

**THE INTEGRATED RELATIONSHIPS OF FINANCIAL  
PERFORMANCES, MACROECONOMIC AND MONETARY  
ENVIRONMENT, AND MARKET FACTOR ON STOCK  
RETURNS: AN EMPIRICAL STUDY OF KBMI IV BANKS IN  
INDONESIA (2015 - Q1 2026)**



**THESIS**

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**A THESIS**

**Submitted in a partial fulfillment of the requirements for the degree of  
Master of Business Administration**

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Stock Returns: An Empirical Study of KBMI IV Banks in Indonesia  
(2015–Q1 2026)

We hereby declare that this thesis is from student own work, has been read and presented to Sekolah Tinggi Manajemen IPMI Board of Examiner, and has been accepted as part of the requirements needed to obtain a Master of Business Administration and has been found to be satisfactory.

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## **NON-PLAGIARISM DECLARATION FORM**

This Thesis is a presentation of our original research work. Wherever contribution of others is involved, every effort is made to indicate this clearly, with due reference to the literature, and acknowledgement of collaborative research and discussions

Also, this work is being submitted in partial fulfillment of the requirements for the Master of Business Administration degree and has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

Jakarta, 29 August 2026



YULITARI FLORA THERESA BR. HUTAPEA

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## ABSTRACT

This study examines the integrated effects of financial performance, macroeconomic and monetary conditions, and market factors on the stock returns of Indonesia's largest banks classified under Core Capital-Based Bank Group IV (KBMI IV) during Q1 2015–Q1 2026. The study is motivated by the rapid expansion of Indonesia's capital market, where the number of investors increased from approximately 3.88 million in 2020 to more than 22.96 million in February 2026, alongside substantial fluctuations in banking stock returns. Under POJK No. 12/POJK.03/2021, KBMI IV represents banks with core capital exceeding IDR 70 trillion. The study focuses on BBKA, BBRI, BMRI, and BBNI and employs a quantitative approach using quarterly secondary data and panel data regression. The balanced panel consists of four banks over 45 quarters, resulting in 180 observations. Financial performance is represented by LDR, ROE, CAR, NPL, and CIR; macroeconomic and monetary conditions by BI Rate, Inflation, M2 Growth, Foreign Exchange Reserves Growth, and Exchange Rate Return; and the market factor by IHSG Return. The results show that Market Return has a positive and statistically significant effect on Stock Return (coefficient = 1.077551; p-value = 0.0018), whereas the other variables do not demonstrate statistically significant individual effects. Collectively, however, all explanatory variables significantly affect Stock Return (Prob. F-statistic = 0.0000), with the model explaining 57.60% of its variation. The results show that general market movements are the most important factor in explaining the quarterly return on shares for the KBMI IV banks, thereby highlighting the significance of systematic market conditions in accounting for the performance of banking stocks.

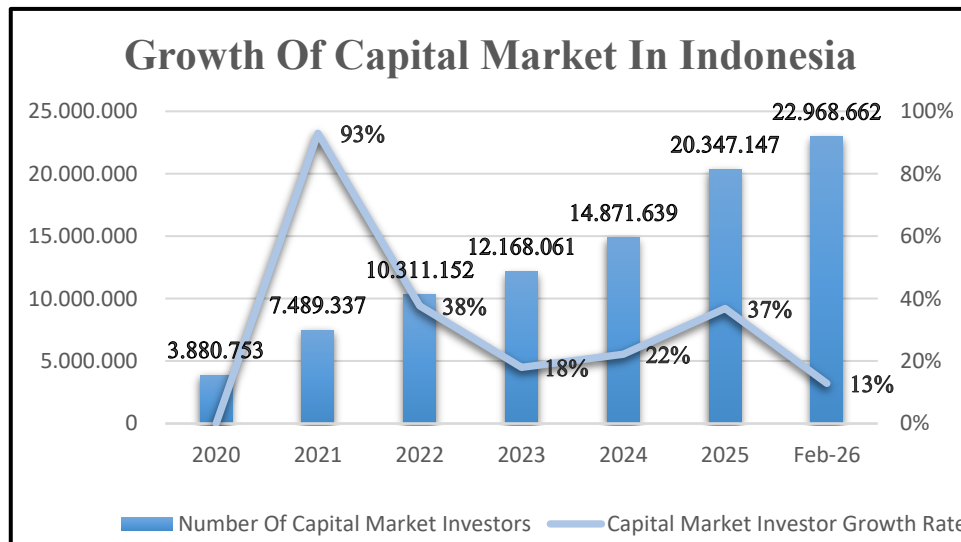
**Keywords:** Stock Return, Financial Performance, Macroeconomic and Monetary Environment, Market Return, KBMI IV Banks

# **CHAPTER I**

## **INTRODUCTION**

### **1.1 Background**

The global economy is still going through major changes in a dynamic way. In the age of free trade, countries can work together to meet the economic needs of their own regions. Sustainable economic growth can provide a solid basis for investors when making their investment decisions. A feature of a modern economy is the presence of a capital market as a key element of the economic system, since it promotes economic and business growth and development. In general, the capital market is seen as an effective way of raising the funds needed for investment by gathering money from the public and then directing it towards more productive areas. More precisely, the capital market can be described as an activity that includes the offering and trading of securities, the public companies linked to the securities they issue, as well as the institutions and professionals involved in securities (Martalena & Malinda, 2011). At present, the stock market has become one of the most widely used tools for investors to invest their money (Martalena & Malinda, 2011). Stocks may be defined as a type of participation or ownership held by individual investors, institutional investors, or traders in the funds invested in a particular industry. The level of ownership is determined by the amount of capital invested in that industry (Azis et al., 2015). The increasing number of investors in Indonesia's capital market over the past few years has demonstrated a highly significant and structural trend. As stated in the Indonesian Capital Market Statistics published by the Indonesia Central Securities Depository (Kustodian Sentral Efek Indonesia/KSEI) as of February 2026, the number of investors rose from about 3.88 million in 2020 to over 22.96 million by February 2026.



**Figure 1. 1 Growth of Capital Market in Indonesia**

Source : Indonesia Central Securities Depository (Data Processed)

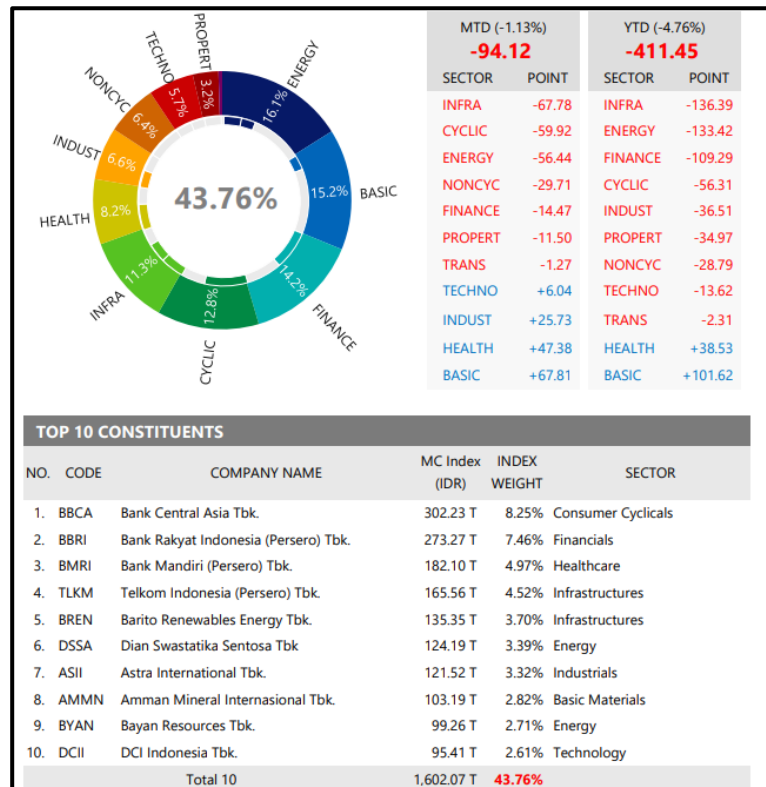
As shown in Figure 1.1 Growth of Capital Market Investors in Indonesia, the most substantial increase occurred during the 2020-2021 period, when investor growth reached nearly 93%. This increase shows a change in how the public invests, especially due to the digitalisation of financial services and the greater involvement of investors during the pandemic. Growth among investors slowed down in 2022 and 2023. Yet the overall trend has continued to rise. Moreover, in 2025 the growth of investments in the capital market picked up once more, which suggests that the development of Indonesia's capital market was not just a temporary situation but rather a move towards a more sustainable stage of growth. A more gradual rate of growth in the number of investors was observed by early 2026, pointing to a move towards market maturity.

The increase demonstrates a structural change in public investment behaviour, brought about by the progress of digital financial services and improved financial literacy. The large rise in the number of investors shows that Indonesia's capital market has not only grown in size but has also undergone a structural transformation that affects the way stock prices are formed. The increasing involvement of investors has likewise had an impact on market behaviour, since investment decisions are not any longer made exclusively on the basis of fundamental analysis but are also shaped by market sentiment, the quick flow of

information, and macroeconomic conditions. As a result, stock price movements have become more volatile and more sensitive to a variety of external factors. When investing their money, investors usually wish to achieve optimal returns in the future (Handayani & Zulyanti, 2018). Such returns can be in the form of capital gains, that is, the profit derived from selling shares at a price higher than the one at which they were bought, or they can take the form of dividends, which are a share of a company's earnings paid out to shareholders. With respect to other financial instruments, such as bonds, returns may also be received as interest income. The return earned by investors is one of the indicators of growing investor wealth, including that of shareholders (Fitriyani & Sumiyarsih, 2015). A high stock return indicates strong company performance and conversely. The higher the return a stock produces, the greater the interest shown by investors in investing in that stock. It is for this reason that stock return has become an important criterion for evaluation in the current situation of the rapidly increasing investor participation in Indonesia's capital market. Together with the rising number of investors and their aim of obtaining optimal returns, more attention should be paid to the sectors that make a substantial contribution to the capital market, since these sectors have a dominant effect on the movement of the index and on the overall stock returns.

Based on the Fact Sheet of the Indonesia Composite Index, published by the Indonesia Stock Exchange and presented in Figure 1.2, *Sector Weights in the Indonesia Composite Index as of February 2026*, the sectors with the largest contributions to market capitalization were Energy, which ranked first with a proportion of 16.1%; Basic Materials, which ranked second with 15.2%; and Financials, which ranked third with 14.2%. These were followed by other sectors, including Consumer Cyclical at 12.8%, Infrastructure at 11.3%, Healthcare at 8.2%, Industrials at 6.6%, Consumer Non-Cyclicals at 6.4%, Technology at 5.7%, and Properties at 3.2% as of February 2026. As one of the three largest sectors, the financial sector plays a crucial role in influencing stock return movements in Indonesia's capital market. In line with national economic growth, the financial services market has continued to expand, making this sector one of the main contributors to market capitalization on the Indonesia Stock Exchange. Furthermore, three major Indonesian banks, namely Bank BCA, Bank BRI, and

Bank Mandiri, are among the ten listed companies with the greatest influence on the movement of the Indonesia Composite Index. These banks even occupy the top three positions, contributing 8.25%, 7.46%, and 4.97% to the index, respectively, while Bank Negara Indonesia (BBNI) is also included among the listed companies with a significant influence.



**Figure 1. 2 Sector Weights and Point Indexs in IHSG February 2026**

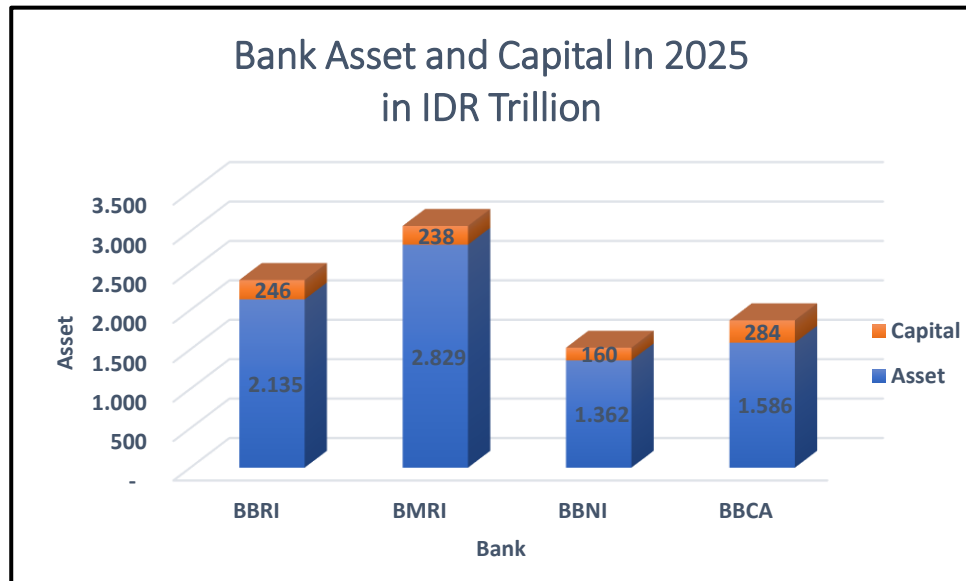
Source : Indonesia Stock Exchange

Banks are financial institutions whose main activities involve collecting funds from the public in the form of savings, demand deposits, and time deposits, as well as channeling these funds back to the public in the form of loans and other financial service products. In essence, banks provide credit facilities and services related to payment transactions and the circulation of money (Abdullah & Wahjusaputri, 2018). The banking sector plays a highly important role in supporting economic development and maintaining the stability of a country's financial system. Banks also function as financial intermediaries by channeling funds from parties with surplus funds to those in need of funds, thereby encouraging investment, consumption, and economic growth. Therefore, the efficiency and stability of the

banking system are essential components in maintaining the sustainability of the financial system. According to Levine (2005), a well-developed financial system can enhance economic growth by improving the efficiency of capital allocation and strengthening the function of financial intermediation.

Based on OJK Regulation Number 12/POJK.03/2021, Indonesia has dozens of banks that are classified into three main categories: commercial banks, rural banks, and Islamic banks. The existence of these three types of banks is crucial for national development, particularly in promoting equitable development outcomes, supporting economic growth, improving public welfare, and maintaining financial stability.

The ranking of a bank is generally determined by the amount of capital or assets it possesses. As illustrated in Figure 1.3, *Indonesia's Bank Ranking*, in 2025, the banks with the largest to smallest total assets were PT Bank Mandiri (Persero) Tbk. (BMRI), which ranked first with total assets of IDR 2,829 trillion; PT Bank Rakyat Indonesia (Persero) Tbk. (BBRI), which ranked second with total assets of IDR 2,135 trillion; PT Bank Central Asia Tbk. (BBCA), which ranked third with total assets of IDR 1,586 trillion; and PT Bank Negara Indonesia (Persero) Tbk. (BBNI), which ranked fourth with total assets of IDR 1,306 trillion. These four banks have core capital exceeding IDR 70 trillion and are therefore classified under Bank Group Based on Core Capital IV, or Kelompok Bank berdasarkan Modal Inti (KBMI) IV, in accordance with Financial Services Authority Regulation Number 12/POJK.03/2021 concerning the Consolidation of Commercial Banks.



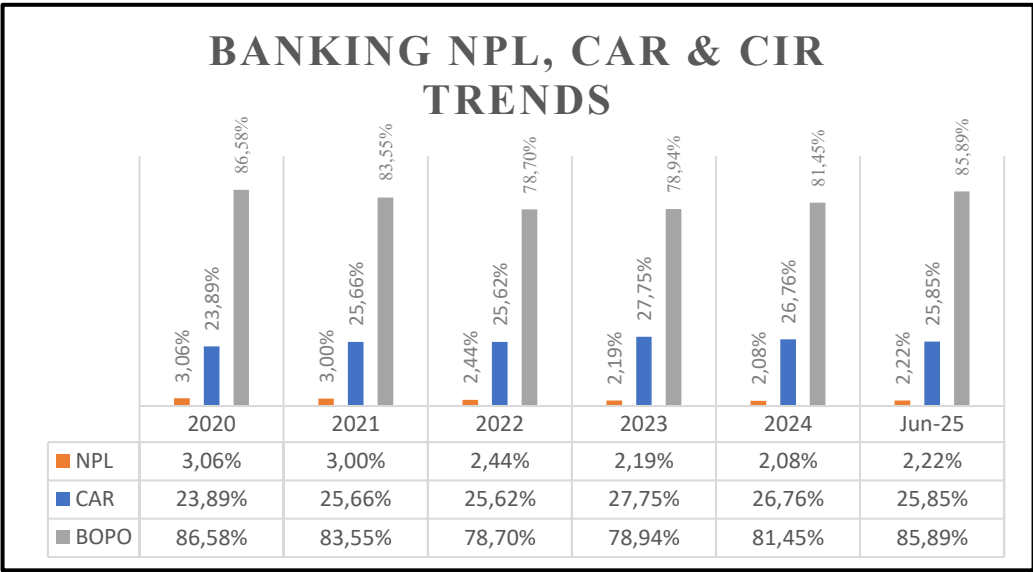
**Figure 1. 3 Indonesia's Bank Ranking (2025)**

Source : Annual Report (Data Processed)

Nevertheless, a large asset sized does not necessarily reflect the overall soundness and performance of a bank. In practice, banks with substantial assets continue to face various risks that may affect their stability and performance. Previous research by Pratama et al., (2025) stated that, in order to understand the condition of banking soundness more comprehensively, it is necessary to analyze key indicators that reflect a bank's risk profile, operational efficiency, and capital resilience. These indicators include the Non-Performing Loan (NPL), Capital Adequacy Ratio (CAR), and Operating Expenses to Operating Income ratio, commonly referred to as BOPO in the Indonesian banking context. BOPO is broadly comparable to the Cost-to-Income Ratio (CIR), as both indicators measure the extent to which operating expenses are used to generate operating income.

As shown in Figure 1.4, *Trends in NPL, CAR, and CIR in the Indonesian Banking Sector*, during the 2020–2025 period, these three indicators showed different dynamics in reflecting the condition of banking soundness in Indonesia. The Non-Performing Loan (NPL) ratio exhibited a declining trend, from 3.06% in 2020 to 2.08% in 2024, before slightly increasing to 2.22% in June 2025. The decline in NPL indicates an improvement in asset quality and the ability of banks to manage credit risk, although the increase in the most recent period suggests the

presence of risk pressure that needs to be monitored. On the other hand, the Capital Adequacy Ratio (CAR) remained relatively stable and consistently high, ranging from 23.89% to 27.75%. This reflects that the Indonesian banking sector has strong capital resilience in absorbing potential losses and maintaining financial system stability. Meanwhile, BOPO, which is comparable to the Cost-to-Income Ratio (CIR), showed considerable fluctuation, with a tendency to increase again and reach 85.89% in June 2025. The increase in CIR indicates pressure on operational efficiency, which may have an impact on the decline in bank profitability.



**Figure 1. 4 Trends in NPL, CAR, and CIR in the Indonesian Banking Sector (2020-2025)**

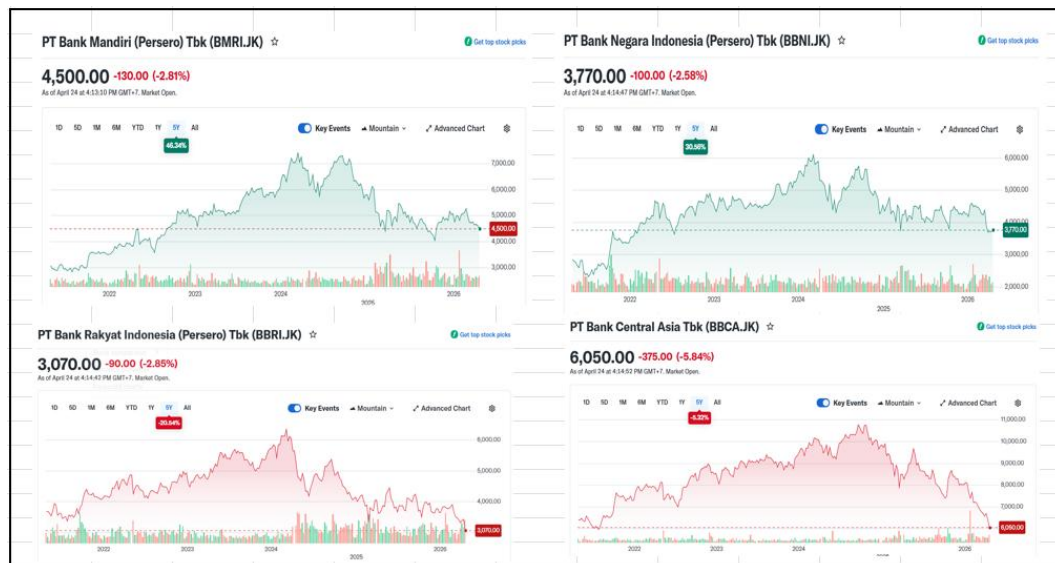
Source : Indonesia Financial Services Authority (OJK)

The dynamics of these three indicators show that the soundness of a bank is not determined by a single aspect, but rather by the interaction among credit risk, capital adequacy, and operational efficiency. These conditions also serve as important considerations for investors in assessing stock performance and making investment decisions. Therefore, a comprehensive assessment framework is needed to measure the overall soundness of banks.

Based on Bank Indonesia Regulation Number 13/1/PBI/2011, the applicable method for assessing the soundness of a bank’s financial performance is the Risk-Based Bank Rating (RBBR), which applies a risk-based approach. This method classifies the assessment into four main factors: a) risk profile, b) Good Corporate Governance (GCG), c) earnings, and d) capital. In the risk profile factor, eight types

of risk are evaluated, namely: 1) credit risk, 2) market risk, 3) liquidity risk, 4) operational risk, 5) legal risk, 6) reputational risk, 7) strategic risk, and 8) compliance risk. This study uses the Non-Performing Loan (NPL) ratio as a proxy for credit risk and the Loan-to-Deposit Ratio (LDR) as a proxy for liquidity risk. Meanwhile, the capital aspect is represented by the Capital Adequacy Ratio (CAR). In terms of earnings, this study uses Return on Equity (ROE) as an indicator of profitability, while the Operating Expenses to Operating Income ratio, commonly referred to as CIR, is used as a measure of operational efficiency. These five indicators are selected to represent bank soundness comprehensively within the RBBR framework.

Although bank soundness can be analyzed through these indicators, and although the four banks are classified under KBMI IV with a dominant contribution to the Indonesia Composite Index, in practice, the stock price movements of each bank do not always move in the same direction, exhibit the same level of volatility, or directly reflect the internal fundamental condition of the bank. To examine how the market responds to the performance of major banks in Indonesia, a comparative analysis of stock price movements can be conducted. As shown in Figure 1.5, *Comparison of Stock Price Movements of KBMI IV Banks*, during the 2022–2026 period, the stock price movements of major banks in Indonesia showed considerable fluctuations throughout the observation period. Although these banks belong to the same category, namely KBMI IV, and have relatively large business scales, each stock displayed a different movement pattern. The stock of PT Bank Central Asia Tbk. (BBCA) tended to show more stable movements compared to the other banks, while the stocks of PT Bank Rakyat Indonesia Tbk. (BBRI), PT Bank Mandiri Tbk. (BMRI), and PT Bank Negara Indonesia Tbk. (BBNI) showed higher fluctuations in several periods, particularly during periods of global economic pressure. These differences indicate that market responses to each bank are not always aligned with their fundamental conditions. This suggests that banking stock price movements are influenced not only by internal factors, but also by external factors and the dynamics of market sentiment.



**Figure 1. 5 Comparison of Stock Price Movements of KBMI IV Banks, during the 2022–24 April 2026 period**

Source : Yahoo Finance ([finance.yahoo.com](https://finance.yahoo.com))

Good Corporate Governance (GCG) is a framework that involves shareholders, stakeholders, commissioners, and managers, which is designed to establish and achieve corporate objectives while also monitoring organizational performance. As regulated under Bank Indonesia Regulation Number 4/8/PBI/2006, GCG is based on five main principles: 1) transparency, 2) accountability, 3) responsibility, 4) independence, and 5) fairness. In this study, corporate governance is measured using the GCG Score, which consists of the following variables: 1) Independent Commissioners, 2) Audit Committee, 3) Institutional Ownership, 4) Managerial Ownership, and 5) Foreign Ownership.

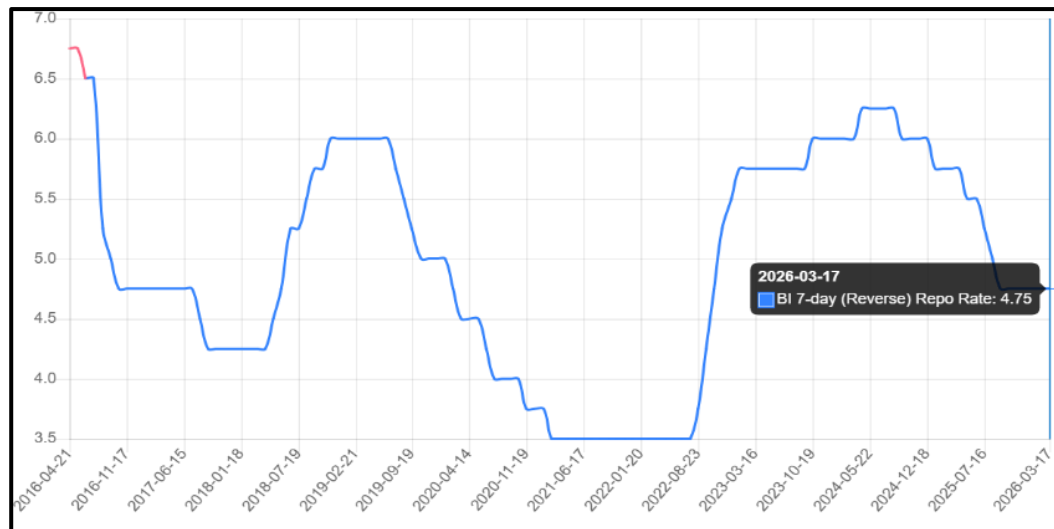
Various previous studies have examined the relationship between bank soundness, as measured using the Risk-Based Bank Rating (RBBR) approach, and stock performance, particularly stock returns. In general, these studies indicate that banking financial indicators and corporate governance have varying effects on stock returns. One study conducted by Heryana and Arifin (2018) used RBBR ratios to measure the effect of bank soundness on stock returns, using a sample of 150 banks during the 2015–2016 period. The results showed that NPL, LDR, ROE, GCG, and NIM did not have a significant effect on stock returns. Another study by Wijono et al. (2023) analyzed the effect of ROA, NIM, and BOPO on the stock prices of LQ20

banks during the 2016–2020 period. The findings showed that, partially, ROA had a positive and significant effect, NIM had a negative and significant effect, while BOPO did not have a significant effect on stock prices.

Although the assessment of bank soundness using the Risk-Based Bank Rating (RBBR) approach provides a comprehensive overview of the internal condition of the banking sector, bank stock performance is not solely influenced by internal factors. A study conducted by Subagyo, Achsani, and Sasongko (2022) stated that financial performance indicators such as NPL, LDR, ROA, and NIM did not affect stock returns. This indicates that fundamental factors are not always the main determinants influencing stock returns in banking companies. In practice, external factors, particularly macroeconomic conditions, also play an important role in determining the stock performance of banks. In the context of increasingly complex capital market dynamics, monetary policy becomes one of the external factors that has an important role in influencing stock return movements. Monetary policy implemented by Bank Indonesia aims to maintain price stability, control inflation, and preserve exchange rate stability. This policy is carried out through various instruments, such as the determination of the benchmark interest rate, management of the money supply, intervention in the foreign exchange market, and the maintenance of foreign exchange reserves and exchange rate stability as part of a broader monetary policy mix. Therefore, in this study, monetary policy is represented by five indicators, namely the interest rate, represented by the BI 7-Day Reverse Repo Rate (BI7DRR), inflation, foreign exchange reserves, the exchange rate, and the money supply (M2).

The interest rate, as the main instrument of monetary policy, has a direct influence on banking sector activities and the capital market. As shown in Figure 1.6, *The Development of Bank Indonesia's Benchmark Interest Rate (BI7DRR)*, the BI7DRR showed dynamic movements throughout the observation period. In the period from 2020 to 2021 the benchmark interest rate fell considerably as a result of the economic slowdown brought about by the Covid-19 pandemic. From 2022 through to 2023 Bank Indonesia began to introduce a progressively more restrictive monetary policy by raising interest rates in an attempt to reduce inflation and protect the exchange rate of the currency. When looking at the period from 2024 to 2026

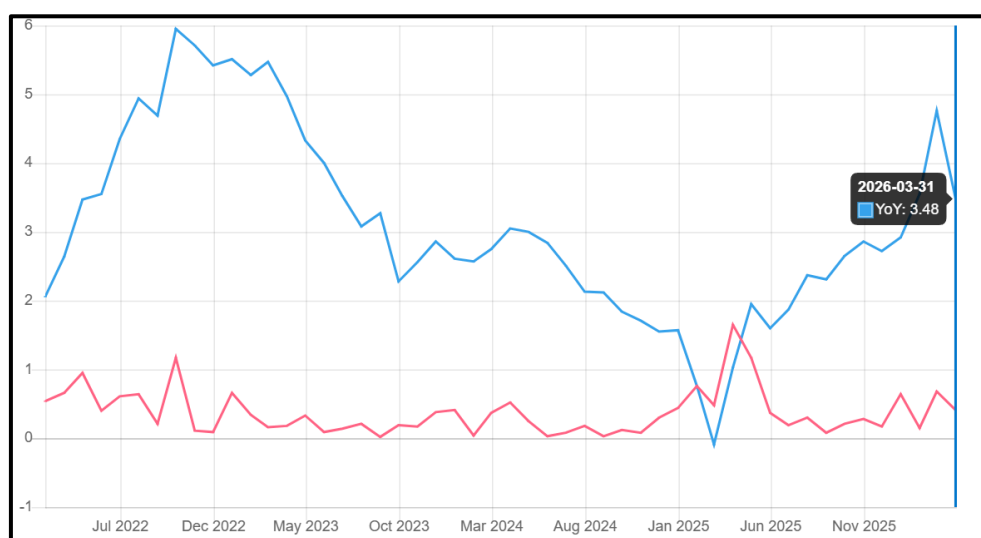
the 10-year interest rate was adjusted further in a downward direction, indicating measures taken to stabilise the economy. Changes in interest rates have direct effects on the banking sector and the stock market; when interest rates are increased the cost of funds goes up and credit demand falls, which could in the end affect bank profitability and stock returns. On the other hand, a decrease in interest rates may stimulate investment and lead to greater investor interest in the stock market.



**Figure 1. 6 The Development of Bank Indonesia's Benchmark Interest Rate (BI7DRR) (April 2016 – March 2026)**

Source : Kontan ([www.kontan.co.id](http://www.kontan.co.id))

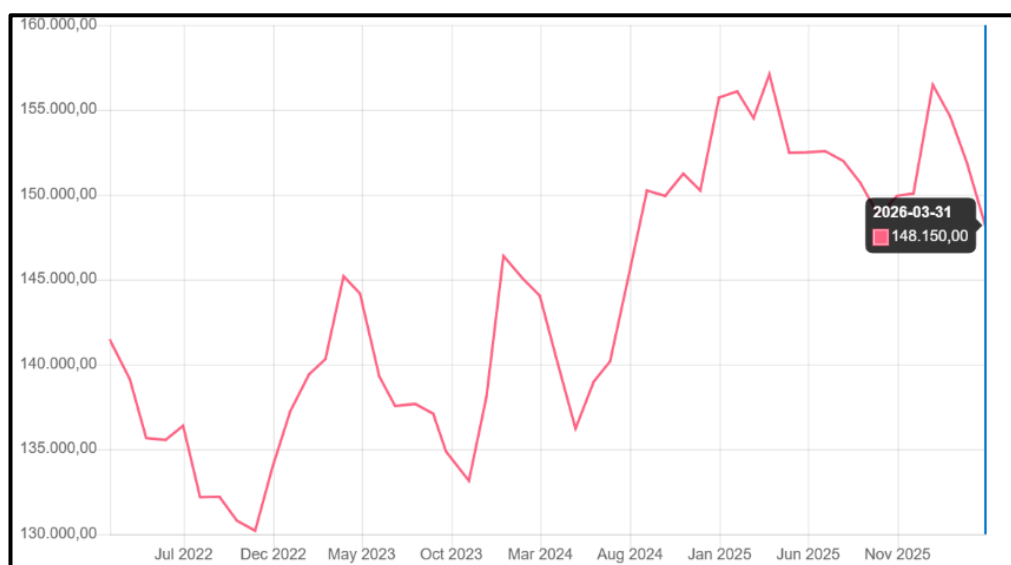
Inflation is also an important indikator in monetary policy, as it reflects price stability within the economy. As shown in Figure 1.7, *Indonesia's Inflation Rate*, Indonesia's inflation rate experienced considerable fluctuations throughout the observation period. Inflation increased sharply in 2022 due to global pressures, such as rising energy prices and disruptions in the supply chain. Afterward, inflation tended to decline and remained at a more stable level during the 2023–2024 period, before slightly increasing again in the subsequent period. These inflation fluctuations reflect the dynamics of price stability in the economy. A high inflation rate may increase economic uncertainty and reduce people's purchasing power, which may ultimately weaken investor interest in the stock market. Conversely, stable inflation creates more favorable economic conditions for investment and capital market growth.



**Figure 1. 7 Indonesia's Inflation Rate (July 2022 – March 2026)**

Source : Kontan ([www.kontan.co.id](http://www.kontan.co.id))

Foreign exchange reserves are an indicator of external stability that reflects a country's ability to withstand global economic pressures. As shown in Figure 1.8, *The Development of Indonesia's Foreign Exchange Reserves (July 2022–March 2026)*, Indonesia's foreign exchange reserves showed a relatively increasing trend, although fluctuations occurred in several periods. The increase in foreign exchange reserves reflects an improvement in external fundamentals, as well as Bank Indonesia's ability to maintain exchange rate stability through intervention in the foreign exchange market. Adequate foreign exchange reserves are an important factor in maintaining investor confidence in the domestic economy. A high level of foreign exchange reserves indicates a country's ability to withstand external pressures, such as capital outflows and global market volatility. This condition provides a positive signal to investors and may support the stability and improvement of stock returns, particularly in the banking sector, which is sensitive to macroeconomic conditions.



**Figure 1. 8 The Development of Indonesia's Foreign Exchange Reserves (July 2022–March 2026)**

Source : Kontan ([www.kontan.co.id](http://www.kontan.co.id))

The exchange rate is one of the macroeconomic indicators that has a significant influence on the capital market. As shown in Figure 1.9, *Exchange Rate against the United States Dollar (USD/IDR)*, the rupiah exchange rate showed a weakening trend in the medium term, with fluctuating movements throughout the observation period. By 2026, the rupiah exchange rate was around IDR 17,000 per United States dollar, reflecting external pressure on the domestic economy. Exchange rate depreciation may increase risks for companies, particularly those with exposure to foreign currencies, and may also affect investor perceptions of economic stability. In the context of the banking sector, this condition may lead to higher credit risk and lower profitability, which ultimately affect stock returns.



**Figure 1. 9 Exchange Rate against the United States Dollar (USD/IDR)  
(2022-May 2026)**

Source : Yahoo Finance ([finance.yahoo.com](https://finance.yahoo.com))

Within the framework of modern monetary policy, the money supply is also an important indicator in reflecting liquidity conditions in the economy. An increase in the money supply indicates liquidity expansion, which may encourage economic activity and investment, including investment in the stock market. Conversely, liquidity tightening may limit economic growth and put pressure on capital market performance.

In addition to macroeconomic factors, overall market conditions also influence stock returns. The Indonesia Composite Index is used as the main indicator to describe the performance of the Indonesian stock market. As shown in Figure 1.10, *Historical Indonesia Composite Index 2022–May 2026*, at the close of trading on May 13, 2026, the Indonesia Composite Index was recorded at 6,732.32, declining by 1.98% or 135.58 points in a single day. This correction reflects the high sensitivity of the market to various sentiments. The fluctuating movement of the Indonesia Composite Index reflects market dynamics influenced by various factors, including domestic macroeconomic conditions and global sentiment. Changes in the Indonesia Composite Index also reflect market responses to various economic conditions, including exchange rate movements, monetary policy, and foreign capital flows. In this context, the Indonesia Composite Index can be used as a key indicator to represent overall capital market performance, which may

ultimately affect individual stock returns, including those in the banking sector. This is supported by the study conducted by Siang, Sembel, and Malau (2024), which showed that Gross Domestic Product (GDP) and market return have a positive effect on bank stock returns.



**Figure 1. 10 Historical Indonesia Composite Index 2022–May 2026**

Source : Yahoo Finance ([finance.yahoo.com](https://finance.yahoo.com))

Several prior studies have shown that monetary policy and macroeconomic variables have a significant influence on stock market performance. Narayan and Sharma (2016) found that changes in interest rates have a significant impact on stock returns, particularly through changes in investor expectations and liquidity conditions in financial markets. Furthermore, Tripathi and Kumar (2017) showed that macroeconomic variables such as inflation, exchange rates, and the money supply significantly affect stock price movements in emerging markets. These findings emphasize that macroeconomic stability is an important factor in determining stock market performance. In addition, Sadorsky (2021) demonstrated that monetary policy, particularly changes in interest rates and liquidity conditions, affects stock market volatility and returns, especially under conditions of global economic uncertainty. A study conducted by Christos Ioannidis et al. (2008) also stated that monetary policy has a significant effect on stock returns.

However, several studies have reported different findings regarding the factors that influence stock returns. Saputra and Dharmadiaksa (2016) stated that interest rates and exchange rates have a negative effect on stock returns in property companies listed on the Indonesia Stock Exchange. Amrillah (2016) found that the exchange rate has a significant negative effect on stock returns in banking companies. More recent studies conducted by Steven (2025) and Chandra (2025) stated that GDP, exchange rates, and the money supply do not have a significant effect on stock returns in banking companies.

In addition to the inconsistencies found in previous research, the economic and capital market dynamics in recent years have also become increasingly complex. Therefore, this study uses the period from the first quarter of 2015 to the first quarter of 2026 in order to capture several important phases in Indonesia's economic and capital market dynamics, including the period of economic stabilization, the Covid-19 pandemic, the post-pandemic economic recovery, the period of global monetary tightening due to inflationary pressures, and the increasing global geopolitical uncertainty in early 2026.

Entering the first quarter of 2026, Indonesia's capital market experienced considerable pressure, as reflected in the weakening of the Indonesia Composite Index and the increasing volatility of banking sector stocks. This condition was influenced by rising global uncertainty, including the escalation of geopolitical conflicts in the Middle East, which encouraged capital outflows and increased pressure on the rupiah exchange rate. Therefore, the research period used in this study is expected to provide a more comprehensive overview of how fundamental factors, corporate governance, monetary policy, and market conditions influence banking stock returns under various economic conditions.

Based on the phenomena described above and the findings of previous studies, it can be concluded that the formation of banking stock returns is influenced not only by internal factors, such as financial conditions and corporate governance, but also by monetary policy and dynamic market conditions. Nevertheless, previous research findings show inconsistencies in explaining the effect of each variable on stock returns.

The rapid development of Indonesia's capital market, accompanied by the increasing number of investors and the growing complexity of factors influencing stock price movements, requires a more comprehensive understanding of the determinants of stock returns. Moreover, the banking sector, as a sector with a dominant role in both the economy and the capital market, requires an analysis that does not only focus on internal factors, but also considers external factors and overall market conditions.

Therefore, this study is important to conduct under the title: **“The Integrated Relationships of Financial Performances, Macroeconomic and Monetary Environment, and Market Factor on Stock Returns: An Empirical Study of KBMI IV Banks in Indonesia (2015–Q1 2026).”**

## **1.2 Research Problem**

Based on the background described above, the research problems in this study can be formulated as follows :

1. The number of capital market investors in Indonesia increased by approximately 491.9%, from 3.88 million investors in 2020 to 22.97 million investors in February 2026. The influx of new investors into Indonesia's markets has made the process of determining stock prices more complicated and less predictable. Simple models are no longer sufficient.
2. The four KBMI IV banks—namely BMRI, BBRI, BBCA, and BBNI—have considerable influence in Indonesia's capital market and this is why their stock performance merits close examination. What is interesting, however, is that merely being a large bank does not mean that your stock moves in a smooth fashion; these four institutions, although large in scale, exhibit quite different patterns of price fluctuations. It has now become clear that size does not ensure stability.
3. Neither the size of the assets nor the fact of being a major bank always results in steady stock price movements, since banking stocks still display different fluctuations from one bank to another.

4. Basic banking factors such as ROE, NPL, CAR, LDR, and CIR do not always offer a consistent explanation for stock returns, as previous studies have shown mixed results.
5. Monetary policy and macroeconomic factors, such as interest rates, inflation, foreign exchange reserves, exchange rates, and the money supply, may influence stock returns. However, their effects remain varied across different studies.
6. Market conditions, as reflected by the Indonesia Composite Index, also need to be considered because individual stock returns cannot be separated from overall market sentiment and market movements.
7. The period from 2015 to the first quarter of 2026 reflects highly complex economic and capital market dynamics, ranging from the Covid-19 pandemic, economic recovery, global monetary policy tightening, to the increasing global geopolitical uncertainty in early 2026, which caused market volatility and placed pressure on the Indonesia Composite Index as well as banking sector stocks.

Therefore, the main research problem of this study is the lack of a comprehensive understanding of how bank fundamental factors, monetary policy, and market factors jointly influence stock returns in the largest banks in Indonesia.

### **1.3 Research Question**

Based on the research problem described in the previous section, this study formulates the main research question as follows :

1. How does financial performances based on RBBR Framework affect the stock returns of KBMI IV banks in Indonesia during the period 2015–Q1 2026 ?
  - a. How does profitability affect the stock return of Indonesian banks during the period 2015 – Q1 2026 ?
  - b. How does credit risk affect the stock returns of Indonesian banks during the period 2015–Q1 2026 ?
  - c. How does capital adequacy affect the stock returns of Indonesian banks during the period 2015–Q1 2026 ?

- d. How does liquidity affect the stock returns of Indonesian banks during the period 2015–Q1 2026 ?
- e. How does operational efficiency affect the stock returns of Indonesian banks during the period 2015–Q1 2026 ?
- 2. How does macroeconomic and monetary environment affect the stock returns of KBMI IV banks in Indonesia during the period 2015 – Q1 2026?
  - a. How does the interest rate affect the stock returns of Indonesian banks during the period 2015 – Q1 2026 ?
  - b. How does inflation affect the stock returns of Indonesian banks during the period 2015–Q1 2026 ?
  - c. How does economic liquidity affect the stock returns of Indonesian banks during the period 2015–Q1 2026 ?
  - d. How do foreign exchange reserves affect the stock returns of Indonesian banks during the period 2015–Q1 2026 ?
  - e. How does the exchange rate affect the stock returns of Indonesian banks during the period 2015–Q1 2026 ?
- 3. How does capital market return affect the stock returns of KBMI IV banks in Indonesia during the period 2015–Q1 2026 ?
- 4. How Financial Performance, Macroeconomic & Monetary Environment, Market Return simultaneously have a significant effect on the stock returns of KBMI IV banks in Indonesia ?

#### **1.4 Research Objective**

Referring to the research questions, the objectives of this study are summarized as follows :

- 1. To analyze and evaluate the impact of financial performance based on RBBR Framework on the stock returns of KBMI IV banks in Indonesia during the period 2015 – Q1 2026.
  - a. To analyze and evaluate the impact of profitability on the stock returns of Indonesian banks during the period 2015 – Q1 2026.
  - b. To analyze and evaluate the impact of credit risk on the stock returns of Indonesian banks during the period 2015–Q1 2026.

- c. To analyze and evaluate the impact of capital adequacy on the stock returns of Indonesian banks during the period 2015–Q1 2026.
  - d. To analyze and evaluate the impact of liquidity on the stock returns of Indonesian banks during the period 2015–Q1 2026.
  - e. To analyze and evaluate the impact of operational efficiency on the stock returns of Indonesian banks during the period 2015–Q1 2026.
2. To analyze and evaluate the impact of macroeconomic and monetary conditions on the stock returns of KBMI IV banks in Indonesia during the period 2015–Q1 2026.
    - a. To analyze and evaluate the impact of the interest rate on the stock returns of Indonesian banks during the period 2015–Q1 2026.
    - b. To analyze and evaluate the impact of inflation on the stock returns of Indonesian banks during the period 2015–Q1 2026.
    - c. To analyze and evaluate the impact of economic liquidity on the stock returns of Indonesian banks during the period 2015–Q1 2026.
    - d. To analyze and evaluate the impact of foreign exchange reserves on the stock returns of Indonesian banks during the period 2015–Q1 2026.
    - e. To analyze and evaluate the impact of the exchange rate on the stock returns of Indonesian banks during the period 2015–Q1 2026.
  3. To analyze and evaluate the impact of capital market return on the stock returns of KBMI IV banks in Indonesia during the period 2015–Q1 2026.
  4. To examine the simultaneous effect of financial performance, macroeconomic and monetary conditions, and capital market return on the stock returns of KBMI IV banks in Indonesia.

### **1.5 The Scope and Limitation of Study**

The scope and limitation of this study are as follows:

1. This study aims to evaluate the impact of financial performance, monetary policy, and capital market return on banking stock returns in Indonesia.
2. The data collection period and data representation are limited to a specific historical period. The data used in this study consist of secondary data, including quarterly financial reports from Q1 2015 to Q1 2026 and

quarterly macroeconomic data from Q1 2015 to Q1 2026. The sampling method applied in this study is non-probability sampling. Therefore, this may limit the generalizability of the findings to other time periods.

3. This study focuses only on banks classified under the KBMI IV category, as determined by the Indonesian Financial Services Authority, or Otoritas Jasa Keuangan (OJK), and listed on the Indonesia Stock Exchange. Therefore, the findings cannot be directly extrapolated to other industries or companies in similar sectors.
4. The analysis of banking performance uses variables included in the Risk-Based Bank Rating (RBBR) framework, excluding Good Corporate Governance (GCG).
5. The bank performance indicators used within the Risk-Based Bank Rating (RBBR) framework are as follows:
  - ROE to measure profitability
  - NPL to measure credit risk
  - CAR to measure capital adequacy
  - LDR to measure liquidity
  - CIR to measure operational efficiency
6. The macroeconomic and monetary environment in this study is represented by several indicators, namely interest rates, inflation, economic liquidity, foreign exchange reserves, and the exchange rate.
7. The inflation variable used in this study is limited to the general inflation rate officially published by Statistics Indonesia (BPS) and does not incorporate sector-specific inflation measures.
8. The interest rate variable used in this study is limited to the prevailing monetary policy interest rate officially sourced from Bank Indonesia for the respective observation periods
9. All variables used in this study are aligned with their respective observation periods to maintain consistency with the quarterly structure of the panel dataset. Accordingly, each observation reflects the data applicable to the corresponding period in which it occurred

## **1.6 Research Benefit**

The results of this study are expected to provide benefits for users of financial information, both in academic circles and among business stakeholders, such as institutional investors, retail investors, and market analysts. The expected benefits of this study are as follows:

### **1. Theoretical Benefits**

- This study is expected to provide a theoretical contribution by enriching the literature on the determinants of stock returns in the banking sector, particularly through the integration of financial performance, monetary policy, and market factors into a single empirical model.
- This study also extends the application of several financial and capital market theories, such as Signaling Theory, Arbitrage Pricing Theory (APT), and the Efficient Market Hypothesis (EMH), in explaining how internal and external factors influence stock returns in the Indonesian banking industry.
- This study contributes to the empirical literature by providing evidence from the largest banks in Indonesia, namely KBMI IV banks, during the period 2015–Q1 2026. This period covers several important economic phases, including the post-global economic stabilization period, the Covid-19 pandemic, the post-pandemic recovery, global monetary tightening, and geopolitical uncertainty in 2026.

### **2. Practical and Managerial Benefits**

#### **• For Investors**

This study is expected to provide useful insights for investors in understanding the factors that influence stock returns in the banking sector, particularly those related to financial performance, corporate governance, monetary policy, and market conditions. The findings of this study are expected to support a more comprehensive investment decision-making process.

#### **• For Banking Management**

This study may help banking management understand how internal financial performance and corporate governance practices are perceived

by the capital market, thereby supporting strategic decision-making to enhance firm value and investor confidence.

- For Regulators and Policymakers

This study is expected to provide additional insights for regulators, such as Bank Indonesia and the Indonesian Financial Services Authority, or Otoritas Jasa Keuangan (OJK), regarding the relationship among monetary policy, banking performance, and capital market dynamics, particularly during periods of economic uncertainty.

- For Future Researchers

This study may serve as a reference for future research related to banking stock returns, panel data analysis, financial performance, corporate governance, and the impact of macroeconomic factors on the capital market.

## **1.7 Organization of Thesis**

This study is “The Integrated Impact of Financial Performance, Good Corporate Governance, Macroeconomic and Monetary Environment, and Market Factors on Stock Returns: An Empirical Study of KBMI IV Banks in Indonesia (2015–Q1 2026).” This study consists of five chapters, as follows:

- Chapter I – Introduction

The first chapter provides an overview of the main background of this study, followed by a discussion of the research problem, research questions, and research objectives. In addition, this chapter explains the main benefits, scope, and limitations of the study.

- Chapter II – Literature Review

The second chapter explains the theoretical concepts that support the development of the research hypotheses. The theoretical sources include articles, journals, and textbooks. This chapter also provides an overview of previous studies as references for this research, along with the development of hypotheses and the research framework.

- Chapter III – Methodology

The third chapter describes the research design, including variable measurement, data collection methods, procedures, data analysis techniques, hypotheses, and the overall research process.

- Chapter IV – Findings, Analysis, and Discussion

The fourth chapter describes the list of companies selected for this study. This chapter presents the research findings and the results of the tested hypotheses. The findings are analyzed by examining whether they support the proposed hypotheses.

- Chapter V – Conclusions, Limitations, Implication, and Recommendations

The final chapter summarizes the research findings. This chapter presents the key points and recommendations based on the research conclusions, offering insights that may be useful for investors and users of financial information in the market, as well as for academics conducting future research.

## **CHAPTER II**

### **LITERATURE REVIEW**

#### **2.1 Theoretical Basis**

##### **2.1.1 Capital Market**

###### **2.1.1.1 Definition of Capital Market**

According to Law Number 8 of 1995 concerning the Capital Market, the capital market refers to all activities related to public offerings and securities trading, public companies associated with the securities they issue, as well as institutions and professions related to securities. According to Sunariyah (2011), in a broad sense, the capital market is an organized financial system, which includes commercial banks and all intermediary institutions in the financial sector, as well as all outstanding securities. Meanwhile, in a narrow sense, the capital market refers to a market or place established for trading shares, bonds, and other types of securities through the services of securities brokers or intermediaries. Several securities commonly traded in the capital market include shares, bonds, mutual funds, and derivative instruments (Eduardus Tandelilin, 2001).

- 1) Shares are certificates of ownership representing claims over the assets of the company issuing the shares.
- 2) Mutual funds are certificates indicating that the holders entrust a certain amount of funds to a mutual fund company, which are then used as investment capital in both the capital market and the money market.
- 3) Bonds are securities that provide a fixed amount of income to their holders.
- 4) Derivative instruments are securities whose value is derived from other securities, and therefore their value highly depends

on the price of the underlying securities used as a benchmark. Several types of derivative instruments include the following:

- a. A rights issue is a derivative of shares that grants existing shareholders the right to purchase a certain number of new shares issued by the company at a predetermined price.
- b. An option is the right to buy or sell a certain number of shares at a predetermined price.
- c. Bonus shares refer to shares issued by a company and distributed to existing shareholders.
- d. Warrants are options issued by a company that give the holder the right to purchase a certain number of shares at a predetermined price within a specific period.

#### **2.1.1.2 Types of Capital Market**

Capital market transactions may take place through different market structures depending on whether securities are being issued for the first time or subsequently traded among investors. The primary market facilitates the initial issuance of securities by issuers to investors, whereas the secondary market enables previously issued securities to be traded among market participants (Sunariyah, 2011). Other trading arrangements may also facilitate transactions outside conventional exchange mechanisms. For the purpose of this study, the secondary market is particularly relevant because the stock returns examined are derived from changes in the market prices of publicly traded banking shares.

#### **2.1.1.3 Benefits of the Capital Market**

According to Samsul (2006), the benefits of the capital market can be viewed from three perspectives, namely the perspective of issuers, the public, and the government.

1. From the Perspective of Issuers
  - The capital market serves as a means of obtaining larger amounts of funds at a lower cost.

- It encourages company management to shift from a closed management system to a more open one, which benefits shareholders through greater transparency.
  - It helps expand business networks with both domestic and foreign companies.
2. From the Perspective of the Public
    - The capital market provides an accessible investment medium that does not necessarily require a large amount of capital for most members of society.
    - It allows investors to allocate their funds across several instruments in order to reduce overall risk and maximize potential returns.
  3. From the Perspective of the Government
    - The capital market serves as a source of financing for State-Owned Enterprises, or Badan Usaha Milik Negara (BUMN), thereby reducing their dependence on government subsidies.
    - It contributes to government revenue through taxation, supports foreign exchange savings for development financing, and expands employment opportunities.

## **2.1.2 Bank**

### **2.1.2.1 Definition of Bank**

According to Law Number 10 of 1998, “a bank is a business entity that collects funds from the public in the form of deposits and channels them back to the public in order to improve the standard of living of the wider community.” According to Putra and Saraswati (2020), a bank is a legally incorporated business entity engaged in financial services, which is able to collect funds directly from the public and redistribute them to the public through the provision of credit. Khairullah and Rosita et al., (2022) explained that banks are fundamental components of the modern financial

system. These institutions function as financial intermediaries by collecting deposit funds from the public. The existence of financial intermediaries such as banks is essential for the economy to function optimally, as they bridge the gap between parties with surplus funds and those in need of funds, thereby encouraging investment and accelerating economic growth. In addition, banks are also known as institutions that provide various financial services, such as money exchange, fund transfers, and the acceptance of various types of payments and deposits, including payments for electricity, telephone bills, water bills, taxes, tuition fees, and other payment obligations (Putra & Saraswati, 2020). In summary, banks are complex and multidimensional institutions that play an essential role in promoting financial stability and supporting economic growth.

#### **2.1.2.2 Functions of Banks**

According to Sahri (2024), banks have three main functions, namely as an agent of development, an agent of trust, and an agent of services.

##### **1. Agents of Development**

The economic condition of a country is determined by the complex relationship between the monetary sector, represented by banks, and the real sector, which includes the production and consumption of goods and services. A healthy real sector requires a well-functioning banking system that is able to efficiently collect and distribute funds. Banks act as catalysts by enabling individuals and companies to exchange goods and services, make investments, and carry out consumption activities. Economic activities depend on the use of money, and banks play an essential role in maintaining the smooth circulation of money within the economy.

## 2. Agents of Trust

Trust serves as the foundation of all banking operations, supporting both the collection of deposits and the distribution of credit. Banks receive deposits from individuals who entrust their money with the belief that the funds will be kept safely, managed prudently, and made accessible when needed. Conversely, banks provide credit to debtors based on the confidence that the borrowed funds will be used responsibly, repaid according to schedule, and that the debtors have a genuine intention to fulfill their financial obligations. In essence, a sound and efficient banking system depends on mutual trust between banks and their customers.

## 3. Agents of Services

In addition to collecting and distributing funds, banks also provide various additional services to the public that offer direct benefits for essential economic activities. These additional services include fund transfers, the safekeeping of valuable assets in safe deposit boxes, bank guarantees to reduce risks in financial transactions, and bill payment management for customer convenience. Through the provision of these services, banks seek to serve as a one-stop financial institution that meets the various financial needs of their customers.

### **2.1.2.3 Types of Banks**

According to Fitriana (2021), banks can be classified into several categories based on their respective characteristics, as follows:

#### 1. Based on Function :

- Commercial Banks are banks whose main sources of income are time deposits and demand deposits. This type of bank provides short-term financing for the wider public.

- Development banks are banks that collect time deposits, raise funds, and distribute medium- and long-term loans to support development sectors.
  - Saving banks are banks that handle fund collection, accept savings deposits, and issue payment instruments or bank drafts.
2. Based on Ownership :
- Central government banks are banks whose majority shares are owned by the central government. These banks may take the form of commercial banks, development banks, or savings banks.
  - Regional government banks are banks whose ownership is fully controlled by regional governments, including commercial banks, development banks, and savings banks.
  - National private banks are banks owned by domestic citizens.
  - Foreign private banks are banks whose majority ownership is held by foreign citizens or foreign entities.
  - Joint venture banks are banks jointly owned by domestic citizens and foreign citizens or entities.
3. Based on Foreign Exchange Activities
- Foreign exchange banks are banks that have obtained permission from Bank Indonesia to conduct foreign exchange activities, including buying, selling, and holding foreign currencies, as well as conducting international transactions.
  - Non-foreign exchange banks are banks that do not have permission to buy, sell, or hold foreign currencies, or to conduct international transactions.
4. Based on Market Segment
- Retail banking refers to banks whose main activities are focused on serving individuals, small businesses, and cooperatives.

- Wholesale banking refers to banks whose main activities are focused on providing services to large customers or major corporate organizations.
5. Based on Core Capital, in Accordance with OJK Regulation Number 12/POJK.03/2021
- KBMI I refers to banks with core capital of up to IDR 6 trillion. Banks in this category have a limited scope of business activities, including the collection and distribution of funds in rupiah, limited-scope electronic banking, temporary capital participation, and foreign exchange trading.
  - KBMI II refers to banks with core capital ranging from IDR 6 trillion to IDR 14 trillion. Banks in this category may conduct the business activities included in KBMI I with a broader scope, including limited treasury activities such as spot transactions and plain vanilla derivatives, as well as capital participation in domestic financial institutions of up to 15%.
  - KBMI III refers to banks with core capital ranging from IDR 14 trillion to IDR 70 trillion. Banks in this category may conduct the business activities included in KBMI II with a broader scope. KBMI III banks may also carry out capital participation in financial institutions both within Indonesia and abroad within the Asian region, up to 25%.
  - KBMI IV refers to banks with core capital of more than IDR 70 trillion. Banks in this category may conduct the business activities included in KBMI III with an even broader scope. Their capital participation activities may extend to financial institutions both domestically and internationally. Examples of banks in this category are dominated by state-owned banks under the Association of State-Owned Banks, or Himbara, and leading national private banks.

### **2.1.3 Signaling Theory**

Signaling Theory explains how information asymmetry can be reduced when parties with superior information communicate relevant signals to other parties. Recipients subsequently interpret those signals and may adjust their decisions according to the information conveyed (Lutvy et al., 2019). Brigham (2011) and Dewi (2017) explain that managerial disclosures can communicate management's assessment of a company's future prospects to external parties. Financial statements therefore function as an important information channel through which investors evaluate corporate conditions and make investment decisions. The stronger a company's historical performance, the greater the investors' interest in purchasing its shares.

In this study, Signaling Theory provides a basis for understanding how financial performance information may influence investor perceptions of firm value. Investors may interpret improving profitability as favorable information about company conditions, whereas declining profitability may create a less favorable assessment of future performance (Mariani & Suryani, 2018).

Corporate disclosures assist investors in evaluating investment alternatives because new information may alter their assessment of a company. Favorable disclosures may encourage a positive market response, while unfavorable information may lead to the opposite reaction. The eventual response depends on how market participants interpret the information and incorporate it into their trading decisions.

### **2.1.4 Efficient Market Hypothesis (EMH)**

A study by Martinez in 1999 looked at the connection between financial ratios and stock returns among 50 industrial companies listed on the French stock exchange and found that financial statement information can be used to predict stock returns. Moreover, Barnor (2014) discovered that economic indicators, such as interest rates, the money supply, and exchange rates, had a significant impact on stock market returns on the Ghana Stock Exchange during the period 2000 to 2013. Generally, market efficiency depends on rational investors being actively involved, having broad access to relevant information, and adjusting

security prices quickly when new information becomes available. Market efficiency theory was widely accepted from the 1960 through to the 1990. However, many economists later criticized this theory and linked it to the causes of the financial crisis between 2007 and 2010. Even in the face of this controversy, Fama (1965) held that the main point of the EMH is that available information is quickly incorporated into stock prices. Over time, opinions about market efficiency have continued to change. In the case of developing countries like Indonesia, Bekaert and Harvey (2000) demonstrated that stock markets in emerging economies tend not to be fully efficient in the semi-strong form because of high transaction costs, limited access to information, and market segmentation. This situation offers investors the opportunity to earn abnormal returns by using fundamental analysis, such as the analysis of bank financial statements and macroeconomic indicators. Since the points mentioned above are taken into account, research into the effect of financial performance, corporate governance, monetary policy, and market return on Indonesian banking stock returns is relevant, since it is based on the belief that publicly available fundamental information—both internal bank information and external macroeconomic information—may still affect stock price movements.

#### **2.1.5 Arbitrage Pricing Theory**

Arbitrage Pricing Theory Arbitrage Pricing Theory (APT), which was developed by Ross in 1976, offers a multifactor explanation of asset returns. Unlike the CAPM, which attributes expected return only to exposure to the market portfolio, APT allows several systematic risk factors to affect security returns at the same time (Tandelilin, 2017). As Roll and Ross (1980) pointed out, several factors have been shown to affect rates of return, such as unexpected inflation shocks, industrial production, risk premiums that differentiate between high-rated and low-rated bonds, and changes in the yield curve. The most fundamental difference between APT and CAPM is the number of risk factors used. CAPM takes into account only one factor, namely market risk, which means that an asset's return is determined entirely by its beta relationship with the market. On the other hand, APT recognizes that both macroeconomic and

industry-specific risk factors can influence asset returns and is not restricted to market risk alone. Examples of such factors include inflation and interest rates. The APT model is based on a number of key assumptions: capital markets function under conditions of perfect competition, investors are generally risk-averse, investors have identical expectations, and returns are generated through a factor model. The APT formula is expressed as follows:

$$E(R_i) = R_f + \beta_1 F_1 + \beta_2 F_2 + \cdots + \beta_n F_n + \varepsilon_i$$

In this formula,  $E(R_i)$  represents the expected return of asset  $i$ ,  $R_f$  represents the risk-free rate,  $\beta_{ik}$  indicates the sensitivity of the asset's return to the  $k$ -th factor,  $F_k$  represents the  $k$ -th factor that generally influences asset returns, and  $\varepsilon_i$  represents the error component that is unique to each asset. The flexibility of APT is the main reason why this theory is highly relevant to this study. APT emphasizes that systematic changes at the macroeconomic level may affect the prices and returns of financial assets. In other words, APT provides an understanding that stock returns are not derived from only one dimension of risk, as suggested by CAPM, but are multidimensional and highly dependent on prevailing economic conditions. This view is in line with the findings of Chen, Roll, and Ross (1986), who showed that macroeconomic variables, such as inflation, industrial production, risk premiums, and interest rate spreads, play an important role in explaining stock market movements.

In the context of the banking sector, APT is considered highly appropriate because this sector is among the most responsive to changes in macroeconomic conditions. This is closely related to the main function of banks as financial intermediaries and managers of economic liquidity (Muthia & Isnurhardi, 2012). Changes in interest rates, exchange rates, and inflation may directly affect interest income, cost of capital, credit risk, and demand for financing, which in turn influence bank stock returns. By using APT as the theoretical foundation, this study can explain more specifically how each macroeconomic variable, such as interest rates, inflation, exchange rates, money supply, and foreign exchange reserves, contributes to influencing banking stock returns. APT provides a rational foundation that changes in macroeconomic indicators are fundamental determinants shaping the dynamics of stock prices in the capital market.

### **2.1.6 Risk – Based Bank Rating Method**

Risk-Based Bank Rating (RBBR) is an assessment framework used to evaluate the soundness and performance of banks through a risk-based approach. The implementation of RBBR emphasizes the importance of evaluating both financial and non-financial aspects that may affect the stability and sustainability of banking operations. This approach emerged in response to the increasing complexity of the banking industry, in which bank performance is no longer assessed solely based on profitability, but also on the ability of banks to manage the various risks they face.

According to Kasmir (2018), bank soundness refers to the ability of a bank to carry out its operational activities normally and to fulfill all of its obligations properly in accordance with applicable banking regulations. The assessment of bank soundness is important because it reflects the overall condition and performance of a bank, including its ability to manage risk, maintain liquidity, sustain profitability, and preserve capital adequacy. In addition, Rivai, Veithzal, and Idroes (2013) stated that bank soundness assessment is needed to determine a bank's ability to respond to changing economic conditions and increasingly complex business risks. Therefore, the risk-based approach is considered a more comprehensive method for evaluating the condition of modern banking institutions compared to conventional bank soundness assessment approaches.

The assessment of bank soundness in Indonesia is conducted using the Risk-Based Bank Rating (RBBR) approach, as regulated under Bank Indonesia Regulation Number 13/1/PBI/2011 concerning the Assessment of Commercial Bank Soundness and Financial Services Authority Regulation Number 4/POJK.03/2016. Through this framework, Bank Indonesia and the Financial Services Authority, or Otoritas Jasa Keuangan (OJK), apply risk-based supervision by combining qualitative and quantitative assessments in evaluating banking performance and risk management practices. In general, the RBBR framework evaluates several important aspects, namely risk profile, Good Corporate Governance (GCG), earnings, and capital. These components are used to assess the overall condition and resilience of banks in facing various internal and external risks. Based on OJK Regulation Number 4/POJK.03/2016, the

assessment of bank soundness focuses on the ability of banks to maintain financial stability, manage risks, and sustain operational performance amid changing economic conditions.

In the risk profile component, the assessment is conducted on various types of risks faced by banks, including credit risk, liquidity risk, market risk, operational risk, legal risk, reputational risk, strategic risk, and compliance risk. In this study, financial performance variables are measured using several proxies derived from the Risk-Based Bank Rating (RBBR) framework, as follows:

1. **Non-Performing Loan (NPL)** is used as a proxy for credit risk. According to Ismail (2018), NPL is a ratio used to measure the level of non-performing loans held by a bank. A higher NPL ratio indicates greater credit risk faced by the bank, which may reduce profitability and investor confidence in banking performance.
2. **Loan-to-Deposit Ratio (LDR)** is used as a proxy for liquidity risk. According to Dendawijaya (2009), LDR is a ratio that reflects the ability of a bank to channel third-party funds into loans. This ratio represents the liquidity level of a bank as well as the effectiveness of its financial intermediation function.
3. **Capital Adequacy Ratio (CAR)** is used as a proxy for capital adequacy. According to Kasmir (2018), CAR is a ratio used to measure the ability of a bank's capital to absorb potential losses arising from its operational activities. A higher CAR ratio indicates a stronger ability of the bank to maintain financial stability.
4. **Return on Equity (ROE)** is used as a proxy for profitability. According to Brigham and Houston (2019), ROE is a profitability ratio used to measure a company's ability to generate profit based on shareholders' equity. A higher ROE indicates the effectiveness of management in utilizing capital to generate profits.
5. **Cost to Income Ratio (CIR)** is used as a proxy for operational efficiency. According to Dendawijaya (2009), CIR is used to measure the level of bank efficiency in carrying out its operational activities. A

lower CIR ratio indicates that the bank is more efficient in managing operating expenses to generate operating income.

The use of these indicators aims to provide a more comprehensive overview of banking conditions and performance within the Risk-Based Bank Rating (RBBR) framework. Through these variables, this study seeks to analyze how bank soundness and operational performance influence stock returns in the largest banks in Indonesia during the period from 2015 to the first quarter of 2026.

### **2.1.7 Good Corporate Governance**

Good Corporate Governance is a system employed by companies as a means of internal control, whose primary aim is to manage major risks so as to attain business objectives, protect the company's assets, and enhance the value of investments (Effendi, 2016). As the World Bank (2016) states, Good Corporate Governance means a collection of laws, regulations, and principles which have to be followed in order to promote the efficient use of a company's resources and to create sustainable long-term economic value for both shareholders and society as a whole. According to the Indonesia Stock Exchange (2022), Good Corporate Governance is a sound and professional system of business governance based on well-established principles and it regulates the relationships between shareholders and stakeholders with the aim of optimizing firm value in the long term. Good Corporate Governance (GCG) is one of the dimensions incorporated in the Risk-Based Bank Rating framework, along with Risk Profile, Earnings, and Capital. It denotes the governance mechanisms by means of which banking institutions are directed, supervised, and held to account. It should be noted, however, that GCG is not included as an empirical variable in the final model of this study. The empirical analysis therefore centres on measurable financial performance indicators, specifically LDR, ROE, CAR, NPL, and CIR.

## **2.1.8 Macroeconomic and Monetary Environment**

### **2.1.8.1 Macroeconomic and Monetary Environment Theory**

The macroeconomic and monetary environment refers to the overall economic and monetary conditions that influence financial system stability, business activities, and capital market performance. Macroeconomic and monetary conditions play an important role in determining investment decisions, market expectations, and corporate performance, particularly in the banking industry, which is highly sensitive to changes in economic and monetary conditions. Macroeconomic and monetary conditions affect economic activities through several transmission channels, such as interest rates, liquidity, inflation, exchange rates, and financial market expectations. Changes in macroeconomic and monetary conditions may influence investment activities, household consumption, corporate financing decisions, and the stability of financial institutions. Therefore, macroeconomic stability is an important factor in maintaining investor confidence and supporting sustainable economic growth.

Samuelson and Nordhaus (2010) stated that macroeconomic stability reflects a country's ability to maintain sustainable economic growth, inflation stability, external sector balance, and financial market stability. In this context, monetary policy implemented by the central bank becomes one of the main mechanisms for maintaining economic stability and controlling macroeconomic fluctuations. As stated in Law No. 23 of 1999 on Bank Indonesia, the role of the monetary authority is carried out by Bank Indonesia, which functions as the central bank. Its responsibilities include maintaining the stability of the rupiah, controlling inflation, and ensuring the stability of the financial system through the use of various monetary policy instruments and measures. These policies involve the management of interest rates, the control of liquidity, the maintenance of exchange rate stability, and the management of foreign exchange reserves. With regard to the capital market, the macroeconomic and monetary

conditions are closely linked to movements in stock prices and stock returns. Under expansionary monetary conditions, market liquidity tends to increase and investment activity is encouraged, while under contractionary monetary conditions the cost of funds may go up and investor interest in risky assets may decline. Moreover, macroeconomic instability can lead to greater uncertainty and volatility in financial markets, thus impacting investor confidence and capital market performance. The banking sector is one of the sectors most affected by changes in macroeconomic and monetary conditions since its operations are directly tied to interest rates, liquidity, credit activities, and the stability of the financial system. Changes in inflation, exchange rates, and liquidity conditions can have an effect on bank profitability, credit risk, operational performance, and the returns on banking sector stocks. Hence, macroeconomic and monetary conditions are important factors in explaining stock performance in the banking sector. In this study, the macroeconomic and monetary environment is represented by a number of indicators that reflect economic stability, monetary conditions, and the resilience of the external sector. The variables used are interest rates, inflation, money supply, foreign exchange reserves, and the rupiah's exchange rate against the United States dollar. These variables have been chosen because they are closely related to liquidity conditions, investment activities, financial market dynamics, and the performance of the banking sector.

#### **2.1.8.2 Indicators of the Macroeconomic and Monetary Environment**

Macroeconomic and monetary indicators are measures employed to evaluate the stability and economic situation of a country. According to Mishkin (2019), macroeconomic indicators offer significant signals about economic conditions, monetary stability, and market expectations, all of which may influence investment decisions and capital market performance. In this study, the macroeconomic and monetary environment is measured by means of five indicators since they are believed to be able

to represent monetary conditions, liquidity levels, external sector stability, and the macroeconomic dynamics that may affect returns on banking sector stocks. The indicators are as follows:

### **1. Interest Rate**

The interest rate is one of the instruments of monetary policy used by the central bank to control inflation and maintain economic stability. According to Mishkin (2019), changes in interest rates may influence investment activities, consumption, and financing decisions in the economy.

### **2. Inflation**

Inflation is a condition in which the prices of goods and services increase generally and continuously over a certain period. According to Boediono (2014), inflation reflects an imbalance between demand and supply in the economy, which causes an increase in the general price level.

### **3. Money Supply**

Money supply refers to the total amount of money circulating in the economy during a certain period. According to Nopirin (2014), the money supply is an important indicator in monetary policy because it reflects the level of liquidity in the economy.

### **4. Foreign Exchange Reserves**

Foreign exchange reserves are foreign assets owned by the central bank and used to maintain exchange rate stability and fulfill international transaction needs. According to Bank Indonesia (2024), foreign exchange reserves play an important role in maintaining external sector resilience and national financial system stability.

### **5. Exchange Rate**

The exchange rate refers to the price of one country's currency relative to the currency of another country. According to Madura (2018), exchange rates are influenced by various

factors, such as inflation, interest rates, economic conditions, and international capital flows.

## **2.1.9 Stock Return**

### **2.1.9.1 Definition of Stock Return**

Shares represent the ownership of an individual or entity in a company, and the market value of shares reflects the performance of the company (Horne and Wachowicz, 2000). If a company's performance is perceived to be good, demand for its shares will increase, thereby leading to a higher stock price. Stock price is measured based on the closing price on the stock exchange (Rakhman et al., 2019).

The main objective of investors in purchasing shares is to obtain a return from those shares (Purba, 2019). Return refers to the level of profit earned by investors from an investment they have made, while stock return refers to income expressed as a percentage of the initial investment capital (Novitasari, 2017). Stock return is the difference between the selling price and the purchase price of a stock, which may have either a positive or negative value (Pradista and Kusumawati, 2022). When a stock produces a positive return, investors make a profit, this being what is known as a capital gain; on the other hand, a negative return causes a loss, which is called a capital loss. The stock return is closely linked to changes in the stock price, fluctuations which may indicate how well a company is performing.

As Tandelilin (2010) pointed out, stock return is a major factor in encouraging shareholders to invest and acts as compensation for the investment risks that investors have taken. The stock return is made up of two main parts:

1. Yield which is the part of the return coming from the periodic cash flow or income obtained from an investment and can be either zero or positive.
2. Capital Gain or Loss which shows the increase or decrease in the price of the investment and thus results in a gain or loss for

the investors. A capital gain or loss may be negative, zero, or positive.

#### **2.1.9.2 Types of Stock Return**

As Jogyanto (2010) pointed out, stock returns may be divided into two categories :

1. Realized Return which are those that have already taken place and are computed from historical data. Realised returns are important since they act as a measure of company performance and help in assessing the expected return and future risk
2. Expected Return which mean the return that investors expect to receive in the future and are used as the basis for making investment decisions.

#### **2.1.10 Market Return**

The rate of return for the market shows the overall performance of the stock market during a given period and shows how investors as a group have reacted to various economic, financial, and market-related pieces of information. In capital market theory, market return is a key measure for judging how well an investment is performing and for determining how attractive stock investments are in comparison to other investments. Bodie, Kane, and Marcus (2021) say that market return shows the total return produced by all the stocks that are traded in the market and acts as a barometer of investor sentiment and of market expectations concerning future economic conditions. Changes in market return are usually connected with changes in macroeconomic conditions, monetary policy, corporate performance, and global financial developments which in turn affect investor behaviour.

From the point of view of Modern Portfolio Theory, market return stands for systematic risk, a type of risk which cannot be removed by diversifying a portfolio. Sharpe (1964) claimed that stock performance is affected by both internal factors relating to the company and by general movements in the market. As a result, investors often use market return as a benchmark to decide whether

a stock is outperforming or underperforming the market as a whole. In an efficient capital market, a rise in market return usually means that investors are optimistic about the future economic outlook and business conditions. Higher market returns tend to encourage investment and increase the demand for stocks, which in turn may lead to higher returns on individual stocks.

On the other hand, a fall in market return may indicate a worsening of market sentiment, greater economic uncertainty, or negative investor expectations, all of which can have a downward effect on stock returns. The banking sector is especially sensitive to changes in market conditions because of its important role in the financial system and in economic activities. Hence, changes in market return can affect how investors view bank performance, financial stability, and future profitability. Good market performance usually boosts investor confidence in banking stocks, while market weakness may lead to risk-averse behaviour and reduce investor interest in stocks in the banking sector.

## **2.2 Previous Studies**

Various previous studies have examined the factors that influence stock returns, particularly in the banking sector. In general, these studies indicate that stock returns are influenced by a combination of internal and external company factors. Internal factors generally include financial performance and corporate governance, while external factors include macroeconomic conditions, the monetary environment, and overall market conditions. Although these factors have been widely examined, the findings of previous studies remain varied and inconsistent. Some studies found significant effects, whereas others reported insignificant or even contradictory results. A summary of previous studies relevant to this research is presented in Table 2.1, *Previous Studies*.

**Table 2 1 Previous Studies**

| No. | Author & Year                       | Title                                                                            | Results                                                                                                                                                                                  |
|-----|-------------------------------------|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Pratama et al (2025)                | Analysis of Banking Soundness and Financial Performance in Indonesian Banks      | The study emphasized that banking soundness should be evaluated through indicators representing risk profile, operational efficiency, and capital adequacy, including NPL, CAR, and BOPO |
| 2   | Heryana & Arifin (2018)             | The effect of Risk-Based Bank Rating (RBBR) on Stock Returns of Indonesian Banks | NPL, LDR, ROE, GCG, and NIM were found to have No. significant effect on stock returns                                                                                                   |
| 3   | Wijono et al (2023)                 | Financial Performance and Stock Prices of Banking Companies Listed in LQ20       | ROA had a positive and significant effect on stock prices, NIM had a negative and significant effect, while BOPO showed no significant effect                                            |
| 4   | Subagyo, Achsani, & Sasongko (2022) | Financial Performance Determinants of Banking Stock Returns                      | NPL, LDR, ROE, and NIM were found to have no significant influence on stock returns                                                                                                      |
| 5   | Siang Sembel & Malau (2024)         | Macroeconomic Determinants of Banking Stock Returns in Indonesia                 | GDP and Market Return positively and significantly affected banking stock returns.                                                                                                       |
| 6   | Narayan & Sharma (2016)             | The Impact of Monetary Policy on Stock Market Returns                            | Interest rate changes significantly affected stock returns through investor expectations and market liquidity conditions                                                                 |

**Table 2.1 Previous Studies (Continues)**

| <b>No.</b> | <b>Author &amp; Year</b>      | <b>Title</b>                                                             | <b>Results</b>                                                                                                                                        |
|------------|-------------------------------|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7          | Tripathi & Kumar (2017)       | Macroeconomic Variables and Stock Market Performance in Emerging Markets | Inflation, exchange rates, and money supply significantly influenced stock market performance                                                         |
| 8          | Sadorsky (2021)               | Monetary Policy, Liquidity Conditions, and Stock Market Performance      | Interest rates and liquidity conditions significantly affected stock market volatility and returns, particularly during periods of global uncertainty |
| 9          | Ioannidis et al (2006)        | Monetary Policy and Stock Market Returns                                 | Monetary Policy was found to have a significant impact on stock returns                                                                               |
| 10         | Saputra & Dharmadiaksa (2016) | The effect of Interest Rate and Exchange Rate on Stock Returns           | Interest rates and exchange rates negatively affected stock returns                                                                                   |
| 11         | Amrillah (2016)               | Exchange rate and Banking Stock Returns                                  | Exchange rates had a negative and significant effect on banking stock returns                                                                         |
| 12         | Steven (2025)                 | Macroeconomic Factors and Banking Stock Returns                          | GDP, Exchange rates, and Money Supply did not significantly affect banking stock returns                                                              |
| 13         | Chandra (2025)                | The Relationship Between Macroeconomic Indikator and Stock Returns       | GDP, Exchange rates, and Money Supply did not significantly affect banking stock returns                                                              |

**Table 2.1 Previous Studies (Continues)**

| No. | Author & Year                               | Title                                                                                         | Results                                                                                                                     |
|-----|---------------------------------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| 14  | Reddy (2012)                                | Impact of Inflation and GDP on Stock Market Return in India                                   | GDP affect positively stock returns and Inflation have negative effect on stock return                                      |
| 15  | William Ferrari & Wiwiek M. Daryanto (2022) | The effect of Risk-Based Bank Rating on Stock Return : Evidence of Buku II Banks in Indonesia | The NPL, LDR, ROA and NIM do not have significant effect on Stock Returns, while CAR has significant effect on Stock Return |

Based on Table 2.1, *Previous Studies* show inconsistencies regarding the factors that influence banking stock returns. From the perspective of financial performance, several studies found that bank soundness indicators have an effect on stock returns, while other studies reported insignificant results. Similarly, in terms of macroeconomic factors and the monetary environment, previous studies have shown different findings regarding the effects of interest rates, inflation, money supply, exchange rates, and market conditions on stock returns.

In addition to the inconsistencies in previous research findings, most prior studies have focused only on a specific group of variables, either internal factors or external factors. Studies that integrate financial performance, the macroeconomic and monetary environment, and market return into a single comprehensive research framework remain relatively limited, particularly in the context of the largest banks in Indonesia classified under the KBMI IV category.

Therefore, this study is conducted to address this research gap by simultaneously analyzing the effects of Financial Performance, represented by ROE, NPL, CAR, LDR, and CIR, the Macroeconomic and Monetary Environment,

represented by interest rates, inflation, money supply, foreign exchange reserves, and exchange rates; and Market Return on Stock Return in KBMI IV banks during the period from 2015 to the first quarter of 2026.

## 2.3 Hypothesis Development

### 1. Financial Performance

#### a. Liquidity

Liquidity refers to a bank's ability to meet its short-term obligations while effectively channeling funds collected from depositors into loans. In the banking industry, liquidity plays a critical role because it reflects a bank's ability to maintain a balance between fund mobilization and credit distribution. According to Rose and Hudgins (2013), an optimal level of liquidity enables banks to satisfy customers' withdrawal demands while maximizing their financial intermediation function through lending activities. In this study, liquidity is proxied by the **Loan-to-Deposit Ratio (LDR)**. This ratio measures the ability of a bank to transform third-party funds into productive loans. A higher LDR indicates that a larger proportion of deposits has been converted into loans, thereby increasing the potential for higher interest income and profitability. Conversely, an excessively low LDR may indicate that the bank has not utilized its available funds efficiently to generate income. From an investor's perspective, effective liquidity management serves as a positive signal regarding a bank's ability to generate future profits. Higher profitability resulting from lending activities may improve investors' expectations of the company's future performance, thereby increasing stock prices and stock returns. Sudiyatno and Suroso (2010) found that liquidity has a positive relationship with corporate financial performance. Similarly, Dewi and Suaryana (2016) argued that a sound liquidity position enhances firm value and attracts investor interest.

**H1a:** Liquidity has a positive effect on the stock returns of the largest banks in Indonesia.

## **b. Profitability**

Profitability refers to a company's ability to generate earnings from its available resources. Within the banking industry, profitability is one of the primary indicators used by investors to evaluate corporate performance. According to Brigham and Houston (2019), profitability reflects management's effectiveness in utilizing corporate resources to generate returns for shareholders. In this study, profitability is measured using **Return on Equity (ROE)**. ROE reflects the company's ability to generate net income from shareholders' equity. From an investment perspective, a high level of profitability provides a positive signal regarding the company's future growth prospects. Investors generally prefer companies capable of generating sustainable earnings. Consequently, stronger profitability tends to increase demand for a company's shares, resulting in higher stock prices and stock returns. Wijono et al. (2023) found that profitability has a positive effect on banking stock prices. Likewise, Puspitasari et al. (2022) concluded that profitability is one of the primary considerations influencing investors' investment decisions.

**H1b:** Profitability has a positive effect on the stock returns of the largest banks in Indonesia.

## **c. Capital Adequacy**

Capital Adequacy refers to a bank's ability to maintain sufficient capital to absorb risks arising from its operational activities. According to Saunders and Cornett (2018), capital serves as the first line of defense against potential losses and is a key indicator of financial system stability. Capital adequacy is proxied by the **Capital Adequacy Ratio (CAR)**. CAR measures a bank's ability to provide sufficient capital to cover risk-weighted assets. A higher CAR indicates greater financial resilience and a stronger capacity to absorb potential losses. From an investor's perspective, a high level of capital adequacy signals that a bank is better able to withstand economic and financial shocks. Consequently, stronger capital adequacy enhances investor confidence, increases firm value, and supports stock performance. Akbar et al. (2019) found that capital adequacy positively influences firm value and

stock performance. Similarly, Rahmawati (2021) reported that CAR positively affects investor perceptions of banking companies.

**H1c:** Capital adequacy has a positive effect on the stock returns of the largest banks in Indonesia.

#### **d. Asset Quality**

Asset quality reflects a bank's ability to manage credit risk arising from lending activities. According to Kasmir (2018), good asset quality indicates that a bank is capable of maintaining a high-quality loan portfolio and minimizing default risk. Asset quality is measured using the **Non-Performing Loan (NPL)** ratio. NPL measures the proportion of non-performing loans relative to total loans outstanding. A higher NPL indicates greater credit risk and poorer asset quality. Increasing non-performing loans reduce interest income, increase loan loss provisions, and ultimately reduce bank profitability. From an investor's perspective, deteriorating asset quality increases uncertainty regarding future corporate performance and may reduce stock prices and stock returns. Heryana and Arifin (2018) identified asset quality as an important indicator of banking soundness. Likewise, Louzis et al. (2012) found that increasing credit risk negatively affects financial performance and firm value.

**H1d:** Asset quality has a negative effect on the stock returns of the largest banks in Indonesia.

#### **e. Operational Efficiency**

Operational Efficiency reflects management's ability to control operating costs in generating operating income. According to Dendawijaya (2009), a good level of operational efficiency indicates that a bank is able to manage its resources effectively, thereby supporting higher profitability. In this study, operational efficiency is proxied by the **Cost-to-Income Ratio (CIR)**. CIR measures the proportion of operating costs incurred to generate operating income. This ratio is broadly comparable to BOPO in the Indonesian banking context, as both indicators assess the efficiency of a bank's operating activities. A higher CIR indicates lower operational efficiency because the

bank incurs relatively higher costs in generating income. Conversely, a lower CIR reflects better cost management and more efficient banking operations. An increase in CIR may reduce profitability and weaken the bank's ability to create value for shareholders. From an investor's perspective, a high CIR may be perceived negatively because it reflects inefficiency in operational management and may reduce expectations of future profitability. Therefore, banks with lower CIR are generally considered to have better operational efficiency and stronger potential to generate sustainable returns. Wijono et al. (2023) found that operational efficiency is associated with the performance of banking companies. A higher cost-to-income ratio increases pressure on profitability and may negatively affect stock performance.

**H1e:** Cost-to-Income Ratio has a negative effect on the stock returns of the largest banks in Indonesia.

## **2. Macroeconomic and Monetary Environment**

### **a. Interest Rate**

Central banks use interest rates as one of the main methods they have for achieving price stability, for controlling inflation, and for promoting economic growth. As Mishkin (2019) points out, changes in interest rates affect economic activity via a number of transmission mechanisms, such as those relating to consumption, investment, savings, and financial markets. The higher the interest rates, the greater the opportunity cost of investing in shares since investors have more attractive options in the form of fixed-income instruments like deposits and bonds. Moreover, higher interest rates also raise the cost of financing for firms and lower expected profits. Narayan and Sharma (2016) found that changes in interest rates have a significant effect on stock returns via investors' expectations and market liquidity. Ioannidis et al. (2006) likewise reported that monetary policy significantly influences stock returns.

**H2a:** Interest rates have a negative effect on the stock returns of the largest banks in Indonesia.

## **b. Inflation**

As Boediono (2014) points out, inflation may be used as an indicator of economic stability because it has an impact on purchasing power, production and investment. When inflation is high, production and operating costs rise whereas consumers' purchasing power falls, leading to a decrease in profitability and an increase in economic uncertainty. Since high inflation lowers the real value of the returns on investments, investors usually see it as a bad sign. Tripathi and Kumar (2017) discovered that inflation has a significant effect on stock market performance; Fama (1981) also said that inflation affects stock returns by means of its effect on economic activity and corporate profitability.

**H2b:** Inflation has a negative effect on the stock returns of the largest banks in Indonesia.

## **c. Money Supply**

The total sum of money in circulation refers to the amount of money that is moving about in an economy over a given period. As Nopirin (2014) points out, the money supply is a key monetary indicator of the level of liquidity and the direction of monetary policy. In this study M2 (Broad Money) is used as a measure of the money supply. A high money supply usually means that an expansionary monetary policy is being followed and that there is greater liquidity, which in turn encourages investment and increases the demand for financial assets such as stocks. Tripathi and Kumar (2017) found that the money supply has a positive effect on stock market performance. Likewise, Sadorsky (2021) demonstrated that adequate liquidity leads to more investment in financial markets.

**H2c:** Money supply has a positive effect on the stock returns of the largest banks in Indonesia.

## **d. Foreign Exchange Reserves**

Foreign Exchange Reserves are foreign assets held by the central bank to maintain exchange rate stability and fulfill international payment obligations. According to Bank Indonesia (2024), foreign exchange reserves are an

important indicator of external sector resilience and macroeconomic stability. Higher foreign exchange reserves strengthen investor confidence by indicating stronger economic fundamentals and greater resilience to external shocks. Gupta and Singh (2021) found that indicators of external stability positively influence investor sentiment and stock market performance.

**H2d:** Foreign exchange reserves have a positive effect on the stock returns of the largest banks in Indonesia.

#### **e. Exchange Rate**

As Madura (2018) noted, exchange rates are influenced by inflation, interest rates, the balance of payments, and international capital flows. This study takes the USD/IDR exchange rate as its indicator of exchange rates. If the rupiah depreciates, then economic uncertainty increases and foreign investment in Indonesia's capital market becomes less attractive. Furthermore, exchange rate volatility raises market risk and affects investors' opinions about the future of the domestic economy. Amrillah (2016) found that exchange rates have a negative effect on banking stock returns. Likewise, Saputra and Dharmadiaksa (2016) concluded that currency depreciation has a negative impact on stock returns.

**H2e:** Exchange rates have a negative effect on the stock returns of the largest banks in Indonesia.

### **3. Market Return**

As Sharpe pointed out in 1964, the Capital Asset Pricing Model (CAPM) shows that the returns on individual stocks are affected by systematic risk resulting from changes in the overall market. In this study, the return on the Indonesia Composite Index (IHSG) is used as a measure of market return since the IHSG serves as the main benchmark for the Indonesian capital market and therefore represents the combined movements in price of all the companies that are listed. When market conditions are positive, investor optimism rises and this causes greater demand for stocks, leading to better returns on individual stocks; on the other hand, when market conditions are worsening, investors tend to decrease their exposure to risky assets, which

then leads to lower stock returns. Siang, Sembel and Malau (2024) discovered that market return has a positive and significant impact on banking stock returns in Indonesia. Moreover, Fama and French (2015) stated that market conditions are one of the main factors responsible for the variations in stock returns.

**H3:** Market return has a positive effect on the stock returns of the largest banks in Indonesia.

#### **4. Simultaneous Effect of Financial Performance, Macroeconomic and Monetary Environment, and Market Return on Stock Return**

Stock returns are influenced by a combination of firm-specific and external factors rather than by a single determinant in isolation. In the banking sector, investors evaluate financial performance as an indication of a bank's profitability, liquidity, capital strength, asset quality, and operational efficiency. From an external perspective, macroeconomic and monetary conditions may affect investors' expectations, funding conditions, economic activity, and overall investment decisions, while market return reflects broader movements and systematic conditions in the capital market. The simultaneous consideration of these factors is consistent with the view that stock return formation reflects multiple sources of information available to investors. The Efficient Market Hypothesis proposed by Fama (1970) suggests that security prices incorporate available information, implying that both firm-specific information and broader economic and market information may be reflected in stock price movements. Furthermore, the Arbitrage Pricing Theory developed by Ross (1976) explains that asset returns may be influenced by multiple systematic factors rather than a single source of risk. Accordingly, examining financial performance, corporate governance, macroeconomic and monetary conditions, and market return within an integrated model provides a more comprehensive framework for explaining the stock returns of KBMI IV banks. In this study, Financial Performance is represented by Loan to Deposit Ratio (LDR), Return on Equity (ROE), Capital Adequacy Ratio (CAR), Non-Performing Loan (NPL), and Cost-to-Income Ratio (CIR). Meanwhile the Macroeconomic and Monetary

Environment is represented by Interest Rate, Inflation, Money Supply Growth, Foreign Exchange Reserves Growth, and Exchange Rate Return. Market Return is represented by IHSB Return. By incorporating these internal and external factors simultaneously into the panel regression model, this study examines whether the explanatory variables collectively have a significant effect on the Stock Returns of KBMI IV banks in Indonesia.

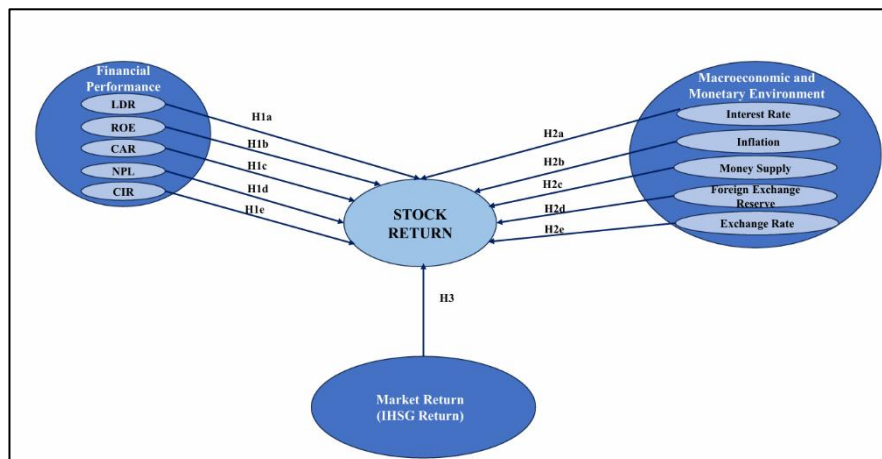
**H4:** Financial Performance, Macroeconomic and Monetary Environment, and Market Return simultaneously have a significant effect on the Stock Returns of KBMI IV banks in Indonesia.

## **2.4 Conceptual Framework**

The present study is grounded in financial theory, banking theory, corporate governance theory, and macroeconomic theory, all of which state that stock returns result from the interaction between internal factors of the company, macroeconomic conditions, and capital market dynamics. Within the banking sector, the determination of stock returns is affected not only by a bank's capacity to achieve sound financial performance but also by the quality of its corporate governance, the stability of the macroeconomic and monetary environment, and the general conditions of the capital market. With regard to internal company factors, investors typically rely on information from financial statements when evaluating investment opportunities and risks. In this study, internal factors are expressed through Financial Performance, which is assessed using the Risk-Based Bank Rating (RBBR) method. The indicators used are the Loan-to-Deposit Ratio (LDR) as a measure of liquidity, Return on Equity (ROE) as a measure of profitability, Capital Adequacy Ratio (CAR) as a measure of capital adequacy, Non-Performing Loan (NPL) as a measure of asset quality, and Cost-to-Income Ratio (CIR) as a measure of operational efficiency. These five indicators have been chosen since they together give a comprehensive picture of the bank's soundness and performance. From the external point of view, the study makes use of the Macroeconomic and Monetary Environment approach, comprising interest rates, inflation, money supply, foreign exchange reserves, and exchange rates. These variables are selected because they

indicate economic conditions and monetary policy that can affect investment activity, the stability of the financial system, and investors' expectations about the future of the capital market. Apart from the internal and macroeconomic factors, the study also includes Market Return, which is represented by the return on the Indonesia Composite Index (IHSG). This variable is included to reflect the overall market situation, since the movement of individual stock returns cannot be detached from the impact of market sentiment and systematic risk in the capital market.

Based on the theoretical foundation, previous empirical findings, and the conceptual relationships among variables explained in the preceding sections, the conceptual framework of this study is developed to examine the effects of Financial Performance, Macroeconomic and Monetary Environment, and Market Return on Stock Return in the largest banks in Indonesia classified under the KBMI IV category during the research period.



**Figure 2.1 Research Framework**

Figure 2.1 Research Framework illustrates the conceptual relationship between Financial Performance, Macroeconomic and Monetary Environment, and Market Return on Stock Return. Financial Performance is the basic situation of banks, as shown by its liquidity, profitability, capital adequacy, asset quality, and operational efficiency. On the other hand, the Macroeconomic and Monetary Environment refers to the economic conditions and monetary policy which may affect investment activity, market liquidity, and investors' expectations concerning the economic outlook. Market Return reflects the general state of the capital markets, as indicated by the movement of the Indonesia Composite Index (IHSG).

Operational efficiency shows how well management can control the operating costs when generating operating income. As Dendawijaya (2009) points out, a good level of operational efficiency means that a bank is able to make effective use of its resources and thus contributes to higher profitability. In this study, operational efficiency is measured using the Cost-to-Income Ratio (CIR). The CIR shows the proportion of operating costs that are incurred in order to produce operating income. This ratio is generally similar to BOPO in the Indonesian banking sector since both indicators evaluate the efficiency of a bank's operating activities. A higher CIR means lower operational efficiency since the bank is incurring relatively higher costs in order to generate income. On the other hand, a lower CIR shows better cost control and more efficient banking operations. A rise in the CIR might have a negative effect on profitability and could impair the bank's ability to create value for its shareholders. From the point of view of an investor, a high CIR may be seen in a negative light since it indicates inefficiency in operational management and may lead to lower expectations regarding future profitability. Hence, banks with a lower CIR are generally regarded as having better operational efficiency and a stronger potential to produce sustainable returns.

It is assumed in this study that each of these factors has an impact on Stock Return, both on its own and at the same time. The conceptual framework is therefore employed not only to explain the partial relationship between each independent variable and Stock Return but also to assess the combined effect of all the research variables on Stock Return for the KBMI IV banks. The study is thus expected to offer a more thorough understanding of the factors that determine stock return formation in the Indonesian banking sector.

## **CHAPTER III**

### **RESEARCH METHODOLOGY**

#### **3.1 Research Design**

A systematic methodology is required to guide the entire research process by providing a framework for collecting, analyzing, and interpreting data. This framework ensures that the study is able to answer the research questions appropriately and efficiently. Through a clear research design, potential errors and biases can be minimized by specifying the methods, tools, and techniques to be applied. There are ten steps that can be used as guidelines in developing answers to the research questions, as follows:

1. Observation

Determining the research topic, including what will be measured and which field or area will be analyzed.

2. Preliminary Data Collection

The initial stage of data collection conducted before formulating the research problem. This step is useful for assessing whether the proposed research is feasible to continue or whether adjustments are needed before the full-scale study is conducted.

3. Problem Formulation

Identifying the problem to be addressed through this research.

4. Research Question

A clear and specific question that serves as the main objective of the study. This question determines the direction of the entire research process.

5. Theoretical Framework

A framework that contains the main theories and concepts underlying the research, while also explaining the relationships among these concepts and their relevance to the research questions.

## 6. Measured Variables

Characteristics that can be observed, measured, and quantified in the study. There are three types of variables, namely independent variables, dependent variables, and comparison variables.

## 7. Data Collection

A structured process of gathering information or evidence to answer the research questions or test the hypotheses. This stage is crucial because the quality and accuracy of the data obtained will affect the validity and reliability of the research findings.

## 8. Data Analysis

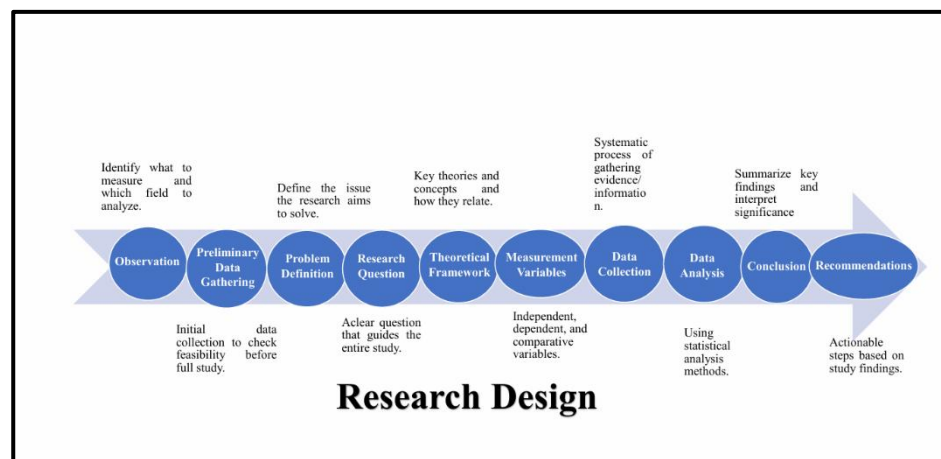
Applying statistical methods as analytical tools.

## 9. Conclusion

The final section that summarizes the main findings, interprets their significance, and reflects on the broader implications of the study.

## 10. Recommendation

A section that provides practical and actionable suggestions based on the findings of the study.



**Figure 3.1 Research Design**

## 3.2 Measurement Variables

Sugiyono (2017) stated that research variables are characteristics or attributes of individuals or objects that have certain variations and are selected by the

researcher to be examined, from which conclusions are subsequently drawn. The types of variables used in this study include independent variables and dependent variables.

### 3.2.1 Dependent Variable

This study employs Stock Return (SR) as the dependent variable and eleven explanatory variables in the panel regression model. Stock Return represents the change in the value of an equity investment over a specified period (Tandelilin, 2010). In this study, quarterly Stock Return is calculated as the change in stock price relative to the stock price in the preceding quarter, as expressed in the following formula:

$$SR = \frac{P_{it} - P_{it-1}}{P_{it-1}}$$

Where :

$P_{it}$  = the current stock price

$P_{it-1}$  = the last periode of stock price

### 3.2.2 Independent Variables

This study has 12 independent variables as follows :

#### 1. Loan-to-Deposit Ratio (LDR)

Loan-to-Deposit Ratio (LDR) indicates the extent to which customer deposits are utilized to support a bank's lending activities. It is used in this study as an indicator of liquidity and the bank's management of deposit-based funding.

$$LDR = \frac{Total\ Loans}{Total\ Deposits} \times 100 \%$$

#### 2. Return on Equity (ROE)

Return on Equity (ROE) measures the amount of profit generated relative to shareholders' equity. A higher ratio indicates greater effectiveness in converting shareholder capital into earnings.

$$ROE = \frac{Net\ Income}{Total\ Equity} \times 100\ %$$

3. Capital Adequacy Ratio (CAR)

Capital Adequacy Ratio (CAR) represents the capital available to a bank relative to its risk-weighted assets. It reflects the bank's capacity to maintain a capital buffer against potential losses and is widely used in evaluating banking capital strength.

$$CAR = \frac{Total\ Capital}{Total\ Risk\ Weighted\ Assets} \times 100\ %$$

4. Non-Performing Loan (NPL)

Non-Performing Loan (NPL) measures problematic loans as a proportion of the bank's total lending portfolio. The ratio is used to represent asset quality and the extent of credit risk arising from lending activities.

$$NPL = \frac{Non-Performing\ Loans}{Total\ Loans} \times 100\ %$$

5. Cost-to-Income Ratio (CIR)

Cost-to-Income Ratio (CIR) evaluates operational efficiency by relating the operating costs incurred by a bank to the operating income generated. A lower ratio generally indicates greater cost efficiency.

$$CIR = \frac{Operating\ Expenses}{Operating\ Income} \times 100\ %$$

6. Interest Rate

Interest Rate is represented by the BI 7-Day Reverse Repo Rate (BI7DRR), which serves as Bank Indonesia's monetary policy rate. Because the original BI7DRR observations are available monthly while the research dataset is quarterly, the value used for each quarter is obtained by averaging the policy rates reported for the three months comprising that quarter. This approach is intended to capture the overall monetary policy stance during the quarter rather than relying

solely on the policy rate observed at the end of the quarter. The data are obtained from Bank Indonesia.

$$\textbf{Interest Rate} = \frac{IR_{m1,t} + IR_{m2,t} + IR_{m3,t}}{3}$$

#### 7. Inflation

Inflation refers to a general and continuous increase in the prices of goods and services within a certain period. The inflation rate is used to represent price stability and purchasing power in the economy. Inflation is measured using the year-on-year (YoY) inflation rate published by Bank Indonesia. Since the inflation data are available on a monthly basis while this study employs quarterly observations, the quarterly inflation rate is calculated as the arithmetic average of the three monthly YoY inflation rates within each respective quarter. This measurement is intended to represent the prevailing inflationary conditions throughout the quarter and to ensure consistency with the quarterly frequent of the panel dataset.

$$\textbf{Inflation} = \frac{Inf_{m1,t} + Inf_{m2,t} + Inf_{m3,t}}{3}$$

#### 8. Money Supply

Money supply growth measures the percentage change in broad money supply (M2) from one quarter to the following quarter.

$$\textbf{M2 Growth Rate}_t = \frac{M2_t - M2_{t-1}}{M2_{t-1}} \times 100 \%$$

#### 9. Foreign Exchange Reserves Growth

Foreign exchange reserves growth measures the percentage change in Indonesia's foreign exchange reserves from one quarter to the following quarter. This variable reflects a country's ability to maintain external stability and withstand global economic pressures.

$$\textbf{FER Growth Rate}_t = \frac{FER_t - FER_{t-1}}{FER_{t-1}} \times 100 \%$$

#### 10. Exchange Rate Return

Exchange rate return measures the change in the Rupiah exchange rate against the United States Dollar from one quarter to the following quarter. This variable is used to capture Rupiah appreciation or depreciation, which may influence investment activity and corporate performance.

$$\text{Exchange Rate Return}_t = \frac{\left(\frac{USD}{IDR}\right)_t - \left(\frac{USD}{IDR}\right)_{t-1}}{\left(\frac{USD}{IDR}\right)_{t-1}} \times 100 \%$$

#### 11. Market Return

Market Return represents the overall gain or loss of the stock market, which is proxied by the return of the Indonesia Composite Index (IHSG). This variable is used to represent general capital market conditions.

$$\text{IHSG Return}_t = \frac{\text{IHSG}_t - \text{IHSG}_{t-1}}{\text{IHSG}_{t-1}} \times 100 \%$$

### 3.3 Data Collection

This study uses secondary data obtained from publicly available sources. The data include quarterly financial statements, capital market data, and macroeconomic indicators for the period from the first quarter of 2015 to the first quarter of 2026. Financial data are obtained from the official websites of each sample bank, while stock price data are obtained from the Indonesia Stock Exchange (IDX) and various financial market databases. Meanwhile, macroeconomic and monetary data, such as interest rates, inflation, money supply, foreign exchange reserves, and exchange rates, are obtained from official publications issued by Bank Indonesia (BI) and Statistics Indonesia (BPS).

The use of secondary data is considered appropriate for the objectives of this study because all variables used in the research are officially published information and can be measured objectively using standardized financial and economic indicators. All data are subsequently arranged in the form of quarterly panel data for further analysis.

### **3.3.1 Research Population**

The population of this study consists of all commercial banks classified under the Core Capital-Based Bank Group IV (KBMI IV) and listed on the Indonesia Stock Exchange (IDX) during the research period. KBMI IV refers to a group of banks with core capital exceeding IDR 70 trillion, comprising the largest banks in Indonesia. The banks included in the population of this study are as follows:

1. PT Bank Central Asia Tbk - (ticker IDX : BBCA)
2. PT Bank Rakyat Indonesia (Persero) Tbk – (ticker IDX : BBRI)
3. PT Bank Mandiri (Persero) Tbk – (ticker IDX : BMRI)
4. PT Bank Negara Indonesia (Persero) Tbk – ticker IDX : BBNI)

These four banks were selected because they have consistently been classified under the KBMI IV category during the observation period and represent the largest banks in Indonesia in terms of assets, market capitalization, and their influence on the national banking industry.

### **3.3.2 Sampling Method**

This study applies a non-probability sampling method using a purposive sampling approach to determine the research sample. Purposive sampling is a sampling technique conducted based on specific criteria established by the researcher, ensuring that the selected sample is relevant to the objectives of the study. This approach is considered appropriate because the study focuses on a specific group of banks that share similar characteristics in terms of size, capital strength, and their influence on the Indonesian banking industry and capital market.

The research sample consists of all banks classified under the KBMI IV category, or Core Capital-Based Bank Group IV, and listed on the Indonesia Stock Exchange (IDX) during the observation period. Considering that the number of banks within this category is relatively limited, all members of the population that meet the research criteria are included in the sample. Therefore, the approach used in this study also

reflects census sampling, in which all members of the population that satisfy the research criteria are used as objects of observation.

This study uses quarterly data observations covering the period from the first quarter of 2015 to the first quarter of 2026. This period results in 45 quarterly observations for each bank. With a total sample of four banks classified under the KBMI IV category, the total number of panel observations used in this study is 180 observations, consisting of 4 banks multiplied by 45 quarters. The data used in this study constitute balanced panel data because each sample bank has the same number of observations throughout the research period.

The relatively long observation period is selected to provide a more comprehensive overview of various economic and market conditions that occurred during the research period, including the phase of economic growth, the COVID-19 pandemic, the post-pandemic recovery period, and the period of global monetary policy tightening. Accordingly, the data used in this study are expected to capture more accurately the relationship between financial performance, the macroeconomic and monetary environment, market return, and stock return in the largest banks in Indonesia.

### **3.4 Data Analysis Technique**

According to Marczyk et al. (2005), data analysis in research generally consists of three main stages: 1) data preparation, 2) conducting the analysis, and 3) interpreting the results, which includes hypothesis testing and drawing valid conclusions. In this study, the analysis process is supported by several software applications, including Microsoft Excel and EViews. Microsoft Excel is used for data compilation, cleaning, and formatting, while Eviews is used as the main econometrics software to conduct descriptive statistics, correlation analysis, panel data regression, model selection tests, classical assumption tests, and hypothesis testing

### 3.4.1 Descriptive Analysis

Descriptive statistics aim to describe data as they are, without making generalizations or drawing conclusions about a broader population. According to Sugiyono (2017), this approach is generally applied in studies that include all members of the population, or census-based studies. In general, descriptive statistics are used to summarize and present the main characteristics of the collected data. The descriptive statistical measures used in this study include the following:

#### 1. Mean

The mean is a measure of central tendency obtained by dividing the total value of all observations by the number of observations (Kothari, 2004). The formula for the mean is as follows:

$$\bar{X} = \frac{X_1 + X_2 + X_3 + \dots + X_n}{n}$$

Where :

$\bar{X}$  = the symbol of mean

$X_1 + X_2 + X_3 + \dots + X_n$  = Value of each item

#### 2. Standard Deviation

Standard deviation measures the extent to which values in a dataset are dispersed or vary from their mean value. Kothari (2004) explained that standard deviation is the square root of the average squared deviation of each value from the arithmetic mean. The formula for standard deviation is as follows:

$$\sigma = \sqrt{\frac{\sum (X_i - \bar{X})^2}{n}}$$

Where :

$\sigma$  = the symbol for standard deviation (pronounced as sigma)

$\bar{X}$  = the symbol of mean

$X_i$  = value of each item

$n$  = total number of items

### 3. Correlation Coefficient

The correlation coefficient is used to measure the relative strength of the linear relationship between the movements of two variables (Ganti, 2020). The formula for the correlation coefficient is as follows:

$$R_{xy} = \frac{Cov(x, y)}{\sigma_x \cdot \sigma_y}$$

Where :

$R_{xy}$  = correlation of variables x and y

$Cov(x, y)$  = covariance between x and y

$\sigma_x$  = x standard deviation

$\sigma_y$  = y standard deviation

The correlation coefficient ranges from -1.0 to 1.0. A value of -1.0 indicates a perfect negative correlation, meaning that the two variables move in opposite directions; for example, when one variable increases, the other variable decreases. Conversely, a value of 1.0 indicates a perfect positive correlation, meaning that the two variables move in the same direction, where an increase in one variable is followed by an increase in the other.

Meanwhile, a value of 0.0 indicates that there is no linear relationship between the variables. If the correlation value is greater than 1.0 or less than -1.0, this indicates an error in the measurement of the correlation. The magnitude of the correlation coefficient shows the strength of the relationship between variables.

For example, a value of 0.3 indicates a positive but weak correlation, whereas values above 0.8 or below -0.8 are considered to indicate a strong correlation (Ganti, 2020). The correlation

coefficient is usually presented in a table known as a correlation matrix. The test of the correlation coefficient is conducted using the following hypotheses:

$$H_0 = r_{ij} = 0$$

$$H_1 = r_{ij} \neq 0$$

The decision-making criteria are based on the probability value, or p-value, as follows:

- a. If the p-value is less than 0.05, then ( $H_0$ ) is rejected, indicating that there is a statistically significant correlation.
- b. If the p-value is greater than 0.05, then ( $H_0$ ) is not rejected, indicating that there is no statistically significant correlation.

### 3.4.2 Panel Data Regression Analysis

Panel data analysis in this study is conducted using panel data regression. Panel data consist of a set of time series observations linked by unit-specific parameters and common parameters, with little or no dynamic interaction across units (Breto, 2018). The panel regression model in this study is used to examine the effect of Financial Performance, Good Corporate Governance, Macroeconomic and Monetary Environment, and Market Return on Stock Return. The model includes eleven independent variables, consisting of LDR, ROE, CAR, NPL, CIR, Interest Rate, Inflation, Money Supply Growth, Foreign Exchange Reserves Growth, Exchange Rate Return, and Market Return. EViews software is used in this study as the analytical tool for processing and estimating the panel data regression model. The regression equation used in this study is formulated as follows:

$$SR_{it} = \beta_0 + b1X_{1it} + b2X_{2it} + b3X_{3it} + b4X_{4it} + b5X_{5it} + b6X_{6t} + b7X_{7t} + b8X_{8t} + b9X_{9t} + b10X_{10t} + b11X_{11t} + \varepsilon_{it}$$

Where :

$i$  = The unit of observation

$t$  = The period

$SR_{it}$  = The dependent variable representing KBMI IV bank's stock return

$X_1$  = LDR

$X_2$  = ROE

$X_3$  = CAR

$X_4$  = NPL

$X_5$  = CIR

$X_6$  = Interest Rate

$X_7$  = Inflation

$X_8$  = M2 Growth Rate

$X_9$  = FER Growth Rate

$X_{10}$  = Exchange Rate Return

$X_{11}$  = IHSG Return

$\varepsilon$  = The error term for unobserved factors

Gurajati (2003) identified several econometric advantages of applying regression techniques to panel data:

1. The structure of panel data allows researchers to identify unobserved individual heterogeneity through the inclusion of entity-specific intercepts or slope coefficients. This enables cross-sectional variation to be explicitly captured, which is not possible when using pure time-series or cross-sectional data.
2. The ability of panel data to control for individual-specific effects enables the specification and estimation of more complex behavioral models, including models with dynamic relationships or nonlinear functional forms.
3. Since panel data consist of repeated observations across both time and individuals, this method is highly suitable for analyzing short-term adjustments and long-term equilibrium relationships through the use of lagged variables and error correction mechanisms.

4. The larger number of observations in panel data improves estimation efficiency by increasing the degrees of freedom, reducing multicollinearity among predictor variables, and producing more consistent standard errors. These advantages contribute to the asymptotic consistency of parameter estimators.
5. Panel data allow researchers to test theoretical constructs that involve both time-series and cross-sectional dimensions simultaneously.
6. The use of panel data helps minimize aggregation bias because information is retained at the individual level rather than being summarized into macro-level averages, which may obscure the actual causal relationships among variables.

### 3.4.3 Panel Data Model Approaches

Referring to the advantages mentioned above, then in the panel data model there should be no testing approach in regressing panel data consisting of pooled least square (common effect), fixed effect approach (fixed effect), and random effect approach (random effect).

#### 3.4.3.1 Common Effect Model (CEM)

According to Gurajati (2016), the Common Effect Model (CEM), also known as pooled Ordinary Least Squares (pooled OLS), is developed by combining all cross-sectional and time-series data into a single dataset. The pooled data are then estimated using the Ordinary Least Squares (OLS) method, which is the most basic linear regression technique (Baltagi, 2005). The equation of the CEM is formulated as follows:

$$\begin{aligned}
 Y_{it} &= \alpha + \beta X_{it} + e_{it} \\
 i &= 1, \dots, n \\
 t &= 1, \dots, T
 \end{aligned}$$

Where :

$Y_{it}$  = The dependent variable of the cross-sectional units over the time period observed

$X_{it}$  = The independent variable of the cross-sectional units over the time period observed

$\alpha$  = the intercept of the regression model

$\beta$  = the slope coefficient

$e_{it}$  = the error component of the observed cross-sectional units and time period

$n$  = the number of observed cross-sectional units

$T$  = the number of observed time period

#### 3.4.3.2 Fixed Effect Model (FEM)

According to Gurajati (2016), the Fixed Effects Model (FEM) is used to overcome the limitations of the pooled OLS model, which assumes that the intercept and slope coefficients are constant. By using dummy variables, FEM allows for differences in parameter values across cross-sectional units and/or across time periods. The general equation of the FEM is formulated as follows:

$$Y_{it} = \beta X_{it} + \alpha_i + e_{it}$$

$$i = 1, \dots, n \quad t = 1, \dots, T$$

Where :

$Y_{it}$  = The dependent variable of the cross-sectional units over the time period observed

$X_{it}$  = The independent variable of the cross-sectional units over the time period observed

$\alpha_i$  = the regression model intercept of the observed cross-sectional units and/or the observed time period

$\beta$  = the slope coefficient

$e_{it}$  = the error component of the observed cross-sectional units and time period

$n$  = the number of observed cross-sectional units

$T$  = the number of observed time period

### 3.4.3.3 Random Effect Model (REM)

According to Gurajati (2016), the Random Effects Model (REM), also known as the Error Component Model (ECM), is used to estimate panel data in which the disturbance term consists of components that vary across individuals and over time. In this model, differences in parameters across time periods and entities are incorporated into the error component. The general equation of the REM is formulated as follows:

$$Y_{it} = \beta X_{it} + a + wit$$

$$wit = eit + eit$$

$$i = 1, \dots, n$$

$$t = 1, \dots, T$$

Where :

$Y_{it}$  = The dependent variable of the cross-sectional units over the time period observed

$X_{it}$  = The independent variable of the cross-sectional units over the time period observed

$a$  = intercept of the regression model

$\beta$  = the slope coefficient

$wit$  = combination of two error components, namely  $\varepsilon_{it}$  and  $e_{it}$

$e_{it}$  = the error component of the observed cross-sectional units and time Period

$\varepsilon_{it}$  = individual-specific error component

$n$  = the number of observed cross-sectional units

$T$  = the number of observed time period

### 3.4.4 Selection of Panel Data Estimation Model

Among the three panel data estimation approaches, a model selection procedure is required to determine the most appropriate model according to the characteristics of the data (Gurajati, 2016). Based on the nature of the data used, Wooldridge (2016) stated that when control variables are included among the independent variables, the Random Effects Model (REM) is more recommended than the Fixed Effects Model (FEM). Meanwhile, Nachrowi and Usman (2006) proposed a practical rule: if the number of time periods ( $T$ ) is greater than the number of cross-sectional units ( $N$ ), FEM is more appropriate; conversely, if  $T$  is smaller than  $N$ , REM is more suitable. To statistically determine the most appropriate model, three specification tests are employed, namely the Chow Test, Hausman Test, and Lagrange Multiplier (LM) Test.

#### 1. Chow Test

The Chow Test, also known as the restricted F-test, is used to select between the Fixed Effects Model (FEM) and the Common Effect Model (CEM) in panel data estimation (Gurajati, 2003). The F-statistic is calculated using the following formula:

$$F = \frac{(PRSS - URSS)/(N - 1)}{(URSS)/((N * T) - N - K)}$$

Where:

**$PRSS$**  = Residual Sum of Square (CEM)

**$URSS$**  = Residual Sum of Square (FEM)

**$N$**  = The amount of cross-section data

**$T$**  = The amount of time series data

**$K$**  = The number of free variables

The null hypothesis is set out below :

$H_0$  = CEM is better than FEM

$H_1$  = FEM is better than CEM

According to Agusti and Rahman (2004), the decision-making criterion in the Chow Test is based on the comparison between the calculated F-statistic and the F-table value at a certain level of significance. If the calculated F-statistic is greater than the F-table value, then ( $H_0$ ) is rejected and ( $H_1$ ) is accepted. This indicates that the Fixed Effects Model (FEM) is more appropriate to be used as the estimation technique.

Two criteria to measure the aforementioned hypothesis are:

- a. If p-value < 0.05, the  $H_0$  is rejected and  $H_1$  is not rejected which means Fixed Effect Model is better than Common Effect Model
- b. If p-value > 0.05, the  $H_0$  is not rejected and  $H_1$  is rejected which means Common Effect Model is better than Fixed Effect Model

## 2. Hausman Test

The Hausman Test is used as a selection criterion between the Fixed Effects Model (FEM) and the Random Effects Model (REM) in panel data estimation (Gurajati, 2003). The Hausman test statistic is calculated using the following formula:

$$m = (\beta - b)(M_0 - M_1) - 1(\beta - b) \approx X^2(K)$$

Where :

$\beta$  = A vector for fixed effect variable statistics

$b$  = A vector for random effect variable statistics

$M_0$  = Covariance matrix for fem conjecture

$M_1$  = The covariance matrix for alleged REM

The null hypothesis is set out below :

$H_0$  = REM is better than FEM

$H_1$  = FEM is better than CEM

According to Gurajati (2016), the decision-making criterion in the Hausman Test is based on the chi-square statistic and its significance level. If the calculated chi-square value is greater than the chi-square table value and the p-value is statistically significant, then ( $H_0$ ) is rejected. This indicates that the Fixed Effects Model (FEM) is more appropriate to be used.

Two criteria to measure the aforementioned hypothesis are:

- a. If p-value < 0.05, the  $H_0$  is rejected and  $H_1$  is not rejected which means Fixed Effect Model is better than Random Effect Model
- b. If p-value > 0.05, the  $H_0$  is not rejected and  $H_1$  is rejected which means Random Effect Model is better than Fixed Effect Model

### 3. Lagrange Multiplier Test

The Lagrange Multiplier (LM) Test is used to select between the Random Effects Model (REM) and the Common Effect Model (CEM) in panel data estimation (Gurajati, 2016). The LM test statistic is calculated using the following formula:

$$LM = \frac{nT}{2(T-1)} \left[ \frac{\sum_{i=1}^n (\sum_{t=1}^T e_{it})^2}{\sum_{i=1}^n \sum_{t=1}^T e^2_{it}} - 1 \right]^2$$

Where :

$N$  = Number of individuals

$Q$  = Number of periods

$e$  = Residual from model OLS

The null hypothesis is set out below :

$H_0$  = CEM is better than REM

$H_1$  = REM is better than CEM

According to Gurajati (2016), the decision-making criterion in the LM Test is based on the chi-square statistic and its significance level. If the calculated chi-square value is greater than the chi-square table value and is statistically significant, then ( $H_0$ ) is rejected. This indicates that the Random Effects Model (REM) is more appropriate to be used.

Two criteria to measure the aforementioned hypothesis are:

- a. If  $p\text{-value} < 0.05$ , the  $H_0$  is rejected and  $H_a$  is not rejected which means Random Effect Model is better than Common Effect Model
- b. If  $p\text{-value} > 0.05$ , the  $H_0$  is not rejected and  $H_a$  is rejected which means Common Effect Model is better than Random Effect Model

### 3.4.5 Classical Assumption Test

Classical assumption tests are analytical procedures used to evaluate the appropriateness of a linear regression model. These tests are useful for identifying potential problems in the data used in the study. Therefore, classical assumption testing is necessary to assess whether the data meet the required statistical conditions (Syafina, 2019).

The use of classical assumption tests is important because the data used in a regression model should satisfy the criteria of the Best Linear Unbiased Estimator (BLUE). Thus, it can be concluded that classical assumption tests are conducted to ensure that the regression equation used in the study is appropriate and valid. Before conducting multiple regression analysis and hypothesis testing, several classical assumption tests need to be performed to determine whether the regression model is free from assumption violations and meets the requirements for producing a good linear estimation.

In this study, the regression model is analyzed using panel data, which combines cross-sectional dimensions, consisting of four KBMI IV banks,

and time-series dimensions, covering the period from the first quarter of 2015 to the first quarter of 2026. Therefore, the classical assumption tests used in this study include the Multicollinearity Test, Heteroskedasticity Test, and Autocorrelation Test. These three tests are selected because they are the most relevant assumptions in panel data regression. Meanwhile, the normality test is not conducted because residual normality is not a primary requirement for obtaining unbiased and consistent estimators in panel data regression, particularly when the number of observations is relatively large (Gujarati & Porter, 2009).

a. Multicollinearity Test

The multicollinearity test is used to examine whether there is a relationship among the independent variables in the regression model. A good regression model should not contain high correlations among independent variables. Tolerance and its counterpart, the Variance Inflation Factor (VIF), can be used to detect the presence or absence of multicollinearity. A low tolerance value corresponds to a high VIF value, since VIF is calculated as  $(1/\text{tolerance})$ . In this test, each independent variable is treated as a dependent variable and regressed against the other independent variables. In addition, the researcher must determine the acceptable level of collinearity, with the tolerance value reflecting the specified collinearity threshold (Ghozali, 2018). This study uses several variables derived from Financial Performance, Good Corporate Governance, Macroeconomic and Monetary Environment, and Market Return. Therefore, the multicollinearity test is conducted to ensure that each variable is able to explain its independent effect on Stock Return. The test is performed using the Correlation Matrix in EViews software. The hypotheses used to assess multicollinearity are as follows:

**$H_0$**  : There is no Multicollinearity

**$H_a$**  : There is Multicollinearity

The decision criteria based on tolerance and VIF values are as follows:

- a) If the tolerance value is  $> 0,1$  0.10 and the VIF value is less than 10, then multicollinearity does not occur.
- b) If the tolerance value is less than or equal to 0.10 and the VIF value is greater than or equal to 10, then multicollinearity occurs.

b. Heteroskedasticity Test

The heteroskedasticity test aims to determine whether the regression model contains unequal residual variance across observations. A good regression model should be free from heteroskedasticity (Syafina, 2019). In this study, the data are obtained from four banks with different characteristics in terms of company size, funding structure, profitability, and operational conditions. These differences may lead to non-constant residual variance; therefore, heteroskedasticity testing is necessary to ensure the reliability of the regression model. The heteroskedasticity test is conducted using the Breusch-Pagan Test through EViews software. The hypotheses used to assess heteroskedasticity are as follows:

**$H_0$**  : There is no Heteroskedasticity

**$H_a$**  : There is Heteroskedasticity

The decision criteria for this test are as follows (Syafina, 2019):

- a) If the probability value is greater than 0.05, then heteroskedasticity does not occur.
- b) If the probability value is less than 0.05, then heteroskedasticity occurs.

When heteroskedasticity is found in the panel regression model, a robust covariance estimator is used in order to make the statistical inference more reliable. White (1980) shows that if heteroskedasticity is present, the usual standard errors might result

in unreliable statistical inference, whereas a heteroskedasticity-consistent covariance estimator will yield robust standard errors without needing to know the specific form of the heteroskedasticity. In view of the panel structure of this study, with four KBMI IV banks being observed over the same quarterly periods, the error terms could not only have unequal variance but also be contemporaneously correlated across banks since the banks are affected by the same market and macroeconomic conditions during those periods. For this reason, the White cross-section robust covariance estimator is used in this study. Cameron and Miller (2015) point out that if the regression errors are correlated within clusters, the conventional standard errors which assume independent observations may lead to incorrect statistical inference. By using cluster-robust covariance estimation, arbitrary forms of heteroskedasticity and within-cluster correlation can be allowed for, thus enabling more reliable statistical inference in cases where the errors are clustered. This principle therefore provides further methodological justification for assuming that the errors of the banks observed in the same period are correlated rather than supposing that there is complete independence among all bank-period observations. In keeping with this principle, the EViews panel estimation framework sets White cross-section covariance estimation equal to period-cluster robust covariance estimation, so as to allow for heteroskedasticity and for contemporaneous correlation among the cross-sectional units within each period. Hence, this study uses White cross-section robust standard errors while keeping the chosen Common Effect Model specification. The correction does not imply that heteroskedasticity is eliminated from the residuals; rather, it adjusts the covariance matrix and the resulting standard errors used to calculate the t-statistics and probability values for statistical inference.

### c. Autocorrelation Test

The autocorrelation test aims to detect the presence of correlation among error terms in a linear regression model across time periods, specifically between period (t) and period (t-1). This problem arises because sequential observations over time may be correlated with one another (Ghozali, 2013). Autocorrelation testing is generally conducted on time-series data and is not required for purely cross-sectional data, such as questionnaire-based studies in which all variables are measured simultaneously at the same point in time (Syafina, 2019). This study uses quarterly panel data covering the period from the first quarter of 2015 to the first quarter of 2026. Therefore, there is a possibility that residuals across time periods may be correlated. Accordingly, the autocorrelation test is conducted to ensure that the residuals of the regression model are independent. Autocorrelation is commonly tested using the Durbin-Watson statistic. The model is considered free from autocorrelation if the following criterion is satisfied:

$$Du < d < 4 - du$$

If the Durbin-Watson statistic falls within an inconclusive region, an additional residual-based diagnostic is conducted by examining the relationship between the current residual and its first-order lag. This additional diagnostic is used to support the interpretation of the Durbin-Watson result. A probability value greater than 0.05 indicates insufficient statistical evidence of significant first-order serial correlation at the 5% significance level.

### 3.4.6 Significance Test

Hypothesis testing aims to evaluate whether the independent variables ((X)) have a significant effect on the dependent variable ((Y)) using panel data linear regression. The analytical procedures are described as follows:

### 3.4.6.1 Partial T-test

The t-test is used to measure the individual effect of each independent variable on the dependent variable. This test examines the regression coefficients partially. The testing procedure is as follows:

1. Formulate the research hypothesis
2. The alternative hypothesis ( $H_i$ ) states that  $\beta_1 = \beta_2 = \beta_3 \neq 0$ , which means that the independent variables partially have a significant effect on the dependent variable.
3. Determine the significance level ( $\alpha$ ).
4. The test is conducted at a specified  $\alpha$  level, with the following provisions:
  - a.  $\alpha = 0.01 \rightarrow$  highly significant ( $p\text{-value} < 0.01$ )
  - b.  $\alpha = 0.05 \rightarrow$  significant ( $0.01 < p\text{-value} < 0.05$ )
  - c.  $\alpha = 0.10 \rightarrow$  marginally significant ( $0.05 < p\text{-value} < 0.10$ )
5. Decision-making criteria:
  - a. If  $t\text{-calculated} < t\text{-table} \rightarrow$  the independent variable does not have a partially significant effect on the dependent variable.
  - b. If  $t\text{-calculated} > t\text{-table} \rightarrow$  the independent variable has a partially significant effect on the dependent variable.
6. Based on the p-value :
  - a. If  $p\text{-value} > \alpha \rightarrow$  the independent variable is not partially significant.
  - b. If  $p\text{-value} < \alpha \rightarrow$  the independent variable is partially significant.

### 3.4.6.2 Simultaneous Significance Test (F-Test)

The simultaneous significance test (F-test) is used to examine whether all independent variables collectively have a significant effect on the dependent variable. The hypotheses are formulated as follows:

- $H_0$ : All parameters = 0
- $H_a$ : At least one parameter  $\neq 0$

The decision-making criterion is based on the p-value at the 5% significance level:

- If the p-value < 0.05, then  $H_0$  is rejected, indicating that all independent variables simultaneously have a significant effect on the dependent variable.
- If the p-value > 0.05, then  $H_0$  is not rejected, indicating that all independent variables simultaneously do not have a significant effect on the dependent variable.

### 3.4.6.3 Coefficient of Determination Test (Adjusted $R^2$ )

The coefficient of determination ( $R^2$ ) generally indicates the extent to which the independent variables are able to explain the variation in the dependent variable. However, Ghozali (2013) cautions that  $R^2$  should not be used as the sole criterion for model selection, as a high  $R^2$  does not guarantee a good model if it contradicts economic theory or fails to satisfy the classical assumption tests such a model is not fit to serve as an empirical model. Gurajati (2003) further adds that:

- If, in empirical testing, the adjusted  $R^2$  value is negative, it is considered to be equal to zero.
- Mathematically:
  - If  $R^2 = 1$ , then adjusted  $R^2 = 1$ .
  - If  $R^2 = 0$ , then adjusted  $R^2 = (1 - k)/(n - k)$ ; if  $k > 1$ , the adjusted  $R^2$  will yield a negative value.

### 3.5 Research Hypothesis Testing

- Hypothesis 1a - LDR

$$H_0 : \beta 1_a = 0$$

$$H_a : \beta 1_a > 0$$

- Hypothesis 1b - ROE

$$H_0 : \beta 1_b = 0$$

$$H_a : \beta 1_b > 0$$

- Hypothesis 1c - CAR

$$H_0 : \beta 1 = 0$$

$$H_a : \beta 1 > 0$$

- Hypothesis 1d - NPL

$$H_0 : \beta 1 = 0$$

$$H_a : \beta 1 < 0$$

- Hypothesis 1e - CIR

$$H_0 : \beta 1 = 0$$

$$H_a : \beta 1 < 0$$

- Hypothesis 2a – Interest Rate

$$H_0 : \beta 1 = 0$$

$$H_a : \beta 1 < 0$$

- Hypothesis 2b – Inflation

$$H_0 : \beta 1 = 0$$

$$H_a : \beta 1 < 0$$

- Hypothesis 2c – Money Supply

$$H_0 : \beta_1=0$$

$$H_a : \beta_1>0$$

- Hypothesis 2d – Foreign Exchange Reserve

$$H_0 : \beta_1=0$$

$$H_a : \beta_1>0$$

- Hypothesis 2e – Exchange Rate

$$H_0 : \beta_1=0$$

$$H_a : \beta_1<0$$

- Hypothesis 3 – IHSG Return

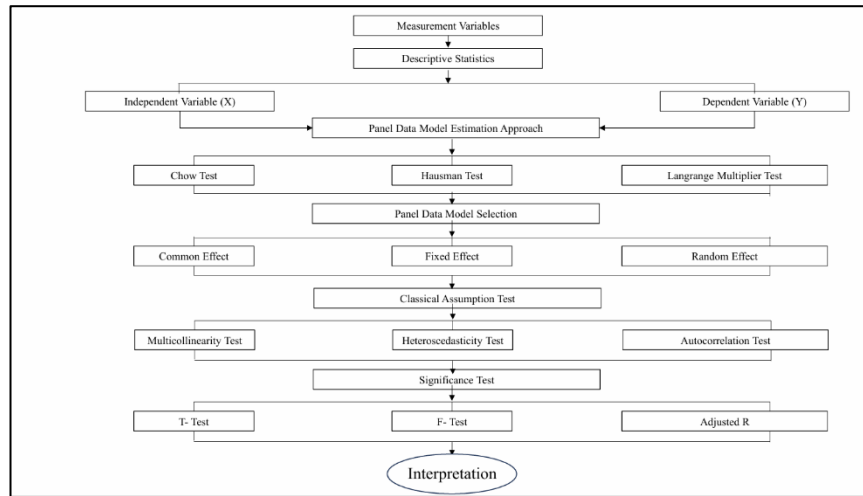
$$H_0 : \beta_1=0$$

$$H_a : \beta_1>0$$

### 3.6 Research Process

Figure 3.2 *Research Process* presents the step-by-step procedure of this research. The process begins with descriptive statistical analysis, which includes the mean, standard deviation, and correlation coefficients. Subsequently, the independent variables (X) and the dependent variable (Y) are established. Following this identification, a panel dataset is constructed and subsequently tested to select one of three alternative models: the common effect model (CEM), the fixed effect model (FEM), and the random effect model (REM). The selection of the panel data model is conducted through three diagnostic tests: the Chow test, the Hausman test, and the Lagrange Multiplier (LM) test. Once the model is selected, classical assumption tests namely the multicollinearity test, heteroscedasticity test, and autocorrelation test are performed on the multiple linear regression equation. The next stage involves significance testing, which includes the individual regression coefficient test (t-test), the simultaneous test (F-test), and the coefficient of

determination ( $R^2$ ). The final step is to interpret the results obtained from the testing procedures.



**Figure 3. 2 Research Process**

## **CHAPTER IV**

### **FINDINGS, ANALYSIS, DISCUSSION**

#### **4.1 Description of Research Objects**

##### **4.1.1 Profile of Sample Banks**

This study employs a sample of four banks classified under the Core Capital Based Bank Group IV (KBMI IV) and listed on the Indonesia Stock Exchange (IDX) during the observation period from the first quarter of 2015 to the first quarter of 2026. The four banks are PT Bank Central Asia Tbk. (BBCA), PT Bank Rakyat Indonesia (Persero) Tbk. (BBRI), PT Bank Mandiri (Persero) Tbk. (BMRI), and PT Bank Negara Indonesia (Persero) Tbk. (BBNI). The selection of these four banks was based on purposive sampling criteria, namely banks with core capital exceeding IDR 70 trillion in accordance with Financial Services Authority Regulation Number 12/POJK.03/2021, as well as their dominant influence on the movement of the Indonesia Composite Index (IHSG) due to their large market capitalization.

Historically, these four banks have different business characteristics. PT Bank Central Asia Tbk. (BBCA) is known as a national private bank with a focus on retail and consumer services, and has a strong reputation for operational efficiency. PT Bank Rakyat Indonesia (Persero) Tbk. (BBRI) is a state-owned bank oriented toward financing the micro, small, and medium enterprise (MSME) sector, with the widest branch network in Indonesia. PT Bank Mandiri (Persero) Tbk. (BMRI) serves as a state-owned bank with a significant portion of corporate and infrastructure financing. Meanwhile, PT Bank Negara Indonesia (Persero) Tbk. (BBNI) is also a state-owned bank with a focus on corporate, commercial, and international services.

Although these four banks belong to the same KBMI IV category, differences in business models, revenue sources, and risk profiles are expected to be reflected in the stock return movements of each bank during the observation period. Therefore, this sample selection is considered

representative for answering the research questions regarding the factors influencing stock returns in the largest banks in Indonesia.

#### 4.1.2 Descriptive Statistics of Research Variables

Descriptive statistics are used to provide an overview of the data characteristics of all variables used in this study. The data used are balanced panel data with a total of 180 observations, consisting of 4 banks multiplied by 45 quarters (Q1 2015 – Q1 2026). The dependent variable in this study is Stock Return (SR), while the independent variables consist of 11 variables, namely Loan-to-Deposit Ratio (LDR), Return on Equity (ROE), Capital Adequacy Ratio (CAR), Non-Performing Loan (NPL), Cost-to-Income Ratio (CIR), Interest Rate (BI7DRR), Inflation, Money Supply Growth (M2), Foreign Exchange Reserves Growth, Exchange Rate Return (USD/IDR), and IHSG Return.

**Table 4. 1 Descriptive Statistics**

| Variable                         | Mean  | Median | Maximum | Minimum | Std. Dev. | Observations |
|----------------------------------|-------|--------|---------|---------|-----------|--------------|
| BI Rate                          | 5,24  | 5,17   | 7,58    | 3,50    | 1,17      | 180          |
| CAR                              | 21,44 | 20,99  | 29,94   | 16,07   | 2,97      | 180          |
| CIR                              | 66,27 | 68,23  | 93,31   | 39,11   | 9,98      | 180          |
| Exchange Rate Return             | 0,80  | 0,42   | 17,74   | -12,62  | 4,60      | 180          |
| Foreign Exchange Reserves Growth | 0,71  | 0,60   | 8,89    | -6,36   | 4,11      | 180          |
| Inflation                        | 3,26  | 3,09   | 7,09    | 0,57    | 1,46      | 180          |
| LDR                              | 84,58 | 86,83  | 98,04   | 60,54   | 8,02      | 180          |
| M2 Growth                        | 2,06  | 1,80   | 7,80    | -2,75   | 2,13      | 180          |
| Market Return                    | 1,03  | 2,11   | 22,77   | -27,95  | 8,28      | 180          |
| NPL                              | 2,38  | 2,28   | 4,25    | 0,66    | 0,80      | 180          |
| Stock Return                     | 2,12  | 3,22   | 39,10   | -51,34  | 13,62     | 180          |
| ROE                              | 18,30 | 17,87  | 29,89   | 2,86    | 4,56      | 180          |

**Source: EViews 12, processed by the researcher (2026)**

Based on Table 4.1 *Descriptive Statistics*, the average stock return (SR) of the four banks during the observation period was 2.12% per quarter, with a standard deviation of 13.62%. The standard deviation value, which is substantially larger than the mean, indicates that the volatility of stock returns of KBMI IV banks was remarkably high during the 2015–Q1 2026 period. The

minimum stock return was recorded at -51.34%, which occurred during the Covid-19 pandemic crisis, while the maximum value reached 39.10%, which occurred during the post-pandemic economic recovery period. The median value of 3.22%, which exceeds the mean of 2.12%, suggests that the distribution of stock return data is negatively skewed, implying that the majority of observations lie below the mean with several large negative extreme values. Regarding financial performance variables, the average LDR during the observation period was 84.58%, indicating that KBMI IV banks, on average, channeled approximately 84.58% of third-party funds into loans. This value remains within the safe limit established by regulators, which is below 92%, although the maximum value of 98.04% indicates that certain banks operated at relatively high liquidity levels during specific periods. The standard deviation of LDR, at 8.02%, suggests moderate variation across banks and over time.

The average ROE was recorded at 18.30%, indicating that large banks in Indonesia were generally able to generate satisfactory returns for shareholders. The minimum ROE of 2.86% occurred during the pandemic period, while the maximum value reached 29.89% during the economic recovery phase. The standard deviation of ROE, at 4.56%, indicates that the profitability of KBMI IV banks was relatively stable throughout the observation period.

The average CAR stood at 21.44%, substantially above the regulatory minimum requirement of 8%, reflecting the very strong capital resilience of KBMI IV banks. The minimum CAR of 16.07% remains well above the regulatory threshold, indicating that even in the worst periods, the largest banks in Indonesia maintained healthy capitalization levels. The relatively small standard deviation of CAR (2.97%) suggests that the capital adequacy levels of KBMI IV banks remained relatively stable and consistent throughout the observation period.

The average NPL was recorded at 2.38%, remaining below the 5% threshold established by the Financial Services Authority (OJK). The minimum NPL of 0.66% reflects exceptionally strong asset quality during certain periods, while the maximum value of 4.25% indicates that despite an increase in non-

performing loans during the pandemic, KBMI IV banks were still able to manage credit risk effectively. The small standard deviation of NPL (0.80%) suggests that the asset quality of large banks remained relatively stable and well-controlled.

The average CIR was recorded at 66.27%, indicating that KBMI IV banks maintained relatively sound operational efficiency. This value is considerably lower than the national banking industry average of approximately 74–85%, suggesting that large banks are able to manage operating expenses more efficiently. The minimum CIR of 39.11% reflects exceptionally high operational efficiency during certain periods, while the maximum value of 93.31% indicates significant efficiency pressures, likely during the pandemic period when operating income declined while operating expenses remained elevated. The standard deviation of CIR, at 9.98%, suggests considerable variation in operational efficiency across banks and over time.

With respect to the macroeconomic and monetary environment variables, the average BI Rate during the 2015–Q1 2026 period was 5.24%, with a standard deviation of 1.17%. The minimum interest rate of 3.50% occurred during the pandemic period when Bank Indonesia lowered rates to stimulate economic recovery, while the maximum value reached 7.58% during the monetary policy normalization period. This relatively wide range reflects the dynamic monetary policy cycle throughout the observation period.

The average inflation rate was recorded at 3.26%, with a standard deviation of 1.46%. The minimum inflation of 0.57% indicates a period of deflation or very low price pressure, while the maximum value of 7.09% occurred in 2022 due to global energy price pressures and supply chain disruptions. Overall, the average inflation rate of 3.26% remains within Bank Indonesia's inflation target range, indicating relatively well-maintained price stability.

The average money supply (M2) growth was recorded at 2.06% per quarter, with a standard deviation of 2.13%. The minimum M2 growth of -2.75% reflects a period of liquidity contraction, while the maximum value of 7.80% indicates a period of aggressive monetary expansion, particularly during

the pandemic when Bank Indonesia launched various accommodative liquidity policies.

The average foreign exchange reserves growth reached 0.71% per quarter, with a standard deviation of 4.11%. The minimum value of -6.36% indicates a period of significant decline in foreign exchange reserves, likely due to Bank Indonesia's intervention to stabilize the exchange rate or external debt payments. The maximum value of 8.89% reflects a period of substantial increase in foreign exchange reserves, such as during periods of heightened commodity export receipts.

The exchange rate return of the rupiah against the US dollar showed an average appreciation of 0.80% per quarter, with a standard deviation of 4.60%. The minimum value of -12.62% reflects significant rupiah depreciation, while the maximum value of 1.74% indicates rupiah appreciation. Although the average indicates a slight appreciation, the wide range reflects considerable exchange rate volatility during the observation period, primarily influenced by global sentiment, commodity prices, and Bank Indonesia's monetary policy.

Finally, the market return, proxied by the IHSG return, showed an average of 1.03% per quarter, with a standard deviation of 8.28%. The minimum value of -27.95% occurred during the crisis period, such as the Covid-19 pandemic in March 2020, while the maximum value reached 22.77% during a strong recovery period. The high standard deviation confirms that the Indonesian capital market experienced significant volatility throughout the research period, reflecting the market's sensitivity to various domestic and global shocks.

Overall, this descriptive statistical overview indicates that the data used in this study exhibit adequate variation, both across banks (cross-section) and over time (time-series). This variation is essential for generating robust and reliable panel data regression estimates in explaining the factors influencing stock returns of KBMI IV banks in Indonesia.

#### 4.1.3 Correlation Coefficient

Correlation coefficient analysis is conducted to provide an initial assessment of the direction and strength of the linear relationship between Stock Return and each independent variable included in the study. The correlation coefficient ranges from  $-1$  to  $+1$ , where a positive value indicates a relationship in the same direction, while a negative value indicates a relationship in the opposite direction. In addition, the probability value is used to assess the statistical significance of the relationship at the 5% significance level. The results of the correlation coefficient analysis are presented in **Table 4.2** *Correlation Coefficient between Stock Return and Research Variables*

**Table 4. 2 Correlation Coefficient between Stock Return and Research Variables**

| Variable                         | Correlation with Stock Return (r) | Probability (p-value) | Relationship | Significance (5%) |
|----------------------------------|-----------------------------------|-----------------------|--------------|-------------------|
| Interest Rate                    | -0,125471                         | 0,0933                | Negative     | Not Significant   |
| CAR                              | 0,057996                          | 0,4393                | Positive     | Not Significant   |
| CIR                              | 0,045032                          | 0,5483                | Positive     | Not Significant   |
| Exchange Rate Return             | -0,561251                         | 0,0000                | Negative     | Significant       |
| Foreign Exchange Reserves Growth | 0,346758                          | 0,0000                | Positive     | Significant       |
| Inflation                        | -0,059083                         | 0,4308                | Negative     | Not Significant   |
| LDR                              | -0,124202                         | 0,0967                | Negative     | Not Significant   |
| M2 Growth                        | -0,173794                         | 0,0196                | Negative     | Significant       |
| Market Return                    | 0,728633                          | 0,0000                | Positive     | Significant       |
| NPL                              | 0,055636                          | 0,4582                | Positive     | Not Significant   |
| ROE                              | -0,104409                         | 0,1631                | Negative     | Not Significant   |

Source: EViews 12, processed by the researcher (2026)

Table 4.2 *Correlation Coefficient between Stock Return and Research Variables* presents the correlation coefficients between Stock Return and the independent variables included in this study. The correlation coefficient indicates the direction and strength of the linear relationship between two variables, while the probability value is used to determine whether the observed correlation is statistically significant at the 5% significance level. Among all explanatory variables, Market Return exhibits the strongest correlation with

Stock Return, with a positive correlation coefficient of 0.728633 and a probability value of 0.0000. This result indicates a relatively strong and statistically significant positive relationship between overall market movements and the stock returns of KBMI IV banks. In other words, higher returns in the Indonesian stock market tend to be associated with higher stock returns of the banks included in the study. This preliminary result suggests that the stock performance of KBMI IV banks is closely associated with broader capital market movements. Exchange Rate Return exhibits the strongest negative correlation with Stock Return, with a coefficient of -0.561251 and a probability value of 0.0000. The result indicates a statistically significant negative relationship between exchange rate movements and banking stock returns during the observation period. Foreign Exchange Reserves Growth, meanwhile, has a positive and statistically significant correlation with Stock Return, with a coefficient of 0.346758 and a probability value of 0.0000. M2 Growth also exhibits a statistically significant relationship with Stock Return; however, the relationship is negative and relatively weak, with a correlation coefficient of -0.173794 and a probability value of 0.0196. The remaining variables show relatively weak correlations with Stock Return and are not statistically significant at the 5% level. Interest Rate has a negative correlation of -0.125471 ( $p = 0.0933$ ), LDR has a negative correlation of -0.124202 ( $p = 0.0967$ ), ROE has a negative correlation of -0.104409 ( $p = 0.1631$ ), and Inflation has a negative correlation of -0.059083 ( $p = 0.4308$ ). Meanwhile, CAR ( $r = 0.057996$ ;  $p = 0.4393$ ), CIR ( $r = 0.045032$ ;  $p = 0.5483$ ), and NPL ( $r = 0.055636$ ;  $p = 0.4582$ ) exhibit weak positive and statistically insignificant correlations with Stock Return.

Overall, the correlation analysis provides preliminary evidence that Market Return, Exchange Rate Return, Foreign Exchange Reserves Growth, and M2 Growth have statistically significant bivariate relationships with Stock Return, whereas the remaining variables do not exhibit statistically significant correlations at the 5% level. However, these findings should not be interpreted as evidence of causal effects or as the final results of the research hypotheses. Correlation analysis only evaluates the bivariate relationship between two

variables without simultaneously controlling for the other explanatory variables. Therefore, the direction, magnitude, and statistical significance of the effects of the independent variables on Stock Return will subsequently be examined using panel data regression analysis.

## 4.2 Panel Data Regression

### 4.2.1 Model Selection Tests

Before estimating the panel data regression, three specification tests are required to determine the most appropriate estimation model, namely the Common Effect Model (CEM), Fixed Effect Model (FEM), or Random Effect Model (REM). The model selection process was performed using the Chow Test, Lagrange Multiplier (LM) Test, and Hausman Test. The results of the panel data model selection are presented in Table 4.3 *Panel Data Model Selection Test Results*

**Table 4. 3 Panel Data Model Selection Test Results**

| Test                      | Test Statistic           | Probability | Decision        |
|---------------------------|--------------------------|-------------|-----------------|
| Chow Test (CEM vs FEM)    | F = 0.187946             | 0,9045      | CEM is selected |
| LM Test (CEM vs REM)      | Breusch-Pagan = 1.947013 | 0,1629      | CEM is selected |
| Hausman Test (FEM vs REM) | Not required             | -           | -               |

Source: EViews 12 Output, processed by the author (2026)

As presented in Table 4.3 *Panel Data Model Selection Test Results*, the Chow Test produces a Cross-section F probability value of 0.9045, which is greater than the 5% significance level (0.05). Therefore, the null hypothesis cannot be rejected, indicating that the Common Effect Model (CEM) is preferred to the Fixed Effect Model (FEM). Subsequently, the Lagrange Multiplier (LM) Test was conducted to determine whether the Common Effect Model or the Random Effect Model (REM) is more appropriate. The Breusch–

Pagan Cross-section probability value is 0.1629, which is also greater than 0.05. Therefore, the null hypothesis of no cross-sectional random effects cannot be rejected, indicating that the Common Effect Model is preferred to the Random Effect Model. Since both tests consistently support the Common Effect Model, the CEM is selected as the final panel data estimation model. Accordingly, the Hausman Test is not required because the selection between FEM and REM is no longer necessary.

### **4.3 Classical Assumption Test**

Before interpreting the regression results, classical assumption tests must be conducted to ensure that the regression model meets the Best Linear Unbiased Estimator (BLUE) criteria. The classical assumption tests performed in this study include multicollinearity test, heteroskedasticity test, and autocorrelation test.

#### **4.3.1 Multicollinearity Test**

The multicollinearity test is conducted to detect the presence of high correlations among independent variables in the regression model. In this study, the multicollinearity test is performed by examining the Variance Inflation Factor (VIF) values of each independent variable. Table 4.4 ***Multicollinearity Test Results*** presents the results of the multicollinearity test using the Variance Inflation Factor (VIF) and tolerance values. A model is considered free from serious multicollinearity problems when the VIF value is below 10 and the tolerance value is above 0.10.

**Table 4. 4 Multicollinearity Test Results**

| Variable                   | VIF      | Tolerance | Conclusion           |
|----------------------------|----------|-----------|----------------------|
| CAR                        | 2,917007 | 0,342817  | No multicollinearity |
| NPL                        | 2,072894 | 0,482417  | No multicollinearity |
| ROE                        | 3,566392 | 0,280395  | No multicollinearity |
| CIR                        | 5,134137 | 0,194775  | No multicollinearity |
| LDR                        | 2,125192 | 0,470546  | No multicollinearity |
| BI Rate                    | 2,070363 | 0,483007  | No multicollinearity |
| Inflation                  | 1,957441 | 0,510871  | No multicollinearity |
| Exchange Rate              | 2,677771 | 0,373445  | No multicollinearity |
| M2 Growth                  | 1,280970 | 0,780658  | No multicollinearity |
| Foreign Reserves<br>Growth | 1,684164 | 0,593766  | No multicollinearity |
| Market Return              | 1,966927 | 0,508407  | No multicollinearity |

Source: EViews 12 Output, processed by the author (2026)

As presented in Table 4.4 *Multicollinearity Test Results*, the VIF values of all independent variables range from 1.280970 to 5.134137, while the tolerance values range from 0.194775 to 0.780658. CIR records the highest VIF value of 5.134137, followed by ROE at 3.566392 and CAR at 2.917007. Meanwhile, M2 Growth has the lowest VIF value of 1.280970. Since all VIF values are below 10 and all tolerance values exceed 0.10, the results indicate that there is no serious multicollinearity problem among the independent variables included in the regression model. Therefore, the model satisfies the multicollinearity assumption and the independent variables can be retained for subsequent regression analysis.

#### 4.3.2 Heteroskedasticity Test

The heteroskedasticity test is conducted to examine whether the variance of the regression residuals remains constant across observations. Homoskedasticity implies that the residual variance is constant, whereas heteroskedasticity indicates that the variance changes across observations, which may affect the reliability of the estimated standard errors, t-statistics, and probability values. In this study, the heteroskedasticity test is performed using

the Breusch–Pagan approach based on the auxiliary regression of the squared residuals. The null hypothesis states that the model is homoskedastic, while the alternative hypothesis indicates the presence of heteroskedasticity. The decision is based on the probability value at the 5% significance level, where a probability value below 0.05 indicates the presence of heteroskedasticity. The results of the test are presented in Table 4.5 *Heteroskedasticity Test*

**Table 4. 5 Heteroskedasticity Test**

| Test                  | Statistic | Probability | Decision     | Conclusion                   |
|-----------------------|-----------|-------------|--------------|------------------------------|
| Breusch-Pagan LM Test | 20,5632   | 0,0382      | Reject<br>H0 | Heteroskedasticity<br>exists |

| Supporting Calculation              | Value    |
|-------------------------------------|----------|
| Number of observations<br>(n)       | 180      |
| R-squared (auxiliary<br>regression) | 0,114240 |
| Degrees of freedom (df)             | 11       |
| LM statistic ( $n \times R^2$ )     | 20,5632  |

| Decision Rule      | Interpretation                                   |
|--------------------|--------------------------------------------------|
| Probability < 0.05 | Reject H0;<br>heteroskedasticity<br>is indicated |

Source: EViews 12 Output, processed by the author (2026)

As presented in Table 4.5 *Heteroskedasticity Test*, the Breusch–Pagan statistic is 20.5632 with a probability value of 0.0382. Since the probability value is lower than the 5% significance level, the null hypothesis of homoskedasticity is rejected. Therefore, the initial Common Effect Model indicates the presence of heteroskedasticity. This result suggests that the variance of the residuals is not constant across observations. Consequently, a robust covariance correction is applied to obtain more reliable standard errors and statistical inference.

### 4.3.3 Autocorrelation Test

The autocorrelation test is conducted to determine whether the residuals in the regression model are correlated across observation periods. In accordance with the methodology established in this study, autocorrelation is primarily assessed using the **Durbin–Watson (DW) statistic**. The decision criterion indicates the absence of autocorrelation when the Durbin–Watson statistic satisfies the condition , where represents the upper critical value of the Durbin–Watson statistic and represents the Durbin–Watson statistic obtained from the regression model.

**Table 4. 6 Autocorrelation Test**

| Stage                 | Indicator                   | Result                                       | Interpretation                                                                                    |
|-----------------------|-----------------------------|----------------------------------------------|---------------------------------------------------------------------------------------------------|
| Primary Test          | Durbin-Watson Statistic     | 2.273195                                     | Inconclusive based on the Durbin-Watson critical-bound decision rule used in the proposal         |
| Additional Diagnostic | First-order Lagged Residual | Coefficient = -0.134335;<br>p-value = 0.0753 | No statistically significant evidence of first-order autocorrelation at the 5% significance level |

Source: EViews 12 Output, processed by the author (2026)

Table 4.6 ***Autocorrelation Test*** presents the results of the autocorrelation test using the Durbin–Watson statistic and the additional residual-based diagnostic conducted to address the inconclusive Durbin–Watson result. Based on the estimation of the **Common Effect Model (CEM)**, the Durbin–Watson statistic is **2.273195**. Based on the Durbin–Watson critical-bound decision rule adopted in this study, this value falls within the **inconclusive region with respect to possible negative autocorrelation**. Therefore, the Durbin–Watson result alone does not provide sufficient evidence to conclusively determine the presence or absence of first-order autocorrelation. Since the Durbin–Watson test produces an inconclusive result, an **additional residual-based diagnostic** is conducted to strengthen the interpretation. The diagnostic examines the relationship between the current residual and its first-order lag. The estimation produces a lagged residual coefficient of **–0.134335** with a probability value of **0.0753**. Since the probability value is greater than the 5% significance level, there is insufficient statistical evidence to reject the null hypothesis of no first-

order serial correlation. Accordingly, although the Durbin–Watson statistic initially falls within the inconclusive region, the additional diagnostic provides **no statistically significant evidence of first-order autocorrelation at the 5% significance level**. Therefore, the regression model is considered not to exhibit a statistically significant first-order autocorrelation problem based on the combined diagnostic evidence.

#### 4.3.4 Heteroskedasticity Correction

Based on the heteroskedasticity test presented in the previous section, the Breusch–Pagan LM test produced a probability value of 0.0382, which is lower than the 5% significance level. Therefore, heteroskedasticity is detected in the initial Common Effect Model. Since heteroskedasticity may affect the reliability of the standard errors and subsequent statistical inference, a corrective treatment is required before the regression results are used for hypothesis testing. In accordance with the methodological procedure described in Chapter III, a robust covariance approach is applied while retaining the selected Common Effect Model. Table 4.7 presents the treatment applied to address the heteroskedasticity identified in the model.

**Table 4. 7 Heteroskedasticity Correction**

| Component                      | Result / Treatment                                     | Interpretation                                                                                    |
|--------------------------------|--------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| Selected Panel Model           | Common Effect Model (CEM)                              | The selected panel model remains unchanged                                                        |
| Heteroskedasticity Test        | Breusch–Pagan : Prob. = 0.0382 < 0.05                  | Heteroskedasticity is detected                                                                    |
| Corrective Treatment           | White cross-section (period cluster) robust covariance | Robust covariance is applied to address the effect of heteroskedasticity on statistical inference |
| Degrees-of-Freedom Correction  | Applied                                                | The robust covariance estimation is d.f. corrected                                                |
| Final Estimation for Inference | CEM with robust covariance                             | Used for the subsequent regression interpretation and hypothesis testing                          |

Source: EViews 12 Output, processed by the author (2026)

As presented in Table 4.7 ***Heteroskedasticity Correction***, the selected panel data model remains the Common Effect Model (CEM), while the

covariance method is adjusted using White cross-section (period cluster) robust covariance with degrees-of-freedom correction. The fact that a period-cluster robust covariance estimator is used is also in line with the cluster-robust inference approach described by Cameron and Miller (2015), especially in cases where the errors within a cluster are correlated. The adjustment is made in order to take into account the impact of heteroskedasticity on the standard errors employed for statistical inference, without altering the panel data model that was chosen as a result of the model selection process. It must be stressed that using a robust covariance estimator does not mean that heteroskedasticity has been removed from the regression residuals; the heteroskedasticity detected by the Breusch–Pagan test is still recognised in this study. Rather, the robust covariance treatment is introduced in order to deal with the effects of heteroskedasticity on the estimated standard errors and the subsequent statistical inference. It is for this reason that the regression results used in the further analysis are based on standard errors that are robust to heteroskedasticity. As a result, the CEM estimation incorporating robust covariance is adopted as the final estimation method for the subsequent regression analysis and hypothesis testing. The detailed regression coefficients, robust standard errors, t-statistics, probability values, and the model's explanatory power are given in the section that follows.

#### **4.4 Final Panel Data Regression Results**

After having carried out the panel model selection and tested the classical assumptions, the Common Effect Model (CEM) was determined to be the suitable panel data regression model for this study. Since the heteroskedasticity test showed that heteroskedasticity was present, as explained in the earlier section, the final estimation makes use of robust standard errors to counter its effect on statistical inference. The regression results presented in this section are therefore based on the Common Effect Model with robust standard errors. The analysis includes 180 balanced panel observations comprising four banks over 45 quarterly periods from 2015Q1 to 2026Q1. The final regression results are then used to examine the

relationship between the independent variables and stock return and to carry out the hypothesis testing of the study.

#### 4.4.1 Final Panel Data Regression Estimation

The final panel data regression estimation is conducted using the Common Effect Model with robust standard errors. The estimated coefficients represent the direction and magnitude of the relationship between each independent variable and stock return, while the robust standard errors are used in calculating the corresponding t-statistics and probability values. Since the robust covariance treatment was applied following the detection of heteroskedasticity, the statistical inference presented in the final model is based on the corrected standard errors. The complete estimation results are presented in Table 4.8 *Final Panel Data Regression Results*

**Table 4. 8 Final Panel Data Regression Results**

| Variable      | Coefficient | Robust Std. Error | t-Statistic | Probability |
|---------------|-------------|-------------------|-------------|-------------|
| C             | 16,555680   | 21,131990         | 0,783441    | 0,437600    |
| CAR           | -0,239206   | 0,456480          | -0,524023   | 0,602900    |
| NPL           | -0,775837   | 1,437308          | -0,539784   | 0,592100    |
| ROE           | 0,069717    | 0,329546          | 0,211555    | 0,833400    |
| CIR           | 0,025732    | 0,193479          | 0,132995    | 0,894800    |
| LDR           | -0,093557   | 0,182456          | -0,512765   | 0,610700    |
| BI Rate       | -1,730210   | 1,201770          | -1,439718   | 0,157000    |
| Inflation     | 1,712516    | 1,036950          | 1,651493    | 0,105800    |
| EXR           | -0,431212   | 0,477549          | -0,902969   | 0,371500    |
| M2 Growth     | 0,062018    | 0,422615          | 0,146748    | 0,884000    |
| FER Growth    | 0,102773    | 0,336165          | 0,305722    | 0,761300    |
| Market Return | 1,077551    | 0,324091          | 3,324841    | 0,001800    |

Source: EViews 12 Output, processed by the author (2026)

As presented in Table 4.8 *Final Panel Data Regression Results*, the estimated coefficients show different directions and magnitudes across the explanatory variables. CAR, NPL, LDR, BI Rate, and EXR have negative estimated coefficients, whereas ROE, CIR, Inflation, M2 Growth, FER Growth, and Market Return have positive estimated coefficients. These coefficients provide the basis for constructing the estimated regression equation. Meanwhile, the t-statistics and probability values obtained from the robust estimation will be used subsequently in the partial hypothesis testing. Therefore, the statistical significance of each explanatory variable is discussed separately in Section 4.5 to avoid overlapping the regression estimation and hypothesis testing discussions.

#### 4.4.2 Estimated Panel Data Regression Equation

Based on the estimated coefficients reported in Table 4.8, the final panel data regression equation can be formulated to represent the estimated relationship between stock return and the explanatory variables included in the study. The regression equation is expressed as follows:

$$\begin{aligned} \text{SR} = & 16.555680 - 0.239206 \text{ CAR} - 0.775837 \text{ NPL} + 0.069717 \text{ ROE} + \\ & 0.025732 \text{ CIR} - 0.093557 \text{ LDR} - 1.730210 \text{ BI Rate} + 1.712516 \text{ Inflation} - \\ & 0.431212 \text{ EXR} + 0.062018 \text{ M2 Growth} + 0.102773 \text{ FER Growth} + 1.077551 \\ & \text{Market Return} + \varepsilon \end{aligned}$$

The regression equation indicates the estimated direction of the relationship between each explanatory variable and stock return while holding the other variables constant. A positive coefficient indicates that an increase in the respective explanatory variable is associated with an increase in stock return, whereas a negative coefficient indicates an inverse relationship. However, the direction of a coefficient alone does not determine whether the relationship is statistically significant. Therefore, the economic interpretation of the coefficients must be considered together with the results of the statistical hypothesis testing presented in the subsequent section.

#### 4.4.3 Coefficient of Determination

The coefficient of determination is used to evaluate the explanatory power of the regression model in explaining variations in the dependent variable. In this study, the R-squared and Adjusted R-squared values are used to assess the extent to which the explanatory variables included in the model collectively explain variations in the stock returns of the selected banks. The results are presented in Table 4.9 *Coefficient of Determination*

**Table 4. 9 Coefficient of Determination**

| Indicator          | Value    | Interpretation                                                                                                   |
|--------------------|----------|------------------------------------------------------------------------------------------------------------------|
| R-squared          | 0,575980 | 57.5980% of the variation in stock return is explained by the variables included in the model.                   |
| Adjusted R-squared | 0,548216 | 54.8216% of the variation in stock return is explained after adjustment for the number of explanatory variables. |

Source: EViews 12 Output, processed by the author (2026)

As shown in Table 4.9 *Coefficient of Determination*, the regression model produces an R-squared value of 0.575980. This indicates that approximately 57.598% of the variation in stock return can be explained by the explanatory variables included in the model, namely CAR, NPL, ROE, CIR, LDR, BI Rate, Inflation, Exchange Rate, M2 Growth, Foreign Exchange Reserve Growth, and Market Return. The remaining approximately 42.402% of the variation is associated with factors outside the explanatory variables included in the regression model.

The Adjusted R-squared value is 0.548216, indicating that after taking into account the number of explanatory variables included in the model, approximately 54.822% of the variation in stock return is explained by the model. The difference between the R-squared and Adjusted R-squared values reflects the adjustment for the number of explanatory variables included in the regression. Overall, these results indicate that the model provides meaningful explanatory power for variations in the stock returns of the banks included in the study.

## 4.5 Hypothesis Testing

Hypothesis testing is conducted to determine whether the explanatory variables included in the panel data regression model have statistically significant effects on stock return. Following the heteroskedasticity correction described in the previous section, the hypothesis testing in this study is based on the final Common Effect Model (CEM) estimated using robust standard errors. Therefore, the t-statistics and probability values used for statistical inference are obtained from the corrected regression output. The hypothesis testing consists of the partial t-test, simultaneous F-test, and a summary of the hypothesis testing results.

### 4.5.1 Partial t-Test

The partial t-test is used to examine the individual effect of each independent variable on stock return while holding the other explanatory variables constant. In accordance with the significance level established in Chapter III, the decision criterion is based on a significance level of 5% ( $\alpha = 0.05$ ). An independent variable is considered to have a statistically significant effect on stock return when its probability value is lower than 0.05. Conversely, a probability value greater than 0.05 indicates that the variable does not have a statistically significant effect on stock return during the observation period. The results of the partial t-test based on the final robust estimation are presented in Table 4.10 *Partial t-Test Results*

**Table 4. 10 Partial t-Test Results**

| Variable             | Coefficient     | Std. Error      | t-Statistic     | p-value         | Direction       | Statistical Result |
|----------------------|-----------------|-----------------|-----------------|-----------------|-----------------|--------------------|
| CAR                  | -0,239206       | 0,456480        | -0,524023       | 0,602900        | Negative        | Not Significant    |
| NPL                  | -0,775837       | 1,437308        | -0,539784       | 0,592100        | Negative        | Not Significant    |
| ROE                  | 0,069717        | 0,329546        | 0,211555        | 0,833400        | Positive        | Not Significant    |
| CIR                  | 0,025732        | 0,193479        | 0,132995        | 0,894800        | Positive        | Not Significant    |
| LDR                  | -0,093557       | 0,182456        | -0,512765       | 0,610700        | Negative        | Not Significant    |
| BI Rate              | -1,730210       | 1,201770        | -1,439718       | 0,157000        | Negative        | Not Significant    |
| Inflation            | 1,712516        | 1,036950        | 1,651493        | 0,105800        | Positive        | Not Significant    |
| Exchange Rate        | -0,431212       | 0,477549        | -0,902969       | 0,371500        | Negative        | Not Significant    |
| M2 Growth            | 0,062018        | 0,422615        | 0,146748        | 0,884000        | Positive        | Not Significant    |
| FER Growth           | 0,102773        | 0,336165        | 0,305722        | 0,761300        | Positive        | Not Significant    |
| <b>Market Return</b> | <b>1,077551</b> | <b>0,324091</b> | <b>3,324841</b> | <b>0,001800</b> | <b>Positive</b> | <b>Significant</b> |

Source: EViews 12 Output, processed by the author (2026)

Based on Table 4.10 *Partial t-Test Results*, Market Return is the only explanatory variable that demonstrates a statistically significant individual effect on stock return at the 5% significance level, with a probability value of 0.0018. Its positive coefficient of 1.077551 indicates a positive relationship between market return and the stock returns of the banks included in the study. In contrast, CAR, NPL, ROE, CIR, LDR, BI Rate, Inflation, EXR, M2 Growth, and FER Growth have probability values greater than 0.05 and therefore do not demonstrate statistically significant individual effects on stock return during the observation period. The absence of statistical significance should not be interpreted as evidence that these factors are economically irrelevant; rather, the results indicate that their individual effects cannot be statistically

established within the specification, sample, and observation period employed in this study.

#### 4.5.2 Simultaneous F-Test

The simultaneous F-test is conducted to determine whether the independent variables collectively have a statistically significant effect on stock return. The decision criterion is based on a significance level of 5% ( $\alpha = 0.05$ ). If the probability value of the F-statistic is lower than 0.05, the independent variables are considered to have a statistically significant simultaneous effect on the dependent variable.

**Table 4. 11 Simultaneous F-Test Result**

| Indicator         | Result    | Criterion | Conclusion                                                                                 |
|-------------------|-----------|-----------|--------------------------------------------------------------------------------------------|
| F-statistic       | 20,746130 | -         | Model test statistic                                                                       |
| Prob(F-statistic) | 0,000000  | < 0.05    | Significant                                                                                |
| Decision          |           |           | Independent variables collectively have a statistically significant effect on Stock Return |

Source: EViews 12 Output, processed by the author (2026)

Based on Table 4.11 *Simultaneous F-Test Result*, the F-statistic is 20.74613 with a probability value of 0.000000. Since the probability value is lower than the 5% significance level, the null hypothesis is rejected. Therefore, CAR, NPL, ROE, CIR, LDR, BI Rate, Inflation, Exchange Rate, M2 Growth, Foreign Exchange Reserve Growth, and Market Return collectively have a statistically significant effect on the stock returns of the KBMI IV banks during the observation period.

This result is important because, although most explanatory variables are not statistically significant when evaluated individually, the overall regression model remains statistically significant. This indicates that the explanatory variables, when considered jointly within the model, provide significant explanatory information regarding variations in bank stock returns.

### 4.5.3 Summary of Hypothesis Testing

Based on the partial hypothesis testing using the final Common Effect Model (CEM) with White cross-section robust standard errors, the direction and statistical significance of each independent variable are summarized in Table 4.12 *Summary of Hypothesis Testing Results*. The direction of the relationship is determined by the sign of the regression coefficient, while statistical significance is determined based on the probability value at the 5% significance level. A positive coefficient indicates a positive relationship with Stock Return, whereas a negative coefficient indicates an inverse relationship. A p-value below 0.05 indicates a statistically significant effect.

**Table 4. 12 Summary of Hypothesis Testing Results**

| Hypothesis | Relationship              | Coefficient     | p-value       | Direction       | Conclusion         |
|------------|---------------------------|-----------------|---------------|-----------------|--------------------|
| H1a        | LDR → SR                  | -0,093557       | 0,6107        | Negative        | Not Significant    |
| H1b        | ROE → SR                  | 0,069717        | 0,8334        | Positive        | Not Significant    |
| H1c        | CAR → SR                  | -0,239206       | 0,6029        | Negative        | Not Significant    |
| H1d        | NPL → SR                  | -0,775837       | 0,5921        | Negative        | Not Significant    |
| H1e        | CIR → SR                  | 0,025732        | 0,8948        | Positive        | Not Significant    |
| H2a        | BI Rate → SR              | -1,730210       | 0,1570        | Negative        | Not Significant    |
| H2b        | Inflation → SR            | 1,712516        | 0,1058        | Positive        | Not Significant    |
| H2c        | M2 Growth → SR            | 0,062018        | 0,8840        | Positive        | Not Significant    |
| H2d        | FER Growth → SR           | 0,102773        | 0,7613        | Positive        | Not Significant    |
| H2e        | EXR → SR                  | -0,431212       | 0,3715        | Negative        | Not Significant    |
| <b>H3</b>  | <b>Market Return → SR</b> | <b>1,077551</b> | <b>0,0018</b> | <b>Positive</b> | <b>Significant</b> |

Source: EViews 12 Output, processed by the author (2026)

As presented in Table 4.12 *Summary of Hypothesis Testing Results*, most independent variables show statistically insignificant effects on Stock Return, although the estimated coefficients indicate different directions of relationships. CAR, NPL, LDR, BI Rate, and Exchange Rate exhibit negative but statistically insignificant relationships with Stock Return. Meanwhile, ROE, CIR, Inflation, M2 Growth, and FER Growth exhibit positive but statistically insignificant relationships. Therefore, although these variables show positive or negative coefficient directions, there is insufficient statistical evidence to conclude that they individually affect the stock returns of KBMI IV banks during the observation period.

In contrast, Market Return exhibits a **positive and statistically significant** effect on Stock Return, with a coefficient of **1.077551** and a p-value of **0.0018**. Since the p-value is below 0.01, the relationship is statistically significant at the 1% level. This result indicates that an increase in overall market return is associated with an increase in the stock returns of KBMI IV banks. Among all independent variables examined in the model, Market Return is therefore the only variable that demonstrates a statistically significant individual relationship with Stock Return after the application of White cross-section robust standard errors.

#### **4.6 Discussion of Research Findings**

This section discusses the empirical findings by relating the statistical results to the theoretical framework, hypothesis development, and previous empirical studies presented in Chapter II. The discussion is organized according to the three main groups of explanatory variables examined in this study, namely financial performance, macroeconomic and monetary environment, and market factor. Rather than merely restating the statistical results, this section evaluates whether the empirical findings are consistent with the theoretical expectations and previous studies and provides possible explanations for the results within the context of Indonesia's KBMI IV banks.

##### **4.6.1 Financial Performance and Stock Return**

Financial performance represents the internal condition of a bank and provides information regarding its liquidity, profitability, capital adequacy, credit risk, and operational efficiency. As discussed in Chapter II, financial performance information may serve as a signal to investors in evaluating the financial condition and prospects of a company. Based on Signaling Theory, favorable financial information is expected to generate positive investor perceptions, while unfavorable financial information may produce the opposite response. In this study, financial performance is represented by LDR, ROE,

CAR, NPL, and CIR. The empirical results for these variables are summarized in Table 4.13 *Financial Performance and Stock Return*

**Table 4. 13 Financial Performance and Stock Return**

| Variable | Coefficient | p-value  | Finding                   |
|----------|-------------|----------|---------------------------|
| CAR      | -0,239206   | 0,602900 | Negative, Not Significant |
| NPL      | -0,775837   | 0,592100 | Negative, Not Significant |
| ROE      | 0,069717    | 0,833400 | Positive, Not Significant |
| CIR      | 0,025732    | 0,894800 | Positive, Not Significant |
| LDR      | -0,093557   | 0,610700 | Negative, Not Significant |

Source: EViews 12 Output, processed by the author (2026)

As presented in Table 4.13 *Financial Performance and Stock Return*, none of the financial performance indicators individually demonstrates a statistically significant effect on Stock Return at the 5% significance level. LDR, CAR, and NPL show negative coefficients, while ROE and CIR show positive coefficients. However, the probability values of all five variables exceed 0.05. These results indicate that although the financial performance variables exhibit different directions of relationship with Stock Return, there is insufficient statistical evidence to establish their individual effects on the quarterly stock returns of KBMI IV banks during the observation period. The negative and insignificant coefficient of LDR indicates that an increase in bank lending relative to deposits is associated with a lower Stock Return, although the relationship cannot be statistically established. As explained in Chapter II, LDR represents bank liquidity and the ability of banks to channel third-party funds into loans. A higher LDR may increase income-generating opportunities through greater lending activities, but it may also increase liquidity pressure when a larger proportion of available funding is allocated to loans. The insignificant finding suggests that investors may not respond to changes in LDR independently but may evaluate bank liquidity together with other indicators of financial performance and prevailing market conditions. This finding is consistent with Subagyo, Achسانی, and Sasongko (2022), who found that LDR did not have a significant effect on stock returns. ROE shows a positive but statistically insignificant relationship with Stock Return. The positive coefficient

is consistent with the theoretical expectation discussed in Chapter II that stronger profitability may provide a positive signal to investors because it reflects the ability of a company to generate returns from shareholders' equity. Yet the fact that the probability value is insignificant shows that the profitability as measured by ROE does not on its own account for the movements in quarterly stock returns in this study. A possible reason for this is that investors in large banking stocks might include expected profitability in the prices of the stocks before the company's financial performance is officially reported. It therefore follows that changes in realised ROE do not necessarily indicate new information which could prompt an immediate reaction in the stock market. The findings also show the mixed empirical evidence referred to in Chapter II, since earlier studies have reached different conclusions about the connection between profitability and stock performance. For instance, Harinurdin (2022) found a positive relationship with respect to ROE, while other studies looking at banking financial ratios have reported no significant relationship between financial performance indicators and stock returns.

CAR has a negative and statistically insignificant relationship with Stock Return. The result shows that a higher level of capital adequacy is not linked to a statistically significant change in quarterly Stock Return when the effects of the other variables are taken into account. Even though a strong level of capitalisation reflects a bank's ability to absorb possible losses and thus may serve as a positive financial signal, a higher CAR does not necessarily result in higher stock returns. For large banks such as the KBMI IV banks, keeping adequate capital is also a vital regulatory and prudential requirement. As a result, investors may see adequate capitalisation as an expected feature of these institutions rather than as new information capable of causing a significant move in stock prices. This finding is in contrast to that of William Ferrari and Daryanto (2022), whose study mentioned in Chapter II found CAR to have a significant effect on stock returns, while NPL, LDR, ROA, and NIM were not significant. NPL has a negative but statistically insignificant relationship with Stock Return. The negative coefficient is in line with the theoretical arguments set out in Chapter II since an increase in non-performing loans means a deterioration in

credit quality and could lead to higher credit costs, greater provisioning requirements, and increased uncertainty about future profitability. Thus, a negative relationship between NPL and Stock Return is economically sound. Nonetheless, the insignificant result means that changes in NPL do not on their own explain the quarterly stock returns of the KBMI IV banks within the model estimated.. This result is in agreement with that of Subagyo, Achsani, and Sasongko (2022), who found that NPL did not have a significant impact on stock returns, even though some of the other studies mentioned in Chapter II have reached different conclusions. CIR also shows a positive but statistically insignificant relationship with stock return. Since CIR stands as a measure of operational efficiency, the fact that the coefficient is positive does not match the usual expectation that higher operating costs in relation to operating income should be linked to poorer financial performance. Yet, since the coefficient is not statistically significant, the positive direction should not be taken as proof that a higher CIR leads to a higher stock return. A possible reason is that the rise in operating expenses among large banks may partly be due to spending on technology development, digital transformation, business expansion, or other investments meant to support future performance. Nevertheless, the statistical result shows that CIR does not on its own explain the quarterly stock return during the period under study.

In general, the results show that LDR, ROE, CAR, NPL, and CIR do not individually have a statistically significant effect on the stock return of the KBMI IV banks. These findings are in line with the research gap identified in Chapter II, in which earlier empirical studies have given mixed evidence about the connection between bank financial performance and stock returns. For example, William Ferrari and Daryanto (2022) found CAR to be significant while several other bank financial indicators were not significant, whereas Subagyo, Achsani, and Sasongko (2022) stated that the financial performance variables they examined did not significantly affect stock returns. Other studies cited in Chapter II did find significant relationships, thus showing that the empirical effect of financial performance on stock returns is still inconsistent across different samples and observation periods. From the point of view of Signaling Theory,

the findings do not mean that financial performance information is of no relevance to investors. On the contrary, they indicate that the individual financial ratios examined in this study may not provide strong enough additional signals to account for the quarterly movements in stock returns when other financial, macroeconomic, monetary, and market factors are taken into account at the same time. This is especially relevant for KBMI IV banks, which are large and widely followed financial institutions whose financial information is regularly made public and closely watched by market participants. As a result, the information contained in individual financial ratios may already be reflected in investors' expectations and in stock prices before the quarterly financial indicators appear in the regression data. Hence, the first set of empirical results shows that financial performance, as measured by LDR, ROE, CAR, NPL, and CIR, does not exhibit statistically significant individual effects on stock return during the observation period. This finding provides evidence that the short-term stock returns of KBMI IV banks cannot be explained entirely by individual accounting-based financial indicators and underscores the need to take into account broader macroeconomic, monetary, and market conditions, which are discussed in the following sections.

#### **4.6.2 Macroeconomic and Monetary Environment and Stock Return**

The macroeconomic and monetary environment represents external conditions that may influence banking operations, investor expectations, financial market liquidity, and stock valuation. As discussed in Chapter II, the banking sector is particularly sensitive to macroeconomic and monetary conditions because its activities are closely related to interest rates, liquidity, credit activities, exchange rate stability, and overall financial system conditions. In this study, the macroeconomic and monetary environment is represented by the BI Rate, Inflation, M2 Growth, Foreign Exchange Reserves Growth, and Exchange Rate Return. These indicators were selected to represent monetary conditions, price stability, liquidity, external-sector resilience, and macroeconomic dynamics that may influence banking stock returns.

**Table 4. 14 Macroeconomic and Monetary Environment and Stock Return**

| Variable      | Coefficient | p-value  | Finding                   |
|---------------|-------------|----------|---------------------------|
| BI Rate       | -1,730210   | 0,157000 | Negative, Not Significant |
| Inflation     | 1,712516    | 0,105800 | Positive, Not Significant |
| Exchange Rate | -0,431212   | 0,371500 | Negative, Not Significant |
| M2 Growth     | 0,062018    | 0,884000 | Positive, Not Significant |
| FER Growth    | 0,102773    | 0,761300 | Positive, Not Significant |

Source: EViews 12 Output, processed by the author (2026)

As presented in Table 4.14 *Macroeconomic and Monetary Environment and Stock Return*, none of the five macroeconomic and monetary variables demonstrates a statistically significant individual effect on Stock Return at the 5% significance level. BI Rate and Exchange Rate show negative coefficients, while Inflation, M2 Growth, and FER Growth show positive coefficients. Nevertheless, all probability values exceed 0.05, indicating that their individual relationships with the quarterly stock returns of KBMI IV banks cannot be statistically established within the estimated model. The **BI Rate** has a negative coefficient of  $-1.730210$  with a p-value of 0.1570. The negative direction is consistent with the theoretical expectation developed in Chapter II. An increase in the policy interest rate may increase funding costs, reduce credit demand, affect bank profitability, and increase the required return or discount rate applied by investors. Conversely, lower interest rates may stimulate investment and increase investor interest in the stock market. However, the statistically insignificant result indicates that changes in the BI Rate do not independently explain quarterly Stock Return after the other explanatory variables are simultaneously considered. This result differs from several previous studies presented in Chapter II. Sadorsky (2021) reported that interest rates and liquidity conditions significantly affected stock market volatility and returns, while Ioannidis et al. (2006) found that monetary policy had a significant impact on stock returns. Saputra and Dharmadiaksa (2016) also reported a negative relationship between interest rates and stock returns. Nevertheless, the negative coefficient found in the present study remains directionally consistent

with the theoretical expectation, although the relationship is not statistically significant.

**Inflation** has a positive coefficient of 1.712516 with a p-value of 0.1058. The positive direction differs from the hypothesis developed in Chapter II, which predicts a negative effect. In hypothesis development, high inflation is expected to increase operating costs, reduce purchasing power, increase uncertainty, and reduce the real value of investment returns. Tripathi and Kumar (2017) and Fama (1981) were used there to support the argument that inflation may influence stock-market performance and corporate profitability.

However, because the positive coefficient in the present study is statistically insignificant, it should not be interpreted as evidence that higher inflation improves banking stock returns. Rather, the result indicates that no statistically reliable individual relationship between inflation and Stock Return can be established. One possible interpretation is that the effect of inflation on banking stocks is not necessarily immediate or uniform because inflation can operate simultaneously through interest rates, credit demand, funding costs, economic activity, and investor expectations. The effect captured by quarterly stock returns may therefore depend on how investors interpret inflation together with the expected monetary-policy response. **M2 Growth** produces a positive coefficient of 0.062018 with a p-value of 0.8840. The direction is consistent with the argument in Chapter II that higher money supply represents greater liquidity in the economy and may stimulate investment activity and demand for financial assets. Tripathi and Kumar (2017) were cited as finding a positive effect of money supply on stock-market performance, while Sadorsky (2021) was used to support the role of abundant liquidity in encouraging financial-market investment. Nevertheless, the very high p-value in the present study indicates that M2 Growth does not independently explain quarterly KBMI IV Stock Return.

Interestingly, preliminary correlation analysis showed that M2 Growth had a statistically significant negative bivariate correlation with Stock Return, whereas its coefficient becomes positive and insignificant after the other variables are incorporated into the panel regression. This distinction reinforces

the importance of the multivariate analysis: a simple correlation describes the relationship between two variables without controlling for other factors, whereas the regression coefficient represents the relationship after the other explanatory variables in the model are taken into account. **Foreign Exchange Reserves Growth** has a positive coefficient of 0.102773 with a p-value of 0.7613. The positive direction is consistent with the theoretical argument developed in Chapter II, where stronger foreign exchange reserves are viewed as an indicator of external-sector resilience and macroeconomic stability. Higher reserves may strengthen investor confidence because they indicate greater capacity to respond to external shocks and maintain exchange-rate stability. However, the relationship is statistically insignificant in the final regression. This is particularly interesting because the earlier correlation analysis found a positive and statistically significant bivariate correlation between FER Growth and Stock Return. The change from significant correlation to insignificant regression effect suggests that the relationship observed at the bivariate level does not retain sufficient independent explanatory power once other macroeconomic, financial, and market variables are controlled for.

Finally, **Exchange Rate** has a negative coefficient of  $-0.431212$  with a p-value of 0.3715. Its negative direction is consistent with Chapter II. Rupiah depreciation may increase economic uncertainty, affect foreign capital flows, increase foreign-currency risks, and adversely affect investor perceptions of domestic financial-market conditions. In Chapter II specifically refers to Amrillah (2016) and Saputra and Dharmadiaksa (2016) in developing the expected negative relationship. The previous-studies table likewise records negative findings for exchange rates, although Steven (2025) and Chandra (2025) are reported as finding that exchange rates and money supply did not significantly affect banking stock returns.

Thus, the present finding is **directionally consistent** with the proposed hypothesis but statistically insignificant. Again, this is noteworthy because Exchange Rate Return showed a strong negative and statistically significant bivariate correlation with Stock Return in the preliminary analysis. Once the

explanatory variables are considered jointly, however, the independent exchange-rate effect is no longer statistically significant.

Overall, the results indicate that the macroeconomic and monetary environment variables do not individually demonstrate statistically significant effects on the quarterly Stock Return of KBMI IV banks. Nevertheless, the coefficient directions of BI Rate, M2 Growth, FER Growth, and Exchange Rate are generally consistent with the theoretical expectations developed in Chapter II, whereas Inflation exhibits an opposite but statistically insignificant direction. These findings contribute to the mixed empirical evidence identified as part of the research gap: previous studies have reported both significant and insignificant effects of macroeconomic and monetary variables on stock returns.

The findings should therefore not be interpreted as indicating that macroeconomic and monetary conditions are irrelevant to banking stocks. Instead, their effects may be incorporated into broader market expectations or transmitted indirectly through funding conditions, profitability, credit activity, investor sentiment, and overall market movements. This interpretation becomes particularly relevant when the Market Return result is considered.

#### **4.6.3 Market Return and Stock Return**

Market Return represents overall capital-market conditions and systematic movements affecting securities traded in the Indonesian equity market. In this study, Market Return is proxied by the return of the Indonesia Composite Index (IHSG). As explained in Chapter II, individual stock returns cannot be entirely separated from market sentiment and systematic market risk.

**Table 4. 15 Market Factor and Stock Return**

| Variable      | Coefficient | t-Statistic | p-value | Finding                  |
|---------------|-------------|-------------|---------|--------------------------|
| Market Return | 1,077551    | 3,324841    | 0,0018  | Positive and Significant |

Source: EViews 12 Output, processed by the author (2026)

In contrast to the financial performance and macroeconomic and monetary variables, Market Return demonstrates a **positive and statistically significant effect** on the Stock Return of KBMI IV banks. The estimated coefficient is 1.077551 with a t-statistic of 3.324841 and a p-value of 0.0018. Since the probability value is below 0.01, Market Return is statistically significant even at the 1% significance level. The positive coefficient is consistent with the hypothesis developed in Chapter II. It indicates that higher overall market returns are associated with higher returns on KBMI IV bank stocks, holding the other explanatory variables constant. However, the coefficient of 1.077551 should not automatically be described as a conventional CAPM beta because it is obtained from a multivariate panel regression containing several additional explanatory variables.

This finding strongly aligns with the literature already presented in Chapter II. **Siang, Sembel, and Malau (2024)** found that Market Return had a positive and significant effect on banking stock returns in Indonesia, while **Fama and French (2015)** identified market conditions as an important determinant of stock-return variation. These studies were specifically used in hypothesis development to support H3 that Market Return positively affects the stock returns of Indonesia's largest banks.

The result is also consistent with the preliminary correlation analysis, in which Market Return exhibited the strongest correlation with Stock Return, with a coefficient of 0.728633 and a probability value of 0.0000. Unlike Exchange Rate Return, FER Growth, and M2 Growth, whose significant bivariate correlations did not remain significant in the multivariate regression, the relationship between Market Return and Stock Return remains statistically significant after the other variables are controlled for. This provides stronger

evidence that broad market movements constitute an important independent explanatory factor for KBMI IV stock returns.

From the perspective of the **Efficient Market Hypothesis (EMH)**, this result is consistent with the proposition that security prices incorporate information available to market participants. It is also compatible with the logic of **Arbitrage Pricing Theory (APT)**, which recognizes that asset returns may reflect exposure to systematic sources of risk.

The significant effect of Market Return may be particularly relevant for KBMI IV banks because these banks are major listed institutions whose stocks form an important component of the Indonesian capital market. Consequently, changes in overall investor sentiment, domestic and global risk appetite, expectations regarding economic prospects, and broad capital-market conditions may be rapidly reflected in their share prices.

Overall, Market Return is the **only explanatory variable in the final model that demonstrates an individually significant relationship with Stock Return**. This does not imply that market movements are the only factors relevant to bank valuation, but it indicates that Market Return provides the strongest statistically detectable individual explanatory relationship within the variables, sample, and period examined in this study.

#### **4.6.4 Overall Findings and Integrated Interpretation**

The overall empirical findings provide an important distinction between the **individual effects** of the explanatory variables and their **collective effect** within the integrated model. At the individual level, only Market Return demonstrates a statistically significant effect on Stock Return. The five financial performance variables and five macroeconomic and monetary variables do not demonstrate statistically significant individual effects at the 5% level. However, the simultaneous F-test produces an **F-statistic of 20.74613 with a probability value of 0.000000**. Therefore, the explanatory variables included in the model collectively have a statistically significant effect on Stock Return. This finding is consistent with the integrated perspective developed in Chapter II, which argues that stock-return formation

reflects multiple sources of firm-specific, economic, monetary, and market information rather than a single determinant in isolation. The model also produces an R-squared of **0.575980**, indicating that approximately **57.60%** of the variation in Stock Return is explained by the explanatory variables included in the model. The Adjusted R-squared of **0.548216** indicates that approximately **54.82%** remains explained after adjustment for the number of explanatory variables. Accordingly, approximately 42.40% of the variation in Stock Return is associated with other factors outside the model.

These results provide empirical support for the rationale underlying the integrated framework of the study. As explicitly stated in Chapter II, previous studies have frequently examined only internal or external determinants separately, whereas research integrating financial performance, macroeconomic and monetary conditions, and Market Return remains relatively limited in the context of KBMI IV banks.

At the same time, the results reveal that integration does not necessarily mean that every explanatory variable will demonstrate individual statistical significance. Rather, the integrated specification allows the independent contribution of each variable to be evaluated while other relevant factors are controlled for. The fact that several variables display significant simple correlations but become insignificant in the multivariate regression illustrates precisely why an integrated analysis is useful.

The empirical findings therefore suggest that the quarterly stock returns of KBMI IV banks during the observation period were particularly associated with **systematic market movements**, while the direct independent effects of individual accounting-based and macroeconomic indicators were comparatively weaker. Nevertheless, the significant simultaneous test indicates that the explanatory variables collectively contain meaningful information for explaining variations in banking Stock Return.

Accordingly, the findings answer the central research objective by demonstrating that Stock Return in Indonesia's largest banks should be examined through an integrated framework encompassing internal financial conditions, the macroeconomic and monetary environment, and overall capital-

market movements. Among these dimensions, Market Return emerges as the strongest individually significant factor in the final empirical specification.

#### **4.6 Chapter Summary**

This chapter presented and discussed the empirical results concerning the effects of Financial Performance, the Macroeconomic and Monetary Environment, and Market Return on the Stock Return of KBMI IV banks in Indonesia. The analysis was conducted using balanced quarterly panel data consisting of 180 observations from four KBMI IV banks over 45 quarters from Q1 2015 to Q1 2026, consistent with the research design described in Chapter III. Following the panel-data model selection procedure, the Common Effect Model (CEM) was retained as the regression specification. Following the detection of heteroskedasticity, White cross-section robust standard errors were applied for statistical inference. The resulting regression model has an R-squared of 0.575980 and an Adjusted R-squared of 0.548216.

The partial hypothesis-testing results indicate that LDR, ROE, CAR, NPL, CIR, BI Rate, Inflation, M2 Growth, Foreign Exchange Reserves Growth, and Exchange Rate do not demonstrate statistically significant individual effects on Stock Return at the 5% significance level. In contrast, Market Return has a positive and statistically significant effect, with a coefficient of 1.077551 and a p-value of 0.0018.

The simultaneous F-test indicates that the explanatory variables collectively have a statistically significant effect on Stock Return, as demonstrated by the F-statistic of 20.74613 and probability value of 0.000000. Therefore, although most variables do not demonstrate statistically significant individual effects, the integrated model remains statistically significant as a whole.

Overall, the findings indicate that broad capital-market movements play a particularly important role in explaining the quarterly Stock Return of KBMI IV banks. The results also reinforce the relevance of examining stock-return formation through an integrated framework rather than relying solely on individual financial ratios or individual macroeconomic indicators. These findings provide the

empirical basis for the conclusions, implications, limitations, and recommendations presented in Chapter V.

## CHAPTER V

### CONCLUSION AND RECOMMENDATIONS

#### 5.1 Conclusion

Based on the empirical findings presented in Chapter IV, the conclusions of this study are as follows:

1. Financial Performances

LDR, ROE, CAR, NPL, and CIR do not individually have statistically significant effects on the Stock Return of KBMI IV banks at the 5% significance level. LDR, CAR, and NPL show negative coefficients, while ROE and CIR show positive coefficients. These findings indicate that individual financial performance indicators do not independently explain quarterly Stock Return during the observation period.

2. Macroeconomic and Monetary Environment

BI Rate, Inflation, M2 Growth, Foreign Exchange Reserves Growth, and Exchange Rate do not individually have statistically significant effects on Stock Return. BI Rate and Exchange Rate show negative coefficients, while Inflation, M2 Growth, and Foreign Exchange Reserves Growth show positive coefficients. Therefore, the direct individual effects of macroeconomic and monetary variables are not statistically established in the final model.

3. Market Return

Market Return has a positive and statistically significant effect on Stock Return, with a coefficient of **1.077551** and a p-value of **0.0018**. This indicates that increases in overall market return are associated with increases in the Stock Return of KBMI IV banks.

4. Simultaneous Effect and Explanatory Power of the Model

Financial Performance, Macroeconomic and Monetary Environment, and Market Return collectively have a statistically significant effect on Stock Return, as indicated by an F-statistic of **20.74613** and a Prob(F-statistic) of **0.000000**. The model has an R-squared value of **0.575980**, indicating that

approximately **57.60%** of the variation in Stock Return is explained by the variables included in the model, while the remaining **42.40%** is associated with other factors outside the model.

## **5.2 Practical and Managerial Implication**

### **5.2.1 For Banking Management**

- Banks should continue to maintain strong financial fundamentals, including liquidity, profitability, capital adequacy, credit quality, and operational efficiency.
- Bank management should recognize that strong fundamentals do not necessarily prevent stock-price volatility because broader market conditions may significantly affect Stock Return.
- Banks should strengthen monitoring of capital-market developments, including IHSG movements, investor sentiment, market volatility, and other systematic market conditions.
- Investor-relations communication should clearly explain how financial performance and external market conditions may affect the bank's business outlook and strategic direction.
- Management should distinguish between deterioration in fundamental banking performance and stock-price movements caused primarily by market-wide conditions.

### **5.2.2 For Investors**

- Investors should not rely solely on individual banking ratios when evaluating KBMI IV stocks.
- Fundamental analysis should be complemented with an assessment of broader market conditions.
- Market Return should be considered an important factor in short-term investment decisions because it is the only individually significant explanatory variable in this study.

### 5.2.3 For Regulators and Policymakers

- Regulators should continue to monitor the interaction between banking-sector resilience and capital-market conditions.
- Bank Indonesia and OJK should consider that changes in market sentiment may affect the valuation of major banks even when underlying financial conditions remain sound.
- Coordination between monetary policy, banking supervision, and capital-market oversight remains important during periods of heightened market volatility.

### 5.3 Recommendation For Future Research

Based on the findings and limitations of this study, several recommendations are proposed for future research:

- Future research may incorporate additional **market-related variables**, such as market volatility, foreign investor flows, government bond yields, investor sentiment, and global market indicators. This is particularly relevant because Market Return was found to be the only variable with a statistically significant individual effect on the Stock Return of KBMI IV banks in this study.
- Future research may examine the **lagged effects of macroeconomic and monetary variables**. Although BI Rate, Inflation, M2 Growth, Foreign Exchange Reserves Growth, and Exchange Rate did not demonstrate statistically significant contemporaneous effects in this study, their impact on banking stock returns may occur with a time lag through changes in funding costs, credit demand, liquidity conditions, profitability, and investor expectations.
- Future studies may investigate different **economic and market conditions** by dividing the observation period into specific regimes, such as the pre-pandemic period, COVID-19 pandemic, post-pandemic recovery, monetary-tightening period, and periods of high market volatility. Such analysis may determine whether the relationships between the explanatory

variables and Stock Return change under different economic and market conditions.

- Future research may expand the sample by including banks from **other KBMI classifications** or conducting comparative analysis between KBMI IV and smaller banking groups. This approach may provide evidence as to whether the determinants of Stock Return differ according to bank size, capitalization, business characteristics, and market exposure.
- Future research may incorporate additional **bank-specific factors** beyond the RBBR-based financial indicators examined in this study, such as earnings growth, dividend policy, asset growth, funding structure, or other indicators that may influence investor valuation of banking stocks.
- Future studies may employ alternative econometric approaches that allow for **dynamic relationships, structural changes, or interaction effects**. This may provide further insight into whether the influence of financial and macroeconomic variables changes over time or depends on prevailing market conditions.
- Future research may further investigate the relatively strong role of **Market Return** identified in this study by examining whether market conditions act not only as a direct determinant of banking Stock Return but also as a factor that **strengthens or weakens the relationship between bank fundamentals and Stock Return**
- Future research may further refine the timing of stock return measurement by considering a period following the publication of financial reports. This approach may provide a more representative assessment of how the market responds to publicly available financial information and may offer additional insight into the relationship between bank financial performance and subsequent stock returns

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# APPENDIX

## Appendix 1 Research Variable

| Bank | Country | CAR (%) | NPL (%) | ROE (%) | CIR (%) | LODR (%) | BRRATE (%) | FSR (%) | MSZgrowth (%) | FOR (times) | Inflation (%) | Market Share (%) | ROA (%) |
|------|---------|---------|---------|---------|---------|----------|------------|---------|---------------|-------------|---------------|------------------|---------|
| BBRI | 2015Q1  | 20.00   | 2.15    | 39.13   | 4.00    | 80.87    | 7.50       | 5.10    | 1.25          | 0.82        | 5.54          | 5.51             | 13.95   |
| BBRI | 2015Q2  | 20.41   | 2.33    | 39.22   | 69.26   | 87.87    | 7.50       | 1.00    | 2.65          | 3.16        | 7.07          | -11.02           | -22.01  |
| BBRI | 2015Q3  | 20.50   | 2.24    | 39.60   | 69.69   | 87.89    | 7.50       | 3.00    | 2.69          | 3.50        | 7.07          | -13.09           | -12.44  |
| BBRI | 2015Q4  | 20.49   | 2.40    | 39.40   | 67.00   | 86.80    | 7.50       | -5.88   | 0.80          | 4.14        | 4.83          | 8.74             | 22.85   |
| BBRI | 2016Q1  | 19.49   | 2.33    | 37.97   | 67.00   | 86.80    | 7.50       | 3.29    | 0.29          | 5.20        | 5.54          | 4.94             | 9.00    |
| BBRI | 2016Q2  | 22.10   | 2.31    | 35.24   | 72.40   | 90.03    | 6.47       | -0.72   | 3.85          | 2.09        | 3.46          | 3.53             | -5.47   |
| BBRI | 2016Q3  | 21.80   | 2.33    | 35.07   | 72.40   | 90.03    | 6.47       | -1.16   | 0.90          | 5.20        | 5.54          | 4.94             | 13.00   |
| BBRI | 2016Q4  | 22.01   | 2.03    | 33.08   | 68.93   | 87.77    | 4.75       | 3.37    | 5.64          | 0.60        | 3.30          | -1.27            | -4.33   |
| BBRI | 2017Q1  | 20.00   | 2.10    | 39.13   | 4.00    | 80.87    | 7.50       | 5.10    | 1.25          | 0.82        | 5.54          | 5.51             | 13.95   |
| BBRI | 2017Q2  | 21.62   | 2.23    | 39.13   | 72.53   | 89.70    | 4.75       | -0.02   | 4.14          | 1.00        | 6.20          | 4.20             | 17.54   |
| BBRI | 2017Q3  | 22.11   | 2.23    | 39.27   | 72.53   | 89.70    | 4.75       | 0.55    | 5.72          | 4.91        | 6.20          | 4.20             | 17.54   |
| BBRI | 2017Q4  | 22.06   | 2.10    | 39.03   | 69.14   | 88.13    | 4.75       | 0.42    | 5.14          | 0.63        | 5.50          | 5.71             | 19.13   |
| BBRI | 2018Q1  | 20.74   | 2.29    | 38.73   | 70.43   | 92.20    | 4.53       | 1.54    | -0.43         | 3.23        | 3.30          | -2.62            | -1.10   |
| BBRI | 2018Q2  | 20.13   | 2.33    | 39.33   | 70.50   | 92.87    | 4.75       | 0.13    | 5.56          | 0.90        | 3.35          | -0.30            | -21.81  |
| BBRI | 2018Q3  | 21.05   | 2.46    | 39.10   | 69.13   | 92.13    | 5.25       | 3.64    | 5.31          | 4.73        | 3.09          | 3.06             | 10.90   |
| BBRI | 2018Q4  | 21.81   | 2.18    | 39.45   | 69.48   | 90.57    | 5.03       | -3.00   | 5.73          | 5.00        | 5.12          | 4.65             | 16.31   |
| BBRI | 2019Q1  | 21.49   | 2.33    | 38.81   | 70.71   | 91.43    | 4.75       | -1.69   | -0.23         | 3.23        | 3.30          | 4.43             | 12.57   |
| BBRI | 2019Q2  | 20.72   | 2.33    | 39.03   | 71.12   | 93.90    | 4.75       | -0.73   | 5.81          | 0.57        | 5.14          | -3.70            | 8.31    |
| BBRI | 2019Q3  | 21.45   | 2.04    | 39.10   | 70.50   | 93.84    | 5.25       | 0.23    | 5.82          | 0.43        | 5.00          | -0.99            | -5.40   |
| BBRI | 2019Q4  | 22.15   | 2.03    | 39.43   | 70.10   | 94.69    | 4.75       | 0.93    | 5.04          | 0.60        | 5.00          | 2.11             | 6.99    |
| BBRI | 2020Q1  | 18.23   | 2.81    | 38.20   | 72.37   | 96.30    | 4.75       | 1.74    | 4.95          | 4.30        | 3.87          | -27.05           | -31.38  |
| BBRI | 2020Q2  | 19.83   | 2.06    | 32.60   | 72.00   | 87.70    | 4.42       | -15.02  | 0.73          | 4.80        | 4.07          | 0.07             | -0.44   |
| BBRI | 2020Q3  | 20.38   | 3.02    | 31.43   | 80.64   | 83.58    | 4.75       | 4.31    | 5.53          | 2.61        | 1.43          | -0.72            | -0.44   |
| BBRI | 2020Q4  | 20.61   | 2.94    | 31.07   | 81.73   | 83.66    | 3.83       | 4.49    | 5.24          | 0.73        | 1.75          | -27.77           | -17.15  |
| BBRI | 2021Q1  | 19.40   | 3.12    | 34.57   | 78.83   | 86.77    | 3.83       | 3.31    | -0.07         | 0.80        | 1.43          | 0.11             | 5.13    |
| BBRI | 2021Q2  | 19.63   | 3.27    | 34.57   | 78.83   | 86.77    | 3.83       | -0.33   | 1.40          | 0.00        | 1.40          | 0.00             | -10.46  |
| BBRI | 2021Q3  | 24.37   | 3.20    | 35.30   | 76.73   | 83.05    | 3.5        | -1.52   | 2.40          | 3.13        | 1.57          | 3.04             | 0.16    |
| BBRI | 2021Q4  | 25.39   | 3.08    | 36.87   | 74.30   | 83.67    | 3.5        | -0.30   | 2.40          | 3.13        | 1.76          | 4.68             | 6.75    |
| BBRI | 2022Q1  | 19.40   | 3.12    | 34.57   | 78.83   | 86.77    | 3.83       | 3.31    | -0.07         | 0.80        | 1.43          | 0.11             | 5.13    |
| BBRI | 2022Q2  | 22.97   | 3.12    | 34.57   | 78.83   | 86.77    | 3.83       | 0.55    | -0.76         | 3.30        | 3.20          | 7.44             | 13.38   |
| BBRI | 2022Q3  | 24.00   | 3.14    | 32.00   | 62.50   | 88.90    | 3.83       | 2.35    | 0.91          | 4.10        | 5.19          | 1.87             | 8.19    |
| BBRI | 2022Q4  | 21.39   | 2.82    | 30.00   | 67.00   | 79.73    | 4.17       | 1.00    | 4.57          | 3.73        | 5.53          | -3.70            | 10.20   |
| BBRI | 2023Q1  | 23.01   | 3.03    | 38.07   | 69.70   | 85.26    | 5.75       | -3.04   | -0.75         | 5.80        | 5.24          | -0.66            | -4.25   |
| BBRI | 2023Q2  | 24.45   | 3.10    | 38.00   | 68.21   | 87.83    | 5.75       | 0.12    | 5.06          | 5.27        | 5.00          | 3.11             | 14.69   |
| BBRI | 2023Q3  | 25.23   | 3.23    | 38.00   | 68.77   | 88.44    | 5.75       | 3.25    | 0.62          | 3.60        | 2.88          | 4.17             | -3.69   |
| BBRI | 2023Q4  | 25.23   | 3.12    | 38.20   | 68.77   | 83.78    | 4.75       | 0.31    | 0.56          | 4.57        | 4.80          | 8.90             | 9.57    |
| BBRI | 2024Q1  | 21.87   | 3.27    | 38.62   | 67.77   | 83.78    | 4.75       | 2.81    | 0.74          | 4.00        | 5.70          | 0.22             | 5.08    |
| BBRI | 2024Q2  | 23.33   | 3.33    | 38.62   | 67.77   | 83.78    | 4.75       | 2.38    | 0.17          | 3.70        | 6.00          | 3.23             | 9.87    |
| BBRI | 2024Q3  | 24.96   | 3.04    | 38.80   | 67.83   | 89.60    | 6.17       | -7.62   | 0.36          | 8.90        | 0.03          | 6.57             | 7.93    |
| BBRI | 2024Q4  | 24.41   | 3.03    | 38.62   | 67.83   | 89.60    | 6.17       | -8.09   | 0.36          | 8.90        | 0.03          | 6.57             | 7.93    |
| BBRI | 2025Q1  | 21.55   | 3.14    | 38.00   | 73.66   | 86.50    | 5.75       | 2.53    | 2.45          | 0.80        | 5.07          | -0.04            | -0.74   |
| BBRI | 2025Q2  | 22.60   | 3.20    | 38.00   | 73.66   | 86.50    | 5.75       | 2.53    | 2.45          | 0.80        | 5.07          | -0.04            | -0.74   |
| BBRI | 2025Q3  | 23.01   | 3.20    | 36.48   | 71.80   | 87.00    | 4.75       | 2.84    | 1.86          | -2.51       | 5.44          | 16.36            | 4.28    |
| BBRI | 2025Q4  | 23.01   | 3.20    | 36.48   | 71.80   | 87.00    | 4.75       | 2.84    | 1.86          | -2.51       | 5.44          | 16.36            | 4.28    |
| BBRI | 2026Q1  | 20.71   | 3.31    | 35.47   | 71.30   | 87.60    | 4.75       | 1.67    | 2.20          | -5.32       | 5.00          | -18.40           | -0.02   |
| BBRI | 2026Q2  | 21.66   | 3.31    | 35.47   | 71.30   | 87.60    | 4.75       | 1.67    | 2.20          | -5.32       | 5.00          | -18.40           | -0.02   |
| BBRI | 2026Q3  | 17.63   | 2.60    | 33.60   | 67.77   | 82.97    | 7.50       | 1.00    | 2.65          | 3.16        | 7.07          | -11.02           | -10.43  |
| BBRI | 2026Q4  | 18.60   | 2.39    | 33.61   | 69.67   | 87.05    | 7.50       | -5.88   | 0.80          | 4.14        | 4.83          | 8.74             | 22.85   |
| BBRI | 2027Q1  | 19.49   | 2.33    | 37.97   | 67.00   | 86.80    | 7.50       | 3.29    | 0.29          | 5.20        | 5.54          | 4.94             | 9.00    |
| BBRI | 2027Q2  | 21.76   | 2.14    | 33.33   | 78.54   | 87.10    | 6.67       | -0.12   | 0.83          | 2.00        | 5.46          | 3.53             | -7.53   |
| BBRI | 2027Q3  | 22.23   | 2.09    | 32.78   | 77.13   | 86.90    | 5.56       | -1.16   | 0.00          | 3.20        | 3.02          | 6.04             | 17.60   |
| BBRI | 2027Q4  | 21.36   | 2.06    | 31.12   | 69.00   | 85.86    | 5.75       | 0.17    | 0.66          | 4.10        | 5.30          | 1.27             | 3.46    |
| BBRI | 2028Q1  | 21.11   | 3.02    | 34.00   | 70.90   | 89.23    | 4.75       | -0.66   | 0.36          | 8.90        | 0.03          | 6.57             | 7.93    |
| BBRI | 2028Q2  | 21.55   | 2.90    | 34.43   | 73.13   | 89.63    | 4.75       | 0.18    | 1.80          | 0.20        | 5.46          | 3.70             | 8.40    |
| BBRI | 2028Q3  | 21.09   | 3.74    | 34.60   | 71.83   | 89.05    | 4.75       | 0.10    | 0.55          | 5.13        | 5.81          | 3.22             | 5.49    |
| BBRI | 2028Q4  | 21.68   | 3.45    | 34.43   | 73.13   | 89.63    | 4.75       | 0.18    | 1.80          | 0.20        | 5.46          | 3.70             | 8.40    |
| BBRI | 2029Q1  | 20.94   | 3.25    | 36.77   | 69.03   | 86.07    | 4.25       | 1.54    | -0.43         | 3.23        | 3.30          | -2.62            | -1.10   |
| BBRI | 2029Q2  | 20.64   | 3.13    | 36.70   | 67.00   | 84.17    | 4.75       | 0.13    | 0.56          | 4.57        | 4.80          | 8.90             | 9.57    |
| BBRI | 2029Q3  | 21.38   | 3.04    | 36.50   | 67.62   | 86.40    | 5.25       | 3.64    | 3.31          | -0.17       | 3.09          | 3.06             | -10.81  |
| BBRI | 2029Q4  | 20.69   | 2.90    | 36.53   | 67.66   | 86.73    | 5.00       | 3.00    | 3.30          | 3.30        | 3.30          | 3.30             | 3.30    |
| BBRI | 2030Q1  | 22.47   | 2.73    | 37.50   | 63.03   | 93.82    | 4.75       | -1.64   | -0.22         | 3.23        | 3.30          | 4.43             | 1.00    |
| BBRI | 2030Q2  | 21.03   | 2.41    | 36.44   | 65.00   | 87.49    | 4.75       | 0.18    | 1.80          | 0.20        | 5.46          | 3.70             | 8.40    |
| BBRI | 2030Q3  | 22.30   | 3.03    | 34.57   | 67.48   | 90.53    | 3.5        | 0.33    | 3.82          | 0.41        | 5.00          | -0.99            | -5.40   |
| BBRI | 2030Q4  | 21.49   | 2.98    | 34.00   | 67.00   | 87.00    | 4.75       | 0.00    | 3.00          | 3.00        | 3.00          | 3.00             | 3.00    |
| BBRI | 2031Q1  | 17.65   | 2.40    | 31.13   | 63.03   | 98.91    | 4.75       | 1.74    | 4.95          | 4.30        | 3.87          | -27.05           | -31.38  |
| BBRI | 2031Q2  | 19.39   | 2.47    | 31.27   | 63.03   | 98.91    | 4.75       | 1.74    | 4.95          | 4.30        | 3.87          | -27.05           | -31.38  |
| BBRI | 2031Q3  | 19.83   | 3.50    | 31.50   | 63.03   | 93.03    | 4.75       | 4.31    | 5.45          | 2.61        | 1.83          | -0.72            | -0.03   |
| BBRI | 2031Q4  | 19.00   | 3.50    | 31.50   | 63.03   | 93.03    | 4.75       | 4.31    | 5.45          | 2.61        | 1.83          | -0.72            | -0.03   |
| BBRI | 2032Q1  | 18.51   | 3.50    | 31.50   | 63.03   | 93.03    | 4.75       | 4.31    | 5.45          | 2.61        | 1.83          | -0.72            | -0.03   |
| BBRI | 2032Q2  | 18.51   | 3.50    | 31.50   | 63.03   | 93.03    | 4.75       | 4.31    | 5.45          | 2.61        | 1.83          | -0.72            | -0.03   |
| BBRI | 2032Q3  | 18.51   | 3.50    | 31.50   | 63.03   | 93.03    | 4.75       | 4.31    | 5.45          | 2.61        | 1.83          | -0.72            | -0.03   |
| BBRI | 2032Q4  | 18.51   | 3.50    | 31.50   | 63.03   | 93.03    | 4.75       | 4.31    | 5.45          | 2.61        | 1.83          | -0.72            | -0.03   |
| BBRI | 2033Q1  | 18.51   | 3.50    | 31.50   | 63.03   | 93.03    | 4.75       | 4.31    | 5.45          | 2.61        | 1.83          | -0.72            | -0.03   |
| BBRI | 2033Q2  | 18.51   | 3.50    | 31.50   | 63.03   | 93.03    | 4.75       | 4.31    | 5.45          | 2.61        | 1.83          | -0.72            | -0.03   |
| BBRI | 2033Q3  | 18.51   | 3.50    | 31.50   | 63.03   | 93.03    | 4.75       | 4.31    | 5.45          | 2.61        | 1.83          | -0.72            | -0.03   |
| BBRI | 2033Q4  | 18.51   | 3.50    | 31.50   | 63.03   | 93.03    | 4.75       | 4.31    | 5.45          | 2.61        | 1.83          | -0.72            | -0.03   |
| BBRI | 2034Q1  | 18.51   | 3.50    | 31.50   | 63.03   | 93.03    | 4.75       | 4.31    | 5.45          | 2.61        | 1.83          | -0.72            | -0.03   |
| BBRI | 2034Q2  | 18.51   | 3.50    | 31.50   | 63.03   | 93.03    | 4.75       | 4.31    | 5.45          | 2.61        | 1.83          | -0.72            | -0.03   |
| BBRI | 2034Q3  | 18.51   | 3.50    | 31.50   | 63.03   | 93.03    | 4.75       | 4.31    | 5.45          | 2.61        | 1.83          | -0.72            | -0.03   |
| BBRI | 2034Q4  | 18.51   | 3.50    | 31.50   | 63.03   | 93.03    | 4.75       | 4.31    | 5.45          | 2.61        | 1.83          | -0.72            | -0.03   |
| BBRI | 2035Q1  | 18.51   | 3.50    | 31.50   | 63.03   | 93.03    | 4.75       | 4.31    | 5.45          | 2.61        | 1.83          | -0.72            | -0.03   |
| BBRI | 2035Q2  | 18.51   | 3.50    | 31.50   | 63.03   | 93.03    | 4.75       | 4.31    | 5.45          | 2.61        | 1.83          | -0.72            | -0.03   |
| BBRI | 2035Q3  | 18.51   | 3.50    | 31.50   | 63.03   | 93.03    | 4.75       | 4.31    | 5.45          | 2.61        | 1.83          | -0.72            | -0.03   |
| BBRI | 2035Q4  | 18.51   | 3.50    | 31.50   | 63.03   | 93.03    | 4.75       | 4.31    | 5.45          | 2.61        | 1.83          | -0.72            | -0.03   |
| BBRI | 2036Q1  | 18.51   | 3.50    | 31.50   | 63.03   | 93.03    | 4.75       | 4.31    | 5.45          | 2.61        | 1.83          | -0.72            | -0.03   |
| BBRI | 2036Q2  | 18.51   | 3.50    | 31.50   | 63.03   | 93.03    | 4.75       | 4.31    | 5.45          | 2.61        | 1.83          | -0.72            | -0.03   |
| BBRI | 2036Q3  | 18.51   | 3.50    | 31.50   | 63.03   | 93.03    | 4.75       | 4.31    | 5.45          | 2.61        | 1.83          | -0.72            | -0.03   |
| BBRI | 2036Q4  | 18.51   | 3.50    | 31.50   | 63.03   | 93.03    | 4.75       | 4.31    | 5.45          | 2.61        | 1.83          | -0.72            | -0.03   |
| BBRI | 2037Q1  | 18.51   | 3.50    | 31.50   | 63.03   | 93.03    | 4.75       | 4.31    | 5.45          | 2.61        | 1.83          | -0.72            | -0.03   |
| BBRI | 2037Q2  | 18.51   | 3.50    | 31.50   | 63.03   | 93.03    | 4.75       | 4.31    | 5.45          | 2.61        |               |                  |         |

## Appendix 2 : Descriptive Statistics

EViews - [Table: DESCRIPTIVE\_STATISTICS Workfile: MASTERDATA\_THESIS:Masterdata]

Command

View Proc Object Print Name Edit +/- CellFmt Grid +/- Title Comments +/-

|    | A                     | B           | C        | D         | E         | F          | G            | H         | I          | J           | K         | L         | M        | N | O |
|----|-----------------------|-------------|----------|-----------|-----------|------------|--------------|-----------|------------|-------------|-----------|-----------|----------|---|---|
| 1  | Date: 08/24/26        | Time: 23:43 |          |           |           |            |              |           |            |             |           |           |          |   |   |
| 2  | Sample: 2015Q1 2026Q1 |             |          |           |           |            |              |           |            |             |           |           |          |   |   |
| 3  |                       |             |          |           |           |            |              |           |            |             |           |           |          |   |   |
| 4  |                       | BIRATE      | CAR      | CIR       | EXR       | FER_GRO... | INFLATION... | LDR       | M2GROWT... | MARKET_R... | NPL       | SR        | ROE      |   |   |
| 5  | Mean                  | 5.240741    | 21.44006 | 66.26672  | 0.799861  | 0.709689   | 3.256444     | 84.57594  | 2.062013   | 1.027257    | 2.379778  | 2.121371  | 18.30467 |   |   |
| 6  | Median                | 5.166667    | 20.98500 | 68.22500  | 0.415061  | 0.597384   | 3.086667     | 86.82500  | 1.799481   | 2.114409    | 2.280000  | 3.217033  | 17.86500 |   |   |
| 7  | Maximum               | 7.583333    | 29.94000 | 93.31000  | 17.73973  | 8.885748   | 7.090000     | 98.04000  | 7.800827   | 22.77250    | 4.250000  | 39.09910  | 29.89000 |   |   |
| 8  | Minimum               | 3.500000    | 16.07000 | 39.11000  | -12.61685 | -6.358422  | 0.566667     | 60.54000  | -2.752562  | -27.94823   | 0.660000  | -51.33758 | 2.860000 |   |   |
| 9  | Std. Dev.             | 1.167029    | 2.972676 | 9.981354  | 4.604549  | 4.113518   | 1.459347     | 8.022641  | 2.126203   | 8.281743    | 0.797444  | 13.61529  | 4.558070 |   |   |
| 10 | Skewness              | 0.261936    | 0.917570 | -0.722980 | 0.515917  | 0.116405   | 0.857562     | -1.070022 | 0.551344   | -0.871794   | -0.005782 | -0.430485 | 0.020614 |   |   |
| 11 | Kurtosis              | 2.334581    | 3.595655 | 3.824936  | 6.696422  | 2.009699   | 3.638300     | 3.841682  | 3.334113   | 5.877327    | 2.376893  | 4.145204  | 3.458249 |   |   |
| 12 | Jarque-Bera           | 5.379177    | 27.91908 | 20.78488  | 110.4616  | 7.761727   | 25.11809     | 39.66163  | 9.956656   | 84.89332    | 2.912974  | 15.39571  | 1.587692 |   |   |
| 13 | Probability           | 0.067909    | 0.000001 | 0.000031  | 0.000000  | 0.020633   | 0.000004     | 0.006886  | 0.000000   | 0.233054    | 0.000454  | 0.452103  |          |   |   |
| 14 | Sum                   | 943.3333    | 3859.210 | 11928.01  | 143.9750  | 127.7440   | 586.1600     | 15223.67  | 371.1624   | 184.9063    | 428.3600  | 381.8467  | 3294.840 |   |   |
| 15 | Sum Sq. Dev.          | 243.7901    | 1581.787 | 17833.31  | 3795.135  | 3028.864   | 380.6927     | 11520.93  | 809.2122   | 12277.12    | 113.8290  | 33182.32  | 3718.904 |   |   |
| 16 | Observations          | 180         | 180      | 180       | 180       | 180        | 180          | 180       | 180        | 180         | 180       | 180       | 180      |   |   |
| 17 |                       |             |          |           |           |            |              |           |            |             |           |           |          |   |   |
| 18 |                       |             |          |           |           |            |              |           |            |             |           |           |          |   |   |
| 19 |                       |             |          |           |           |            |              |           |            |             |           |           |          |   |   |
| 20 |                       |             |          |           |           |            |              |           |            |             |           |           |          |   |   |
| 21 |                       |             |          |           |           |            |              |           |            |             |           |           |          |   |   |
| 22 |                       |             |          |           |           |            |              |           |            |             |           |           |          |   |   |
| 23 |                       |             |          |           |           |            |              |           |            |             |           |           |          |   |   |
| 24 |                       |             |          |           |           |            |              |           |            |             |           |           |          |   |   |
| 25 |                       |             |          |           |           |            |              |           |            |             |           |           |          |   |   |
| 26 |                       |             |          |           |           |            |              |           |            |             |           |           |          |   |   |
| 27 |                       |             |          |           |           |            |              |           |            |             |           |           |          |   |   |
| 28 |                       |             |          |           |           |            |              |           |            |             |           |           |          |   |   |
| 29 |                       |             |          |           |           |            |              |           |            |             |           |           |          |   |   |
| 30 |                       |             |          |           |           |            |              |           |            |             |           |           |          |   |   |

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## Appendix 3 : Correlation Coefficient between Stock Return and Research Variables

Views - [Table: CORRELATION\_COEFFICIENT Workfile: MASTERDATA\_THESIS:Masterdata]

File Edit Object View Proc Quick Options Add-ins Window Help

Command

Command

Capture

| View | Proc | Object | Print | Name | Edit +/- | CellFmt | Grid +/- | Title | Comments +/- |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |
|------|------|--------|-------|------|----------|---------|----------|-------|--------------|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|
|      |      | A      |       | B    |          | C       |          | D     |              | E |  | F |  | G |  | H |  | I |  | J |  | K |  | L |  | M |  | N |  | O |
| 1    |      |        |       |      |          |         |          |       |              |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |
| 2    |      |        |       |      |          |         |          |       |              |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |
| 3    |      |        |       |      |          |         |          |       |              |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |
| 4    |      |        |       |      |          |         |          |       |              |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |
| 5    |      |        |       |      |          |         |          |       |              |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |
| 6    |      |        |       |      |          |         |          |       |              |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |
| 7    |      |        |       |      |          |         |          |       |              |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |
| 8    |      |        |       |      |          |         |          |       |              |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |
| 9    |      |        |       |      |          |         |          |       |              |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |
| 10   |      |        |       |      |          |         |          |       |              |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |
| 11   |      |        |       |      |          |         |          |       |              |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |
| 12   |      |        |       |      |          |         |          |       |              |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |
| 13   |      |        |       |      |          |         |          |       |              |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |
| 14   |      |        |       |      |          |         |          |       |              |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |
| 15   |      |        |       |      |          |         |          |       |              |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |
| 16   |      |        |       |      |          |         |          |       |              |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |
| 17   |      |        |       |      |          |         |          |       |              |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |
| 18   |      |        |       |      |          |         |          |       |              |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |
| 19   |      |        |       |      |          |         |          |       |              |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |
| 20   |      |        |       |      |          |         |          |       |              |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |
| 21   |      |        |       |      |          |         |          |       |              |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |
| 22   |      |        |       |      |          |         |          |       |              |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |
| 23   |      |        |       |      |          |         |          |       |              |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |
| 24   |      |        |       |      |          |         |          |       |              |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |
| 25   |      |        |       |      |          |         |          |       |              |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |
| 26   |      |        |       |      |          |         |          |       |              |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |
| 27   |      |        |       |      |          |         |          |       |              |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |
| 28   |      |        |       |      |          |         |          |       |              |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |
| 29   |      |        |       |      |          |         |          |       |              |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |
| 30   |      |        |       |      |          |         |          |       |              |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |

Path = c:\users\pulitan\onedrive\????? DB = none WF = masterdata\_thesis

## Appendix 4: CEM

| Command                                                           |             |                    |             |        |
|-------------------------------------------------------------------|-------------|--------------------|-------------|--------|
| Command                                                           |             |                    |             |        |
| View Proc Object Print Name Freeze Estimate Forecast Stats Resids |             |                    |             |        |
| Dependent Variable: SR                                            |             |                    |             |        |
| Method: Panel Least Squares                                       |             |                    |             |        |
| Date: 08/25/26 Time: 13:22                                        |             |                    |             |        |
| Sample: 2015Q1 2026Q1                                             |             |                    |             |        |
| Periods included: 45                                              |             |                    |             |        |
| Cross-sections included: 4                                        |             |                    |             |        |
| Total panel (balanced) observations: 180                          |             |                    |             |        |
| Variable                                                          | Coefficient | Std. Error         | t-Statistic | Prob.  |
| C                                                                 | 16.55568    | 19.62539           | 0.843584    | 0.4001 |
| CAR                                                               | -0.239206   | 0.392995           | -0.608676   | 0.5436 |
| NPL                                                               | -0.775837   | 1.234963           | -0.628226   | 0.5307 |
| ROE                                                               | 0.069717    | 0.283400           | 0.246003    | 0.8060 |
| CIR                                                               | 0.025732    | 0.155278           | 0.165715    | 0.8686 |
| LDR                                                               | -0.093557   | 0.124293           | -0.752712   | 0.4527 |
| BIRATE                                                            | -1.730210   | 0.843349           | -2.051595   | 0.0418 |
| INFLATION                                                         | 1.712516    | 0.656219           | 2.609669    | 0.0099 |
| EXR                                                               | -0.431212   | 0.243089           | -1.773886   | 0.0779 |
| M2GROWTH                                                          | 0.062018    | 0.364108           | 0.170329    | 0.8650 |
| FER_GROWTH                                                        | 0.102773    | 0.215796           | 0.476250    | 0.6345 |
| MARKET_RETURN                                                     | 1.077551    | 0.115834           | 9.302509    | 0.0000 |
| Root MSE                                                          | 8.841184    | R-squared          | 0.575980    |        |
| Mean dependent var                                                | 2.121371    | Adjusted R-squared | 0.548216    |        |
| S.D. dependent var                                                | 13.61529    | S.E. of regression | 9.151495    |        |
| Akaike info criterion                                             | 7.330052    | Sum squared resid  | 14069.98    |        |
| Schwarz criterion                                                 | 7.542916    | Log likelihood     | -647.7047   |        |
| Hannan-Quinn criter.                                              | 7.416359    | F-statistic        | 20.74613    |        |
| Durbin-Watson stat                                                | 2.273195    | Prob(F-statistic)  | 0.000000    |        |

## Appendix 5: FEM

Equation: FEM  
Test cross-section fixed effects

| Effects Test             | Statistic | d.f.    | Prob.  |
|--------------------------|-----------|---------|--------|
| Cross-section F          | 0.187946  | (3,165) | 0.9045 |
| Cross-section Chi-square | 0.614047  | 3       | 0.8932 |

Cross-section fixed effects test equation:  
Dependent Variable: SR  
Method: Panel Least Squares  
Date: 08/25/26 Time: 13:49  
Sample: 2015Q1 2026Q1  
Periods included: 45  
Cross-sections included: 4  
Total panel (balanced) observations: 180

| Variable              | Coefficient | Std. Error         | t-Statistic | Prob.  |
|-----------------------|-------------|--------------------|-------------|--------|
| C                     | 16.55568    | 19.62539           | 0.843584    | 0.4001 |
| CAR                   | -0.239206   | 0.392995           | -0.608676   | 0.5436 |
| NPL                   | -0.775837   | 1.234963           | -0.628226   | 0.5307 |
| ROE                   | 0.069717    | 0.283400           | 0.246003    | 0.8060 |
| CIR                   | 0.025732    | 0.155278           | 0.165715    | 0.8686 |
| LDR                   | -0.093557   | 0.124293           | -0.752712   | 0.4527 |
| BIRATE                | -1.730210   | 0.843349           | -2.051595   | 0.0418 |
| INFLATION             | 1.712516    | 0.656219           | 2.609669    | 0.0099 |
| EXR                   | -0.431212   | 0.243089           | -1.773886   | 0.0779 |
| M2GROWTH              | 0.062018    | 0.364108           | 0.170329    | 0.8650 |
| FER_GROWTH            | 0.102773    | 0.215796           | 0.476250    | 0.6345 |
| MARKET_RETURN         | 1.077551    | 0.115834           | 9.302509    | 0.0000 |
| Root MSE              | 8.841184    | R-squared          | 0.575980    |        |
| Mean dependent var    | 2.121371    | Adjusted R-squared | 0.548216    |        |
| S.D. dependent var    | 13.61529    | S.E. of regression | 9.151495    |        |
| Akaike info criterion | 7.330052    | Sum squared resid  | 14069.98    |        |
| Schwarz criterion     | 7.542916    | Log likelihood     | -647.7047   |        |
| Hannan-Quinn criter.  | 7.416359    | F-statistic        | 20.74613    |        |
| Durbin-Watson stat    | 2.273195    | Prob(F-statistic)  | 0.000000    |        |

## Appendix 6: LM TEST

| Lagrange Multiplier Tests for Random Effects                                              |                       |                      |                       |
|-------------------------------------------------------------------------------------------|-----------------------|----------------------|-----------------------|
| Null hypotheses: No effects                                                               |                       |                      |                       |
| Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided (all others) alternatives |                       |                      |                       |
|                                                                                           | Test Hypothesis       |                      |                       |
|                                                                                           | Cross-section         | Time                 | Both                  |
| Breusch-Pagan                                                                             | 1.947013<br>(0.1629)  | 45.37701<br>(0.0000) | 47.32403<br>(0.0000)  |
| Honda                                                                                     | -1.395354<br>(0.9185) | 6.736246<br>(0.0000) | 3.776581<br>(0.0001)  |
| King-Wu                                                                                   | -1.395354<br>(0.9185) | 6.736246<br>(0.0000) | 0.351796<br>(0.3625)  |
| Standardized Honda                                                                        | -0.987307<br>(0.8383) | 7.653362<br>(0.0000) | 0.033856<br>(0.4865)  |
| Standardized King-Wu                                                                      | -0.987307<br>(0.8383) | 7.653362<br>(0.0000) | -2.569584<br>(0.9949) |
| Gourieroux, et al.                                                                        | --                    | --                   | 45.37701<br>(0.0000)  |

## Appendix 7 : Multicollinearity Test

| View Proc Object Print Name Edit v/r CellFmt Grid v/r Title Comments v/r |          |           |  |  |  |  |  |  |  |  |
|--------------------------------------------------------------------------|----------|-----------|--|--|--|--|--|--|--|--|
| Variable                                                                 | VIF      | Tolerance |  |  |  |  |  |  |  |  |
| 1 CAR                                                                    | 2.917007 | 0.342817  |  |  |  |  |  |  |  |  |
| 2 NPL                                                                    | 2.072894 | 0.482417  |  |  |  |  |  |  |  |  |
| 3 ROE                                                                    | 3.566392 | 0.280395  |  |  |  |  |  |  |  |  |
| 4 CIR                                                                    | 5.134137 | 0.194775  |  |  |  |  |  |  |  |  |
| 5 LDR                                                                    | 2.125192 | 0.470546  |  |  |  |  |  |  |  |  |
| 6 BI Rate                                                                | 2.070363 | 0.483007  |  |  |  |  |  |  |  |  |
| 7 Inflation                                                              | 1.957441 | 0.510871  |  |  |  |  |  |  |  |  |
| 8 Exchange...                                                            | 2.677771 | 0.373445  |  |  |  |  |  |  |  |  |
| 9 M2 Growth                                                              | 1.280970 | 0.780658  |  |  |  |  |  |  |  |  |
| 10 Foreign R...                                                          | 1.684164 | 0.593766  |  |  |  |  |  |  |  |  |
| 11 Market R...                                                           | 1.969927 | 0.508407  |  |  |  |  |  |  |  |  |
| 12                                                                       |          |           |  |  |  |  |  |  |  |  |
| 13                                                                       |          |           |  |  |  |  |  |  |  |  |
| 14                                                                       |          |           |  |  |  |  |  |  |  |  |
| 15                                                                       |          |           |  |  |  |  |  |  |  |  |
| 16                                                                       |          |           |  |  |  |  |  |  |  |  |
| 17                                                                       |          |           |  |  |  |  |  |  |  |  |
| 18                                                                       |          |           |  |  |  |  |  |  |  |  |
| 19                                                                       |          |           |  |  |  |  |  |  |  |  |
| 20                                                                       |          |           |  |  |  |  |  |  |  |  |
| 21                                                                       |          |           |  |  |  |  |  |  |  |  |
| 22                                                                       |          |           |  |  |  |  |  |  |  |  |
| 23                                                                       |          |           |  |  |  |  |  |  |  |  |
| 24                                                                       |          |           |  |  |  |  |  |  |  |  |
| 25                                                                       |          |           |  |  |  |  |  |  |  |  |
| 26                                                                       |          |           |  |  |  |  |  |  |  |  |
| 27                                                                       |          |           |  |  |  |  |  |  |  |  |
| 28                                                                       |          |           |  |  |  |  |  |  |  |  |
| 29                                                                       |          |           |  |  |  |  |  |  |  |  |
| 30                                                                       |          |           |  |  |  |  |  |  |  |  |

## Appendix 8 Heteroskedasticity Test

EViews - [Equation: UNTITLED Workfile: MASTERDATA\_THESIS:Masterdata]

Command

```
series ABS_RESID = @abs(RESID_HET)
series ABS_RESID = @abs(RESID_HET)
```

View Proc Object Print Name Freeze Estimate Forecast Stats Resids

Dependent Variable: RESID\_SQ  
Method: Panel Least Squares  
Date: 08/25/26 Time: 16:35  
Sample: 2015Q1 2026Q1  
Periods Included: 45  
Cross-sections Included: 4  
Total panel (balanced) observations: 180

| Variable      | Coefficient | Std. Error | t-Statistic | Prob.  |
|---------------|-------------|------------|-------------|--------|
| C             | -177.5220   | 240.0325   | -0.739575   | 0.4606 |
| CAR           | 2.195100    | 4.806604   | 0.456684    | 0.6485 |
| NPL           | -17.16719   | 15.10448   | -1.136563   | 0.2573 |
| ROE           | -0.103800   | 3.466177   | -0.029946   | 0.9761 |
| CIR           | 1.436882    | 1.899159   | 0.756588    | 0.4504 |
| LDR           | 1.801289    | 1.520194   | 1.184908    | 0.2377 |
| BIRATE        | 5.080531    | 10.31475   | 0.492550    | 0.6230 |
| INFLATION     | -7.489540   | 8.026030   | -0.933156   | 0.3521 |
| EXR           | 1.108775    | 2.973150   | 0.372929    | 0.7097 |
| M2GROWTH      | 1.601030    | 4.453300   | 0.359515    | 0.7197 |
| FER_GROWTH    | -8.555827   | 2.639344   | -3.241649   | 0.0014 |
| MARKET_RETURN | 3.371738    | 1.416738   | 2.379931    | 0.0184 |

Root MSE 108.1339 R-squared 0.114240  
Mean dependent var 78.16653 Adjusted R-squared 0.056244  
S.D. dependent var 115.2162 S.E. of regression 111.9293  
Akaike info criterion 12.33785 Sum squared resid 2104731  
Schwarz criterion 12.55082 Log likelihood -1098.416  
Hannan-Quinn criter. 12.42426 F-statistic 1.969779  
Durbin-Watson stat 2.099897 Prob(F-statistic) 0.034243

## Appendix 9 Autocorrelation Test

EViews - [Equation: UNTITLED Workfile: MASTERDATA\_THESIS:Masterdata]

Command

```
Equation AUTO_TEST.ls RESID_AUTO C RESID_AUTO_LAG
```

View Proc Object Print Name Freeze Estimate Forecast Stats Resids

Dependent Variable: RESID\_AUTO  
Method: Panel Least Squares  
Date: 08/25/26 Time: 18:08  
Sample (adjusted): 2015Q2 2026Q1  
Periods Included: 44  
Cross-sections Included: 4  
Total panel (balanced) observations: 176

| Variable       | Coefficient | Std. Error | t-Statistic | Prob.  |
|----------------|-------------|------------|-------------|--------|
| C              | -0.169191   | 0.666569   | -0.253823   | 0.7999 |
| RESID_AUTO_LAG | -0.134335   | 0.075082   | -1.789176   | 0.0753 |

Root MSE 8.791929 R-squared 0.018065  
Mean dependent var -0.153860 Adjusted R-squared 0.012422  
S.D. dependent var 8.897749 S.E. of regression 8.842313  
Akaike info criterion 7.208273 Sum squared resid 13604.45  
Schwarz criterion 7.244301 Log likelihood -632.3280  
Hannan-Quinn criter. 7.222866 F-statistic 3.201151  
Durbin-Watson stat 1.967541 Prob(F-statistic) 0.075326

Path = c:\users\yulian\homedrive\????? DB = none WF = masterdata\_thesis

## Appendix 10 Final Regression Output

| Dependent Variable: SR<br>Method: Panel Least Squares<br>Date: 08/25/26 Time: 18:52<br>Sample: 2015Q1 2026Q1<br>Periods included: 45<br>Cross-sections included: 4<br>Total panel (balanced) observations: 180<br>White cross-section (period cluster) standard errors & covariance (d.f. corrected)<br>Standard error and t-statistic probabilities adjusted for clustering |             |                    |             |           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------|-------------|-----------|
| Variable                                                                                                                                                                                                                                                                                                                                                                     | Coefficient | Std. Error         | t-Statistic | Prob.     |
| C                                                                                                                                                                                                                                                                                                                                                                            | 16.55568    | 21.13199           | 0.783441    | 0.4376    |
| CAR                                                                                                                                                                                                                                                                                                                                                                          | -0.239206   | 0.456480           | -0.524023   | 0.6029    |
| NPL                                                                                                                                                                                                                                                                                                                                                                          | -0.775837   | 1.437308           | -0.539784   | 0.5921    |
| ROE                                                                                                                                                                                                                                                                                                                                                                          | 0.069717    | 0.329546           | 0.211555    | 0.8334    |
| CIR                                                                                                                                                                                                                                                                                                                                                                          | 0.025732    | 0.193479           | 0.132995    | 0.8948    |
| LDR                                                                                                                                                                                                                                                                                                                                                                          | -0.093557   | 0.182456           | -0.512765   | 0.6107    |
| BIRATE                                                                                                                                                                                                                                                                                                                                                                       | -1.730210   | 1.201770           | -1.439718   | 0.1570    |
| INFLATION                                                                                                                                                                                                                                                                                                                                                                    | 1.712516    | 1.036950           | 1.651493    | 0.1058    |
| EXR                                                                                                                                                                                                                                                                                                                                                                          | -0.431212   | 0.477549           | -0.902969   | 0.3715    |
| M2GROWTH                                                                                                                                                                                                                                                                                                                                                                     | 0.062018    | 0.422615           | 0.146748    | 0.8840    |
| FER_GROWTH                                                                                                                                                                                                                                                                                                                                                                   | 0.102773    | 0.336165           | 0.305722    | 0.7613    |
| MARKET_RETURN                                                                                                                                                                                                                                                                                                                                                                | 1.077551    | 0.324091           | 3.324841    | 0.0018    |
| Root MSE                                                                                                                                                                                                                                                                                                                                                                     | 8.841184    | R-squared          |             | 0.575980  |
| Mean dependent var                                                                                                                                                                                                                                                                                                                                                           | 2.121371    | Adjusted R-squared |             | 0.548216  |
| S.D. dependent var                                                                                                                                                                                                                                                                                                                                                           | 13.61529    | S.E. of regression |             | 9.151495  |
| Akaike info criterion                                                                                                                                                                                                                                                                                                                                                        | 7.330052    | Sum squared resid  |             | 14069.98  |
| Schwarz criterion                                                                                                                                                                                                                                                                                                                                                            | 7.542916    | Log likelihood     |             | -647.7047 |
| Hannan-Quinn criter.                                                                                                                                                                                                                                                                                                                                                         | 7.416359    | F-statistic        |             | 20.74613  |
| Durbin-Watson stat                                                                                                                                                                                                                                                                                                                                                           | 2.273195    | Prob(F-statistic)  |             | 0.000000  |