

CHAPTER II

LITERATURE REVIEW

2.1 Macroeconomic

Indonesia's macroeconomic has been shaped by global trade tensions, domestic policy reforms, and political transitions. Macroeconomic refers to the study of the overall performance and structure of a nation's economy, focusing on broad indicators such as Gross Domestic Product (GDP), inflation, interest rates, exchange rates, unemployment, and fiscal and monetary policies. These indicators collectively reflect the health of an economy and influence government policies, business strategies, and investor behavior. A stable macro economy tends to foster investor optimism and stock market growth, while volatility and policy uncertainty can trigger sharp market corrections and financial instability. In Indonesia, key macroeconomic variables particularly GDP growth, interest rates, inflation, and exchange rates have had profound effects on both the financial system and the real economy. These variables significantly influence bank profitability, capital flows, and stock market performance. For example, fluctuations in interest and exchange rates have been found to negatively impact banking sector earnings and digital bank stock returns, even during periods of broader economic stability (Idawati, 2023 ; Sovia et al., 2022).

Stock markets are especially sensitive to macroeconomic conditions. When indicators show strong economic performance such as stable inflation, low interest rates, and GDP growth investor confidence typically rises, leading to gains in stock prices. Conversely, instability or poor macroeconomic data tends to trigger capital flight and stock market downturns. Research in Indonesia confirms this trend that inflation, exchange rates, and interest rates have been shown to significantly affect the JKSE and LQ45 blue-chip stocks (Utomo et al., 2019 ; Mohammad Ashraful & Mansur, 2014 ; Akbariaza, 2024). This close relationship means that macroeconomic health is often mirrored by stock market performance.

The presidential transition from Joko Widodo to Prabowo Subianto in late 2024 marked a turning point in Indonesia's economic direction. Prabowo introduced aggressive policies aimed at achieving 8% annual growth by 2029, including sweeping fiscal austerity measures and the launch of a sovereign wealth fund, Danantara, to manage state-owned assets and attract investments (Tempo, 2025). However, the free lunch program and MSME debt relief policies have raised concerns over budget sustainability and fiscal discipline (Indonesia at Melbourne, 2025 ; Reuters, 2024). These policies, combined with planned VAT increases and fears of political centralization, triggered a significant drop in the Jakarta Composite Index in March 2025 and led to market caution, reflected in weaker banking profits and currency performance (ANN, 2025)

Further complicating the macroeconomic landscape was the U.S.-China trade war, which directly affected Indonesia's exports, imports, and monetary policy due to the country's reliance on both nations as major trading partners. The conflict contributed to inflationary pressures and interest rate volatility, requiring Indonesia to adjust its trade strategies and strengthen regional partnerships to buffer against external shocks (Sulistiyowati & Pratama, 2023).

2.2 Volatility

Volatility in the banking and finance sector refers to the degree of variation in asset prices or returns over time and serves as a key indicator of market uncertainty and risk. High volatility indicates large fluctuations in prices, reflecting greater market instability, while low volatility suggests more predictable and stable movements. Several factors contribute to financial volatility. Macroeconomic conditions such as inflation, interest rates, and GDP growth play a significant role. Additionally, global events particularly crises like the COVID-19 pandemic or the Russia-Ukraine war have been shown to amplify volatility, especially in banking stocks (Batten et al., 2023).

Internal bank-specific factors such as solvency ratios, long-term investments, and market valuations significantly influence stock return volatility (Niewińska, 2020), and volatility is particularly sensitive to policy changes and regulatory reforms (Bhattacharjee & Saha, 2023). Exchange rate fluctuations are another critical driver, especially in emerging economies, where they can negatively impact banking sector development (Nasim et al., 2024).

To measure volatility, the finance sector uses a variety of statistical and econometric tools. One of the most basic methods is standard deviation, which quantifies the dispersion of returns around the mean (Gupta, 2024). More advanced models like GARCH and its variants are widely applied to capture time-varying volatility in financial returns, particularly for bank indices and stock prices (Prem et al., 2019). Bollinger Bands, another common technique, use standard deviation bands around a moving average to assess market volatility (Bhattacharjee & Saha, 2023). Value-at-Risk (VaR) models help quantify the potential maximum loss in value of an asset or portfolio over a specific period, under normal market conditions (Batten et al., 2023). Also, volatility spillover analysis, such as the Diebold-Yilmaz approach, measures how shocks in one sector propagate to others highlighting banking's role in broader economic risk transmission (Laborda et al., 2021).

Volatility has several important effects on the banking and finance sector. High volatility increases investment risk, which may deter risk-averse investors and reduce market participation. It also leads to wider bid-ask spreads and increased cost of capital, making it more expensive for firms to raise funds. Banks exposed to volatile markets may face balance sheet pressures due to fluctuations in asset values and loan performance, which can reduce lending and affect profitability (Sharma & Silgado, 2019). Moreover, during times of elevated volatility, market confidence can erode, leading to panic selling and liquidity shortages.

2.3 KBMI 4

KBMI 4 refers to banks in Indonesia with a core capital of over IDR 70 trillion, as defined by Financial Services Authority Regulation No. 12/POJK.03/2021 (Artha & Antari, 2023). This category includes major banks such as PT Bank Rakyat Indonesia (Persero) Tbk, PT Bank Mandiri (Persero) Tbk, PT Bank Negara Indonesia (Persero) Tbk, and PT Bank Central Asia Tbk (Maudi Sari Mawardi et al., 2023). KBMI 4 banks are the largest financial institutions in Indonesia, playing a crucial role in stabilizing the national economy. Due to their significant capital and market influence, these banks are often subject to stricter regulatory policies and must implement robust risk management strategies to ensure long-term sustainability (Bagus Dwi Budiman, 2023)

Artha and Antari (2023) found that profitability in KBMI 4 is influenced by credit quality, liquidity, and efficiency, while dividend policies are affected by capital and asset quality. Profitability and dividend policies significantly impact market capitalization. Also, factors such as Net Interest Margin (NIM) and Loan to Deposit Ratio (LDR) significantly affect profitability (Saputro et al., 2022). In addition, research by Hutapea et al. (2024) highlighted that bank efficiency, as measured by the operational risk or in Indonesia it's called *Beban Operasional Pendapatan Operasional* (BOPO) ratio, has a negative and significant impact on Return on Assets (ROA), further emphasizing the importance of cost management in maintaining profitability (Hutapea et al, 2024). These findings suggest that KBMI 4 must continuously optimize their operational expenses while ensuring adequate liquidity to remain profitable in the long term.

Electronic banking and foreign exchange transactions positively impact fee-based income, whereas third-party funds have a negative effect (Sugiyarti & Fatiha, 2023). Febryianti et al. (2024) explored the effect of bank competition on financial stability, showing that competition in KBMI 4 is influenced by market share, LDR, and Non-Performing Loans (NPL). The fair value of KBMI 4 stocks using the Dividend

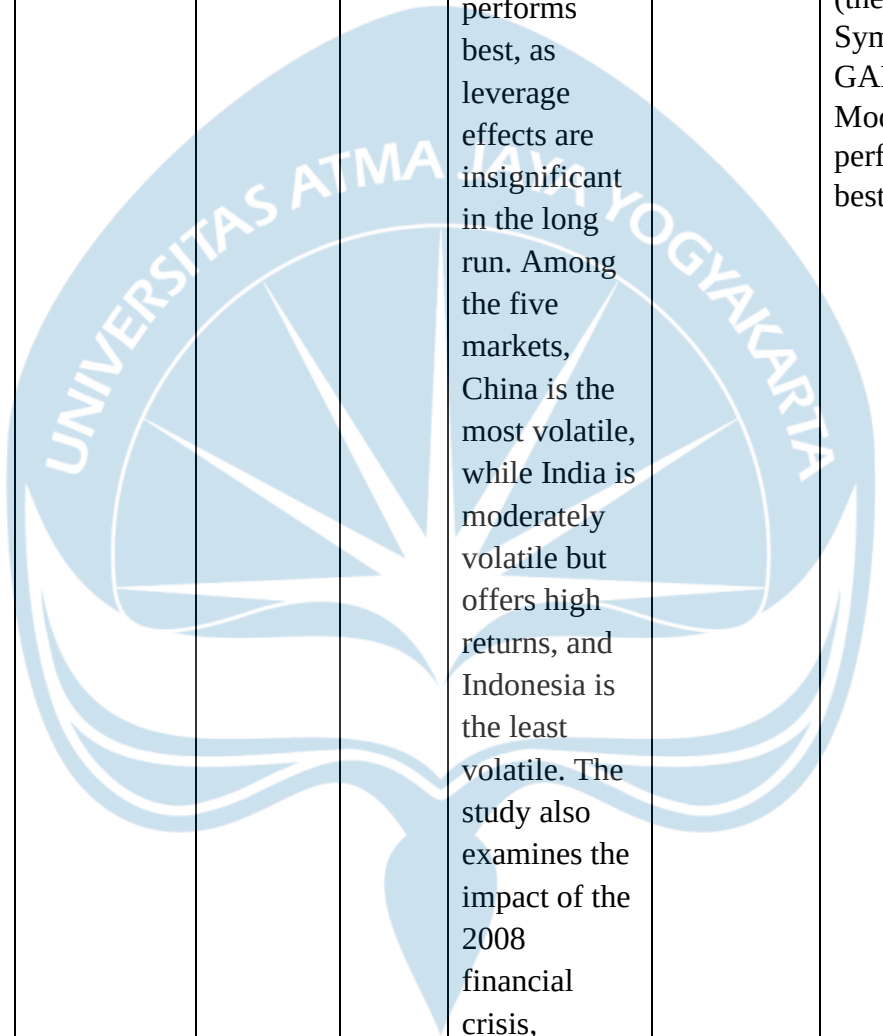
Discount Model (DDM), concluding that stocks in this category are often undervalued, making them attractive investment opportunities for long-term investors (Maudi Sari Mawardi et al., 2023).

Budiman et al. (2023) NPL significantly influences KBMI 4 profitability, whereas BOPO and NIM have a notable impact on overall financial performance (Bagus Dwi Budiman, 2023). Hani and Athoilah (2024) analyzed the effect of banking risks on profitability, concluding that LDR has a significant positive effect on KBMI 4, while NPL and BOPO negatively affect profitability. The role of financial distress indicators and found that banks with higher credit risk and lower capital adequacy were more vulnerable to financial instability.

2.4 Previous Studies

Table 2: Previous Study and Result

No	Title	Author	Publication Year	Result	Similarity	Differences
1	Comparison of linear and non-linear GARCH models for forecasting volatility of select emerging countries	Sudhi Sharma, Vaibhav Aggarwal, and Miklesh Prasad Yadav	2020	The study compares linear (GARCH (1,1)) and non-linear (E-GARCH, T-GARCH) models for forecasting stock market volatility in China, India, Indonesia, Brazil, and	Using Symetric GARCH Model and Asymmetric GARCH Models to forecasting stock market volatility	Writer's research use KBMI 4 stock (the result shows Asymmetric GARCH Models performs best). Meanwhile , this study use stock market in China,



				Mexico. It finds that the GARCH (1,1) model performs best, as leverage effects are insignificant in the long run. Among the five markets, China is the most volatile, while India is moderately volatile but offers high returns, and Indonesia is the least volatile. The study also examines the impact of the 2008 financial crisis, showing that India remained stable while China was significantly affected due to its export		india, Indonesia, Brazil, and Mexico (the result Symetric GARCH Models performs best)
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				dependence. These findings help investors optimize portfolio diversification and identify hedging opportunities in emerging markets.		
2	Modeling Indian Bank Nifty Volatility using Univariate GARCH Models	Nikhil M. N., Suman Chakraborty, Lithin B. M., Sanket Ledwani, and Satyakam	2023	The study on modeling Indian Bank Nifty volatility using univariate GARCH models finds that volatility during the sample period is highly persistent, with an estimated coefficient of 0.995695. When volatility increases, it	Using banking sector as the sample. The result shows EGARCH Models performs best	Writer's research use Indonesia Banking Sector especially KBMI 4. Meanwhile, this study use Indian Bank Nifty

				takes an average of 16 days to return to the mean. The research also identifies an "anti-leverage effect," where positive shocks increase volatility more than negative shocks of the same magnitude. Among the GARCH models tested, the EGARCH model with Student's t-distribution provides the best fit and lowest forecast errors. These findings highlight the long-lasting impact of		
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				volatility shocks and the asymmetric response of Bank Nifty returns to market events.		
3	Evaluating the Efficacy of GARCH Models in Forecasting Volatility Dynamics Across Major Global Financial Indices: A Decade-long Analysis	Nagendra Marisetty	2024	The study evaluates the efficacy of GARCH models in forecasting volatility dynamics across major global financial indices over a decade. The findings indicate that the GARCH (1,1) model provides a strong balance between simplicity and statistical significance, effectively capturing	Using GARCH Models to forecasting volatility	This study only use Symetric GARCH Models

				time-varying volatility. While more complex models, such as GARCH (1,2) and GARCH (2,2), offer slightly better fit measures, the GARCH (1,1) model consistently demonstrates reliable predictive accuracy. The results highlight its robustness in reflecting market fluctuations, making it a preferred choice for volatility forecasting. Future research could explore advanced variations for further refinement.		
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4	Comparative Volatility Analysis of USA and China	Bharat Kumar Meher, Santosh Kumar, Ramona Birau, Abhishek Anand, Sunil Kumar, Gabriela Ana Maria Lupu (Filip),	2024	The study examines the long-term and short-term integration of the US and Chinese markets from 2000 to 2023 using Johansen's cointegration test. Findings show a significant long-term relationship between the markets, with trace and max-eigen values exceeding critical levels at 0.05, leading to a rejection of the null hypothesis of no cointegration. This	Using GARCH Models to forecasting volatility	This study only use EGARCH Model and the sample are US and Chinese Markets

				indicates that while short-term shocks may cause fluctuations, the two markets converge over time. EGARCH model results reveal occasional asymmetric volatility spillovers, demonstrating a bidirectional relationship. These findings are valuable for investors and policymakers, highlighting diversification opportunities and informing economic policy, particularly within the Chinese market.		
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5	Assessing nickel sector index volatility based on quantile regression for Garch and Egarch models: Evidence from the Chinese stock market 2018–2022	Linna Lu, Yalin Lei, Yang Yang, Haoqi Zheng, Wen Wang, Yan Meng, Chunhong Meng, Liqiang Zha	2023	This study applied a combined GARCH modeling approach to analyze fluctuations in China's nickel sector index, aiming to better predict market trends, assess risks, and support the healthy development of the industry and capital market. By using GARCH, EGARCH, GARCH-QR, and EGARCH-QR models, the study effectively captured the volatility, clustering, and	Using Symetric and Asymetric GARCH models to predict the volatility	The sample of this study is nickel sector
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				asymmetry in the index, highlighting the prolonged influence of external shocks but showing that the leverage effect of positive and negative news is limited.		
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Source: Collect from Various Resources

2.5 Hypotheses Development

Stock market volatility is deeply influenced by firm-level and macro-level shocks, and this is especially evident in the behavior of KBMI 4 stocks. Volatility in these stocks is often not short-lived but tends to persist over time, signaling a structural feature of the market dynamics rather than isolated disruptions. These persistent fluctuations indicate the presence of volatility clustering, where large shocks are followed by further high volatility, irrespective of the shock's direction.

Empirical evidence from Zuhrohtun et al. (2023) confirms that volatility in Indonesian banking stocks, particularly within the KBMI 4 category, exhibits strong autocorrelation and long memory. The persistence remains significant even after accounting for macroeconomic and sector-specific variables, such as policy rate changes and international shocks. This supports the assertion that KBMI 4 returns respond to volatility shocks with enduring intensity, reflecting deeper interconnectedness within the Indonesian financial sector (Zuhrohtun et al., 2023).

H1: Volatility shocks are highly persistent in KBMI 4 returns

GARCH model has been widely employed in financial econometrics to estimate and forecast market volatility. This model is particularly useful in capturing time-varying volatility patterns in financial time series data. Symmetric GARCH models, such as GARCH(1,1), operate under the assumption that positive and negative shocks exert an equal effect on future volatility, making them relatively straightforward to implement and interpret. These models have demonstrated strong predictive performance, particularly in stable or less turbulent financial environments where volatility dynamics do not exhibit strong asymmetry.

Several empirical studies support the reliability of symmetric GARCH models in forecasting volatility across various financial sectors. Research has shown that these models are effective in predicting market risk, aiding portfolio management, and informing risk-adjusted investment strategies (Rahman & Md. Yousuf Harun, 2024). However, their effectiveness can be contingent upon prevailing market conditions. In highly volatile or crisis-prone periods, the assumption of symmetric effects may not hold, necessitating alternative modeling approaches such as asymmetric GARCH variations.

H2: Symetric GARCH (1,1) model yield more accurate volatility forecasts for KBMI 4 returns compared to the Asymmetric GARCH models (E-GARCH (1,1) or GJR-GARCH (1,1)).

Market reactions to new information whether good or bad can significantly affect stock volatility. The Efficient Market Hypothesis suggests symmetry in how markets react to similar magnitude news, however, real world evidence, especially in emerging economies, often deviates from this. Still, within KBMI 4, some empirical studies show relatively balanced reactions to positive and negative information, particularly when financial disclosures and regulatory frameworks are strong.

Recent findings from Nainggolan (2025) reveal that Indonesia banks owing to their transparent sustainability reporting and compliance with ESG mandates exhibit more symmetric return sensitivity to macroeconomic announcements and financial news. Additionally, Cahyadi & Mardanugraha (2024) note that during the COVID-19 pandemic, monetary policy changes elicited proportional reactions in Indonesia bank stock returns, suggesting that investor expectations were well-anchored and informed.

This symmetry can also be linked to the institutional maturity of the KBMI 4 group, which includes the largest and most systemically important banks in Indonesia. Their market influence, advanced risk management, and clear communication reduce the asymmetric interpretation of shocks, thereby making reactions to good and bad news of similar size more evenly distributed.

H3: KBMI 4 returns are equally sensitive to good news and bad news of the same size.

2.7 Theoretical Framework

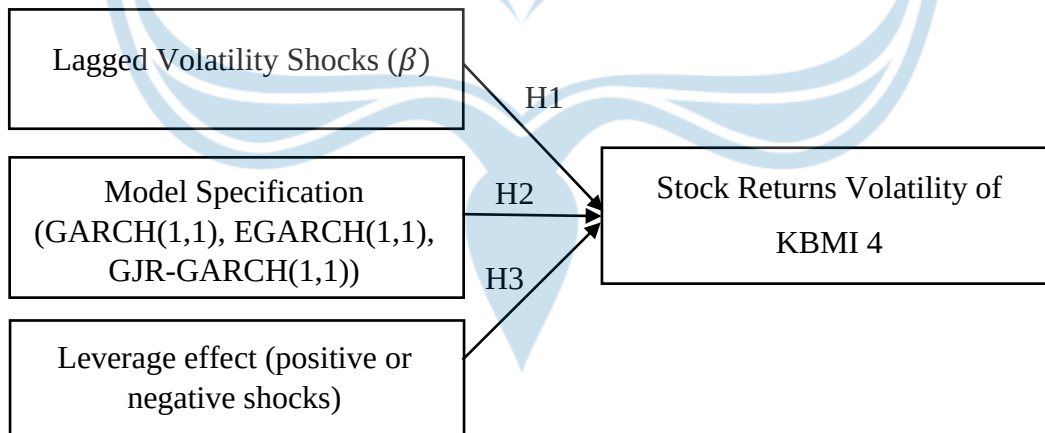


Figure 6 Theoretical Framework

Source: Generated by the Author (2025)