# The Influence of Changes in Effective Interest Rates, The Rupiah Exchange Rate And Bank Profitability On Movements in Stock Returns of BUMN Bank Listed

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#### **Abstract**

The purpose of this research is to determine the United States Effective Interest Rate, Rupiah Exchange Rate and Bank Profitability with the ratio dimensions This research is a cause-and-effect comparison, the data source used is the US central bank, the rupiah exchange rate against the US dollar and the annual reports of state-owned banks from 2015 to 2019 from the Indonesian Stock Exchange. The number of samples is 4 banks in state-owned banking. To analyze the model and test the research hypothesis, we used several statistical methods of panel data regression analysis. the research results and hypothesis tests The American Effective Interest Rate and the Rupiah Exchange Rate simultaneously influence stock returns, and ROA, ROE, and NIM ratios are proven not to affect stock returns.

#### **Keywords**

ROA (Return on Assets), ROE (Return on Equity), NIM (Net Interest Margin), BOPO ratio, share price..

#### 1. Introduction

The Federal Reserve in the last few decades has made policies which have caused several countries to make decisions that may be detrimental to investors, and one of the countries affected by this policy is Indonesia. This is because when the US effective interest rate is raised, investors will flee from Asian exchanges towards American capital investment, because basically investors will invest their funds by looking at interest rates, the greater the interest rate in a country, the greater it will be. Also the rate of return on invested funds.

The capital market has currently experienced quite rapid development and plays an important role in mobilizing funds from people who want to invest in the capital market. In a very broad sense, investment is a sacrifice made now with the aim of obtaining a higher value in the future. One of the capital market instruments that is currently popular is shares, because by owning shares, investors will get the right to profits from the shares they own. There are several stock sectors that can be traded, one of which currently often shows positive activity is banking sector shares. when the United States Effective Interest Rate increases its benchmark, there should be a significant influence on stock returns which experience a decline, in this case namely banking sector stock returns. Because when the Fed's interest rates increase the benchmark interest rate, foreign investors will switch to investing from Asian stock markets towards investing in America. However, in several periods of time, such as from 2015 to 2017, there was a problem when the United States Effective Interest Rate increased its benchmark interest rate, in fact stock returns in the banking sector experienced an increase. This matter of course the opposite is true. From 2015 to 2017, stock returns tended to increase, not directly proportional to the decline in the rupiah exchange rate, because when the rupiah exchange rate falls, share prices should also fall due to the depreciation of the rupiah value. Based on the description above, the researcher is interested in raising this problem to conduct research with the title "Analysis of the Effect of Changes in the United States Effective Interest Rate, Rupiah Exchange Rate and Bank Profitability on the Movement of Share Returns of State-Owned Banks Listed on the Indonesian Stock Exchange for the 2015-2019 Period".

# 1.1 Objectives

Based on the background description, the researcher formulates the problem regarding research on Analysis of the Effect of Changes in the United States Effective Interest Rate, Rupiah Exchange Rate and Bank Profitability on the Movement of Share Returns of State-Owned Banks Listed on the Indonesian Stock Exchange for the 2015-2019 Period.

### 2. Literature Review

After reviewing the literature, researchers found several studies that have similarities in the subject of the study, look at this table:

Tabel 1. Summary of Previous Research

No.	Research Title	Variable	Research result	Equality	Difference
1	Stock Market and Money	Stock Market,	exchange rate (the exchange rate	Stock	Bullish and
	Market Indicators Are	Money Market	of the US Dollar against the	market	Bearish
	Interrelated Judging from		Rupiah) rises by one unit, it		Stock
	the Bullish and Bearish		means that there will be a		Market
	Stock Market which was		decrease in the stock market		
	published in the Journal of		indicator (IHSG) by one unit.		
	Economic and		bullish market, stock market		
	Management Research		indicators and money market		
	Sitinjak and Kurniasari		indicators together have a		
	(2003)		positive effect. Especially on the		
			SBI money market indicator, it is		
			significantly positive in		
			influencing the stock market.		
2	The Effect of Inflation,	Return on	Inflation has an influence	Stock	Return on
	Return on Assets (ROA),	Assets,	negative and significant on stock	market	Assets,
	Economic Value Added	Economic	returns, Return On Assets has a		Economic
	(EVA), and Firm Size on	Value Added,	negative and insignificant effect		Value
	Stock Returns in	Firm Size,	on stock returns, Economic		Added, and
	Manufacturing Companies	Stock Returns	Value Added and Firm Size		Firm Size
	Listed on the Indonesian		Simultaneously have a		
	Stock Exchange for the		significant influence on Stock		
	2007-2008 Period <b>Raisa</b>		Returns.		
3	Rusmiyani (2011)	Cta ala Daire	There is no simificant 4 months	Ct a ala	Interest not
3	Dynamic Interaction	Stock Prices	There is no significant dynamic	Stock	Interest rate
	Between Stock Prices and	and Rupiah	interaction between stock prices	market,	
	the Rupiah Exchange Rate	Exchange Rate	and exchange rates.	Rupiah	
	against the US Dollar Sa'adah and Panjaitan			Exchang e Rate	
	(2006)			e Kate	
	(4000)				

# **2.1** American Effective Interest Rate ( *The Fed* )

Bank interest is a reward for services provided by banks based on conventional principles to customers who buy or sell their products. Interest can also be interpreted as the price that must be paid to customers (who have savings) compared to what customers must pay to the bank (customers who obtain loans). (Eungene F. Bringham, 2015, 134).

#### 2.2 Rupiah Exchange Rate

The exchange rate or exchange rate is a comparison between the price of one country's currency and another country's currency. For example, the rupiah exchange rate against the US dollar shows how many rupiah are needed to be exchanged for one US dollar (Sumarto and Agus Herta, 2017:5).

### 2.3 Profitability

Profitability is very important for a company in order to maintain its business continuity in the long term, this is because profitability shows whether the company has good prospects in the future or not. According to (Kasmir, 2016:136) profitability is a factor that can influence company value.

### 2.4 Stock Return

According to (Mohamad Samsul, 2016:71), stock returns are also known as stock income and are changes in the value of stock prices period t with t-1. And this means that the higher the change in share prices, the higher the resulting share return.

According to (Roy Sembel, 2015:213) there are two types of returns, namely: "Realized returns are returns that have occurred. This return is calculated using historical data. Realized returns are important because they are used as a measure of company performance. Realized returns are also useful in determining expected returns and future risks. "Expected return is the return that investors hope to obtain in the future."

### 3. Methods

The research objects in this study are several macroeconomic variables which include the American effective interest rate, the Rupiah exchange rate against the US dollar and the profitability of state-owned banks. Meanwhile, the subject of this research is banking sector stock returns listed on the Indonesia Stock Exchange (BEI) for the 2015-2019 period. This research is a type of quantitative research because it refers to calculating research data in the form of numbers. The Instrument research use observation with existing data because the data sources obtained in this research are historical number records reports published by related institutions such as the Board of Governors of the Federal Reserve System (Federal Reserve), Bank Indonesia, Indonesian Stock Exchange, Panel Data Estimation Model, Determination of Panel Data Estimation Methods, Classic assumption test, normality test, Multikoliniarity test, heteroscedasticity test, and Autocorrelation test. Regression analysis process carried out is using multiple regression analysis drawing conclusions using statistical tests, t-test, and F-test.

#### 4. Data Collection

The data collection techniques used in this research are using secondary sources because the data taken is not directly from the company to be studied but from historical figures of American Effective Interest Rates, Exchange Rates and Profitability which are published publicly general. United States Effective Interest Rate data was obtained from the official website of the Board of Governors of the Federal Reserve System (Federal Reserve) Data on the Rupiah Exchange Rate against the US Dollar was obtained from the official Bank Indonesia website www.bi.go.id. Then the profitability ratios of Return on Assets (ROA), Return on Equity (ROE) and Net Interest Margin (NIM) of Bank Negara Indonesia, Bank Rakyat Indonesia, Bank Mandiri, Bank Tabungan Negara are obtained from the official website of each company.

The measurement variables for this research are:

Table 2. Variable Indicators

	. Variable filulcators
Variable	Indicator
	1. Savings Interest
United States Effective	2. Loan interest
Interest Rate (X <sub>1</sub> )	3. Effective Interest
	( Eungene F. Bringham, 2015 : 134).
	1. Foreign Exchange Demand
Exchange rate (X <sub>2</sub> )	2. Foreign Exchange Offers
	(Mc Leod, 2018: 107).
	1. Return On Assets
Profitability (V )	2. Return On Equity
Profitability (X <sub>3</sub> )	3. Net Interest Margin
	(Kasmir, 2016:136)
	Actual Return
Stock Return (Y)	2. Expected Return
	(Roy Sembel, 2015: 213)

Source: data processed by the author (2020)

### 5. Results and Discussion

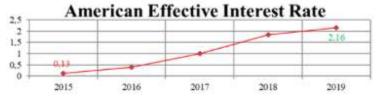
#### **5.1 Development of the United States Effective Interest Rate**

Table 3. United States Effective Interest Rate Development Table

H.15 Selected Interest Rates	
Series Description:	Federal funds effective rate
Units:	Percent:_Per_Year

Multipliers:	1
Currencies:	NA
Unique Identifiers:	H15/H15/RIFSPFF_N.A
Time Period	RIFSPFF_N.A
2015	0.13
2016	0.39
2017	1
2018	1.83
2019	2.16

The US Effective Interest Rate has a minimum value of 0.13, meaning that the lowest Effective Interest Rate set by American banks is 13%, why is that, because this is a measure to anticipate the global economic slowdown due to the never-ending trade war, if the economy really falls, then a broader sequence of interest rate cuts could be appropriate. The maximum value is 2.16. The maximum value of 2.16 means that the highest Effective Interest Rate set by an American bank in this research period was 2.16. Why is that, because the FOMC wants to return the real interest rate to a "neutral" level. According to the understanding of monetary economics, the "neutral rate" is an interest rate that neither increases nor suppresses domestic demand. The interest rate has an average value of 1.10, meaning that from 20 observations on 4 companies listed on the IDX during the research period, the average value of the monetary policy interest rate set by American banks was 1.10%. The graph showing the development of US effective interest rates is as follows:



Source: data processed by the author (2020)

#### 5.2 Development of the Rupiah Exchange Rate Against the US Dollar

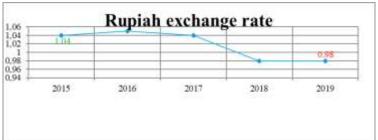
Table 4. Table of Development of the Rupiah Exchange Rate Against the US Dollar

Rupiah exchange rate	
Series Description:	Indonesia (IDR) – United States (USD)
Units:	Percent:_Per_Year
Multipliers:	1
Currencies:	IDR-USD
Unique Identifiers:	
Time Period	Percent:_Per_Year
2015	1.04
2016	1.05
2017	1.04
2018	0.98
2019	0.98

Source: processed data, 2020

The value of the Rupiah Exchange Rate, during the research period, had a minimum value of 0.98, meaning that the lowest Rupiah Exchange Rate was 0.98, why is that, because the impact of imports increased but not exports. An increase in imports will cause demand for US dollars to increase and the value of the rupiah currency will decrease (fall) because it is continuously exchanged into dollars. This causes *the supply* of rupiah to increase along with the demand for dollars which also increases. Then the highest Rupiah Exchange Rate is 1.05. The average exchange rate

of the Rupiah against the US Dollar was 1.05, meaning that during the research period the value of the US Dollar currency translated into Rupiah was on average equal to 1.05. This average size is caused by market confidence, which can be seen from how good the market mechanism is between market players and supports the stability of the rupiah value.



# 5.3 Profitability Development in State-Owned Banks Listed on the Indonesia Stock Exchange (BEI) for the 2015-2019 Period

Table 5. Development of BNI Bank Profitability

Tueste et Betterpisiesse et Britz Bussis Frestauessisey					
Year	ROA	ROE	NIM		
2015	2.64%	17.21%	6.42%		
2016	2.69%	15.54%	6.17%		
2017	2.75%	15.60%	5.50%		
2018	2.78%	16.10%	5.29%		
2019	2.42%	14.00%	4.92%		
Max	2.78%	17.21%	6.42%		
Min	2.42%	14.00%	4.92%		
Average	2.66%	15.69%	5.66%		

Source: processed data, 2020

Table 6. Development of BRI Bank Profitability

Table 6: Bevelopment of Bitt Bank I fortaginty					
Year	ROA	ROE	NIM		
2015	4.19%	29.89%	7.58%		
2016	3.84%	20.03%	8.00%		
2017	3.69%	20.03%	7.92%		
2018	3.68%	20.49%	7.45%		
2019	3.50%	19.41%	6.98%		
Max	4.19%	29.89%	8.00%		
Min	3.50%	19.41%	6.98%		
Average	3.78%	21.97%	7.59%		

Source: processed data, 2020

Table 7. Development of Bank BTN's Profitability

Year	ROA	ROE	NIM
2015	1.61%	16.84%	4.87%
2016	1.76%	18.35%	4.98%
2017	1.71%	18.11%	4.76%
2018	1.34%	14.89%	4.32%
2019	0.13%	1.00%	3.32%
Max	1.76%	18.35%	4.98%
Min	0.13%	1.00%	3.32%
Average	1.31%	13.84%	4.45%

Source: processed data, 2020

Table 8. Development of Bank Mandiri's Profitability

14010 0.2	Tuble of Bevelopinent of Bulk Munching Hontubin					
Year	ROA	ROE	NIM			
2015	3.15%	23.03%	5.90%			
2016	1.95%	11.12%	6.29%			
2017	2.72%	14.53%	5.63%			
2018	3.17%	16.23%	5.52%			
2019	3.03%	15.08%	5.46%			
Max	3.17%	23.03%	6.29%			
Min	1.95%	11.12%	5.46%			
Average	2.80%	16.00%	5.76%			

Source: processed data, 2020

Table 9. Development of Share *Returns* in State-Owned Banks

Year	BBNI	BBRI	BBTN	BMRI
2015	-0.01	0.00	0.03	0.03
2016	0.01	0.01	0.02	0.04
2017	0.05	0.05	0.04	0.06
2018	0.00	0.00	-0.01	-0.02
2019	-0.01	0.01	0.00	-0.02
Max	0.06			
Min	-0.02			
Average	0.02			

Source: processed data, 2020

That table saw negative results because the share price of PT. Bank Mandiri Tbk, during the 2015-2019 period experienced a significant decline, due to the economies of developing countries being faced with plans by the United States Central Bank (*The Fed*) to begin reducing the rate of its bond purchases. This policy means that developing countries, which are generally located in the Asian region, must be prepared to lose sources of fresh cash flows, including Indonesia. The Indonesian economy in 2018 is estimated to only grow by 5.7% compared to growth in 2017 of 6.2%. The decline in economic growth in 2018 was recorded as limited growth in real exports due to the economic slowdown global.

On the domestic demand side, investment growth, especially non-building, also slowed, while household consumption remained the main driver of growth. During 2018, there was a share *return* of PT. Bank Tabungan Negara Tbk which also experienced a decrease of -0.01. Even though the two other state-owned banks did not experience a decline, these banks did not experience a significant increase in stock returns. The average stock *return* for state-owned banks listed on the Indonesia Stock Exchange during the 2015-2019 period was only 0.02. This is because all state-owned banks have produced negative stock returns, so that overal this can have a decreasing impact on the average stock *return*.

# 5. 4 Panel Data Regression Analysis

Table 10. Results of Panel Data Regression Analysis - Common Effect Model

Dependent Variable: Y Method: Least Squares Panel Date: 10/11/20 Time: 09:00

Sample: 2015 2019 Periods included: 5 Cross-sections included: 4

Total panel (balanced) observations: 20

Variables	Coefficient	Std. Error	t-Statistics	Prob.
С	-1.424434	0.381442	-3.734344	0.0022
X1	0.036598	0.015030	2.435030	0.0289
X2	1.376219	0.361740	3.804444	0.0019
X3	0.041476	1.053572	0.039367	0.9692

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X4 X5	-0.004654 -0.055335	0.135787 0.855513	-0.034271 -0.064680	0.9731 0.9493
R-squared		ean dependent		0.014000 0.024581
Adjusted R-squared SE of regression		0.524729SD dependent var 0.016946Akaike info criterion		
Sum squared resid		0.004020Schwarz criterion		
Log likelihood F-statistic	56.74256Hannan-Quinn Criter. 5.195442Durbin-Watson stat			-5.015943 1.501539
Prob(F-statistic)	0.006651			1.001337

Source: processed data, 2020

the results of the *Common Effect Model approach* above, it can be seen that only the US effective interest rate and the rupiah exchange rate against the US dollar have a statistically significant effect when viewed from the probability values (0.0289<0.05) and (0.0019<0.05). The ROA (*Return On Asset*) *Ratio*, ROE (*Return On Equity*) *Ratio*, and NIM (*Net Interest Margin*) *Ratio* do not have a significant effect because the probability value of each variable is greater than 0.05.

Table 11. Results of Panel Data Regression Analysis - Fixed Effect Model

Dependent Variable: Y Method: Least Squares Panel Date: 10/11/20 Time: 09:02 Sample: 2015 2019 Periods included: 5

Cross-sections included: 4

Total panel (balanced) observations: 20

Variables	Coefficient	Std. Error	t-Statistics	Prob.
C	-1.411218	0.448687	-3.145218	0.0093
X1	0.034743	0.016808	2.067028	0.0631
X2	1.377447	0.467236	2.948073	0.0133
X3	0.550686	1.420319	0.387720	0.7056
X4	-0.039334	0.181752	-0.216418	0.8326
X5	-0.406257	2.012483	-0.201868	0.8437

# **Effects Specification**

Cross-section fixed (dummy variables)						
R-squared	0.678453	Mean dependent var	0.014000			
Adjusted R-squared	0.444600	SD dependent var	0.024581			
SE of regression	0.018319	Akaike info criterion	-4.859615			
Sum squared resid	0.003691	Schwarz criterion	-4.411535			
Log likelihood	57.59615	Hannan-Quinn Criter.	-4.772145			
F-statistic	2.901198	Durbin-Watson stat	1.586631			
Prob(F-statistic)	.052461					

Source: processed data, 2020

From the results of the *Fixed Effect Model approach* above, it can be seen that only the rupiah exchange rate against the US dollar has a statistically significant effect when viewed from the probability value (0.0133 < 0.05). The US effective interest rate, ROA (*Return On Asset*) *Ratio*, *ROE* (*Return On Equity*) Ratio, and NIM (*Net Interest Margin*) *Ratio* do not have a significant effect because the probability value of each variable is greater than 0.05.

#### **5.5 Random Effect Model**

Table 12. F-Chow Test Results

Redundant Fixed Effects Tests

Equation: Untitled

Cross-section fixed effects test

Effects Test	Statistics	Df	Prob.
Cross-section F Chi-square cross-section	0.326727 1.707167	(3,11)	0.8061 0.6353

Source: processed data, 2020

# 5.5 Classic Assumption Test

Classical assumption tests are used to ensure normality, autocorrelation, multicollinearity and heteroscedasticity is not found in the Common Effect Model. If all these conditions are met, it means that the Common Effect Model is suitable for use.

- 1. Normality test = The normality test results show that the Prob.Jarque -bera value >  $\alpha$  ( 0.05 ) with a Jarque probability value of 0.511679 > 0.05.
- 2. Autocorrelation test = *the Durbin-Watson* value was 1.501539. This value is greater than DU 1.4109 and smaller than 4-DU 2.5891. This proves that accepting H<sub>0</sub> means there is no autocorrelation in *the Common Effect Model of this* research.
- 3. Multicolleniarity test = that each independent variable, namely the US Effective Interest Rate, Rupiah Exchange Rate against the US Dollar, ROA (*Return On Asset*) Ratio, ROE (*Return On Equity*) Ratio, and NIM (*Net Interest Margin*) Ratio have a smaller correlation. from 90% it can be concluded that there is no multicollinearity.
- 4. Heteroscedasticity test = the results of the *heteroscedasticity test* show that the value of Prob. R-Squared  $> \alpha$  value (0.05), with a value of Prob. F-Statistics 0.2911 > 0.05, so it can be concluded that H0  $_{is}$  accepted, which means that heteroscedasticity does not occur.

# **5.6 Hypotesis Test**

The result Comparison of t table with t count is:

- 1. FED to Stock Return with regresion coefficient 0.036598, t count 2.435030 and the conclusion is fluent (2.435030 > 2.03224).
- 2. NTR to Stock Return with regresion coefficient 1,376219, t count 3,804444 and the conclusion is fluent (3,804444 > 2,03224).
- 3. ROA to Stock Return with regresion coefficient 0.041476, t count 0.039367 and the conclusion is not fluent (0.039367 < 2.03224).
- 4. ROE to Stock Return with regresion coefficient -0,004654, t  $_{count}$  -0,03427 and the conclusion is not fluent (-0,03427 < 2,03224).
- 5. NIM to Stock Return with regresion coefficient -0.055335, t count -0.064680 and the conclusion is not fluent (-0.064680 < 2.03224).

The result of F test (simultaneous regression test) is the  $_{calculated}$  F compared with F  $_{table}$ . F  $_{count}$  based on table 4.16 it is 5.195442, then F  $_{table}$  of 2.60. Thus, it can be concluded that all independent variables simultaneously influence stock  $_{returns}$  in state-owned banks for the 2015-2019 period (5.195442 > 2.60).

The coefficient of determination had conclusion the total variation in the influence of the independent variables on the dependent (stock returns) is 64.98%, the remaining 35.02% is influenced by other variables not examined in this research.

#### 6. Conclusion

Based on the results and discussion of the research on Analysis of the Effect of Changes in the United States Effective Interest Rate, Rupiah Exchange Rate and Bank Profitability on the Movement of Share Returns of State-Owned Banks Listed on the Indonesian Stock Exchange for the 2015-2019 Period, the author can draw the following conclusions:

1. The condition of the development of the effective interest rate in the United States tends to continue to increase its benchmark, the maximum value is 2.16 and occurred in 2019, this is because the FOMC wants to return the

- real interest rate to a "neutral" level. According to the understanding of monetary economics, the "neutral rate" is an interest rate that neither increases nor suppresses domestic demand.
- 2. The condition of the development of the rupiah exchange rate experienced fluctuating movements, tending to decrease from the 2015-2019 period, this was due to the impact of increasing imports but not exports. An increase in imports will cause demand for US dollars to increase and the value of the rupiah currency will decrease (fall) because it is continuously exchanged into dollars. This causes *the supply* of rupiah to increase along with the demand for dollars which also increases.
- 3. Conditions for the development of profitability ratio ROA (*Return on Assets*) 3%, ROE (*Return on Equity*) 17 % and NIM (*Net Interest Margin*) 6%. The average value of bank profitability is in accordance with Bank Indonesia regulations, so that state-owned banks can maintain bank profitability at each bank.
- 4. Based on the results of verification analysis during the 2015-2019 period, it shows that the influence of movements in US interest rates, the rupiah exchange rate and bank profitability on stock *returns* in state-owned banks is partial, only the US effective interest rate and the rupiah exchange rate have a significant effect on stock *returns* while the ROA ratio (*Return on Assets*), ROE (*Return on Equity*) and NIM (*Net Interest Margin*) do not have a significant effect on stock *returns*. The influence of movements in US interest rates, the rupiah exchange rate and bank profitability simultaneously influence stock *returns* in state-owned banks.

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# **Biography**

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