

The Effect of Inflation, Rupiah Exchange Rate, and Stock Volatility on Trading Volume Activity of State-Owned Banks Listed on the IDX (2020-2025)

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Abstract

This study examines the impact of macroeconomic factors and market indicators on the Trading Volume Activity (TVA) of state-owned banks listed on the Indonesia Stock Exchange (IDX) from January 2020 to December 2025. Utilizing a quantitative approach and purposive sampling, five prominent state-owned banking institutions were selected, yielding a balanced panel dataset of 360 monthly observations. The data were evaluated using panel data regression analysis. The empirical findings reveal that macroeconomic variables heavily dictate investor behavior; inflation exerts a significant negative effect on TVA, confirming that reduced purchasing power and rising operational costs deter active trading. Similarly, the Rupiah exchange rate shows a significant negative relationship with TVA, indicating that currency depreciation acts as a negative market signal that triggers capital flight and dampens trading activity. Conversely, market-driven metrics demonstrate positive dynamics. Stock returns have a significant positive impact on TVA, proving that solid financial performance captures investor attention and stimulates market participation. Furthermore, stock volatility possesses a significant positive relationship with TVA, aligning with the Sequential Information Arrival Hypothesis where price fluctuations serve as a catalyst for speculative trading and portfolio rebalancing. Simultaneously, the combined model proves highly robust, explaining 28.55% of the variations in the trading volume of state-owned banks. These insights provide valuable guidelines for investors formulating risk-managed strategies and policymakers striving to maintain domestic financial stability during fluctuating economic cycles.

Keywords: inflation, exchange rate, stock return, stock volatility, trading volume activity (TVA)

1. Introduction

The dynamic shifts in the global economy over recent years have significantly reshaped capital markets. As a cornerstone of modern economic growth, the capital market provides vital funding pathways for corporations through public and external financing mechanisms. This process not only strengthens corporate financial sustainability but also plays a pivotal role in achieving broader sustainable development goals (Jamil & Rasheed, 2025). Because capital market activities mirror both micro- and macroeconomic conditions, stock market movements are widely utilized as a primary barometer for assessing a nation's economic stability and overall performance.

A key metrics used to gauge this stability is Trading Volume Activity (TVA). Beyond simply reflecting market liquidity, TVA serves as a direct indicator of investor interest in specific stocks. It effectively measures how the capital market responds to new information and price

movements, capturing the entirety of transactions executed on the stock exchange (Mayliza et al., 2025). The intensity of these trades, as observed through TVA, is shaped by a combination of firm-specific microeconomic elements and external macroeconomic forces—such as inflation and exchange rates—which ultimately shape investor perceptions and future return expectations.

Domestic macroeconomic conditions act as a major driver of capital market dynamics in Indonesia. Among these indicators, inflation plays a crucial role in dictating trading volume activity. High inflation erodes public purchasing power and escalates economic uncertainty, which directly disrupts investment decisions. Alongside inflation, the Rupiah exchange rate has also experienced notable fluctuations in recent years. The Rupiah's volatility against the US Dollar (USD) tends to be higher than that of developed market currencies. This is largely because Indonesia's economic structure remains highly dependent on imported raw materials, capital goods, and energy, making it exceptionally sensitive to foreign capital flows (Lubis et al., 2025). A weakening Rupiah tends to heighten investment risks and trigger capital flight. Furthermore, depreciation of the domestic currency inflates USD-denominated debt obligations and hampers corporate investment through financial channels (Du et al., 2026; Shim et al., 2020).

The ripple effects of inflation and exchange rate fluctuations extend far beyond corporate costs and consumer purchasing power; they impact the broader capital market landscape. This macroeconomic instability shapes investor risk perceptions, which are subsequently reflected in stock returns and volatility. Both metrics serve as primary signals for investment decision-making. For instance, investors typically trade more actively when they spot favorable shifts in returns, such as the positive return phenomenon often observed on Fridays due to the accumulation of weekly information (Fleming et al., 2024). Similarly, high volatility spurs market activity, driven by speculative traders and institutional investors rebalancing their portfolios. Empirical evidence also points to seasonal influences; during Ramadan, for example, market volatility often subsides while returns rise ahead of Eid al-Fitr, buoyed by positive market sentiment and a spike in domestic consumption (Adib, 2024).

Within this ecosystem, the banking sector holds a strategic position as the primary engine of Indonesia's economic growth through its intermediary function. State-Owned Banks (BUMN) dominate the national financial system in terms of total assets, market capitalization, and stock liquidity. Consequently, their shares are heavily traded, making them highly relevant for an in-depth analysis using Trading Volume Activity (TVA). The 2020–2025 timeframe is specifically selected to capture the profound impacts of stimulus policies, monetary easing, and the broader economic dynamics unfolding during and after the COVID-19 pandemic.

While previous studies offer mixed results regarding how macroeconomic factors influence the stock market, most have focused on stock returns as the dependent variable. Empirical research utilizing TVA remains relatively limited, particularly concerning state-owned banks. To bridge this gap, this study aims to analyze the effects of inflation, the Rupiah exchange rate, stock returns, and stock volatility on the TVA of state-owned banks listed on the Indonesia Stock

Exchange (IDX) for the 2020–2025 period.

Ultimately, this study is expected to provide valuable empirical contributions to the financial literature regarding the interplay between macroeconomic variables and capital markets. Practically, it aims to assist investors in formulating sharper investment strategies and guide policymakers in maintaining the stability of the domestic financial market.

2. Literature Review

The capital market plays a crucial role in shaping the modern economic landscape. In today's interconnected global economy, strengthening cross-border economic ties have made financial capital flows and international transactions increasingly dynamic (Saydaxmadovich, 2021). Under the Indonesian legal framework—specifically Law No. 8 of 1995—the capital market is formally defined as an umbrella of activities encompassing public offerings and securities trading, involving public companies, market intermediaries, and related professionals. In practice, a country's economic health and trajectory are often mirrored directly by its capital market performance, particularly through stock price movements and trading volumes (Mayliza et al., 2025). Trading Volume Activity (TVA) represents the cumulative number of shares transacted during buying and selling activities for a specific stock over a given period (Situmeang et al., 2021). For market participants, TVA is far more than a mere statistical figure; it serves as a vital technical indicator to evaluate stock price momentum and gauges how efficiently the market absorbs and responds to incoming information (Mayliza et al., 2025). High trading volumes generally signal that a stock is actively traded, highly liquid, and heavily favored by investors (Safrani & Kusumawati, 2022).

From a macroeconomic perspective, inflation occurs when the money supply expands beyond the economy's actual needs. This imbalance erodes the currency's purchasing power, triggering a continuous, broad-based rise in the prices of goods and services over time (Zhang & Zhou, 2025). For investors, surging inflation acts as a warning sign, as it tends to be negatively correlated with stock returns across both developed and emerging markets (IMF, 2021). High inflation erodes the real value of a company's future cash flows and stifles consumer purchasing power, ultimately dampening overall stock market performance (Nemati & Moghaddam, 2026). Although some investors occasionally turn to stocks as a hedging mechanism to chase capital gains during inflationary periods (Situmeang et al., 2021), unbridled inflation generally breeds economic instability that drives market participants away. As this macroeconomic risk escalates, investor appetite for active trading diminishes due to looming concerns over shrinking corporate profit margins. Based on these insights, the first hypothesis is formulated as follows:

H1: Inflation has a negative effect on Trading Volume Activity (TVA).

The exchange rate represents the price of a domestic currency relative to foreign currencies, determined fundamentally by supply and demand forces within the foreign exchange market (Wijaya, 2020). However, exchange rate movements are not driven solely by economic fundamentals; they are also highly sensitive to non-fundamental elements, including investor

sentiment and global policy uncertainty (Arghyrou et al., 2025). The relationship between the Rupiah exchange rate and capital market dynamics is profoundly intertwined, as a stable exchange rate signals economic resilience to both domestic and international investors. A strengthening Rupiah tends to bolster investor confidence, lower import costs for listed companies, and mitigate foreign exchange risks, which collectively drive higher market participation and trading volumes (Mayliza et al., 2025). Furthermore, favorable exchange rate movements frequently incentivize investors to reallocate capital into equity instruments in pursuit of superior returns (Situmeang et al., 2021). Based on these insights, the second hypothesis is formulated as follows:

H2: Rupiah Exchange Rate has a positive effect on Trading Volume Activity (TVA).

Stock returns represent the gains realized by investors from their capital market investments and serve as a direct reflection of management's capability to deploy corporate capital effectively (Tandelilin, 2024). Companies that consistently deliver solid financial performance generally receive positive market appraisal through surging stock prices, which ultimately translates into positive returns for shareholders. These potential gains act as the primary catalyst and incentive driving market participants to invest their capital. From a behavioral perspective, signals or announcements of high stock returns immediately capture investor attention, sparking a buying and selling frenzy. This surge in market interest automatically triggers highly intensive trading activities on the stock exchange, directly leading to a sharp increase in trading volumes. Based on these insights, the third hypothesis is formulated as follows:

H3: Stock Return has a positive effect on Trading Volume Activity (TVA).

Stock volatility measures price fluctuations and serves as a fundamental risk proxy in finance, characterized by its dynamic nature and high sensitivity to shifting market conditions (Qatrunnada, 2024). According to the Sequential Information Arrival Hypothesis (SIAH), new market information is not absorbed by all investors simultaneously; this asynchronous information diffusion leads to staggered responses, establishing a lead-lag relationship between trading volume and price volatility (Permanawati et al., 2022). When stock volatility spikes excessively, it heightens uncertainty regarding future asset valuations, making it exceptionally difficult for investors to generate accurate projections. In such high-risk environments, risk-averse investors typically choose to liquidate their positions or temporarily withdraw from the market (Widodo & Suryanto, 2021), which ultimately dampens market participation and leads to thinner trading activity. Based on these insights, the fourth hypothesis is formulated as follows:

H4: Stock Volatility has a negative effect on Trading Volume Activity (TVA).

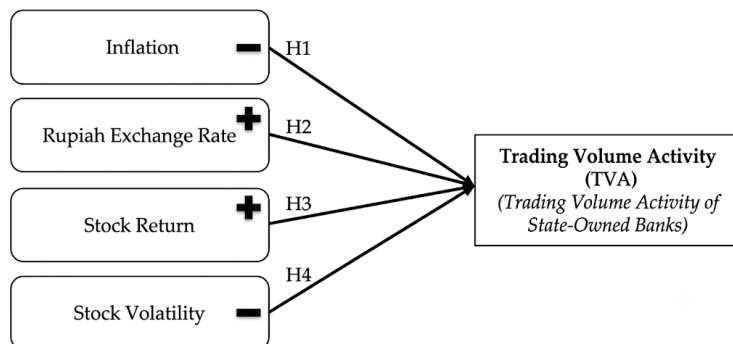


Figure 1. Framework of Thought

3. Research Method

This study examines hypotheses concerning the effects of inflation (X1), the Rupiah exchange rate (X2), stock return (X3), and stock volatility (X4) on Trading Volume Activity (TVA) (Y) of state-owned bank stocks listed on the IDX for the 2020–2025 period. The population utilized in this study consists of banking sector companies listed on the Indonesia Stock Exchange (IDX) during the 2020–2025 period. Sampling in this research employs purposive sampling, which is a data collection method based on specific criteria. The sampling criteria in this study include: banking companies in Indonesia listed on the IDX; falling under the category of state-owned banks; having published complete financial statements and performance reports throughout the 2020–2025 period; and not experiencing delisting during the research period.

The dependent variable, or the bound variable, is the variable influenced by the independent variables (Sugiyono, 2023). Trading Volume Activity (TVA) serves as the dependent variable examined in this study. TVA can be calculated using the following formula.

$$TVA = \frac{\text{Total Shares Traded}}{\text{Total Shares Outstanding}}$$

The types of data used in this study are quantitative data and secondary data. This research utilizes time-series data and cross-sectional data combined into panel data. This panel data covers state-owned banks, namely BNI, BRI, Bank Mandiri, BTN, and BSI, from January 2020 to December 2025. The data sources for this research were obtained from various official institutions and economic data provider websites, including: Indonesian inflation data obtained from the Bank Indonesia website (www.bi.go.id); the Rupiah exchange rate against the US Dollar obtained from the Bank Indonesia website (www.bi.go.id); stock return, representing historical stock price data, obtained from the Yahoo Finance website (processed data) (www.finance.yahoo.com); stock volatility obtained from the Yahoo Finance website (processed data) (www.finance.yahoo.com); and Trading Volume Activity (TVA) obtained from the IDX website (processed data) (www.idx.co.id).

Table 1. Research Sample

No	Symbol	Company	Date
1	BBNI	PT Bank Negara Indonesia (Persero) Tbk	25 November 1996
2	BBRI	PT Bank Rakyat Indonesia (Persero) Tbk	10 November 2003
3	BBTN	PT Bank Tabungan Negara (Persero) Tbk	17 Desember 2009
4	BMRI	PT Bank Mandiri (Persero) Tbk	14 Juli 2003
5	BRIS	PT Bank Syariah Indonesia (Persero) Tbk	9 Mei 2018

Source: IDX (2026)

The use of panel data in this study is based on the large number of observations, specifically 5 state-owned banks over a 72-month period, resulting in a total of 360 observation data points. Panel data regression analysis is employed to observe the influence of the independent variables on the dependent variable. The estimation model in this study is structured as follows:

$$Y = \alpha + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \epsilon_t$$

Information:

Y	Trading Volume Activity (TVA)
α	Constant
β	Coefficients of the independent variables
X1	Inflation
X2	Rupiah exchange rate
X3	Stock return
X4	Stock volatility
ϵ	Error

4. Finding and Discussion

Descriptive statistics were used to provide an overview of the minimum, maximum, mean, and standard deviation values for both the dependent and independent variables during the 2020–2025 research period.

Table 2. Descriptive Statistics

Variabel	N	Minimum	Maximum	Mean	Std. Deviation
Inflasi	360	-0,0009	0,0595	0,0262	0,0129
Nilai Tukar Rupiah	360	9,5270	9,7227	9,6284	0,0055
Return Saham	360	-0,5059	0,7870	0,0127	0,1332
Volatilitas Saham	360	-0,0032	0,4759	0,0965	0,0774
Aktivitas Volume Perdagangan	360	-0,07475	0,0025	-	0,0133

(TVA)				0,0341	
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Source: Processed Data from EViews 13 (2026)

Based on the results in Table 2, Trading Volume Activity (TVA)—which has been transformed into its natural logarithm form—shows a minimum value of -0.07475, a maximum value of 0.0025, and a mean value of -0.0341, with a standard deviation of 0.0133 indicating that the volatility of trading volumes exceeds its average level. For the macroeconomic variables, inflation ranges from a minimum of -0.0009 to a maximum of 0.0595, maintaining an average rate of 0.0262 and a standard deviation of 0.0129. Concurrently, the Rupiah exchange rate moves between a minimum of 9.5270 and a maximum of 9.7227, yielding a mean value of 9.6284 and a standard deviation of 0.0055. Regarding firm-specific metrics, stock returns exhibit a minimum of -0.5059, a maximum of 0.7870, an average of 0.0127, and a standard deviation of 0.1332. Lastly, stock volatility records a mean growth value of 0.0965, with its maximum and minimum values touching 0.4759 and -0.0032, respectively, alongside a standard deviation of 0.0774 that illustrates the dynamic risk landscape of the Indonesian capital market during this timeframe.

Table 3. Data Regression Results

Dependent Variable: LNNTVA				
Method: Panel Least Squares				
Date: 05/29/26 Time: 12:30				
Sample: 2020M01 2025M12				
Periods included: 72				
Cross-sections included: 5				
Total panel (balanced) observations: 360				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0,403036	0,103064	3,910560	0,0001
INFLASI	-0,103543	0,048282	-2,144562	0,0327
LN_KURS	-0,045703	0,010698	-4,272026	0,0000
RETURN	0,017618	0,004518	3,899906	0,0001
VOLATILITAS	0,055812	0,008450	6,604713	0,0000
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0,301396	Mean dependent var	-0,034108	
Adjusted R-squared	0,285473	S.D. dependent var	0,013273	
S.E. of regression	0,011220	Akaike info criterion	-6,117640	
Sum squared resid	0,044183	Schwarz criterion	-6,020487	

Log likelihood	1110,175	Hannan-Quinn criter.	-6,079010
F-statistic	18,92880	Durbin-Watson stat	1,890642
Prob(F-statistic)	0,000000		

Source: Processed Data from EViews 13 (2026)

Based on the panel data regression estimation, the empirical model testing the determinants of Trading Volume Activity (TVA) is structured as follows:

$$Y = 0.403036 - 0.103543X_1 - 0.045703X_2 + 0.017618X_3 + 0.055812X_4 + \epsilon$$

The mathematical model yields several critical insights into how macroeconomic factors and firm-specific indicators dictate trading dynamics. The constant intercept (α) of 0.403036 implies that if all independent variables are held at zero, the log-transformed Trading Volume Activity (TVA) will rest at 0.403036, assuming other contextual parameters remain constant.

Regarding the macroeconomic predictors, the inflation coefficient (X_1) is documented at -0.103543 with a significance value of 0.0327 ($p < 0.05$). This negative and statistically significant relationship demonstrates that a one-unit escalation in inflation triggers a 0.103543 contraction in stock trading volume. This empirical finding fully supports H1 and aligns with the theoretical assertion that soaring inflation erodes consumer purchasing power, deflates the real value of future corporate cash flows, and introduces high economic uncertainty, which collectively deter investors from active trading.

Similarly, the Rupiah exchange rate (X_2) exhibits a negative coefficient of -0.045703 and is highly significant at 0.0000. This indicates that a one-unit depreciation of the Rupiah leads to a 0.045703 reduction in TVA. Consequently, H2 is rejected, as the data reveals a negative impact rather than a positive one. This phenomenon can be explained by the fact that currency depreciation serves as a negative signal for the capital market, driving up investment risk, elevating USD-denominated debt burdens for corporate sectors, and prompting foreign capital flight as investors shift their funds abroad.

Conversely, market-driven metrics demonstrate positive and statistically meaningful relationships. The stock return coefficient (X_3) is recorded at 0.017618 ($p = 0.000 < 0.05$), meaning that a one-unit increase in stock returns drives a 0.017618 expansion in market transactions. This finding accepts H3, strengthening the behavioral finance perspective that solid corporate returns act as a powerful catalyst that captures investor attention and sparks intense buying and selling enthusiasm on the exchange floor.

Lastly, the stock volatility coefficient (X_4) displays a positive value of 0.055812, which is highly significant at 0.0000 ($p < 0.05$). This result rejects H4, which originally hypothesized a negative link. Instead, the positive coefficient indicates that a one-unit increase in price fluctuations expands trading volume by 0.055812. In the context of Indonesian state-owned banks, this pattern conforms to the Sequential Information Arrival Hypothesis (SIAH), where asynchronous or staggered information distribution among market participants creates substantial price fluctuations, thereby generating a high-volume trading wave driven heavily by

speculative traders and institutional rebalancing.

Simultaneously, the model demonstrates strong exploratory robustness. The F -statistic of 18.92880 ($p = 0.000000 < 0.05$), proves that inflation, exchange rate, stock returns, and stock volatility exert a significant combined influence on TVA. Furthermore, the Adjusted R-squared value of 0.285473 demonstrates that 28.55% of the variation in the Trading Volume Activity of state-owned banks is explained by the four variables within this model, while the remaining 71.45% is dictated by external factors outside the scope of this study.

5. Conclusion

This study provides conclusive empirical evidence regarding how macroeconomic pressures and market indicators shape the Trading Volume Activity (TVA) of state-owned banks listed on the IDX for the 2020–2025 period. The most vital finding of this research demonstrates a clear dichotomy between external macroeconomic headwinds and internal stock market signals. External economic pressures, specifically rising inflation and Rupiah depreciation, significantly suppress transaction volumes as they induce economic uncertainty, escalate corporate risks, and diminish investor appetite. On the other hand, internal market signals act as powerful drivers of liquidity; higher stock returns actively attract investor interest, while increased stock volatility generates higher trading momentum through speculative activities and asynchronous information processing in the market. Together, these findings highlight that while macroeconomic stability is critical to maintaining overall capital market confidence, the intrinsic performance and risk characteristics of state-owned bank stocks remain resilient catalysts for driving market transactions.

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