: **banksname_id** (strongly balanced)

Time variable: **year**, 2015 to 2024

Delta: 1 unit

```
.
```

end of do-file

```
. do "C:\Users\User\AppData\Local\Temp\STD57b8_000000.tmp"
```

```
. xtserial wscore wdgr wnp1 wldr wcar wsize
```

Wooldridge test for autocorrelation in panel data

H0: no first-order autocorrelation

F(1, 9) = 4.217

Prob > F = 0.0702

Fixed Effect Regression Model:

Fixed-effects (within) regression
Group variable: panel_id

Number of obs **100**
Number of groups **10**

R-squared:

Within **0.7800**
Between **0.2948**
Overall **0.5634**

Obs per group:

min **10**
avg **10.0**
max **10**

corr(u_i, Xb) **0.0704**

F(5, 9) **99.48**
Prob > F **0.0000**

(Std. err. adjusted for **10** clusters in panel_id)

<u>zscore</u>	Coefficient	Robust std. <u>err.</u>	t	P> t	[95% conf. interval]	
<u>dgr</u>	2.642119	.2061482	12.82	0.000	2.175779	3.108458
<u>npl</u>	-1.862637	.3977686	-4.68	0.001	-2.762452	-.962822
<u>ln_banksiz</u>	13.53044	6.76322	2.00	0.076	-1.769021	28.82991
<u>ldr</u>	-.2718268	.2894467	-0.94	0.372	-.9266006	.3829471
<u>car</u>	3.59545	1.392752	2.58	0.030	.4448268	6.746073
<u>_cons</u>	-47.42232	97.48396	-0.49	0.638	-267.9464	173.1017
<u>sigma_u</u>	31.504101					
<u>sigma_e</u>	20.801074					
<u>rho</u>	.69640275	(fraction of variance due to <u>u_i</u>)				

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Likely AI-generated text that was likely revised using an AI-paraphrase tool or word spinner.

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Our AI writing assessment is designed to help educators identify text that might be prepared by a generative AI tool. Our AI writing assessment may not always be accurate (i.e., our AI models may produce either false positive results or false negative results), so it should not be used as the sole basis for adverse actions against a student. It takes further scrutiny and human judgment in conjunction with an organization's application of its specific academic policies to determine whether any academic misconduct has occurred.

Frequently Asked Questions

How should I interpret Turnitin's AI writing percentage and false positives?

The percentage shown in the AI writing report is the amount of qualifying text within the submission that Turnitin's AI writing detection model determines was either likely AI-generated text from a large-language model or likely AI-generated text that was likely revised using an AI paraphrase tool or word spinner.

False positives (incorrectly flagging human-written text as AI-generated) are a possibility in AI models.

AI detection scores under 20%, which we do not surface in new reports, have a higher likelihood of false positives. To reduce the likelihood of misinterpretation, no score or highlights are attributed and are indicated with an asterisk in the report (*%).

The AI writing percentage should not be the sole basis to determine whether misconduct has occurred. The reviewer/instructor should use the percentage as a means to start a formative conversation with their student and/or use it to examine the submitted assignment in accordance with their school's policies.

What does 'qualifying text' mean?

Our model only processes qualifying text in the form of long-form writing. Long-form writing means individual sentences contained in paragraphs that make up a longer piece of written work, such as an essay, a dissertation, or an article, etc. Qualifying text that has been determined to be likely AI-generated will be highlighted in cyan in the submission, and likely AI-generated and then likely AI-paraphrased will be highlighted purple.

Non-qualifying text, such as bullet points, annotated bibliographies, etc., will not be processed and can create disparity between the submission highlights and the percentage shown.



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- 99 Not Cited or Quoted 15%**
Matches with neither in-text citation nor quotation marks
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Matches that are still very similar to source material
- 0 Missing Citation 0%**
Matches that have quotation marks, but no in-text citation
- 0 Cited and Quoted 0%**
Matches with in-text citation present, but no quotation marks

Top Sources

- 12% Internet sources
- 3% Publications
- 9% Submitted works (Student Papers)

Top Sources

The sources with the highest number of matches within the submission. Overlapping sources will not be displayed.

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