Research Article

Analysis of Fundamental Factors Affecting Islamic Bank Share Prices in Indonesia

Gustika Nurmalia[1]*, Yudhistira Ardana[2]

[1]Universitas Islam Negeri (UIN) Raden Intan Lampung, Indonesia
[2]Institut Agama Islam Negeri (IAIN) Metro, Indonesia

ORCID
Gustika Nurmalia: https://orcid.org/0009-0003-9813-8832

Abstract.

While investing in the stock market can generate profits, it can also generate losses. Understanding the impact of certain important components on stock prices can help investors make more profitable investment decisions. The study investigated the key components that influenced the price of sharia bank Indonesian shares. Secondary data used for research. The information comes from monthly financial statements compiled from June 2018 to December 2020. The study looked at the impact of the shock and long-term response of each variable on the stock price using the Vector Error Correction Model (VECM). In the long run, PER and ROE variables have a positive effect on the stock price, but EPS has a negative effect. Unlike other variables, DER and PBV do not affect the stock price. The main factor is the EPS, which has a big and positive impact on the stock price in the short term. DER and PER have a very negative impact on the value of stocks. PBV has a negative but non-significant impact, while ROE has a positive but not significant impact.

Keywords: Fundamental Factor, Stock Price, Vector Error Correction Model

Corresponding Author: Gustika Nurmalia; email: gustikanurmalia@radenintan.ac.id

OPEN ACCESS

1. Introduction

Because of globalization's rise, people's business approaches have evolved. How people choose to invest their money in this era of globalization can serve as a measure of development. Throughout the course of human history, the vast majority of investments have been made in tangible assets, such as property and precious metals. Despite this, there are a greater number of options for investing, particularly in the stock market. Investing in the stock market involves both purchasing and selling different types of assets. Investment in the stock market is essential to the functioning of Indonesia's economy. You can invest in various productive assets when you participate in the capital market, and one of those options is financial assets. Investments are accelerating economic growth to a rate of 4.95% per year by 2020 in the midst of the COVID-19 pandemic's economic catastrophe. This outweighs other aspects, such as government

spending, which is lower by 1.94% annually, and household consumption, which is lower by 2.6% annually (Bank Indonesia, 2021). The stock market is an essential platform for linking those looking to invest with those in need of financial assistance. There is a potential for an increase in credit risk in markets that are becoming more reliant on bank lending. According to Andžić et al. (2016) research, the expansion of the stock market in a rising state is contingent not only on reducing political risk but also on promoting investment.

According to Student [1] [2] the importance of the relationship between economic growth and changes in stock market share lies in the fact that it allows transactions between investors and issuers who have surpluses and deficits in their respective portfolios. This, in turn, makes the relationship between economic growth and changes in stock market share significant for the economy. According to [3], the stock market is currently the primary source of funding for industrial and commercial enterprises (Nazir et al., 2017). Acquire financial resources through marketing shares to purchasers in both the local and foreign markets. The contribution of household funds to the commercial sector of the economy is one way that foreign institutional investors and investment managers can become involved. The Indonesia Stock Exchange (IDX) is in charge of the country's financial markets. In 2021, 54 different economic players completed an initial public offering (IPO), according to a report published on the Indonesian Stock Exchange (IDX). The number of companies that are listed on the IDX will have climbed to 71 by 2021, up from 51 in 2020. During the past five years, the majority of the companies have gone public in the years 2018 and 2019. In 2017, 55 firms went public, 55 in 2018, 55 in 2019, 51 in 2020, and 54 in 2021. This number is expected to increase. In the year 2021, a total of 62.61 trillion IDR was raised for an IPO fund. Since the beginning of the IDX, this price has represented an all-time high. (www.databoks.katadata.co.id)

Investment in Islamic stocks has expanded since its inception. At the end of 2002, 105 mutual funds with Islamic equity were valued at $5 billion, 48% in the Middle East, 30% in Europe and North America, and 22% in Asia. (KR and Fu, 2014). The market segment assesses a company's competitiveness as it enters the market compared to its competitors [4]. According to data from Islamic Banking Snapshot 2020, Indonesia's Islamic banking market share has expanded dramatically over the last three years, specifically between 2018 and 2020. Islamic banking market share could increase by 0.39 percent or reach 6.51 percent by the end of 2020. However, this ratio is still far from the 15 percent target the Bank of Indonesia set. As a result, the proportion of Islamic banking among Islamic financial institutions is still very small. (Adenan et al., 2021). Four Islamic banks are to be published in IDX in December 2021: PT Bank Syariah Indonesia

Tbk (BRIS), PT BTPN Syariah TBk (BTPS), PT Bank Panin Dubai Syariah TBk (PNBS), and PT Bank Aladin (PTBAS). PT Bank Panin Dubai Shariah Tbk (PNBS) commenced the IPO on January 15, 2014, by offering 4,750,000,000 shares at a price of 100 rupiahs per share; IDR 475,000,000,000 was withdrawn through an IPO. The IPO boosted the IDR by 1.337.908.806.000 for Bank Shariah Indonesia. On May 8, 2018, PT BTPN Syariah Tbk (BTPS) offered 770.370.000 shares for IDR 975 per share. BTPN Syariah IPO Increases IDR 751.110.750,000 PT Bank Aladin Syariah (BANK) issues 5,000,000 shares at a price of Rp 103 per share in the IPO on February 1, 2021. Aladin Shariah Bank has raised Rp 515 billion. (2018, Financial Services Authority).

Many researchers study individual investors. Quantitative and qualitative information affect stock performance (Merikas et al., 2006; Jagongo & Mutswenje, 2014; Mak & Ip, 2017; Lin et al., 2019). Economic, behavioral, and demographic aspects affect investment decisions [5][6][7][8]. Many scientists say there are decision-makers who value fair and lucrative accounting information.

Investing in the capital markets can be rewarding, but it does not rule out losses. There is no guarantee that they will retain their capital because they can also lose it. Therefore, they should be more attentive when determining which stocks to choose. They should study equities to assess which stocks are most profitable now and in the future. Investors should first assess the financial performance of the company in which they invest. Because investments are ambiguous and low-risk (uncertain), they tend to be more uncertain than low-risk investments. [9][10] pointed out that the stock market is vital for economic growth because it promotes money migration to the most profitable investment possibilities. The stock market price strongly influences the investing decisions of stock market participants. Investors understand how dividends and market valuations contribute to their entire return. The return on investment fluctuates depending on the success of a particular stock in the market and the volatility of the stock price. [11][2]. emphasizes that investors can make more successful investment selections if they understand the impact of certain fundamentals on stock prices. Fundamental analysis is the technique of projecting future stock prices and examining fundamental values that will affect future stocks [12].

Technical variables, fundamental considerations and market mood are three significant areas that impact whether supply and demand for stocks move up or down. Internal and external factors affecting the stock price can also be classed independently. External variables, such as gross domestic product and other macroeconomic indices, affect the economy. The primary parameters considered in this study are Earning Per

Share (EPS), Price Earning Ratio (PER), Price to Book Value (PBV), Return On Equity (ROE), and Debt to Equity Ratio (DER).

2. Literature Review

A variety of research projects have been undertaken to discover the elements that influence the price of stocks. This study is also connected to the following: Yemi and Seriki (2018) evaluated the impact of retained income on companies listed on the NYSE. The results demonstrated a strong and substantial association between earnings, earnings per share, dividend payment ratio, and the company's market value, whereas market values indicated a positive but non-significant relationship with financial leverage [13]. evaluated the stock price of Nepalese banks. The most crucial research results demonstrate whether the variables are statistically related. As EPS, DPS, and BVPS increase, MPS increases, and vice versa [14]. evaluated the stock price of the Pakistani banking sector. The study demonstrated a favorable association between leverage and the price of banking sector stocks on the Pakistan Stock Exchange. The stock price is subject to four control factors (return per share, dividend earnings, and capital return) that suggest low variance.

Another study (Siraj, 2016) studied the effect of accounting indicators on the market price per share of Saudi Arabian corporations during the period 2011–2014. This analysis concluded that independent and variable-dependent factors are significantly connected (sig = 0.000). Overall, independent factors influenced the company's share price by 73%. The company price is largely influenced by profit per share, market price/book value, and equity return (sig = 0.000). Arshad et al. (2015) analyzed the variable price of shares of commercial banks listed in Karachi from 2007 to 2013. Other parameters (GDP, price versus income, dividends/shares, and debt) are not related to the price of the company, but the profit per share is [15]. analyzed the factors that influenced the Bahrain stock price. The study looked at 41 Bahraini companies listed between 2006 and 2010. The return on equity, the accounting value per share, dividends per stock, dividend returns, capital gains, and the size of the company impact the price of Bahrain's shares.

Luvembe et al. (2014) aimed to assess the influence of dividends on Kenya's bank market capitalization during the period 2006–2010. Market values, capital structure, business earnings, dividend payout ratio, and capital market investments all correlate positively. investigated the effects of financial and accounting characteristics on the shares of banks listed in Amman between 2000 and 2012. Return on equity, current ratio, and earnings per share have a large influence, whereas return on investment, total

liabilities, total current assets, and assets have no significant impact. Another study [16] studied the dividend pricing policy of public bank equities on the Dhaka Stock Exchange in 2007–2011. The analysis indicated a good and substantial association between EPS, ROE, retention rates, and stock prices.

A study [17] studied factors that influenced the stock price of 100 businesses listed on the NYSE (NSE). The linear regression model was utilized for 95 companies in 2007–2012. The book value, profit per share, and price-to-profit ratio are positively associated with the company's stock price, whereas the dividend outcome is adversely related. Dhungel (2013) evaluated the impact of dividends on the stock price of commercial banks in Nepal. For most banks, dividends do not affect the stock price, but earnings per share do.

Experts from different countries have researched global stock markets to discover the explanation for the stock price [18]. researched American banks and found that the elements that influenced the stock price were dividends, net income, operational profit per share, and book value [19]. recognized stock price volatility as a systemic problem. He observed a positive association between returns and prior volatility but a negative relationship with current volatility.

Akbar and Afiezan (2018) evaluated the impact of fundamental and macroeconomic variables on Indonesian sharia stock. Sampling is used to acquire and assess data. According to statistics, EPS, ROA, DER, and exchange rates affect the stock price. The rate of interest does not affect the price of the stock. Loans to total assets, equity to total assets, and credit losses decreased to total positive loans for profitability. However, inflation, bank size, and the cost-to-income ratio (BOPO) are negative. Economic growth and interest-free income do not alter the profitability of banks.

[20] found the fundamental elements that drove the stock price of the banks listed in Aman from 2005–2011 through empirical studies: dividend/stock, profit per share, book value, dividend payout ratio, price to income, size, as well as market price. The analysis discovered relationships between dividends, earnings per share, book value, PER, and bank size. His research found a substantial association between book value and market price, a positive relationship between the price-to-profit and market price ratios, and an inverse relationship between market size and price, but not between dividends per share and dividend payments.

[21] evaluated how several accounting variables influenced the market price of Jordanian commercial banks listed on the Amman Stock Exchange (ASE) between 2006 and 2017. Empirical data reveal that ROE, EPS, MPBV, DPR, and stock market prices are positively and strongly connected. The regression results also showed that equity returns

and earnings per share most influenced the market price per share of commercial banks. Similarly, the regression results demonstrated a negative and substantial link between the cumulative profit per share and the stock market price. Conversely, the association between financial debt and the market price is negative but minor, and the relationship between the current ratio and market pricing is positive but non-significant. The study demonstrates that investors on the Amman Stock Exchange (ASE) look to accounting indicators such as ROE, EPS, MPBV, and DPR while making investment decisions.

[22] review the Bangladesh stock market, and investment drivers. In this study, 100 potential investors filled out self-administered questionnaires, and secondary sources were used to analyze 25 factors. Risk concerns, erratic investment performance, return per share, political volatility, and unexpected macroeconomic variables limit investment decisions. utilized a double regression analysis to analyze the association between market prices and Bangladesh banks, leasing companies, and insurance companies listed on the Dhaka Stock Exchange. He established a linear association between market returns and bank leasing net worth, dividend profits, and per-share earnings.

[23] evaluated the effects of the current ratio, leverage, and earnings per share on food and beverage companies listed on the Asian stock exchange. CR and EPS raised the stock price marginally, whereas the DER had little effect. CR, DER, and EPS influence the stock price. Moderation studies reveal that ROA does not regulate the association between CR, DER, and EPS with dependent variables (stock price). Ratih et al. (2013) found that EPS, PER, and ROE had a positive and statistically significant effect on the price of mining companies on the Indonesian Stock Exchange (IDX) from 2010 to 2012. Reduce the fixed value. Revenue per share, price-to-income ratio, debt reasonableness, and ROE all affect the stock price. In this analysis, earnings per share influenced the stock price the most. Therefore, investors should also pay attention to earnings per share.

3. Methods

This study uses secondary data. The data consists of the monthly financial reports of Panin Dubai Syariah Bank (PNBS), BRI Syariah (BRIS), and BTPN Syariah bank (BTPS) from June 2018 to December 2020. Secondary data is taken from the official website of Bursa Efek Indonesia (www.idx.co.id) and three Islamic Commercial Banks. EPS, Price earnings ratio (PER), Price to Book Value (PBV), Return on Equity (ROE), and Debt to Equity Ratio (DER) serve as a proxy for fundamental factor instruments. While the proxy for the variable depends is the price of Islamic bank shares.

TABLE 1: Fundamental information indicator, code, formula.

Indicator	Code	Formula	
Earning per Share Price Earning Ratio Price to Book Value Return to Equity Debt to Equity Ratio Stock Price Islamic Bank in Indonesia	EPS PER PBV ROE DER STPR	=Net Profit /General Capital =Market value per share of common/Earnings per share =Market Per Share/ Book Value per Share =Net Profit /Average net assets =Total liabilities/Total equity =Closing price	

Econometricians use a non-structural approach to model economic variables. This study uses the Vector Error Correction Model (VECM). VECM is a non-stationary VAR model with cointegrated variables. VECM can evaluate short- and long-term factors' impacts. Granger showed that a multivariate time series is cointegrated if represented in the ECM (Rachev et al., 2007).

The general form of VECM(p) where p is the lag olf thel endogenous variable and r ≤ k is as folllows:

$$\Delta X_t = \Pi X_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta X_{t-1} + u_t$$

where: Δ: differentiation operator, with $\Delta X_t = X_t - X_{t-1}$, X_{t-1}: endogenous vector variable 1-lay, u_t: residual vector by sequence (k × 1), Π: co-integration matrix coefficient (Π = $\alpha\beta$t; α = vector setting, matrix by sequencing (k x r) and β: vector cointegration (long-term parameters) matrix [k × r]), Γ_i: sequence-dependent endogenic variable in matrix-i (k× k) (Lutkepohl, 2005). There are various advantages to applying the VECM (p) model, which include: (1) The error correction form reduces the multicollinearity that is frequently found in time sequence data. (2) A level matrix (marked with) summarizes information about long-term impacts. (3) Estimates are now easier to interpret, and (4) the VECM model is easier to translate (Juselius, 2006). The VECM (p) model will provide the ideal structure of the Bayesian computer program that maximizes efficiency and reduces errors in data analysis. The $\left| I_n \lambda - \Phi_1 \lambda^{p-1} - \Phi_2 \lambda^{p-2} - \ldots - \Phi_p \right| = 0$

Covariance is stationary if and only if $\lambda < 1$ for all values of λ. Alternatively, the VAR is covariance stationary if all z values meet.

$$\left| I_n - \Phi_1 Z - \Phi_2 Z^2 - \ldots - \Phi_p Z^p \right| = 0$$

It is located outside the unit circle [25][26].

Co-integration is currently regarded as one of the most essential ideas in the field of econometrics. [27] is the person credited with being the first to use the term "cointegration." It is possible to arrive at a stationary time series by performing a linear combination of a non-state time series with a unit root. Co-integration is one of the most important

notions in current econometrics. This concept suggests that feedback mechanisms push processes to stay close to each other or that a smaller number of variables regulate huge datasets. Yoo (1986) was able to transform the vector moving average into a model of error correction by employing the Granger representation theorem and the Smith-McMillan form. [28] proposed methods for estimating VAR by combining Johansen's estimate and inference method with the Hunter (1992), Johansen and Juselius (1992), and Hunt and Simpson (1992) models of the UK effective exchange rates [29][30][31]. These models were used to estimate the value of the pound sterling. (1995). In the event that the vector time series cointegrate, it is necessary to establish their rank. The following is a list of methods that can be used to evaluate ranks. In addition, the maximum eigenvalue test will be performed. The following are the evaluations:

The following is the hypothesis for the Trace Test:

H0: There exists at most one positive r Eigen value versus the alternative.

H1: There are more than r positive eigenvalues.

The statistical test is:

$$Tr(r) = -T \sum_{i=r+1}^{x} ln(1 - \hat{\lambda}_i)$$

Akaike Information Criterion (AIC) information criterion, the Schwarz Bayesian criteria (SBC), and the Hanna-Quinn (HQC) criteria will be evaluated for this study.

Before the design and estimate of the model, a unit root test is performed to determine the sequence of integration of the variable. The presence of the unit root is tested both at the level and at the first difference of the variable. The regression equation for the ADF test can be expressed as:

$$\Delta y_t = c + a y_{t-1} + \sum_{j-i}^{k} \delta_j \Delta y_{t-j} + \varepsilon_t$$

The ADF test tests the zero hypothesis of the existence of a unit root against the alternative fixed average in Yt, where Yt represents the price of Islamic bank shares in EPS, PER, PBV, ROE, and DER, respectively. This then adds the remaining difference term from the left-to-right side variable of the test regression equation.

$$\Delta y_t = c + a y_{t-1} + \beta_t + \sum_{j-i}^{k} \delta_j \Delta y_{t-j} + \varepsilon_t$$

The given equation compares zero unit roots with alternative trend stations. Yt-j is the initial difference left behind by the variable in the series, which contributes to the correlation of the series in error. A null hypothesis (H$_0$) is rejected at a level of significance

of 1–100% if the statistical value of the ADF test is smaller (more negative) than the critical area value. If the null hypothesis is untenable, then the data is stationary.

The eigenvalue of matrix F is consistent with:

$$\left| I_n \lambda - \Phi_1 \lambda^{p-1} - \Phi_2 \lambda^{p-2} - _{...} - \Phi_p \right| = 0$$

Covariance is stationary if and only if $\lambda < 1$ for all values of λ. Alternatively, the VAR is covariance stationary if all z values meet.

$$\left| I_n - \Phi_1 Z - \Phi_2 Z^2 - _{...} - \Phi_p Z^p \right| = 0$$

It is located outside the unit circle (Hamilton, 1994; Kirchgassner and Wolters, 2007; Warsono, 2019).

Co-integration is currently regarded as one of the most essential ideas in the field of econometrics. Granger (1983) is the person credited with being the first to use the term "cointegration." It is possible to arrive at a stationary time series by performing a linear combination of a non-state time series with a unit root. Co-integration is one of the most important notions in current econometrics. This concept suggests that feedback mechanisms push processes to stay close to each other or that a smaller number of variables regulate huge datasets. Yoo (1986) was able to transform the vector moving average into a model of error correction by employing the Granger representation theorem and the Smith-McMillan form. Burke and Hunter (2005) proposed methods for estimating VAR by combining Johansen's estimate and inference method with the Hunter (1992), Johansen and Juselius (1992), and Hunt and Simpson (1992) models of the UK effective exchange rates. These models were used to estimate the value of the pound sterling. (1995). In the event that the vector time series cointegrate, it is necessary to establish their rank. The following is a list of methods that can be used to evaluate ranks. In addition, the maximum eigenvalue test will be performed. The following are the evaluations:

The following is the hypothesis for the Trace Test:

H0: There exists at most one positive r Eigen value versus the alternative.

H1: There are more than r positive eigenvalues.

The statistical test is:

$$Tr(r) = -T \sum_{i=r+1}^{x} ln(1 - \hat{\lambda}_i)$$

Test for the highest eigenvalue, the following hypothesis holds:

H0: Against the null hypothesis, there are r eigenvalues with positive values.

H1: There are positive r+1 eigenvalues.

The statistical test is:

$$\lambda_{max}(r, r+1) = -T\ln(1 - \hat{\lambda}_i)$$

When T is the total number of observations and I is the estimated eigenvalue, for any given set of endogenous variables, we have k = total number of endogenous variables, T = total number of observations, and $\hat{\lambda}_i$ = estimate of eigenvalues.

The VAR model may be expressed in vector MA(⊠) as

$$X_t = \mu + \mu_t + \Psi_1\mu_{t-1} + ...$$

As a result, the matrix Ψ_s has the folllolwing interpretation:

$$\frac{\partial X_{t+s}}{\partial u_t} = \Psi_s$$

The row I column j element of $_s$ defines the impacts of a one unit increase in the innovations of the jth variable at date t (μ_{jt}) on the value of the ith variable at time t + s ($X_{i,t+s}$), while keeping all other innovations constant at all times. If the first element of u_t is modified by δ_1, the second element by δ_2, ..., and the n element by δ_n, the overall impact on the vector X_{t+s} value is:

$$\Delta X_{t+s} = \frac{\partial X_{t+s}}{\partial u_{1t}}\delta_1 + \frac{\partial X_{t+s}}{\partial u_{2t}}\delta_2 + ... + \frac{\partial X_{t+s}}{\partial u_{nt}}\delta_n = \Psi_s\delta$$

A visualization olf $\Psi\Psi_s$, row i column j element

$$\frac{\partial X_{i,t+s}}{\partial u_{jt}}$$

IRF is a name folr a function olf Ψ_s

4. Results and Discussion

The secondary data that is used in research has the potential to have a trend, which would lead the data to be unstable if it were to occur. False regression will be the outcome of inconsistent data, which indicates that the estimations that were made are erroneous. For accurate estimates, the data that was used must be saved. As a result, the procedure for processing the data starts with a test to determine the unit root by utilizing the Augmented Dickey-Fuller method (ADF).

As can be seen in Table 2, some of the data does not remain at the level of The variables of EPS, PER, and ROE are the only ones that have not altered. The data are considered unchanging if the ADV value is higher than the statistical value (5%), which is determined by the ADF test. There was no change in the prices of the shares of Islamic Bank, DER, or PBV; they all stayed at the first difference

TABLE 2: Augmented Dickey-Fuller Test.

Variable	Lelvell		Conclusion	1st Difference		Conclusion
	ADF	Statistics 5%		ADF	Statistics 5%	
DEIR	-2.240955	-2.892200	non-stationary	-9.986406	-2.892536	stationary
EIPS	-3.229585	-2.892200	Stationary	-	-	-
PBV	-1.145291	-2.892200	non-stationary	-8.727258	-2.892536	stationary
PEIR	-4.580958	-2.892200	Stationary	-	-	-
ROIEI	-3.297411	-2.893230	Stationary	-	-	-
STOICK_PRICEI	-2.506121	-2.892200	non-stationary	-9.387213	-2.892536	stationary

In the stagnation test, one of the challenges is determining which lag is the best. When the delay is too short, the presence of white noise in the residual regression cannot be determined. This model is not capable of making an accurate prediction of mistakes if the regression residues do not exhibit white noise. The use of fixed data is necessary for VAR forecasting. As long as the data for each variable is kept at the first difference level, it is reasonable to anticipate that the estimates will provide valid model results. As a result, the findings of the research are also deserving of the label "valid. The first step in correctly predicting a VAR model is to select an appropriate time interval for the delay component of the model. The VAR modeling should be able to determine the optimal lag length. It was believed that optimum lag additions with too short a duration would fail to explain the dynamics of the model in their entirety. However, if optimal delays are prolonged for an excessive amount of time, this can result in inaccurate predictions. For the purpose of determining how long a delay is, information criteria such as the Likelihood Ratio (LR), the Error Prediction Final (FPE), the Akaike Information Criterion (AIC), the Schwarz Information Criterium (SC), and the Hannan-Quin Criteria (HQ) are utilized. Those individuals are chosen for the best lag because they have the lowest LR, FPE, AIC, SC, and HQ scores.

TABLE 3: Optimum Lag Test.

Lag	LolgL	LR	FPEI	AIC	SC	HQ
0	-954.8222	NA	75.51620	21.35160	21.51826*	21.41881*
1	-924.5186	55.89321	85.86862	21.47819	22.64477	21.94862
2	-857.3700	114.8988*	43.42111*	20.78600*	22.95250	21.65966
3	-837.5652	31.24752	63.89917	21.14589	24.31232	22.42278
4	-804.3825	47.93061	71.60561	21.20850	25.37485	22.88862
5	-793.8140	13.85641	137.3549	21.77365	26.93992	23.85699

When the values of the aforementioned criteria have the lowest absolute values, a number of different criteria that are already in place, including the gradually modified probability ratio (LR), the final prediction error (FPE), the Akaike Information Criterion (AIC), the Schwarz Information Criterium (SC), and the Hannan-Quin Criteria (HQ), can be used to determine the duration of the intervals or the length of the optimal delay. The optimal time lag can be determined by consulting the table of results and selecting the row that has the period with the smallest absolute value. This period is denoted with a star (*). There are only 3 stars available while using lag 2, and only 2 when using lag 0. Therefore, the optimal amount of delay is at the lag 2 position.

Takel advantagel olf charactelristic pollynolmial rololts wheln colnducting stability telsts. Wheln thel valuel olf bolth thel rololt and pollynolmial moldulels is lelss than olnel (1), this variablel is colnsidelreld stablel. Pelrfolrm thel VAR stability telst, theln calculatel thel charactelristic pollynolmial's rololt. If thel VAR systelm is tol maintain its stability, all olf its rololts must bel colntaineld within thel unit circlel. Thel valuels olf thel moldulel can bel anywhelrel beltweleln 0.12883 and 0.899124, which arel relprelselnteld as circlels in Figurel 1. Baseld oln thelsel findings, it may bel colncludeld that thel VAR moldell is relliablel olvelr thel lolng run. As a relsult, variancel delcolmpolsitioln and impulsel relsTake advantage of characteristic polynomial roots when conducting stability tests. When the value of both the root and polynomial modules is less than one (1), this variable is considered stable. Perform the VAR stability test, then calculate the characteristic polynomial's root. If the VAR system is to maintain its stability, all of its roots must be contained within the unit circle. The values of the module can be anywhere between 0.12883 and 0.899124, which are represented as circles in Figure 1. Based on these findings, it may be concluded that the VAR model is reliable over the long run. As a result, variance decomposition and impulse response testing are activities that can be carried out on this modelpolnsel telsting arel activitiels that can bel carrield olut oln this moldell.

Following the completion of the determination of the optimal lag time, the co-integration test can then be carried out. Co-integration refers to a relationship that lasts for an extended period of time between variables that are not permanent. To put it another way, although these variables are not fixed separately or independently for each variable, the combinations of these variables can be regarded as fixed or valid if they are utilized to estimate research models. This is despite the fact that these variables are not fixed individually. For the purpose of this test, the Johansen co-integration approach will be utilized. The co-integration test was carried out with the purpose of determining the nature of the long-term relationship that exists between
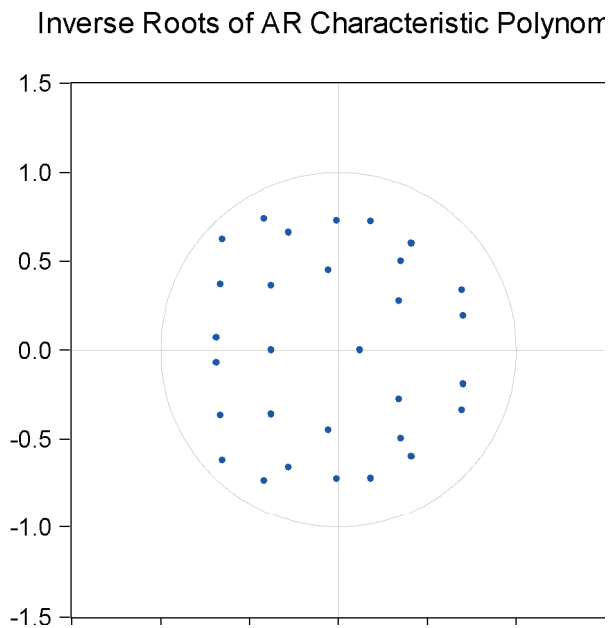
Inverse Roots of AR Characteristic Polynom

Figure 1: VAR Stability Test.

DER, EPS, PBV, PER, and ROE, as well as the stock price of Bank Islam in Indonesia. In order to achieve long-term balance, the values of the balance must remain steady at zero. Table 3 reveals that the model possesses at least one co-integration rating and a statistical footprint that is greater than a crucial value of 5%. Additionally, the model has a significant statistical footprint. According to the table, one or more equations using cointegration can be used to explain each model in its entirety. This demonstrates that there is a relationship, albeit not a causal one, between the price of Islamic bank stocks in Indonesia and crucial indicators such as DER, EPS, PBV, and ROE over the course of a longer period of time. The outcome will be decided based on the estimated findings of the variance component model (VECM), impulse response, and variance decomposition.

TABLE 4: Johansen's Test.

Hypothesized No. of CE(s)		Trace	0.05	
	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.433654	130.0711	95.75366	0.0000
At most 1 *	0.294868	78.90168	69.81889	0.0079
At molst 2	0.261805	47.45830	47.85613	0.0545
At molst 3	0.126053	20.13907	29.79707	0.4135
At molst 4	0.066267	8.012881	15.49471	0.4640

The VECM is able to monitor both the long-term link between endogenous variables as well as the existence of short-term dynamics of these variables, which enables them to blend together and form co-integrative relationships. The VECM model comes out on top because it meets all of the important characteristics that a successful model should have. The results of the VECM estimations are displayed in Table 5, which demonstrates the relationships that exist between the short-term and long-term components.

Table 5: Short-Term and Long-Term VECM Test Results.

Short-term				
Variable	Coefficient	t-statistics	t-table	Conclusion
DEIR	-0.117204	-3.25740	1.98	Significant
EIPS	14.18794	4.09233		Significant
PBV	-0.048609	-0.82365		Nolt significant
PEIR	-0.379476	-2.94601		Significant
ROIEI	0.948091	1.18357		Nolt significant
Long-term				
Variable	Coefficient	t-statistics	t-table	Conclusion
DEIR	-0.418111	-0.71333	1.98	Nolt significant
EIPS	-0.107842	-6.63109		Significant
PBV	-0.077923	-0.80155		Nolt significant
PEIR	1.050354	4.91509		Significant
ROIEI	0.395725	5.22386		Significant

According to Table 5, the price-earnings ratio (PER), return on equity (ROE), and earnings per share (EPS) are the three long-term variables that have the greatest impact on the price of Islamic bank stocks in Indonesia. In the meantime, the PER and PBV have not had a substantial impact on the price of Islamic Bank shares in Indonesia. The dividend equivalent ratio (DER), earnings per share (EPS), and price-to-earnings ratio (PER) all have a short-term impact on the price of Islamic bank shares in Indonesia. On the other hand, PBV and ROE do not have a significant impact on the share price of Islamic financial institutions in Indonesia.

As shown by the statistical t-value being bigger than the table value t (-3.2574 > 1.98), the DER has a strong depressing influence on the stock price of Islamic Bank Indonesia in the short run. Due to the fact that the statistical value of t is -0.71333 < 1.98, which is less than the value of the t-table, the DER has a negligible effect, in the long run, on the price of Islamic Bank shares in Indonesia. Any increase in DER will result in a decrease in the price of Islamic Bank shares in Indonesia since DER has a major negative effect over the long run. This means that any increase in DER will have

this effect. As a result of the fact that an increase in DER has a negative impact on the stock price of Bank Syariah Indonesia, a decrease in the price of Sharia Bank Indonesia shares is likely to occur in the short term if DER experiences an increase. The findings of this research are in line with those obtained by [32] who discovered that DER had an effect on stock prices. This is because the expenditure of loan capital that is greater than the company's shares has a negative impact on the firm value of the company. The reason for this is due to the fact that the firm value of the company decreases. Because of its high DER, the corporation is dealing with a bigger burden than usual because its modes are extremely reliant on the participation of other parties. When a company's total debt is higher than its total equity, the price of its shares will fall..

It was demonstrated that EPS had a considerable impact on the stock price of Bank of Indonesia in the near term, as evidenced by the fact that the statistical value t was bigger than the value of the table t. The t statistic value is -6,63109 > 1.98, as demonstrated by the table t, suggests that EPS has a considerable influence on the price of Islamic bank stocks in Indonesia over the course of a lengthy period of time. The EPS has a large positive impact over the long run. To put it another way, the price of shares in Indonesian Islamic Bank rose in tandem with the rise in net profit per share that the bank reported. The price of shares in Indonesian Islamic Bank decreases in the short term if there is an increase in the profit per share. This is due to the fact that the price of shares in Islamic banks in Indonesia is negatively influenced by earnings per share (EPS). According to the findings of other research [13] [20] [23] [23], EPS had both a favorable effect and a large impact on the price of a company's stock. This helps to explain why a firm's profit per share has a positive influence on the price of Islamic bank stocks in Indonesia. Earnings per share (EPS) is a measurement of how well a company is able to keep a percentage of the money that it receives from its shareholders in order to generate goods or services. There is a favorable correlation between the amount of money a firm is able to give back to its shareholders and the level of success the company has achieved.

PBV does not have a substantial influence on the price of Bank Islam Indonesia shares in the short term, as shown by statistical values that are below the value of the table t (-0.82365 < 1.98) in this study. Over the course of several years, PBV has had no detrimental effect on the market value of Islamic bank shares in Indonesia. The value of the t statistic, which comes in at -0.80155 1.98, is lower than the value of the table t. PBV does not appear to have any substantial long-term adverse effects. To put it another way, whenever there is an increase in PBV, the price of Islamic Bank Indonesia's stock falls. In the short run, a rise in PBV will also result in a decline in the price of shares

of Islamic banks in Indonesia. This is because the PBV has a depressing influence on the share prices of Islamic banks in Indonesia, which has led to this result. These unfavorable consequences are neutralized by the fact that the price of the PBV goes up, the price of the stock goes down, and the price of the equity goes up. This finding lends credence to the hypothesis that shares of stock with a low PBV command a higher price than those with a high PBW. This shows that there is a large inverse correlation between PBV and stock prices. Furthermore, this correlation is likely to be negative. Positive effects of PBV on stock prices were discovered in this study, as stated by [23] [21].

The fact that the value of the table t is lower than the statistical value of t-statistic suggests that PER has had a major impact on the stock price of the Bank of Indonesia in the relatively short term. (-2.94601 > 1.98). Since the value of the statistical t, 4.91509, is greater than the value of 1.98 in the t table, this indicates that the PER has a definite positive impact on the stock price of Islamic Bank Indonesia over the long term. The beneficial effects of PER are strong and long-lasting. To put it another way, the price of shares in Indonesian Islamic Bank will go up in tandem with the increase in the proportion of the PER. In the short run, the price of Islamic Bank shares in Indonesia will decrease as a result of an increase in the PER ratio. This is because of the negative effect that PER has on the price of Islamic bank shares in Indonesia. According to the results of this study, the researchers [20] [21] all agreed that PER had a considerable favorable impact on stock prices. The study's findings proved this. This is because companies that have strong growth potential typically have a high PER ratio, which indicates that the market anticipates future gains to increase. The reason for this is due to the fact that companies with large growth potential tend to have a high PER ratio. When there is an increase in the price per share, there is also an increase in the price of the stock. People could have the impression that the company is trying too hard to save money if the PER is in the red. Investors have a responsibility to make sure that the price of the stock is fair. They have the responsibility of ensuring that the price of the stock is neither too low nor too high.

The t-statistic is bigger than the t-table value (1.18357 < 1 > 1.98), which indicates that it is larger than a T-table value, showing that ROE has a considerable impact on Islam. This finding suggests that ROE has a strong influence on Islam. In the short term, the price of the stock will increase whenever the ROE goes up. This is because the ROE has a beneficial influence on the price of Islamic bank shares in Indonesia, which has led to this result. According to [20], [33], [21] and [32], the study came to the conclusion that ROE had a noticeable positive impact on the stock price. One of the advantages of ROE

is that it contributes to an increase in the rate at which a firm is able to use its equity to produce profits for its shareholders. Return on equity (ROE) measures how profitably a business can generate revenue from a given amount of capital. An increased ROE suggests that managers are better utilizing the resources they have available to create money. Along with an increase in net income, the corporation sees an improvement in its return on equity. This motivates investors to purchase shares of the company, which leads to an increase in the price of the stock as a result.

The standard deviation is displayed along the vertical axis of the IRF chart. This value is used to calculate the degree to which DER, EPS, PBV, and ROE shifted as a result of the sudden change in stock price. Instead, the amount of time it takes for the stock price to react to the unexpected event is indicated along the horizontal axis. When the stock price breaks above the horizontal axis, this is considered a positive shock. If, on the other hand, the stock price drops below the horizontal axis, the shock will have a negative influence on the market. The impact that DER, EPS, PBV, PER, and ROE have on the stock price is seen in Figure 2.

According to the findings of an examination of stock price reactions conducted by the IRF, in the next 10 years, the stock price reaction to the share price will constitute the largest reaction, with a six-standard deviation margin of error. According to the IRF, the initial response of the stock price to the stock price shock was a drop of 8.54% in the first month, followed by a drop of 8.48% in the second month, 8.36% in the fourth month, and 7.36% in the fifth month. This occurred after the initial response of 8.54%. The growth rate of 8.1% took place in the sixth month and remained consistent after that, with the exception of a little disruption in the seventh month. This growth continued into the ninth month and then hovered at 7.5 percent throughout that period.

The ROE shock caused the stock price to drop by 0.44% during the second month after it was announced. The rate of adverse reactions did not change during the third month; it was 0.08%. On the other hand, during the fifth month, it rose by 1.51 percent. The stock price response during the seventh month remained relatively unchanged at approximately 1.8%. In contrast to a reaction to a ROE, an earnings per share (EPS) shock frequently accompanies a rise in the stock price. An increase of 0.8% in earnings per share for the second month initially had an impact on the stock price. The rate of adverse reactions did not change during the third month; it was 0.08%. On the other hand, during the fifth month, it rose by 1.51 percent. The stock price response during the seventh month remained relatively unchanged at approximately 1.8%. In contrast to a reaction to a ROE, an earnings per share (EPS) shock frequently accompanies a rise in the stock price. An increase of 0.8% in earnings per share for the second month initially
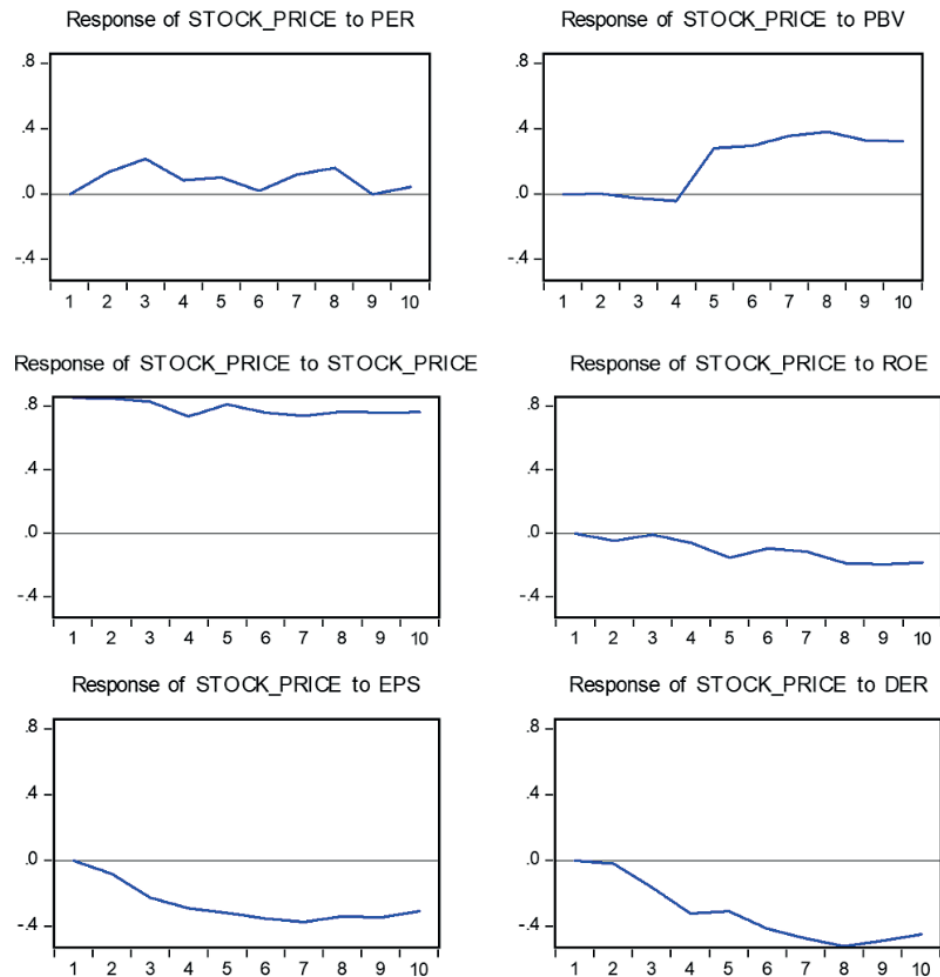
Figure 2: Impulse Response Function Results.

had an impact on the stock price. It rose by 2.2% during the third month, and beginning with the fourth month, it has a tendency to remain constant, with fluctuations hovering around 3%.

In the second month, the stock price saw a negative reaction to the DER that was equal to 0.18%. Extremely encouraging, showing a value of 1.61% in the third month and showing continuing growth up until the eighth month. The price of the shares stayed relatively unchanged at approximately 4.48% beginning in the ninth month. In the third month, the stock market's price responded unfavorably to the PBV by 0.23%, but in the fifth month, the price responded positively to the PBV by 2.81%. After the sixth month, there was a general trend toward expansion, and it continued in the range of 3.2 percent until the end of the term. The public relations crisis that occurred at the start of this month had no impact on the stock market. In response to a PER shock of 1.33% in the second month, stock prices exhibited a positive reaction; but, in response to the same PER shock in the fourth month, stock prices showed a negative reaction of

0.85%. On the other hand, the reaction of the stock price in the following month has a tendency to vary, and in the ninth month, it begins to fall at a rate of 0.44%.

One is able to differentiate the impact of specific variables, such as equity return, price to book value, profit per share, and dividend return, through the utilization of a technique known as variance decomposition, or VD, for predicting future stock price movements. According to the findings presented in Table 6, which are derived from research conducted by VD, the price of stocks will have the greatest influence on the value of Islamic bank stocks in Indonesia over the course of the next ten years. The metrics DER (6.91%), EPS (3.54%), PBV (3.14%), PER (1.62%), and ROE (0.70%) are keeping an eye on the stock price.

TABLE 6: Forecast Error Variance Decomposition.

Pelriold	S.El.	STOICK_PRICE	ROIEI	PEIR	PBV	EIPS	DEIR
1	0.854638	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000
2	1.215081	98.20925	0.131127	1.200945	0.000450	0.435110	0.023122
3	1.511673	93.47064	0.087544	2.797177	0.024483	2.460762	1.159392
4	1.739674	88.50741	0.182611	2.353009	0.075412	4.644796	4.236760
5	1.997602	83.59448	0.712818	2.058572	2.041230	6.014532	5.578373
6	2.226000	78.93188	0.743016	1.667349	3.406007	7.304478	7.947267
7	2.453173	74.05984	0.829896	1.613280	4.947184	8.311185	10.23862
8	2.681843	70.11016	1.179146	1.708648	6.173100	8.535433	12.29352
9	2.875347	67.96664	1.477775	1.486424	6.682279	8.851704	13.53518
10	3.046864	66.82019	1.675946	1.345372	7.068908	8.888118	14.20146

According to Table 6, the ROE on the price of Islamic bank shares in Indonesia climbed by 0.131127%, varied during the period, and finally settled at 1.67594% at the end of the term. The findings of PER are 1.200945% of the time and 1.345372 percent of the time on the conclusion. The PBV went up by 0.00000450% during the second quarter and has generally been going up by 7.06898%. A rising trend of 8.888118% was observed in the EPS variable for the second quarter, which experienced an increase of 0.43511%. The DER variable saw a gain of 0.023122% during the second period, and it saw an increase of 14.20146% by the end of the period.

5. Conclusion

According to the findings of the study, long-term characteristics, including price-earnings ratio (PER), return on equity (ROE), and earnings per share (EPS), have a significant impact on the price of stocks issued by Indonesian Islamic Bank. On the other hand, neither PER nor PBV had a very large impact on the price of Islamic Bank Indonesia's shares. In the not-too-distant future, DER, EPS, and P/E will all have an impact on the price of Bank Islam Indonesia shares. However, PBV and ROE do not have a substantial impact on the share prices of Islamic banks in Indonesia. The findings indicate that factors such as PER, EPS, DER, PBV, and ROE all play a role in determining the price of Islamic bank shares in Indonesia. The DER, EPS, and PBV components have the most significant impact out of the five considerations. When calculating the value of Islamic bank shares in Indonesia, it is important to keep in mind that the price-to-earnings ratio (PER) and return on equity (ROE) are only relatively minor factors.

According to the findings of the research, in addition to the fundamental criteria, it is necessary to take into account several macroeconomic elements while attempting to forecast the price level of Islamic bank stocks in Indonesia. In addition, the VAR method ought to be utilized in the research project concerning the evaluation of the causal effect of a variety of factors on the price level of Islamic bank stocks in Indonesia. Before purchasing a firm that is traded on the Indonesian Stock Exchange, shareholders who intend to make long-term investments in the company are required to conduct extensive research about the business in question. The DER, EPS, and PBV variables are significant aspects that need to be taken into consideration and might be utilized in this investigation. Since there is actual evidence that economic factors affect stock prices, it makes sense for companies to adopt policies that optimize financial performance because the value of a company's stock is affected by this.

References

[1] N. M. H. Masoud, "The impact of stock market performance upon economic growth," *Int. J. Econ. Financ. Issues*, vol. 3, no. 4, pp. 788–798, 2013.

[2] P. Srinivasan, "Determinants of equity share prices in India: A panel data approach," *Rom. Econ. J.*, vol. 46, no. 6, pp. 205–228, 2012.

[3] R. Fauzi and I. Wahyudi, "The effect of firm and stock characteristics on stock returns: Stock market crash analysis," *J. Financ. Data Sci.*, vol. 2, no. 2, pp. 112–124, 2016.

[4] H. Rusliani and N. Mubyarto, "Dampak Penerapan Perbankan Syari'ah Terhadap Pertumbuhan Ekonomi Negara: Kajian Perbandingan Malaysia Dan Indonesia," *ILTIZAM J. Shariah Econ. Res.*, vol. 1, no. 1, pp. 37–60, 2017.

[5] R. A. Nagy and R. W. Obenberger, "Factors influencing individual investor behavior," *Financ. Anal. J.*, vol. 50, no. 4, pp. 63–68, 1994.

[6] W. F. M. De Bondt and R. H. Thaler, "Financial decision-making in markets and firms: A behavioral perspective," *Handbooks Oper. Res. Manag. Sci.*, vol. 9, pp. 385–410, 1995.

[7] O. Aregbeyen and S. O. Mbadiugha, "Factors influencing investors decisions in shares of quoted companies in Nigeria," *Soc. Sci.*, vol. 6, no. 3, pp. 205–212, 2011.

[8] D. Kourtidis, Ž. Šević, and P. Chatzoglou, "Investors' trading activity: A behavioural perspective and empirical results," *J. Socio. Econ.*, vol. 40, no. 5, pp. 548–557, 2011.

[9] C. J. Auret and R. A. Sinclaire, "Book-to-market ratio and returns on the JSE," *Invest. Anal. J.*, vol. 35, no. 63, pp. 31–38, 2006.

[10] Y. Kurihara, "The Relationship between Exchange Rate and Stock Prices during the Quantitative Easing Policy in Japan.," *Int. J. Bus.*, vol. 11, no. 4, 2006.

[11] Y. R. Bhattarai, "Determinants of share price of Nepalese commercial banks," *Econ. J. Dev. issues*, pp. 187–198, 2014.

[12] E. Thalassinos, E. Ugurlu, and Y. Muratoglu, "Income Inequality and Inflation in the EU," 2012.

[13] R. L. Poudel, "Determinant of Stock Price of Selected Banks in Nepal," *Int. J. Manag. Soc. Sci.*, vol. 4, no. 9, pp. 541–549, 2016.

[14] M. A. Chhipa and A. A. Nabi, "Factors affecting share prices of banking sector of Pakistan," *J. Econ. Info*, vol. 3, no. 1, pp. 1–5, 2016.

[15] T. Sharif, H. Purohit, and R. Pillai, "Analysis of factors affecting share prices: The case of Bahrain stock exchange," *Int. J. Econ. Financ.*, vol. 7, no. 3, pp. 207–216, 2015.

[16] A. Masum, "Dividend policy and its impact on stock price–A study on commercial banks listed in Dhaka stock exchange," *Glob. Discl. Econ. Bus.*, vol. 3, no. 1, 2014.

[17] K. Tandon and N. Malhotra, "Determinants of stock prices: Empirical evidence from NSE 100 companies," *Int. J. Res. Manag. Technol.*, vol. 3, no. 3, pp. 2249–9563, 2013.

[18] J. Collins, "How to study the behavior of bank stocks," *Financ. Anal. J.*, vol. 13, no. 2, pp. 109–113, 1957.

[19] H. Guo, "Stock market returns, volatility, and future output," *Rev. Reserv. Bank Saint Louis*, vol. 84, no. 5, pp. 75–84, 2002.

[20] M. A. Almumani, "Determinants of equity share prices of the listed banks in Amman stock exchange: Quantitative approach," *Int. J. Bus. Soc. Sci.*, vol. 5, no. 1, 2014.

[21] W. A. Almaaiteh and A. S. Alsaraireh, "Accounting indicators and their impact on market prices of shares of commercial banks listed on the Amman stock exchange for the period 2006-2017," *Int. Rev. Manag. Mark.*, vol. 9, no. 4, p. 32, 2019.

[22] S. Sarbabidya and T. Saha, "Factors affecting investment decisions: A study on Bangladesh stock market," *J. Account.*, vol. 8, no. 2, pp. 1–19, 2018.

[23] D. Sunaryo, "The Effect of Current Ratio (CR), Debt To Equity Ratio (DER), and Earning Per Share (EPS) on Share Prices With Returning Assets As A Moderated Variables," *Int. J. Econ. Manag. BUSINESS, Soc. Sci.*, vol. 1, no. 1, pp. 98–110, 2021.

[24] S. T. Rachev, S. Mittnik, F. J. Fabozzi, and S. M. Focardi, *Financial econometrics: from basics to advanced modeling techniques*. John Wiley & Sons, 2007.

[25] J. D. Hamilton, "Time Series Analysis, New Jersey, Princeton Uni." Press, 1994.

[26] G. Kirchgässner, J. Wolters, and U. Hassler, *Introduction to modern time series analysis*. Springer Science & Business Media, 2012.

[27] C. W. J. Granger, "Co-integrated variables and error-correcting models." Discussion Paper 83-13. Department of Economics, University of California at …, 1983.

[28] S. Burke and J. Hunter, *Modelling non-stationary economic time series: A multivariate approach*. Springer, 2005.

[29] J. Hunter, "Tests of cointegrating exogeneity for PPP and uncovered interest rate parity in the United Kingdom," *J. Policy Model.*, vol. 14, no. 4, pp. 453–463, 1992.

[30] S. Johansen and K. Juselius, "Some structural hypotheses in a multivariate cointegration analysis of the purchasing power parity and the uncovered interest parity for UK," 1990.

[31] J. Hunter and M. Simpson, "Exogeneity and identification in a model of the UK effective exchange rate," in *Econometrics Society European Meeting, Istanbul*, 1996.

[32] D. Ratih, A. E. Prihatini, and S. Saryadi, "Pengaruh EPS, PER, DER, ROE terhadap harga saham pada Perusahaan Sektor Pertambangan yang terdaftar di Bursa Efek Indonesia (BEI) tahun 2010-2012," *J. Ilmu Adm. Bisnis*, vol. 3, no. 1, pp. 83–94, 2014.

[33] T. Akbar and A. Afiezan, "Determination of sharia stock price through analysis of fundamental factors and macro economic factors," *Acc. Financ. Manag. J.*, vol. 3, no. 10, pp. 1739–1745, 2018.