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The Influence of Foreign Investor Transactions on the Share Price Movement of PT Bank Rakyat Indonesia (Persero) Tbk on the Indonesia Stock Exchange in the 2020–2025 Period

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Abstract. *This study examines the relationship between foreign investor transactions and the stock price movement of PT Bank Rakyat Indonesia (Persero) Tbk (BBRI) on the Indonesia Stock Exchange from January 2020 to December 2025. Foreign investor transactions are measured by Net Foreign Buy (NFB), calculated as foreign buy value minus foreign sell value, while stock price movement is measured by monthly stock returns. The study applies a quantitative approach using 72 monthly observations. The analysis consists of descriptive statistics, Pearson correlation, and simple linear regression. The results show a positive NFB regression coefficient of 0.00001881 when NFB is measured in IDR billion and returns are expressed as decimals. The coefficient is statistically significant ($p < 0.001$), with a coefficient of determination (R^2) of 0.3952. The Pearson correlation between NFB and monthly returns is 0.6287. A robustness check using HAC/Newey–West standard errors with three lags also indicates a positive and statistically significant coefficient. These findings indicate a positive and statistically significant relationship between NFB and BBRI's monthly returns during the observation period. However, because the model uses contemporaneous monthly variables and only one independent variable, the results do not establish causality and do not capture all factors that may influence stock returns.*

Keywords: *Buy; Investors; Regression; Stock.*

1. Introduction

Capital markets play a role in raising funds and allocating capital through the trading of financial instruments. In the stock market, prices are formed by the interaction of supply and demand, influenced by information, expectations, company conditions, and the transaction decisions of market participants. Therefore, price changes cannot always be explained solely by a company's fundamental performance; trading dynamics must also be considered. In a globally integrated market, foreign investor transactions are a relevant aspect to study because these transaction flows can be linked to the stock price formation process.

The international finance literature has examined the relationship between foreign investment flows and stock returns. Froot, O'Connell, and Seasholes (2001) analyzed

international portfolio flows across multiple countries and found that these flows are related to returns, including their predictive power for future returns in emerging markets. They also reported positive local price sensitivity to foreign inflows. This finding suggests that foreign transactions can be related to price movements, but does not rule out the possibility that investor transactions also respond to past returns.

Evidence from Asian markets suggests that foreign investor behavior and its impact are not always uniform. Choe, Kho, and Stulz (1999), in their study of the Korean stock market in the period leading up to the Asian crisis, found herding and positive feedback trading by foreign investors, but found no evidence that foreign trading destabilized the market during the period they studied. Richards (2005) found a relatively large price impact of foreign investor trading in a number of emerging Asian stock markets. These differences in context and results justify examining the relationship between foreign transactions and specific objects and periods, rather than assuming that cross-market results automatically apply to BBRI.

In the Indonesian context, Wang (2007) examined foreign stock trading and market volatility in Indonesia and Thailand, reporting a contemporary relationship between foreign trading and volatility. Peranginangin, Ali, Brockman, and Zurbruegg (2016) focused on liquidity and found that aggressive foreign trading contributes to price discovery and is associated with commonality in liquidity. Both studies demonstrate the relevance of foreign transactions to Indonesian market dynamics, but the outcome variable is not the monthly return of BBRI shares. This distinction needs to be explicitly stated when using the results as the basis for this research.

Evidence more closely aligned with the focus of this research was presented by Rudiawarni, Sulistiawan, and Sergi (2024). Using data from listed companies in Indonesia for the 2016–2021 period, they found that foreign investor net purchases are associated with higher excess returns and discussed the role of transaction value and information asymmetry. These findings support the relevance of the net purchase proxy in stock return studies. However, this study differs in that it focuses on a single stock, BBRI, using simple stock returns and a monthly frequency for 2020–2025.

PT Bank Rakyat Indonesia (Persero) Tbk (BBRI) was chosen as the object of this research because it focuses on individual stocks, not market indices. Focusing on a single issuer allows the relationship between foreign investor transactions and stock returns to be tested specifically on BBRI. This selection does not necessarily mean that the research results can be generalized to all banking stocks or all issuers on the Indonesia Stock Exchange.

The period from January 2020 to December 2025 encompasses several distinct market phases, including stress during the COVID-19 pandemic, the subsequent recovery, and changes in global financial conditions. This span provides a relevant timeframe for observing variations in foreign transactions and BBRI returns. However, the existence of multiple market phases does not prove that specific conditions cause changes in transactions or prices; such relationships must be assessed through data analysis and established models.

In capital market practice, net buy and net sell are often used to gauge stock trends. However, net buy transactions are not always followed by price increases, and net sell transactions are not always followed by price decreases. Foreign investors may make transactions based on information or expectations, while past price changes can also influence their trading decisions. Therefore, this study examines the statistical relationship between NFB and BBRI's monthly returns, recognizing the possibility of a bidirectional relationship and without considering contemporaneous regression as definitive proof of causality.

The research gap stems from differences in units of analysis, transaction proxies, outcome variables, and observation frequency in previous studies. Froot et al. (2001) examined cross-border portfolio flows; Wang (2007) discussed foreign trade and market volatility; Peranginangin et al. (2016) focused on price discovery and liquidity; and Rudiawarni et al. (2024) examined net purchases and excess returns in a sample of Indonesian companies. These literatures provide relevant background information, but they do not specifically address how monthly NFB relates to BBRI stock returns during 2020–2025. This study fills this more specific gap, without claiming that the relationship between foreign transactions and returns has not been previously studied.

BBRI is treated as an individual stock unit of analysis, so its movements are not equated with those of the Jakarta Composite Index (JCI). In this study, price movements are operationalized using monthly returns, which are the relative changes in closing prices compared to the previous month. This operationalization allows the dependent variable to be calculated consistently and used in quantitative analysis.

Based on the above description, this study examines the relationship between foreign investor transactions and the stock price movements of PT Bank Rakyat Indonesia (Persero) Tbk on the Indonesia Stock Exchange during January 2020–December 2025. Foreign investor transactions are measured by Net Foreign Buy (NFB), while stock price movements are measured using monthly returns. Using a quantitative approach and simple linear regression, the study assesses the direction, statistical significance, and explanatory power of the relationship between the two variables across 72 monthly observations. Conclusions are limited to the model and period analyzed.

A descriptive overview of BBRI's share price development during the 2020–2025 period is presented in Table This table provides context for the stock price phenomenon, while the empirical testing of the study uses monthly Net Foreign Buy (NFB) data and stock returns.

Year	BBRI Closing Price (Rp)	Annual NFB (Rp billion)	Annual Return (%)
2020	4,070	-3,194	-6.44%
2021	4.110	+13,036	+0.98%
2022	4,940	+6,233	+20.19%
2023	5,725	+6,976	+15.89%
2024	4,080	-38,071	-28.73%
2025	3,660	-9,327	-10.29%

Table 1.1 BBRI Closing Price, Annual Net Foreign Buy (NFB), and Annual Return for the 2020–2025 Period
Source: BBRI monthly master dataset 2020–2025 (Stockbit for closing price and IPOT for Foreign Buy/Foreign Sell), processed.

Note: The annual closing price is calculated using the December closing price. The annual NFB is the sum of the monthly NFB (Foreign Buy − Foreign Sell) for January–December. The annual return is calculated from the change in the December closing price relative to the previous year's closing price; the 2020 return uses the December 2019 closing price of Rp4,350. The annual NFB figures in this table are descriptive aggregates and do not substitute for the 72 monthly observations used in the regression.

Table presents a consistently calculated annual summary of the research master dataset. In 2020, annual NFB was negative at IDR 3,194 billion, with an annual return of -6.44%. In 2021, annual NFB was positive at IDR 13,036 billion, with an annual return of +0.98%. In 2022 and 2023, NFB and annual returns were both positive. Conversely, in 2024 and 2025, annual NFB and annual returns were both negative. This descriptive pattern does not in itself prove causality. Therefore, the main test was conducted using 72 monthly observations and simple linear regression.

The capital market is part of the financial system that connects those who need funds with those who have funds to invest in financial instruments. In the stock market context, the trading mechanism matches investor supply and demand, resulting in stock prices that continually fluctuate based on the information, preferences, and transaction decisions of market participants.

From a market microstructure perspective, stock prices are formed not only through the assessment of fundamental information but also through the trading process. Kyle (1985) modeled the relationship between order flow, information, and price formation in markets where transactions can carry information. This framework helps explain why transaction flow can be related to price changes; however, this theoretical framework does not imply that every change in order flow always produces a price impact of the same direction and magnitude.

When domestic and foreign investors trade in the same stock, their activities are part of the price formation process. Richards (2005) reports a relatively large price impact from foreign investor trading in several emerging Asian stock markets. These cross-market findings support the relevance of the topic, but the magnitude of the impact on a specific stock still needs to be tested using data from that stock.

Thus, stock price formation in this study is viewed as the result of the interaction of supply and demand, reflected in trading activity. Foreign investor transactions are one activity that could theoretically be related to changes in BBRI's share price.

Shares are capital investment instruments that grant their holders ownership rights in a company. Shares traded on the capital market have prices that fluctuate over time as a result of the interaction between supply and demand.

Stock price movements can be caused by changes in company information, economic conditions, investor expectations, market sentiment, and trading activity. Therefore, stock price changes not only reflect changes in fundamental conditions but also reflect market participants' responses to information and trading activity.

This study does not use nominal prices as the dependent variable, but rather stock returns. Returns measure the relative change in price from one period to the next, making them more appropriate for representing price changes in quantitative analysis. The choice of returns should also be interpreted in accordance with the operational definition of the study, namely monthly returns based on the closing price at the end of the month. Thus, the movement of BBRI share prices in this study is understood as a change in investment value reflected through BBRI share returns.

2. Research Methods

This study uses a quantitative approach with an explanatory research approach. The quantitative approach was used because the study aims to empirically test the influence of foreign investor transactions on the stock price movements of PT Bank Rakyat Indonesia (Persero) Tbk (BBRI) on the Indonesia Stock Exchange during the 2020–2025 period. The data used is secondary data with a monthly frequency, consisting of foreign investor transaction data and BBRI share price data for each month during the observation period. Foreign investor transactions are operationalized using monthly Net Foreign Buy (NFB), while BBRI share price movements are operationalized using monthly stock returns. This study uses secondary data obtained from capital market data sources and verifiable supporting sources. The primary data includes trading dates, foreign buys and sells of BBRI shares, and the closing price of BBRI shares. The primary data sources follow the documentation used in the research master dataset. BBRI's closing share price and observation date were obtained from the stock history on Stockbit (Stockbit, 2020–2025). BBRI's Foreign Buy and Foreign Sell values were obtained from IPOT data/screenshots collected for each month (IPOT, 2020–2025). Net Foreign Buy was calculated as Foreign Buy minus Foreign Sell and recorded in Rupiah before being converted to billions of Rupiah for analysis. Aggregate foreign investor data for the entire market was not used as a substitute for BBRI-specific transaction data. The IDX trading calendar was used as a reference for date checking; the observation date of May 2025 in the working master was aligned to May 29, 2025. Screenshot documentation serves as evidence of the working source used, while arithmetic checking and source checking are two separate audit procedures.

3. Results and Discussion

3.1. General Description of Research Object

The object of this study is the shares of PT Bank Rakyat Indonesia (Persero) Tbk (BBRI), traded on the Indonesia Stock Exchange (IDX). The study used monthly data from January 2020 to December 2025, resulting in a total of 72 months of observations analyzed.

Based on the data sources specified in the master dataset, the closing price and trading date were obtained from Stock bit securities, while the foreign buy and sell transaction values were obtained from the IPOT securities terminal in rupiah. The Net Foreign Buy (NFB) variable is calculated as the difference between foreign buy and sell prices, then converted to billions of rupiah to facilitate coefficient interpretation.

The dependent variable is BBRI's monthly stock return, calculated by comparing the closing price in the current month with the closing price in the previous month. The December 2019 closing price of Rp4,350 was used as the baseline for calculating the January 2020 return; December 2019 was not included in the study's sample observations.

Data integrity note: Foreign Buy and Foreign Sell transaction values in the work master have been matched with the IPOT screenshot evidence previously submitted by the user, and the Net Foreign figures follow the net foreign buy/net foreign sell values in the source. Monthly trading dates refer to the Indonesia Stock Exchange trading calendar (nd); specifically for May 2025, the observation date is adjusted to May 29, 2025. This date adjustment does not change the closing price or transaction value and does not change the audited statistical results.

Descriptive statistics were used to describe the distribution of closing stock prices, net foreign investor transactions, and stock returns during the observation period. A summary of the statistics is presented in Table.

Variables	N	Average	Median	Standard deviation	Minimum	Month min.	Maximum	Max month.
Closing price (Rp)	72	4,342.64	4,270.00	765.34	2,660.00	Apr-2020	6,125.00	Feb-2024
NFB (Rp billion)	72	-338.15	-245.00	2,960.34	-8,771.00	Apr-2024	7,620.00	Oct-2021
Monthly returns	72	0.16%	0.37%	8.86%	-27.87%	Mar-2020	21.65%	Nov-2020

Source: processed from the research master dataset.

During the study period, BBRI's closing price averaged IDR 4,342.64, with a minimum of IDR 2,660 in April 2020 and a maximum of IDR 6,125 in February 2024. These statistics illustrate the stock price variation throughout the observation period.

The average NFB was IDR 338.15 billion per month, while the median was Rp 245.00 billion. The minimum value of IDR 8,771.00 billion occurred in April 2024, and the maximum value of IDR 7,620.00 billion occurred in October 2021. The negative average indicates that the monthly NFB values in the sample tended to be negative, although this does not necessarily mean that all months experienced net selling.

Monthly stock returns averaged 0.16% and median 0.37%. The lowest return was -27.87% in March 2020, while the highest return was 21.65% in November 2020. The large standard deviation indicates relatively wide variation in monthly returns during the observation period.

The Pearson correlation coefficient between NFB and stock returns is 0.629. This positive value indicates that in the sample, higher NFB tends to be associated with higher monthly

returns. Correlation is a measure of the initial linear relationship and does not necessarily prove causation.

Variable pairs	Pearson Correlation	Initial interpretation
NFB and BBRI returns	0.629	Positive

Source: processed from the research master dataset.

The regression model used is Return BBRI = α + β NFB + ε, with NFB expressed in billions of rupiah and returns expressed in decimal form. The regression coefficients indicate the change in average returns related to changes in NFB, while still taking into account the limitations of the observational design and the possibility of a two-way relationship between transactions and returns.

Parameter	OLS coefficient	OLS standard error	t-statistic	p-value
Constant (α)	0.007971	0.008231	0.968	0.3362
NFB (β)	0.00001881	0.00000278	6,764	< 0.001

Model size	Mark
Number of observations	72
R^2	0.3952
Adjusted R^2	0.3866
F-statistic	45,749
Significance of F	< 0.001

Source: results of master data processing with OLS regression.

The OLS estimation equation is Return = 0.007971 + (0.00001881 × NFB in billions of rupiah). The coefficient on NFB is positive and statistically significant at the 5 percent level ($p < 0.001$). Because NFB is measured in billions of rupiah and returns are expressed as decimals, a 1 trillion rupiah increase in NFB is associated with a higher monthly return of approximately 0.01881, or 1.881 percentage points, according to the model. This interpretation reflects a linear association in the sample and not an identified causal effect.

The R^2 value of 0.3952 indicates that 39.52 percent of the variation in returns in the sample can be linearly explained by the NFB in this simple model. The portion of variation not explained by the model may be related to other factors or random variation not included in the specification. Therefore, R^2 should not be interpreted as the percentage of returns causally attributable to foreign investor transactions.

Testing	Statistics	p-value	Initial conclusion (α=5%)
Residual normality (Shapiro–Wilk)	0.9678	0.0616	Does not reject normality at the 5% level
Heteroscedasticity (Breusch–Pagan)	0.7596	0.3834	There is no evidence of heteroscedasticity at the 5% level.
Heteroscedasticity (White)	1.4985	0.4727	There is no evidence of heteroscedasticity at the 5% level.
Residual autocorrelation (Ljung–Box lag 1)	0.5073	0.4763	There is no evidence of autocorrelation at lag 1.
Residual autocorrelation (Ljung–Box lag 3)	0.8955	0.8265	There is no evidence of autocorrelation up to lag 3.
Residual autocorrelation (Ljung–Box lag 6)	1,5758	0.9543	There is no evidence of autocorrelation up to lag 6.

The Durbin Watson value is 2.144. The Ljung–Box test at lags 1, 3, and 6 found no evidence of significant residual autocorrelation at the 5 percent level. The Shapiro Wilk test also did not reject the hypothesis of residual normality at that level, while the Breusch Pagan and White tests showed no evidence of significant heteroscedasticity. These results indicate that the tests used did not find sufficient evidence of violations; they do not prove that the model assumptions are met.

As a robustness check for the inference, the HAC/Newey–West standard error was calculated with a maximum lag of 3. The NFB coefficient remains positive at 0.00001881 and statistically significant ($p < 0.001$). This result indicates that the conclusion regarding the coefficient's significance remains with the estimated standard error. The choice of lag still needs to be explained as a methodological decision, and the HAC does not address potential endogeneity or omitted variables.

3.2. Discussion of Research Results

The estimation yields a positive NFB coefficient of 0.00001881 with $p < 0.001$. With NFB in billions of Rupiah and returns in decimal form, a 1 trillion Rupiah increase in NFB is associated with a higher monthly return of approximately 0.01881, or 1.881 percentage points, in the model. The R^2 value of 0.3952 indicates a linear explanatory power of 39.52 percent. This figure does not indicate that 39.52 percent of the return is due to NFB.

The positive direction of the relationship aligns with the findings of Rudiawarni, Sulistiawan, and Sergi (2024), who reported a positive relationship between foreign investor net purchases and excess returns in Indonesian companies. The similarity lies in the direction of the relationship and the market context, but the two designs are not identical. Their study used a sample of companies and excess returns, while this study focuses on BBRI, simple returns, and monthly data for 2020–2025. Therefore, these results represent evidence from a different unit of analysis, not a direct replication.

The results can be discussed using price pressure and price impact theories. Theoretically, net buying can increase demand pressure, while net selling can increase supply pressure. Froot et al. (2001) examined the relationship between portfolio flows and returns, and Richards (2005) reported the price impact of foreign trade in several emerging Asian markets. However, transaction flows can also respond to previous returns or similar information, as discussed in the positive feedback trading literature. Because this study used NFB and returns for the same month, the results are consistent with this mechanism, but cannot empirically separate the direction of the influence.

Previous research also shows that outcome variables and research context influence how findings should be interpreted. Choe, Kho, and Stulz (1999) found herding and positive feedback trading by foreign investors in the Korean market, but found no evidence of market destabilization during the period studied. Wang (2007) examined the relationship between foreign trade and market volatility in Indonesia and Thailand. Because Wang used volatility as

an outcome, his findings provide context for foreign activity, not a direct comparison for the BBRI return coefficient.

The information and price discovery literature offers possible mechanisms related to NFB and returns, but previous research findings are inconsistent. Sudiman, Allen, and Powell (2013) found that the majority of price discovery in their sample of IDX stocks occurred among local investors, although foreign investors were more aggressive in placing orders. Conversely, Peranginangin et al. (2016) reported the contribution of aggressive foreign trading to price discovery and commonality in liquidity. Hanafi (2024) discussed foreign transaction patterns and price movements leading up to news announcements. Differences in the unit of analysis, frequency, and outcome variables make these findings interpretive rather than direct evidence of a causal mechanism for NFB on BBRI's monthly returns.

The positive and significant coefficient of NFB statistically supports H1 in the estimated model: across 72 monthly observations from January 2020 to December 2025, higher NFB is associated with higher monthly returns for BBRI. This direction of relationship aligns with Rudiawarni et al. (2024), but that study used excess returns on a sample of firms, rather than simple monthly returns for a single stock. This finding is consistent with the possibility of price pressure, but simple contemporaneous regression does not identify price discovery mechanisms or prove causality; foreign transactions may also respond to price changes within the same month.

In summary, the analysis of 72 monthly observations yielded a positive correlation between NFB and BBRI returns of 0.629. Simple linear regression yielded a positive NFB coefficient of 0.00001881 with a p-value <0.001 and an R^2 of 0.3952. Initial diagnostic tests found no significant evidence of residual normality, heteroscedasticity, and autocorrelation. Thus, H1 received statistical support in the initial estimate, with the caveat that the results represent a statistical relationship and not evidence of causality.

4. Conclusion

This study examines the relationship between foreign investor transactions, proxied by Net Foreign Buy (NFB), and monthly stock returns of PT Bank Rakyat Indonesia (Persero) Tbk (BBRI) on the Indonesia Stock Exchange during January 2020–December 2025. The analysis uses 72 monthly observations and simple linear regression. Based on the results of Chapter IV, conclusions are formulated by limiting the interpretation to the model and observation period. First, the NFB regression coefficient is positive at 0.00001881. With NFB in billions of Rupiah and returns as decimals, a 1 trillion Rupiah increase in NFB is associated with a monthly increase in returns of approximately 0.01881, or 1.881 percentage points, based on the estimated regression line. This figure represents an interpretation of the coefficient in the model, not a guarantee of actual return changes each time the NFB increases. Second, the NFB coefficient is statistically significant with a p-value less than 0.001. Therefore, the null hypothesis that the NFB coefficient is equal to zero is rejected at the 5 percent significance level. Because the coefficient is positive, this result supports the research hypothesis

regarding a positive and significant relationship between NFB and BBRI's monthly returns during the observation period. Third, the R^2 of 0.3952 indicates that 39.52 percent of the variation in monthly returns in the sample can be linearly explained by the NFB in this model. The remaining variation is not explained by this simple model and may be related to other factors or unobserved variation. R^2 is a measure of the model's explanatory power, not a measure of the percentage causal influence.

5. References

Choe, H., Kho, B.-C., & Stulz, R. M. (1999). Do foreign investors destabilize stock markets? The Korean experience in 1997. Journal of Financial Economics, 54(2), 227–264. https://doi.org/10.1016/S0304-405X(99)00037-9

Froot, K. A., & Ramadorai, T. (2001). The information content of international portfolio flows (NBER Working Paper No. 8472). National Bureau of Economic Research. https://doi.org/10.3386/w8472

Froot, K.A., O'Connell, P.G.J., & Seasholes, M.S. (2001). The portfolio flows of international investors. Journal of Financial Economics, 59(2), 151–193. https://doi.org/10.1016/S0304-405X(00)00084-2

Grossman, S. J., & Stiglitz, J. E. (1980). On the impossibility of informationally efficient markets. The American Economic Review, 70(3), 393–408. https://www.jstor.org/stable/1805228

Hanafi, MM (2024). Foreign investors and stealth trading: An examination of price movements in developing markets. Pacific-Basin Finance Journal, 83, Article 102234. https://doi.org/10.1016/j.pacfin.2023.102234

Indonesia Stock Exchange. (nd). Stock exchange holiday schedule. https://www.idx.co.id/id/tentang-bei/jadwal-libur-bursa

IPOT. (2020–2025). Monthly data on Foreign Buy and Foreign Sell of BBRI shares [Platform documentation and screenshots compiled by researchers].

Kyle, A.S. (1985). Continuous auctions and insider trading. Econometrica, 53(6), 1315–1335. https://doi.org/10.2307/1913210

Richards, A. (2005). Big fish in small ponds: The trading behavior and price impact of foreign investors in Asian emerging equity markets. Journal of Financial and Quantitative Analysis, 40(1), 1–27. https://doi.org/10.1017/S0022109000001721

Rudiawarni, FA, Sulistiawan, D., & Sergi, BS (2024). The role of the net purchase of stocks by foreign investors in boosting stock returns: Evidence from the Indonesian stock market. Economic Modelling, 135, Article 106730. https://doi.org/10.1016/j.econmod.2024.106730

Stockbit. (2020–2025). Historical data on BBRI stock closing prices [Platform data compiled by researchers].

Sudiman, J., Allen, DE, & Powell, RJ (2013). The contribution of foreign investors to price discovery in the Indonesian stock exchange. Annals of Financial Economics, 8(2), Article 1350008. https://doi.org/10.1142/S2010495213500085

Wang, J. (2007). Foreign equity trading and emerging market volatility: Evidence from Indonesia and Thailand. Journal of Development Economics, 84(2), 798–811.https://doi.org/10.1016/j.jdeveco.2006.05.001

Warinangin, Y., Ali, A.Z., Brockman, P., & Zurbruegg, R. (2016). The impact of foreign trades on emerging market liquidity. Pacific-Basin Finance Journal, 40, 1–16. https://doi.org/10.1016/j.pacfin.2016.07.002