

ANALYSIS IMPACT OF MERGER BSI TO THE SHARIA STOCK DEVELOPMENT ON THE FINANCIAL SECTOR

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Abstract. *This study aims to analyze the impact of the Bank Syariah Indonesia (BSI) merger on the performance of Islamic stocks in the Indonesian financial sector. The merger of three state-owned Islamic banks (BRI Syariah, BNI Syariah, and Bank Syariah Mandiri) is a strategic government policy to strengthen the national Islamic banking industry, increase economies of scale, and expand Indonesia's influence in the global Islamic financial market. The method used is a **quantitative descriptive** approach with a **Vector Error Correction Model (VECM)** approach involving stock price and transaction volume variables from four Islamic banks: Bank Syariah Indonesia (BRIS), Bank Aladin (BANK), Bank BTPN Syariah (BTPS), and Bank Panin Dubai Syariah (PNBS). The data used is weekly data for the 2018–2023 period. It results of the study indicate that the BSI merger had a negative and significant impact on the stock prices and transaction volume of BANK, BTPS, and PNBS. However, PNBS transaction volume showed a positive and significant response to its internal variables. The VECM results found a short-term influence between BRIS stock prices and BANK, BTPS, and PNBS. The **Granger causality test** showed a one-way relationship between BRIS stock prices and several other sharia stock variables. Meanwhile, the Impulse Response Function (**IRF**) results showed that BRIS shares responded **positively** when other variables experienced shocks. In general, sharia stocks in the financial sector exhibited adaptive fluctuations and followed model predictions.*

Keywords: *Sharia Stock, merger Bank Syariah Indonesia, financial sector of Islamic Index, VAR VECM*

Introduction

1.1 Background

In the current era of globalized Islamic finance, Islamic banking has demonstrated persistence and resilience amid global financial crises. Islamic banks, which operate based on principles and values different from conventional banking, require a paradigm shift in performance measurement that is not solely oriented toward financial ratios (Antonio, 2012). In 2020, the Covid-19 pandemic had a significantly impactful effect on Indonesia's

economy, beginning with disruptions in international commodity distribution chains and a decline in foreign investment. This resulted in an economic slowdown, with growth decreasing from 5.02% in 2019 to 2.97% in 2020. The decline was also accompanied by rising unemployment, where World Bank data shows an increase from 5.28% to 7.07% in 2020 (Melati, 2023). The rapid spread of Covid-19 changed human lifestyles and social interactions. People were required to wear masks and avoid crowds, which restricted economic activities such as production, distribution, and global marketing due to lockdown policies.

Indonesia is part of the global supply chain, contributing 18.5% of its GDP from various sectors. Indonesian exports declined by 2.6% from 2019 to 2020. Macroeconomically, a country's economic condition correlates with its capital market performance. High uncertainty in production and capital markets tends to make investors more reactive to potential crises, resulting in declining investor confidence and reduced transaction volume (Melati, 2023). Indonesia's Islamic banking industry has experienced significant development over the past two decades. However, until 2020, its market share remained below 7% of the national banking industry. In response, the government undertook a strategic merger of three state-owned Islamic banks—Bank Syariah Mandiri, BNI Syariah, and BRI Syariah—forming Bank Syariah Indonesia (BSI) on February 1, 2021.

This merger was expected to strengthen capital capacity, expand the network, improve efficiency, and create an Islamic bank with global competitiveness. However, the merger also posed potential risks, including uncertainty in stock performance, especially during the Covid-19 pandemic.

Sharia-compliant financial stocks play an important role as indicators of investor confidence in the stability of Islamic financial institutions. Therefore, analyzing the impact of the BSI merger on the performance of Islamic financial sector stocks is highly relevant and important.

1.1.1 Problem Formulation

1. Concerns regarding the potential decline in the stock performance of the merged Islamic bank (BSI) after the merger.
2. The share prices of Islamic banks prior to the merger may not have positively influenced the financial sector's stock prices after the BSI merger.
3. The stock performance of the merged Islamic bank (BSI) may not support the overall development of Islamic financial sector stocks.

1.1.2 Research Questions

1. Based on the problem formulation above, the research questions to be examined are:
2. Does the merger of state-owned Islamic banks lead to a decline in financial sector stock prices?
3. Do the stock prices of Islamic banks prior to the merger collectively have a relationship or positive impact on Islamic sector stocks?
4. Does the stock performance of the merged Islamic bank (BSI) have no influence on Islamic financial sector stock prices?

1.1.3 Research Limitations

This study focuses on analyzing stock performance before and after the merger of Bank Syariah Indonesia, and identifying whether there are significant differences in stock prices and trading volumes before and after the merger. It also aims to observe the development of Islamic stocks in the financial sector. The stock analyzed is BRI Syariah prior to the merger (ticker: BRIS), and BSI after the merger (with the same ticker: BRIS), using weekly average stock prices and trading volumes. The observation period spans from September 5, 2018 to May 31, 2023.

This study does not analyze Islamic stocks from all sectors in the Islamic stock market and does not consider macroeconomic factors, as these influences are assumed to be inherently reflected in the movement of Islamic bank stocks before and after the merger, including financial sector Islamic stocks.

1.1.4 Research Objectives

1. Based on the research questions, the objectives of this study are:
2. To analyze the stock performance of Islamic banks before and after the merger into Bank Syariah Indonesia (BSI).
3. To analyze and identify whether there are significant differences in the development of Islamic bank stocks pre- and post-merger.
4. To analyze the impact of the merger on Islamic financial sector stocks.

1.1.5 Research Benefits

The results of this study are expected to provide contributions and benefits to relevant stakeholders:

1) Theoretical Benefits

The findings and analysis of this study are expected to serve as a source of ideas or references for academics and practitioners in the Islamic capital market, as well as information for other researchers interested in the development of the Islamic capital market and Islamic banks.

2) Practical Benefits

The results may serve as a reference for Islamic investors who have expectations regarding the growth of Islamic stocks. They may also help determine the extent to which these stocks influence the progress of Islamic financial institutions in the Islamic stock market. Additionally, the research highlights the positive impacts or benefits of the merger of Islamic banks, and contributes to the future development of Islamic stocks, encouraging more Islamic banks and non-bank Islamic financial institutions to successfully conduct IPOs in Indonesia's Islamic capital market.

Literature Review

One effort to reduce vulnerabilities is by increasing public participation in the capital market (Asto Hadiyoso, 2015). The purpose of the study was to

establish an optimal portfolio derived from stocks listed in the Indonesia Sharia Stock Index (ISSI) and to measure its performance to determine its potential as an investment instrument for the wider public. Using the single-index model approach, daily stock price data, and inflation as a proxy for the risk-free rate, the study produced an optimal portfolio consisting of forty-three stocks with returns and risks superior to the market (Composite Stock Price Index). The smaller number of stocks and lower risk compared to the market indicate that the portfolio was well diversified. Performance testing using Jensen's Alpha showed that the portfolio outperformed the market, JII, and ISSI (Najeeb, 2013). The Islamic Capital Market and the Islamic Finance Industry aim to provide investment solutions that comply with Sharia. In Malaysia, Sharia committee members of a university must adhere to internal policies and procedures adopted by the institution to implement standards established by the Central Bank of Malaysia (Gilani, pp. 85–98).

Other studies examine factors influencing the capital structure of Islamic banks worldwide, particularly in the Middle East, Far East Asia, and Europe, where Islamic banks operate to further develop and sustain the Islamic capital market in the Maldives. Policy reforms are necessary to address these challenges (Muneeza, 2018; Hunnayan, 2017).

There are also studies showing that unsystematic risk measured by both CAPM and APT models remains high, suggesting that additional overlooked factors may have a stronger influence on stock returns than market indices and GDP (Masa'deh, 2018). Research has also found that Islamic stock portfolios outperform conventional portfolios in all periods (pre-crisis before 2007, the 2007–2010 crisis period, and post-crisis from 2011 to 2015) (Haddouti, 2019). This indicates that Islamic stocks are generally more resilient during times of crisis. However, different results were found in research conducted in India, where political issues influenced the market—showing positive market reactions to elections and increases in certain stock returns during election periods (Kavita Chavali, 2020). Islamic stocks are considered a viable and

ethical investment avenue for Muslim investors, allowing them to invest according to their religious beliefs without sacrificing financial performance (Abbes, 2019). Another study analyzed and developed the potential of the ASEAN MEA, recommending cross-border regional policies to support deeper integration of the ASEAN Islamic capital market (Ardiansyah, 2019). Islamic companies and their investors worldwide benefit from clear management practices, especially in controlling leverage in accordance with self-regulated guidelines (Kahya, 2020). A comparative study on bankruptcy levels between Islamic and conventional banks also found that Islamic banks fall within the “grey zone,” according to the Financial Services Authority (OJK) and the Altman Z-Score model (Fakhri, 2019).

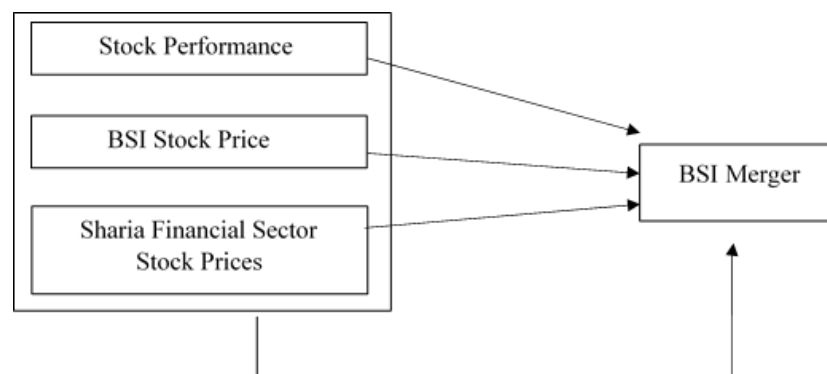
These findings indicate that the financial condition of Sharia Business Units (UUS) is relatively good for business development but remains vulnerable in responding to risks arising from economic and financial industry changes. Another study tested hypotheses and analyzed data regarding the announcement of the merger of state-owned Islamic banks. The results showed differences in average abnormal return (Suci, 2021) prior to the announcement, indicating a market reaction to the merger announcement as observed from trading volume activity. However, there was no difference in Average Trading Volume Activity (ATVA) before and after the merger announcement due to insignificant results, suggesting that the information did not influence investors’ decisions.

Among the existing studies, none has examined the impact of the merger of state-owned Islamic banks under normal conditions or during a crisis caused by a specific outbreak. The referenced studies also analyzed only short-term effects on stock price movements – limited to 10 days before and 10 days after the merger announcement. Therefore, the author aims to explore the topic more comprehensively over a longer period to provide valuable insights into the stock performance before and after the merger for future Islamic stock investors.

Method

3.1.1 Hypothesis

Based on the theories previously discussed and the findings from past research, the variables used in this study can be applied in the research framework as follows:



The merged Islamic Bank continues to grow, develop, and operate sustainably. This raises several questions: Will this affect its overall stock performance? Will it influence the final stock price after the merger? And will it also have an impact on other Islamic financial sector stock prices?

H1: There is a significant effect on the increase in Islamic bank stock prices after the merger.

H2: There is an improvement in company performance after the merger.

H3: There is an effect on other Islamic financial sector stock prices.

This study employs a descriptive quantitative approach using the **Vector Error Correction Model (VECM)** method. The research variables include:

- BRIS, BANK, BTPS, PNBS stock prices
- Trading volume of each stock

3.1.2 Data Sources and Types

Secondary data in the form of weekly stock prices and trading volumes for the period **5 September 2018 - 31 May 2023**, obtained from:

- Indonesia Stock Exchange (IDX)

- Online securities applications
- OJK (Financial Services Authority) reports

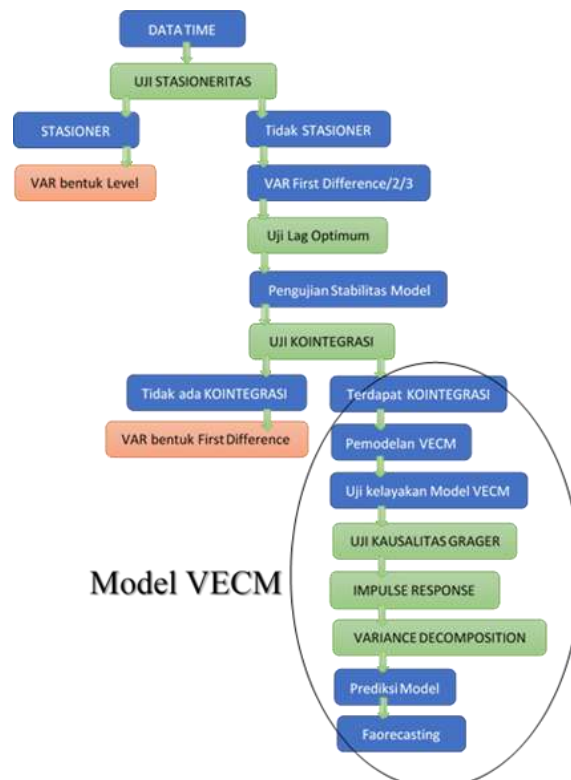
3.1.3 Analysis Techniques

The analysis was conducted through the following steps:

1. Stationarity Test (ADF Test)
2. Optimal Lag Determination
3. Johansen Cointegration Test
4. VECM Estimation
5. Granger Causality Test
6. Impulse Response Function (IRF)
7. Variance Decomposition (VD)

3.1.4 Model and Formula

1. Model Development Flow



2. Vector Error Correction Model (VECM)

The VECM model used in this study is as follows:

$$\begin{aligned}
 Y_{1t} &= \beta_{01} + \mu_0 x + \sum_{i=1}^{p-1} \alpha_i Y_{2t-i} + \dots + \sum_{i=1}^{p-1} \eta_i Y_{nt-i} + e_{1t} \\
 Y_{2t} &= \beta_{01} + \mu_0 x + \sum_{i=1}^{p-1} \alpha_i Y_{2t-i} + \dots + \sum_{i=1}^{p-1} \eta_i Y_{nt-i} + e_{1t} \\
 Y_{3t} &= \beta_{01} + \mu_0 x + \sum_{i=1}^{p-1} \alpha_i Y_{2t-i} + \dots + \sum_{i=1}^{p-1} \eta_i Y_{nt-i} + e_{1t} \\
 Y_{4t} &= \beta_{01} + \mu_0 x + \sum_{i=1}^{p-1} \alpha_i Y_{2t-i} + \dots + \sum_{i=1}^{p-1} \eta_i Y_{nt-i} + e_{1t} \\
 Y_{5t} &= \beta_{01} + \mu_0 x + \sum_{i=1}^{p-1} \alpha_i Y_{2t-i} + \dots + \sum_{i=1}^{p-1} \eta_i Y_{nt-i} + e_{1t}
 \end{aligned}$$

ket :

Y_1 = Harga Saham

Y_2 = Volume Transaksi

Saham Y_3 = Nilai Saham

Syariah

Y_4 = Index Saham

Syaria Y_5 = Saham

Syariah Mergert = time

trend

β = Parameter

p-1 = Ordo VECM dari

$VAR Y_{t-1}$ = variabel in-

level

e = error dengan $i = 1,2,3,4,5$

3.1. Theoretical Framework

Linguistically, the word “investment” originates from the English term *investment*, meaning “to plant,” or from the Arabic word *istathmara*, meaning “to grow, produce fruit, or increase in number.” Terminologically, investment refers to capital placement or equity participation in a business activity that does not violate Sharia principles, either in its object or in its processes (Antonio, 2007).

The legal basis for investment is found in the Qur’anic verses of Surah Yusuf, verses 46–49.

(يُوسُفُ أَيُّهَا الصِّدِّيقُ أَفْتِنَا فِي سَبْعِ بَقَرَاتٍ سِمَانٍ يَأْكُلُهُنَّ سَبْعَ عَجَافٍ وَسَبْعِ سُنبُلَاتٍ خُضْرٍ وَأُخَرَ يَابِسَاتٍ
 أَلْعَلِّيَ أَرْجِعُ إِلَى النَّاسِ لَعَلَّهُمْ يَعْلَمُونَ ٤٦ قَالَ تَزْرَعُونَ سَبْعَ سِنِينَ دَأْبًا فَمَا حَصَدْتُمْ فَذَرُوهُ فِي سُنْبُلَةٍ إِلَّا
 قَلِيلًا مِمَّا تَأْكُلُونَ ٤٧ ثُمَّ يَأْتِي مِنْ بَعْدِ ذَلِكَ سَبْعَ شِدَادٍ يَأْكُلْنَ مَا قَدَّمْتُمْ لَهُنَّ إِلَّا قَلِيلًا مِمَّا تَحْصِنُونَ ٤٨ ثُمَّ
 يَأْتِي مِنْ بَعْدِ ذَلِكَ عَامٌ فِيهِ يُغَاثُ النَّاسُ وَفِيهِ يَعْصِرُونَ ٤٩)

“(When the servant met Yusuf, he exclaimed): ‘Yusuf, O man of truth, explain to us about seven fat cows being eaten by seven thin cows, and seven green ears

(of grain) and (seven) others that are dry, so that I may return to the people, that they may know.'"

Yusuf said: "You shall sow for seven consecutive years as usual; and what you harvest, leave it in its ears, except for a small portion that you will consume."

"Then after that will come seven extremely difficult years, which will consume what you have stored to face those years, except for a small portion of the seeds you have preserved."

"Then after that will come a year in which people will receive abundant rain, and in that year they will press (grapes)."

From these verses, we can derive the wisdom regarding the importance of anticipating a crisis while still in a state of prosperity or abundance. This was conveyed by Prophet Yusuf (peace be upon him) in his interpretation of the king's dream about seven fat cows and seven thin cows, accompanied by seven green ears of grain and seven dry ones. The dream symbolized periods of abundance and scarcity. Therefore, Prophet Yusuf (peace be upon him) proposed the establishment of food storage as a form of long-term investment, so that when difficult times arrived, what had been stored could sustain the people through the crisis.

In principle, investment is permissible (*halal*). Investment in stocks is referred to as *musahamah*, which is a derivative form of *musyarakah*, meaning partnership in the form of shares. In the Qur'an, Surah Sad verse 24 mentions the concept of *syirkah/musyarakah*.

(وَلَقَدْ هَمَّتْ بِئْتٍ وَهَمَّ بِهَا لَوْلَا أَنْ رَأَىٰ بُرْهَانَ رَبِّهِ كَذَلِكَ لِنَصْرِفَ عَنْهُ السُّوءَ وَالْفَحْشَاءَ إِنَّهُ مِنْ عِبَادِنَا الْمُخْلَصِينَ ﴿٢٤﴾

"Indeed, the woman had desired Yusuf, and he would have inclined toward her had he not seen the proof of his Lord. Thus (it was) so that We might avert from him evil and immorality. Indeed, he was one of Our chosen servants."

From the verse above, it can be understood that partnership or association in shares is permissible, as long as it is carried out with trustworthiness (*amanah*) and the partners adhere to Sharia rules and do not

wrong one another. This is because the basic ruling in *mu'amalah* is *mubah* (permissible).

In Sharia-compliant investment, stock selection is allowed only for issuers that are included in Islamic stock indices. Stocks that have been screened according to Sharia criteria are listed in the **Daftar Efek Syariah (DES)**, **Jakarta Islamic Index (JII)**, and **Indonesia Sharia Stock Index (ISSI)**.

Results and Discussion

4.1. Effect of the Merger on Stock Prices

The VECM results show that the merger of BSI has a negative and significant impact on:

- BANK stock price
- BTPS stock price
- PNBS stock price

Meanwhile, BRIS stock – as the surviving entity of the merger – exhibits high volatility but tends to stabilize in the medium term.

These findings are supported by several statistical tests, including:

4.1.1 Stationarity Test at Level

The initial stationarity test results indicate that one variable, the BRIS stock price, shows a probability value greater than 0.05 (above the alpha level).

- BRIS (MacKinnon) = 0.5974 > 0.05
- BRIS (ADF Test) = 0.1742 > 0.05

Therefore, a retest was conducted using first difference, where all variables became stationary:

- Stock prices: BANK = 0.000, BRIS = 0.000, BTPS = 0.000, PNBS = 0.000
- Trading volumes: BANK = 0.000, BRIS = 0.000, BTPS = 0.000, PNBS = 0.000

This indicates the data is stationary and ready for further testing.

4.1.2 Optimal Lag Test

The optimal lag selection uses a VAR model based on criteria such as: LR, FPE, AIC, SIC, and HQ. Akaike Information Criterion (AIC) was used as the primary benchmark. The maximum lag indicated is lag 7, as most criteria (LR, FPE, AIC) converge at this lag.

4.1.3 Model Stability Test

The stability of the VAR model is essential; if unstable, IRF and VD analyses are invalid. The model is considered stable because all modulus values are < 1 , meaning the model is valid for impulse response and variance decomposition analysis.

4.1.4 Cointegration Test

Johansen Cointegration Test is used to determine long-term relationships among variables. The assumption selection (based on deterministic trend) shows that the best model is:

Assumption 1:

None (NINT) Using lag 7 (derived from differenced data), the results show:

- Trace test and Max-Eigen both indicate the presence of cointegration.
- Since there are 8 variables, maximum cointegration is 7.
- Because cointegration exists, the VECM model is appropriate.

4.1.5 VECM Modeling (Short-Run and Long-Run Results)

Below is the English summary of your detailed VECM interpretations (points 1-34):

Short-Run Findings (Summary of Effects) : The VECM results show numerous significant short-run relationships among stock prices and trading volumes of BRIS, BANK, BTPS, and PNBS. Examples :

- α 1% increase in BRIS price 8 months earlier significantly increases BTPS price by 0.21%.
- α 1% increase in BANK price 1-6 months earlier significantly increases BANK's trading volume (0.22%-0.39%).

- α 1% increase in BTPS price 1–4 months earlier significantly increases BTPS trading volume.
- α 1% increase in PNBS trading volume 1–7 months earlier significantly increases PNBS trading volume (0.28%–0.45%).

BRIS trading volume shock significantly affects PNBS prices.

(All interpretations follow the t-statistic > t-table rule.)

Long-Run Findings : α 1% increase in BRIS stock price does NOT significantly affect the stock prices of BANK, BTPS, PNBS, nor trading volumes of BRIS, BANK, BTPS All t-statistics = 1.00000 < t-table (1.97047) But BRIS significantly affects PNBS trading volume Coefficient \approx 0.28 t-statistic = 2.85522 > 1.97047

4.1.6 VECM Model Feasibility

Model feasibility requires probability values > 0.05.

At Adj. Q-Stat:

Lag 6 = 0.0800 > 0.05

Lag 7 = 0.0730 > 0.05

Thus, the model is feasible for further analysis.

4.2. Effect of the Merger on Trading Volume

Post-merger, Islamic financial sector stock trading volumes declined, except:

PNBS, which experienced a significant increase in trading volume. This indicates investor reactions to the new ownership structure of PNBS after Dubai Islamic Bank entered.

4.3. Causality Results

Impulse behavior summary ;

- Shocks in BANK cause BRIS to rise in period 2, then fall sharply in period 3, fall again in period 5, and rise again until period 10.
- Shocks in BANK cause BTPS to fall in period 3 (-8), fall deeper in period 5 (-16), recover partially around period 8, then fall again in period 10.
- Shocks in BANK cause PNBS to rise in period 2 (+15), then fall sharply by period 6 (-30), then gradually rise through period 10.

- Shocks in BRIS affect BANK, BTPS, and PNBS with alternating volatility patterns.
- Shocks in BTPS heavily impact BANK and BRIS with large negative swings.
- Shocks in PNBS generally cause PNBS itself to fluctuate with significant amplitude.

Main conclusion :

- BRIS has the strongest central effect.
- When other stocks experience shocks, BRIS tends to rise.
- When BRIS experiences shocks, other stocks also rise, but none reach stability by period 10.

Granger Causality Results

One-way causality relationships:

- BRIS price → BTPS price
- BRIS price → PNBS price
- BRIS price → PNBS volume
- BANK price → BRIS volume

Interpretation : BRIS plays a central and influential role in the Islamic financial sector's stock dynamics.

4.4. Impulse Response Function (IRF)

The IRF analysis shows that : Shocks in one variable generate persistent responses in others. BRIS consistently gives positive responses to shocks in other variables, indicating strong adaptability and dominance in the sector.

4.5. Variance Decomposition (VD)

Variance decomposition shows : stock price fluctuations are explained up to 100% by BRIS itself in early periods. Contributions from BANK, BTPS, PNBS, and their trading volumes begin to emerge starting period 2 and increase gradually through period 10. This confirms that BRIS has the largest contribution to the variance structure of Islamic financial sector stocks.

| Variance Decomposition of D(BRIS): | | | | | | | | | |
|------------------------------------|----------|----------|----------|----------|----------|------------|------------|------------|------------|
| Period | S.E. | D(BRIS) | D(BANK) | D(BTPS) | D(PNSB) | D(V__BRIS) | D(V__BANK) | D(V__BTPS) | D(V__PNSB) |
| —† | 105.8252 | 100.0000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 2 | 115.8191 | 96.95497 | 0.036646 | 2.93E-05 | 0.097877 | 0.008944 | 2.181801 | 0.193148 | 0.526589 |
| 3 | 119.6174 | 91.88180 | 0.253427 | 0.300566 | 1.125684 | 0.015859 | 2.097842 | 1.648701 | 2.676125 |
| 4 | 123.7402 | 85.86164 | 0.252213 | 0.336485 | 4.235478 | 0.190489 | 4.932489 | 1.690365 | 2.500844 |
| 5 | 128.9573 | 84.36963 | 0.238626 | 0.546855 | 5.352941 | 0.188690 | 4.945150 | 1.732453 | 2.625656 |
| 6 | 131.6949 | 80.89851 | 0.289641 | 0.552801 | 5.395920 | 0.256006 | 4.800730 | 1.685062 | 6.121330 |
| 7 | 134.4670 | 77.62885 | 0.805476 | 0.739156 | 6.349046 | 1.043404 | 5.280756 | 1.645711 | 6.507603 |
| 8 | 135.9766 | 76.09384 | 1.278231 | 0.722938 | 6.619284 | 1.037918 | 5.741260 | 1.778934 | 6.727598 |
| 9 | 138.3166 | 74.37232 | 1.692500 | 0.762047 | 6.843267 | 1.220710 | 5.673017 | 2.373797 | 7.062340 |
| 10 | 141.3502 | 71.52829 | 1.786233 | 2.149408 | 7.189324 | 1.246856 | 5.756890 | 2.274956 | 8.068041 |

The next contribution occurs in the **BANK stock price variable**, where the fluctuations in BANK's stock price are influenced by its own variable, reaching **99.99%**. Meanwhile, the BRIS stock price contributes **0.01%**, whereas the BTPS and PNBS stock prices, as well as the trading volumes of BRIS, BANK, BTPS, and PNBS, do not provide any contribution yet, remaining at **0%**.

In the second period, contributions from the other variables begin to appear and continue to increase up to the tenth period, as presented in the following table:

| Variance Decomposition of D(BANK): | | | | | | | | | |
|------------------------------------|----------|----------|----------|----------|----------|------------|------------|------------|------------|
| Period | S.E. | D(BRIS) | D(BANK) | D(BTPS) | D(PNSB) | D(V__BRIS) | D(V__BANK) | D(V__BTPS) | D(V__PNSB) |
| —1 | 87.62729 | 0.006743 | 99.99326 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 2 | 94.98778 | 0.469049 | 92.16089 | 0.014802 | 5.802312 | 0.507298 | 0.830800 | 0.074502 | 0.140347 |
| 3 | 100.3140 | 2.771253 | 85.41565 | 0.020240 | 9.062474 | 0.665035 | 1.166003 | 0.744962 | 0.154379 |
| 4 | 103.9644 | 3.004203 | 81.33757 | 0.038293 | 10.09705 | 0.634855 | 1.424244 | 0.693611 | 2.770171 |
| 5 | 105.8905 | 2.964905 | 80.47733 | 0.378270 | 9.825104 | 1.012256 | 1.723877 | 0.876749 | 2.741504 |
| 6 | 107.4836 | 3.497793 | 78.71891 | 0.493043 | 9.699888 | 1.119865 | 1.720230 | 1.848339 | 2.901927 |
| 7 | 110.7621 | 5.879082 | 75.48321 | 0.477120 | 9.275053 | 1.062191 | 2.247600 | 1.899833 | 3.675908 |
| 8 | 118.5901 | 7.307006 | 67.07474 | 0.590540 | 11.10553 | 0.952557 | 6.670586 | 1.852973 | 4.446068 |
| 9 | 125.2136 | 11.05037 | 61.09372 | 1.844604 | 11.74958 | 1.344239 | 6.042842 | 2.262680 | 4.611968 |
| 10 | 133.2291 | 14.94219 | 54.66598 | 2.132446 | 14.65644 | 1.209350 | 5.688649 | 2.058113 | 4.646827 |

Next, in **Graph 3**, the results show the contribution occurring in the **BTPS stock price variable**, where fluctuations in BTPS stock price are influenced by its own variable, reaching **94.19%**. The BRIS stock price contributes **4.63%**, while BANK contributes **1.18%**. Meanwhile, the BTPS and PNBS stock prices, as well as the trading volumes of BRIS, BANK, BTPS, and PNBS, do not yet provide any contribution, remaining at **0%**.

In the second period, contributions from other variables begin to appear and continue to increase up to the tenth period, as shown in the table below.

Furthermore, in **Graph 4**, the results show the contribution occurring in the **PNBS stock price variable**, where fluctuations in PNBS stock price are influenced by its own variable, reaching **87.83%**. The BRIS stock price

contributes **7.78%**, BANK contributes **2.70%**, and BTPS contributes **1.69%**. Meanwhile, the trading volumes of BRIS, BANK, BTPS, and PNBS do not yet provide any contribution, remaining at **0%**.

In the second period, contributions from other variables begin to appear and increase up to the tenth period, as presented in the table below.

| Variance Decomposition of D(BTPS): | | | | | | | | | |
|------------------------------------|----------|----------|----------|----------|----------|------------|------------|------------|------------|
| Period | S.E. | D(BRIS) | D(BANK) | D(BTPS) | D(PNSB) | D(V__BRIS) | D(V__BANK) | D(V__BTPS) | D(V__PNBS) |
| 1 | 160.5640 | 4.626724 | 1.184070 | 94.18921 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 2 | 169.0726 | 4.665956 | 1.308010 | 91.55493 | 1.858487 | 0.118436 | 0.056994 | 0.198300 | 0.238891 |
| 3 | 173.2539 | 6.312519 | 1.823636 | 87.20727 | 1.803145 | 0.791138 | 0.089748 | 1.681796 | 0.290753 |
| 4 | 175.8681 | 6.206613 | 1.813560 | 84.68899 | 1.897567 | 1.691917 | 0.114687 | 2.999659 | 0.587010 |
| 5 | 183.9371 | 6.423266 | 1.683765 | 83.42795 | 2.258253 | 2.054240 | 0.727946 | 2.851936 | 0.572645 |
| 6 | 188.2374 | 7.909440 | 1.748362 | 79.96140 | 3.116475 | 2.552973 | 0.820345 | 3.291442 | 0.599564 |
| 7 | 190.1271 | 8.935058 | 1.986069 | 78.37982 | 3.157165 | 2.698498 | 0.839883 | 3.334364 | 0.669141 |
| 8 | 191.8833 | 8.894034 | 2.088576 | 77.39853 | 3.530715 | 2.709323 | 1.024965 | 3.324658 | 1.029202 |
| 9 | 192.8573 | 8.834653 | 2.262291 | 76.61938 | 3.718321 | 2.712024 | 1.104405 | 3.420719 | 1.328204 |
| 10 | 193.7724 | 8.925554 | 2.316301 | 75.96959 | 3.747746 | 2.800246 | 1.342973 | 3.389974 | 1.507613 |

| Variance Decomposition of D(PNSB): | | | | | | | | | |
|------------------------------------|----------|----------|----------|----------|----------|------------|------------|------------|------------|
| Period | S.E. | D(BRIS) | D(BANK) | D(BTPS) | D(PNSB) | D(V__BRIS) | D(V__BANK) | D(V__BTPS) | D(V__PNBS) |
| 1 | 4.300334 | 7.780814 | 2.696142 | 1.695888 | 87.82716 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 2 | 4.617813 | 9.836820 | 2.848148 | 1.501917 | 84.96234 | 0.096095 | 0.120826 | 0.506824 | 0.127032 |
| 3 | 4.835905 | 9.094351 | 4.921271 | 1.544826 | 78.14128 | 1.156071 | 2.530118 | 1.942801 | 0.669284 |
| 4 | 5.011106 | 8.630475 | 7.062142 | 1.446528 | 74.46418 | 1.129089 | 4.018207 | 1.818753 | 1.430625 |
| 5 | 5.075038 | 8.491030 | 7.178798 | 1.893447 | 73.61032 | 1.131052 | 4.269327 | 1.872998 | 1.553029 |
| 6 | 5.195660 | 8.503523 | 8.964637 | 2.183356 | 70.99483 | 1.140144 | 4.391735 | 1.874429 | 1.947349 |
| 7 | 5.340797 | 8.185078 | 8.604611 | 2.067677 | 67.19709 | 2.098415 | 5.355748 | 1.776893 | 4.714488 |
| 8 | 5.633871 | 9.902613 | 12.24844 | 1.931982 | 61.14941 | 3.524496 | 4.824078 | 1.613342 | 4.805630 |
| 9 | 5.740062 | 9.975316 | 12.23832 | 2.087172 | 59.61846 | 3.405835 | 5.379756 | 1.916424 | 5.378720 |
| 10 | 5.886979 | 9.893446 | 12.55709 | 2.289413 | 59.22948 | 3.239325 | 5.469987 | 2.173639 | 5.147614 |

In **Graph 5**, the results show the contribution occurring in the **BRIS stock trading volume variable**, where fluctuations in BRIS trading volume are influenced by its own variable, reaching **90.10%**. The BRIS stock price contributes **9.889%**, while BANK contributes **0.003%**, BTPS contributes **0.002%**, and PNBS contributes **8.36%**. Meanwhile, the trading volumes of BANK, BTPS, and PNBS do not yet provide any contribution, remaining at **0%**.

In the second period, contributions from other variables begin to appear and continue to increase up to the tenth period, as shown in the table below.

| Variance Decomposition of D(V__BRIS): | | | | | | | | | |
|---------------------------------------|----------|----------|----------|----------|----------|------------|------------|------------|------------|
| Period | S.E. | D(BRIS) | D(BANK) | D(BTPS) | D(PNSB) | D(V__BRIS) | D(V__BANK) | D(V__BTPS) | D(V__PNBS) |
| 1 | 59602410 | 9.889895 | 0.002933 | 0.001933 | 8.36E-05 | 90.10516 | 0.000000 | 0.000000 | 0.000000 |
| 2 | 76756754 | 7.562126 | 0.542461 | 0.123053 | 0.005349 | 90.25419 | 0.125202 | 1.386595 | 0.001020 |
| 3 | 77537831 | 7.634531 | 0.713361 | 0.357860 | 0.058511 | 88.61371 | 0.883509 | 1.488006 | 0.250510 |
| 4 | 78030497 | 8.104504 | 0.705250 | 0.735338 | 0.058626 | 87.55682 | 0.938361 | 1.628109 | 0.272993 |
| 5 | 78371140 | 8.258981 | 0.704801 | 0.733792 | 0.091985 | 87.31877 | 0.996451 | 1.619924 | 0.275292 |
| 6 | 79252315 | 8.463002 | 0.772710 | 0.875889 | 0.232805 | 86.16452 | 1.046228 | 1.591397 | 0.853453 |
| 7 | 80033543 | 8.315541 | 0.814933 | 1.073643 | 0.574372 | 84.53672 | 1.105872 | 2.617944 | 0.960979 |
| 8 | 87034754 | 7.263872 | 0.785957 | 1.751939 | 0.555962 | 84.77116 | 0.935434 | 2.936083 | 0.999597 |
| 9 | 89149837 | 7.024316 | 0.749686 | 1.692808 | 0.533365 | 83.42342 | 1.052871 | 4.537831 | 0.985704 |
| 10 | 90103869 | 6.997833 | 0.889721 | 2.373293 | 0.670004 | 81.68839 | 1.055772 | 5.321709 | 1.003280 |

In **Graph 6**, the results show the contribution occurring in the **BANK stock trading volume variable**, where fluctuations in BANK trading volume are influenced by its own variable, reaching **71.22%**. The BRIS stock price contributes **2.88%**, the BANK stock price contributes **25.19%**, BTPS contributes **0.13%**, PNBS contributes **0.55%**, and the BRIS trading volume contributes **0.03%**. Meanwhile, the trading volumes of BTPS and PNBS do not yet provide any contribution, remaining at **0%**.

In the second period, contributions from other variables begin to appear and continue to increase up to the tenth period, as shown in the table below.

Variance Decomposition of D(V__BANK):

| Period | S.E. | D(BRIS) | D(BANK) | D(BTPS) | D(PNSB) | D(V__BRIS) | D(V__BANK) | D(V__BTPS) | D(V__PNSB) |
|--------|----------|----------|----------|----------|----------|------------|------------|------------|------------|
| 1 | 10053926 | 2.877351 | 25.18796 | 0.133070 | 0.551805 | 0.034129 | 71.21568 | 0.000000 | 0.000000 |
| 2 | 10267721 | 3.324682 | 25.44635 | 0.140903 | 0.561207 | 0.032828 | 70.07383 | 0.010211 | 0.409987 |
| 3 | 10960889 | 4.639666 | 23.55757 | 0.284506 | 2.241815 | 0.568628 | 67.21262 | 0.013517 | 1.481672 |
| 4 | 11870278 | 4.878431 | 22.18034 | 0.270457 | 1.944088 | 1.416742 | 65.59324 | 0.031988 | 3.684713 |
| 5 | 12144177 | 4.776624 | 22.20921 | 0.551271 | 1.857532 | 1.674885 | 64.39170 | 0.346363 | 4.192415 |
| 6 | 12448948 | 4.733753 | 23.16052 | 0.526160 | 2.543157 | 1.904630 | 62.40579 | 0.498328 | 4.227660 |
| 7 | 14235899 | 21.66981 | 18.04477 | 0.488995 | 2.021154 | 3.466193 | 48.78272 | 0.446693 | 5.079674 |
| 8 | 14719238 | 23.17116 | 17.32180 | 0.710544 | 2.009803 | 3.862950 | 47.18479 | 0.431841 | 5.307112 |
| 9 | 15163319 | 21.84818 | 16.86599 | 0.742086 | 2.250781 | 4.061994 | 44.54831 | 0.445361 | 9.237297 |
| 10 | 15981379 | 21.19602 | 15.18358 | 1.562195 | 6.280186 | 5.026152 | 41.68427 | 0.575139 | 8.492457 |

In **Graph 7**, the results show the contribution occurring in the **BTPS stock trading volume variable**, where fluctuations in BTPS trading volume are influenced by its own variable, reaching **97.608%**. The BRIS stock price contributes **0.004%**, the BANK stock price contributes **0.007%**, the BTPS stock price contributes **1.807%**, PNBS contributes **0.047%**, and the BRIS trading volume contributes **0.047%**. Meanwhile, the BANK trading volume contributes **0.489%**, while the PNBS trading volume does not yet provide any contribution, remaining at **0%**.

In the second period, the contribution of the PNBS trading volume variable begins to appear and continues to increase up to the tenth period, as shown in the table below.

Variance Decomposition of D(V__BTPS):

| Period | S.E. | D(BRIS) | D(BANK) | D(BTPS) | D(PNSB) | D(V__BRIS) | D(V__BANK) | D(V__BTPS) | D(V__PNSB) |
|--------|----------|----------|----------|----------|----------|------------|------------|------------|------------|
| 1 | 9764525. | 0.004075 | 0.007184 | 1.807538 | 0.035238 | 0.047509 | 0.489987 | 97.60847 | 0.000000 |
| 2 | 10925031 | 0.125954 | 0.019514 | 3.498563 | 0.029237 | 0.410044 | 0.540584 | 95.33398 | 0.042122 |
| 3 | 11117937 | 0.397025 | 0.350316 | 4.420822 | 0.044949 | 0.459154 | 0.532543 | 93.74684 | 0.048347 |
| 4 | 11178549 | 0.583326 | 0.427154 | 4.373408 | 0.101433 | 0.455796 | 0.548683 | 93.22164 | 0.288560 |
| 5 | 11222685 | 0.590307 | 0.442936 | 4.778153 | 0.110020 | 0.636950 | 0.580810 | 92.53584 | 0.324985 |
| 6 | 11459074 | 0.592472 | 0.425243 | 7.965572 | 0.136183 | 1.130257 | 0.645306 | 88.79228 | 0.312683 |
| 7 | 11529984 | 0.961812 | 0.424698 | 7.877287 | 0.528007 | 1.137553 | 0.639221 | 87.91310 | 0.518322 |
| 8 | 11576289 | 1.009704 | 0.553265 | 7.992734 | 0.751932 | 1.189108 | 0.659599 | 87.23564 | 0.608021 |
| 9 | 11616350 | 1.250339 | 0.646255 | 8.035736 | 0.752014 | 1.209364 | 0.677129 | 86.82485 | 0.604314 |
| 10 | 11731945 | 1.371266 | 0.684121 | 7.906335 | 1.018701 | 1.478865 | 0.729849 | 86.21604 | 0.594828 |

In **Graph 8**, the results show the contribution occurring in the **PNBS stock trading volume variable**, where fluctuations in PNBS trading volume are predominantly influenced by its own variable, reaching **68.57%**. The BRIS stock price contributes **0.016%**, the BANK stock price contributes **0.045%**, the BTPS stock price contributes **0.631%**, and the PNBS stock price contributes **30.132%**. Meanwhile, the BRIS trading volume contributes **0.047%**, the BANK trading volume contributes **0.551%**, and the BTPS trading volume contributes **0.001%**.

In this final graph, all variables have begun to contribute and continue to increase from period 2 up to period 10, as shown in the table below. ;

| Variance Decomposition of D(V__PNBS): | | | | | | | | | |
|---------------------------------------|----------|----------|----------|----------|----------|------------|------------|------------|------------|
| Period | S.E. | D(BRIS) | D(BANK) | D(BTPS) | D(PNSB) | D(V__BRIS) | D(V__BANK) | D(V__BTPS) | D(V__PNBS) |
| 1 | 1.02E+08 | 0.016324 | 0.045294 | 0.631488 | 30.13257 | 0.046897 | 0.551722 | 0.001961 | 68.57375 |
| 2 | 1.08E+08 | 0.280286 | 0.497898 | 0.830882 | 28.09385 | 0.520355 | 0.490870 | 0.157963 | 69.12790 |
| 3 | 1.19E+08 | 1.493252 | 5.793895 | 0.693047 | 23.44499 | 1.297452 | 1.191277 | 0.173587 | 65.91250 |
| 4 | 1.21E+08 | 2.394925 | 5.694872 | 0.936143 | 22.71730 | 1.892721 | 1.595204 | 0.190888 | 64.57795 |
| 5 | 1.23E+08 | 2.292928 | 7.869889 | 2.774799 | 21.67487 | 1.855239 | 1.570867 | 0.210737 | 61.75067 |
| 6 | 1.28E+08 | 5.244147 | 9.836092 | 3.094903 | 20.33860 | 1.753455 | 1.744861 | 0.234553 | 57.75339 |
| 7 | 1.33E+08 | 7.065675 | 11.96814 | 2.869469 | 19.22134 | 2.080252 | 2.762777 | 0.245414 | 53.78693 |
| 8 | 1.36E+08 | 10.63629 | 11.51552 | 2.741059 | 18.62300 | 2.191131 | 2.883473 | 0.238192 | 51.17133 |
| 9 | 1.39E+08 | 11.98057 | 11.15092 | 2.836793 | 18.12763 | 2.120757 | 2.800547 | 0.662750 | 50.32004 |
| 10 | 1.40E+08 | 11.89984 | 11.38556 | 2.838773 | 17.87111 | 2.078434 | 3.807706 | 0.787362 | 49.33122 |

Cholesky One S.D. (d.f. adjusted)
 Cholesky ordering: D(BRIS) D(BANK) D(BTPS) D(PNSB) D(V__BRIS) D(V__BANK) D(V__BTPS) D(V__PNBS)

There are **three variables that can be predicted**, as presented in the table below

The prediction results show that the **BRIS stock price variable** has a Mean Absolute Percentage Error (MAPE) of **6.10%** (or 6.103204). For the **BTPS variable**, the MAPE is **3.11%** (or 3.109768), and for the **PNBS variable**, it is **3.52%** (or 3.524297).

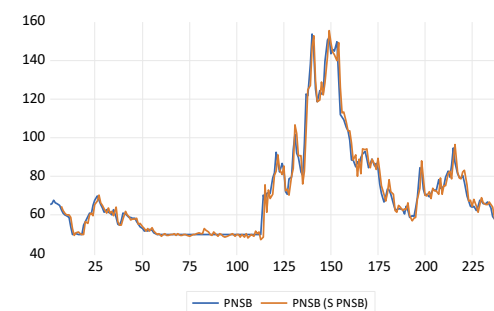
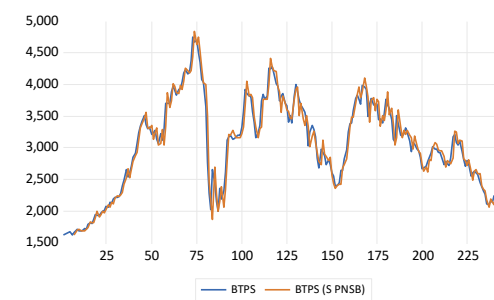
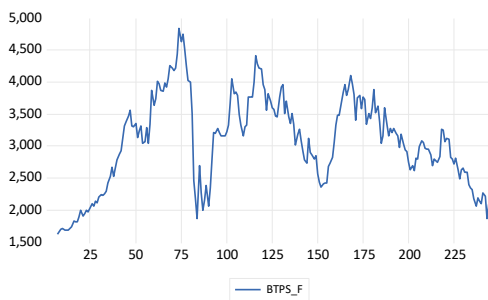
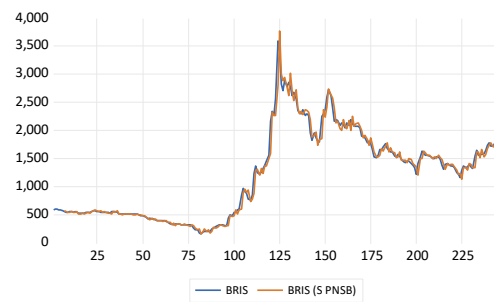
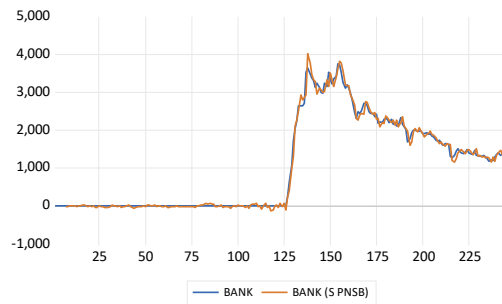
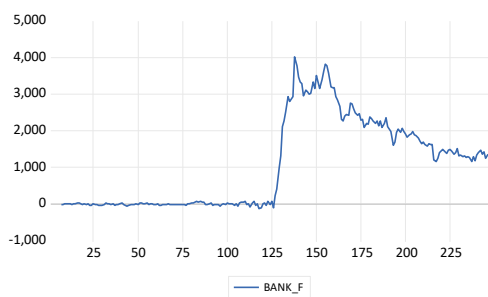
Forecast Evaluation
 Date: 09/05/23 Time: 16:17
 Sample: 1 246
 Included observations: 246

| Variable | Inc. obs. | RMSE | MAE | MAPE | Theil |
|----------|-----------|----------|----------|----------|----------|
| BANK | 245 | 73.26985 | 52.87004 | NA | 0.022651 |
| BRIS | 245 | 88.48611 | 61.37592 | 6.103204 | 0.030268 |
| BTPS | 245 | 134.2561 | 94.69371 | 3.109768 | 0.021211 |
| PNSB | 245 | 3.595739 | 2.560765 | 3.524297 | 0.024069 |
| V__BANK | 245 | 8406625. | 5709214. | NA | 0.144392 |
| V__BRIS | 245 | 49836759 | 29689485 | NA | 0.232332 |
| V__BTPS | 245 | 8164641. | 5469014. | NA | 0.183234 |
| V__PNSB | 245 | 85467221 | 55512451 | NA | 0.247870 |

RMSE: Root Mean Square Error
 MAE: Mean Absolute Error
 MAPE: Mean Absolute Percentage Error
 Theil: Theil inequality coefficient

Meanwhile, for the **BANK variable**, the model is unable to generate predictions due to incomplete historical data, and the same limitation applies to the trading volume variables.

In this final stage of the model prediction, the results indicate that **the smaller the MAPE value, the better the forecasting model**, as it more closely approximates the actual data – illustrated in the comparative graph below.



4.6. Forecasting

In the forecasting stage, an additional column must be provided to accommodate the forecasting results by resizing the number of columns. After the columns are resized, the forecasting process is performed again using Static Forecast, allowing the prediction results to be as close as possible to the actual values. The results are shown in the table below :

| BANK | BRIS | BTPS | BTPS |
|---------|---------|---------|------|
| 1.360 | 1.756 | 1.991 | 57 |
| ↓ 1.231 | ↓ 1.736 | ↓ 1.921 | ↓ 56 |

From the table above, the Static Forecasting results show that the BANK variable, which previously had a stock price of 1,360, is forecasted to decline to 1,231 in the upcoming price movement. The BRIS stock price, which was initially 1,756, is predicted to slightly decrease to 1,736 in the next period. The BTPS stock price, previously at 1,991, is forecasted to fall to 1,921 in the following period. Meanwhile, the PNBS stock price is expected to decline from 57 to 56 in the next period, as also reflected in the graph below.

Conclusion

Based on the results of the data analysis and discussion through the data stationarity test, lag optimum test, model stability test, cointegration test, Granger causality test, impulse response analysis, variance decomposition, as well as the final-stage prediction and forecasting, this study successfully addresses the research question regarding whether the merger of Bank Syariah Indonesia has a partial influence on Islamic financial sector stocks in the stock market. As explained in the Results and Discussion section, the conclusions of this research are as follows:

Based on the VECM estimation in the long run:

The main effect of the Bank Syariah Indonesia merger is negative and significant on other Islamic financial sector stock prices (BANK, BTPS, and PNBS). It also has a negative and significant impact on the trading volume of BANK and BTPS. However, the trading volume of PNBS shows a positive and significant influence on changes in trading volume from previous periods.

In the VECM short-run estimation:

The BRIS stock price has a **negative and significant** effect on BANK, BTPS, PNBS stock prices and on the trading volume of BRIS, BANK, and BTPS. In contrast, the PNBS trading volume is **positive and influenced** by the BRIS stock price. The BRIS trading volume has a **negative and significant** effect on BANK and BTPS stock prices, and on BANK, BTPS, and PNBS trading volumes. Meanwhile, BRIS trading volume has a **positive and significant** effect on the PNBS stock price.

The BRIS stock price is **positively and significantly** affected by the BTPS trading volume. The Granger causality test indicates a **bidirectional relationship** between BANK and PNBS trading volumes toward PNBS stock prices. However, there is **no bidirectional causality** between BRIS and the other variables. There is **unidirectional causality** from the BRIS stock price to BTPS and PNBS stock prices, as well as from the BRIS stock price to PNBS trading volume, and from BANK stock price to BRIS trading volume. This implies that when BRIS stock price increases significantly, related variables also experience significant positive changes.

Based on the Impulse Response analysis, the BRIS stock price most frequently increases when other variables experience shocks, as reflected in the previously discussed graphs. BRIS stock price remains prominent in several periods when shocks occur in significantly related variables (BANK, BTPS, PNBS stock prices, BANK trading volume, and PNBS trading volume).

From the variance decomposition results, the BRIS stock price contributes the most in influencing other variables. This indicates that since its listing on the stock market, BRIS has contributed significantly to the development and fluctuations of Islamic financial sector stock prices and trading volumes.

Regarding the future development of Islamic financial sector stocks, the results suggest a healthy level of fluctuation. The prediction model shows that **three variables have reached a stable pattern**, even though short-term forecasts indicate a decline in stock prices in the following period.

Implications

The findings of this study demonstrate that the research variables have a significant influence on the development of Islamic financial sector stock prices and trading volumes. This should be of particular concern to stakeholders, especially since Bank Syariah Indonesia is the largest Islamic commercial bank, with most of its assets owned by State-Owned Enterprises (BUMN). Stakeholders must be prepared to anticipate changes in these variables.

For the government, the results highlight the need for policies that support the growth and development of the Islamic financial market in Indonesia. For Islamic investors, it is essential to monitor variable changes that may affect the Islamic financial sector in the stock market to make informed investment decisions.

For stakeholders of Islamic financial institutions, these findings serve as motivation to further advance the Islamic financial market on the Indonesia Stock Exchange, increasing competition and encouraging more participation in Islamic financial sector stocks.

Research Limitations

This research has several limitations, including limited variable selection. Additional variables could have strengthened the analysis of the Islamic financial sector stock market. External variables were also not included, even though primary data—converted into numerical series—could potentially provide more depth. Other relevant data directly linked to Islamic stock price and trading volume developments were also not incorporated.

Suggestions

Based on the analysis, the following suggestions are offered:

1. Future studies should include additional variables to improve model validity and incorporate other independent variables that influence investors' decisions in the stock market.
2. Islamic investors should reconsider the variables and economic factors influencing macroeconomic conditions, as well as hot issues and recent government policies.
3. Islamic stock regulators are encouraged to increase special programs that serve as platforms for sharing information related to the development of Islamic financial sector stocks, supporting further growth among Islamic financial institutions.
4. For the general public interested in halal and safe Islamic stock investments, it is important to stay updated with data provided by OJK through the *Daftar Efek Syariah (DES)*.

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