

THE IMPACT OF INTEREST RATE, INFLATION, EARNINGS PER SHARE, AND RETURN ON ASSET ON STOCK PRICE IN BANKING SUBSECTOR COMPANIES LISTED ON THE INDONESIA STOCK EXCHANGE 2019-2022

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Article history: received 09 August 2023; revised 12 September 2023; accepted 04 October 2024

DOI: <https://doi.org/10.33751/jhss.v8i1.8670>

Abstract. Generally, investors preferred companies with large market capitalization to minimize risks, such as banking companies. The occurrence of Covid-19 has negatively impacted the macro and microeconomics. This research aimed to investigate whether macroeconomic and microeconomic factors (company performance) influenced the stock prices of banking companies from 2019 to 2022. The research employs multiple linear regression as its methodology. Based on the research findings, interest rates, inflation, earnings per share, and return on assets collectively influence the stock prices of banking institutions. However, in partial analysis, interest rates, inflation, and return on assets do not have a significant impact on the stock prices of banking institutions, whereas earnings per share does have a significant influence.

Keywords: stock price; interest rate; inflation; EPS; ROA

I. INTRODUCTION

Investment involves the current allocation of capital with the aim of obtaining future profits [22]. According to book [7] generally, investors opt for companies with larger market capitalization to minimize investment risks. The banking subsector holds the largest market capitalization on the Indonesia Stock Exchange (IDX). Quoted from website in [6], the occurrence of Covid-19 led to a decline in both macro and microeconomics. Consequently, the researcher conducted this study to explore whether macroeconomic and microeconomic factors (corporate performance) influence the stock prices of banking companies. Similar research has been conducted by a journal in [3] [4] and [1]. The approach to securities analysis, as proposed by book in [22], is the top-down approach. The top-down approach begins with the analysis of macroeconomics and subsequently delves into microeconomics (corporate performance) [22]. The macroeconomic analysis in this study is divided into two components: interest rates and inflation.

According to book [22], an increase in interest rates will lead to a decrease in stock prices, and vice versa. This theory is supported by the research in [15] and [13], which state that interest rates have a negative effect on stock prices. However, contrasting findings are presented in the studies in [14] and [2], suggesting that interest rates do not impact stock prices. Due to the divergence in previous research results, the researcher collected data obtained from Bank Indonesia (BI), Kustodian Sentral Efek Indonesia (KSEI), and Yahoo Finance to compare the level of interest rates against the stock prices of banking companies for the years 2019-2022 as follows:

TABLE 1 COMPARISON OF INTEREST RATES WITH STOCK PRICES

Year	Interest Rate	Stock Prices
2019	5.63%	1.694
2020	4.25%	1.429
2021	3.52%	2.061
2022	4.00%	2.028

Source: data processed by the author (2023)

Table 1 reveals that the decrease in interest rates in 2020 was not followed by an increase in stock prices. This phenomenon represents an interest rate anomaly identified in this study. The second macroeconomic analysis in these studies is inflation. Inflation is a condition where prices continuously rise, leading to a continuous decrease in the value of money [11]. An increase in inflation serves as a negative signal for investors [22]. This theory aligns with the journal article in [18] and [23], stating that inflation has a negative impact on stock prices. However, journal article in [5] and [13] suggest the opposite, indicating that inflation does not affect stock prices. Due to variations in prior research findings, the researcher collected data sourced from BI, KSEI, and Yahoo Finance to compare inflation with banking stock prices during the period 2019-2022, as follows:

TABLE 2 COMPARISON OF INFLATION WITH STOCK PRICES

Year	Inflation	Stock Price
2019	3.03%	1.694
2020	2.04%	1.429
2021	1.56%	2.061
2022	4.21%	2.028

Source: data processed by the author (2023)

The inflation phenomenon can be observed in Table 2, which indicates that the upward trend of inflation is not followed by a decrease in stock prices. This led the researcher to investigate the impact of inflation on stock prices in the banking subsector.

Following the analysis of macroeconomics, the study proceeds with an analysis of company performance. Investors need to consider estimating Earnings Per Share (EPS) when analyzing a company's performance [22]. EPS ratio measures how much net profit a company generates for each outstanding share [20]. Thus, the higher the company's earnings, the increased demand for its shares. This theory is supported by research in [2] and [19], indicating a positive correlation between EPS and stock prices. However, these findings differ from the research in [8], stating that EPS has no impact on stock prices. Given the variance in prior research findings, the researcher conducted a comparison of EPS with banking stock prices during the period 2019-2022, gathering data from BEI, KSEI, and Yahoo Finance as follows:

TABLE 3
COMPARISON OF EPS WITH STOCK PRICES

Year	EPS	Stock Price
2019	122,87	1.694
2020	88,32	1.429
2021	88,94	2.061
2022	130,49	2.028

Source: data processed by the author (2023)

Table 3 reveals that there has been a decrease in the average EPS from 2019 to 2021, which is not accompanied by a decrease in banking stock prices. This phenomenon constitutes a significant aspect of EPS within the scope of this study.

The second aspect of company performance analyzed in this research is Return on Asset (ROA). Reference [12] shows that ROA serves as a measure of management's capability in generating earnings from utilized assets. The more proficient a company is in generating earnings from its assets, the higher the demand from investors for its stocks [12]. This theory finds support in the journal article in [16] and [19], both asserting a positive correlation between ROA and stock prices. However, this contrasts with the journal article in [9] and [17], who state that ROA does not affect stock prices. Given these disparities in previous research findings, the researcher undertook a comparison of the average pre-tax earnings to stock prices of banking companies for the years 2019-2022, utilizing data collected from BEI, KSEI, and Yahoo Finance, as presented below:

TABLE 4
COMPARISON OF EARNINGS BEFORE TAX WITH STOCK PRICES

Tahun	Earnings Before Tax	Stock Price
2019	4.232.184.308	1.694
2020	2.794.540.738	1.429
2021	4.030.788.288	2.061
2022	5.885.571.771	2.028

Source: data processed by the author (2023)

Table 4 illustrates that the increase in pre-tax earnings in 2022 is not accompanied by a corresponding increase in stock prices. Based on this phenomenon, the researcher is intrigued to investigate the influence of ROA on banking stock prices.

The interest rate is a compensation provided by banks to customers who have deposited their money (interest on

deposits) and the price that customers must pay to the bank for loans received (interest on loans) [12]. The higher the interest rate, the lower the public demand for investment, and vice versa. This is supported by the study in [15], which states that the interest rate has a negative effect on stock prices, meaning that the higher the interest rate, the stock prices will decrease because investors choose to withdraw their investments.

H1: Interest rate affects stock prices.

Inflation is an economic issue that adversely affects a large segment of the population, manifesting as a continuous increase in the prices of goods and services [21]. According to book [22], inflation serves as a negative signal for investors to participate in the capital market. This is supported by the research in [18], which states that inflation has a negative impact on stock prices, implying that an increasing inflation will lead to a decrease in stock prices and vice versa.

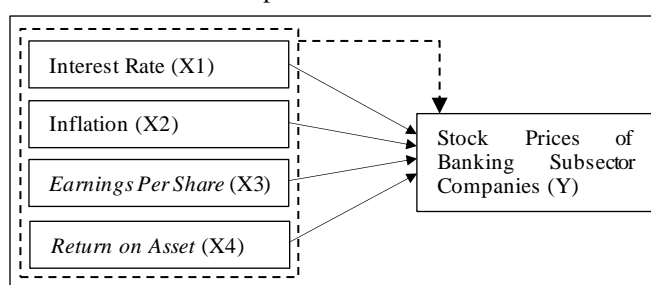
H2: Inflation affects stock prices.

EPS is a ratio used to determine how much net income of a company is allocated to each outstanding share of its stock [20]. In this regard, the greater the profit generated by a company, the demand for its shares will increase. This is supported by the journal article in [2] and [19], indicating that EPS has a positive impact on stock prices, implying that an increase in EPS will be followed by an increase in stock prices.

H3: EPS affects stock prices.

ROA is a measure of management's capability to generate profit from the assets employed [12]. The more proficient a company is at generating profit from its utilized assets, the higher the demand from investors for its shares. This aligns with the journal article in [16] and [19], stating that ROA has a positive impact on stock prices, implying that a higher ROA leads to an increase in stock prices.

H4: ROA affects stock prices.



—▶ Partial Effect
 - - - - -▶ Simultaneous Effect

Figure 1 Conceptual Framework
 Source: data processed by the author (2023)

II. RESEARCH METHODS

Multiple linear regression is a multivariate technique used in research to identify the effects of independent and dependent variables [10]. The population of this study comprises companies in the banking subsector listed on the Indonesia Stock Exchange during the years 2019 to 2022. The sampling technique employed in this study is nonprobability sampling, specifically purposive sampling. The criteria considered in this study are as follows:

TABLE 5
SAMPLE CRITERIA

No.	Criteria	Total
1.	Companies in the banking subsector listed on the Indonesia Stock Exchange in the years 2019-2020.	47
2.	Companies in the banking subsector that were not listed before the year 2019 on the Indonesia Stock Exchange	(4)
3.	Companies in the banking subsector that were suspended on the Indonesia Stock Exchange in the years 2019-2022.	(2)
4.	Companies in the banking subsector that conducted corporate actions on the Indonesia Stock Exchange during the years 2019-2022.	(21)
Total of samples that meet the criteria		21
Total of samples utilized for object (21x4)		84

Source: data processed by the author (2023)

The dependent variable of this study is stock price, measured by the closing stock price. The first independent variable of this study is interest rate, measure by BI-7 Day Repo Rate (BI7DRR).

Inflation is used in this study's second independent variable in the following ways:

$$I_n = \frac{\sum \frac{P_n - P_{n-1}}{P_{n-1}} \cdot P_{n-1} \cdot Q_0}{\sum P_0 Q_0} \times 100\% \quad (1)$$

Information:

In = Monthly index

Pn = Price at month n

Pn-1 = Price at month (n-1)

P0 = Initial price

Q0 = Initial quantity

EPS is used in this study's third independent variable in the following ways:

$$EPS = \frac{\text{Net Income}}{\text{number of shares}} \quad (2)$$

ROA is used in this study's fourth independent variable in the following ways:

$$ROA = \frac{\text{Earnings Before Tax}}{\text{Average Total Assets}} \quad (3)$$

III. RESULTS AND DISCUSSION

A. Statistical Descriptive Analysis

TABLE 6
DESCRIPTIVE STATISTIC

	N	Minimum	Maximum	Mean	Std. Deviation
Stock Price	84	50	8549	1766.85	2142.269
Interest Rate	84	3.52	5.63	4.3500	.78890
Inflation	84	1.56	4.21	2.7100	1.02146
EPS	84	-99.65	981.95	116.8957	203.959
ROA	84	-8.38	12.21	2.89201	2.89201

Source: data processed by the author (2023)

The minimum stock price recorded was 50.03, held by PT Bank MNC International Tbk. (BABP) in 2020, and the maximum was 8549.19, held by PT Bank Mandiri (Persero) Tbk. (BMRI) in 2022. The distribution of stock price data was summarized using the mean and standard deviation, resulting in seventy-three samples falling within the range of -375.3906 ($\mu - (1 \times \text{Std. dev})$) and 3909.0770 ($\mu + (1 \times \text{Std. dev})$), while eleven other samples were beyond this interval. This indicates that the stock price data for the years 2019-2022 are clustered within the range of -375.3906 to 3909.0770.

The first independent variable in this study is the interest rate with a minimum value of 3.52% occurring across all companies in 2021, and a maximum value of 5.63 observed in 2019. The interest rate variable demonstrates an average value larger than the standard deviation, suggesting relatively homogeneous data.

The second independent variable in this study is inflation, with a minimum value of 1.56% occurring in 2021, and a maximum value of 4.21% in 2022. The average inflation value exceeds the standard deviation, indicating relatively homogeneous data.

The third independent variable is earnings per share (EPS), with a minimum value of -99.65 held by PT Bank KB Bukopin Tbk. (BKBP) in 2020. This decrease is due to an increase in the number of outstanding shares from the previous year, from 11.5 billion to 32.6 billion shares, while the company's net profit plummeted by 1605% from Rp216 billion to -Rp3.2 trillion. An increase in outstanding shares has been undertaken to address the unfavourable corporate condition in accordance with Peraturan Otoritas Jasa Keuangan No. 35 (POJK 35). Furthermore, the decrease in net profit is attributed to the heightened total expenses related to provisions for potential losses arising from unrecoverable financing murabahah receivables. The maximum EPS value is 981.95, held by PT Bank Negara Indonesia (Persero) Tbk. (BBNI) in 2022. This is attributed to BBNI's steady number of outstanding shares compared to the previous year, coupled with a 168% increase in net profit from Rp10.8 trillion to Rp18.3 trillion. The substantial increase in net profit is primarily attributed to the augmented interest and Sharia income derived from related parties, in the form of transactions involving Government Bonds and Surat Pembendaharaan Negara (SPN). The distribution of EPS data results in seventy-four samples falling within the range of -87.3087 ($\mu - (1 \times \text{Std. dev})$) and 321.6369 ($\mu + (1 \times \text{Std. dev})$), while ten other samples fall outside this interval. This suggests that the EPS data for the years 2019-2022 are clustered within the range of -87.3087 to 321.6369.

The fourth independent variable is return on asset (ROA), with a minimum value of -8.38% held by PT Bank QNB Indonesia Tbk. (BKSW) in 2021 due to the escalation in the total provision for impairment losses and the subsequent decrease in the value of financial assets. The maximum ROA value is 12.21%, held by PT Bank BTPN Syariah Tbk. (BTPS) in 2020, attributed to the rise in investment income from securities such as Sharia-compliant bonds (sukuk), Sertifikat Investasi Mudharabah Antarbank (SIMA), Sharia mutual funds, and other securities based on Sharia principles. The distribution of ROA data results in seventy-three samples falling within the range of -2.0409 ($\mu - (1 \times \text{Std. dev})$) and 4.6407 ($\mu + (1 \times \text{Std. dev})$), while eleven other samples fall outside this interval. This indicates that the ROA data for the years 2019-2022 are clustered within the range of -2.0409 to 4.6407.

B. Classical Assumption Test

1) Multicollinearity Test

TABLE 7
MULTICOLLINEARITY TEST RESULT

Model	Collinearity Statistics	
	Tolerance	VIF
Interest Rate	.914	1.094
Inflation	.900	1.111
EPS	.870	1.149
ROA	.875	1.143

Source: data processed by the author (2023)

In this study, there is no issue of multicollinearity as indicated by the Tolerance values for all independent variables being ≥ 0.10 and the VIF values for all variables being ≤ 10.00 .

2) Heteroscedastisity Test

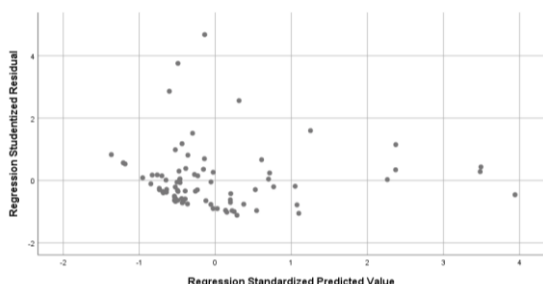


Figure 2 Heteroscedastisity Test Result

Source: data processed by the author (2023)

Based on the scatterplot in Figure 2, it can be observed that the points are scattered above and below the zero line on the Y-axis, and not forming a distinct pattern. This indicates the absence of heteroskedasticity in the regression model.

3) Autocorrelation Test

TABLE 8
AUTOCORRELATION TEST RESULT

Model	Std. Error of the Estimate	Durbin-Watson
1	1192.71645	2.055

Source: data processed by the author (2023)

Table 8 shows a value of $d=2.055$, which is greater than dU and smaller than $4-dU$ ($dU < d < 4-dU$). Therefore, in this study, there is no presence of positive or negative autocorrelation.

4) Normality Test

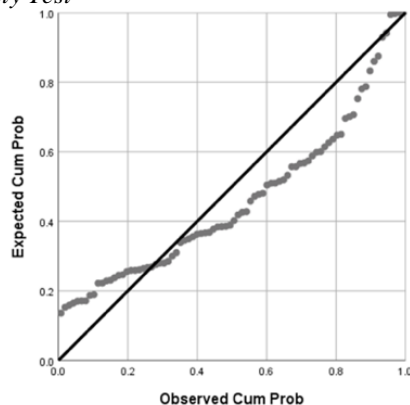


Figure 3 Normality Test

Source: data processed by the author (2023)

Based on Figure 3, it can be observed that the data is scattered around the diagonal line and follows the direction of the diagonal line. Therefore, it can be concluded that the data is normally distributed.

C. Hypotesis Test

TABLE 8
RESULTS OF MULTIPLE LINEAR REGRESSION ANALYSIS

Model	Unstandardized Coefficients	
	B	Std. Error
1 (Constant)	389.871	752.838
Interest Rate	164.055	173.721
Inflation	-195.938	135.176
EPS	8.490	.683
ROA	113.897	47.151

Source: data processed by the author (2023)

Based on Table 8, the multiple linear regression equation of this study can be formulated as follows:

$$Y = 389,871 + 164,055X_1 - 195,938X_2 + 8,490X_3 + 113,897X_4 + e$$

- The constant value of 389,871 indicates that when other variables (interest rate, inflation, EPS, and ROA) *ceteris paribus*, the stock price is 389,871.
- The regression coefficient value of variable X_1 is positively 164,055, which means that if X_1 increases by one unit, the stock price will increase by 164,055 units. Assuming that other variables *ceteris paribus*.
- The regression coefficient value of variable X_2 is negatively 195,938, indicating that if X_2 increases by one unit, the stock price will decrease by 195,938 units. Assuming that other variables *ceteris paribus*.
- The regression coefficient value of variable X_3 is positively 8,490, implying that if X_3 increases by one unit, the stock price will increase by 8,490 units. Assuming that other variables *ceteris paribus*.
- The coefficient value of variable X_4 is positively estimated at 113,897, indicating that an increase of one unit in X_4 will lead to a corresponding increase of 113,897 units in stock price. This assumption holds when other variables are held constant.

1) Simultaneously Test (F-test)

TABLE 9
F-TEST RESULT

Model	df	F	Sig.
1 Regression	4	47.189	.000 ^b
Residual	79		
Total	83		

Source: data processed by the author (2023)

Table 9 shows the probability value of the F test is 0.00, which is smaller than 0.05, or the tabulated F value of 2.49, which is smaller than the calculated F value of 47.189. This implies that the null hypothesis (H_0) is rejected, and the alternative hypothesis (H_a) is accepted. Therefore, it can be concluded that the independent variables collectively have a significant effect on the dependent variable.

2) Partial Significantly Test (t-test)

TABLE 10
t-TEST RESULT

Model	t	Sig.
1 (Constant)	.518	.606
Interest Rate	.944	.348
Inflation	-1.450	.151
EPS	12.437	.000
ROA	2.416	.018

Source: data processed by the author (2023)

The interest rate variable has a probability value greater than 0.05 or a t-value < t-table value, indicating that H₀ is accepted, and H_a is rejected. This implies that the interest rate partially does not have a significant effect on stock prices.

The inflation variable has a probability value greater than 0.05 or a negative t-value > negative t-table value, meaning that H₀ is accepted, and H_a is rejected. Thus, inflation partially does not have a significant effect on stock prices.

The earnings per share (EPS) variable have a probability value less than 0.05 or a t-value > t-table value, indicating that H₀ is rejected, and H_a is accepted. Therefore, earnings per share (EPS) partially have a significant effect on stock prices.

The return on asset (ROA) variable has a probability value greater than 0.05 or a t-value < t-table value, meaning that H₀ is accepted, and H_a is rejected. This implies that return on asset (ROA) partially does not have a significant effect on stock prices.

3) Coefficient of Determination Test (R²)

TABLE 11
COEFFICIENT OF DETERMINATION TEST RESULT

Model	R	R Square	Adjusted R Square
1	.840 ^a	.705	.690

Source: data processed by the author (2023)

Based on Table 11, it can be observed that the adjusted R-square value is 0.690 or 69%. Therefore, the interest rate (X₁), inflation (X₂), earnings per share (X₃), and return on assets (X₃) collectively have an influence or contribute by 69% to the stock price (Y). Meanwhile, the remaining 31% is influenced by other variables not included in this study.

IV. CONCLUSION

The purpose of this study was to examine the effects of interest rate, inflation, EPS, and ROA on banking companies listed on the IDX during the years 2019-2022. A total of 21 companies were selected as the research sample over a four-year period (84 samples). Based on various tests that have been conducted and discussed above, it can be concluded that interest rate, inflation, EPS, and ROA collectively have a significant influence on the stock prices of banking companies in the sub-sector listed on the IDX during the years 2019-2022. However, on a partial basis, the variables of interest rate, inflation, and return on asset do not have a significant impact on stock prices. In contrast, the EPS variable has a significant impact on the stock prices of banking companies listed in the IDX during the years 2019-2022. Based on the conclusions, the researcher recommends the following: For investors considering making investments, the factors that generally influence stock prices are divided into internal factors (company performance) and external factors or macroeconomics. Internal factors are within the control of the company and can be assessed through the company's financial reports. External factors originate from outside and are beyond the company's control. Among these influencing factors, investors should ideally have predictions about the potential positive or negative outcomes for their chosen investment company. This foresight is crucial for making informed decisions in the realm of investment. The results of this study indicate that interest rates and inflation partially do

not significantly influence stock prices. Regulators have established appropriate policies regarding interest rates and inflation to maintain stock price stability. Therefore, it is expected that regulators can sustain their performance in the future. On the other hand, the results of this study reveal that earnings per share do influence stock prices. As a result, it is advised that company managers provide an appropriate level of earnings per share to enhance the demand for the company's shares.

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