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Is the banking stock return affected by exchange, interest, and inflation rates?

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ABSTRACT

For public investors, the return becomes the appeal for investors to purchase and sell the stocks in the capital market. Fundamentally, in their analysis, they must consider macroeconomic factors, i.e., foreign exchange, interest, and inflation rates. This study investigates and analyzes these factors as the determinant of stock return. The return intended is owned by the Indonesian capital market-listed banks selected as Kompas 100 Index constituents. Eight years are used as time observation, i.e., from 2015 to 2022. Based on this period, 11 banks exist as the samples. Then, this study utilizes the regression model to analyze the data associated with hypothesis testing. After examining the hypotheses, this study concludes a negative relationship between the exchange rate of IDR/USD on banking stock return: The more weakened the IDR/USD, the lower the stock return. Similarly, this negative sign also happens in the relationship between interest rate and stock return. Conversely, inflation positively affects this return.

Keywords: banking industry, exchange rate, inflation level, interest rate, stock return

INTRODUCTION

The banks are one of the companies listed on the capital market (Hartono, 2017). Through their initial public offering (IPO) in the primary market, they receive fresh funds to strengthen their core capital (Sari, 2022) and expand their business (Hutauruk, 2023). After the first-day IPO, the banking stock price is always higher than the offering price (Hanafi & Hanafi, 2022), set by the deal between the bank as the share issuer and the underwriter (Widyawati et al., 2019).

After that, these stocks purchased by public investors on the IPO date are traded in the secondary market, and their prices are determined by supply and demand. Therefore, they will receive capital gains by selling their shares higher than the purchasing price (Hartono, 2017). Besides, they can get dividends if having their stocks before the ex-dividend date (Zutter & Smart, 2018). These two components become returns for these investors (Jensen & Jones, 2019).

Numerous scholars are studying banking stock return with macroeconomic factors as its determinant. They employ data from the capital market in India (Narayan et al., 2014), Pakistan (Rolle et al., 2020), Saudi Arabia (Alsharif, 2023), the United States (Priti, 2016), Turkey (Rjoub et al., 2017), and Indonesia (Ardiansyah et al., 2020; Kusumaningtyas et al., 2021; Nurazi & Usman, 2016; Prastuti & Setianingrum, 2018; Tumbelaka et al., 2023). At least three macroeconomic factors of banking stock return are attempted to be proven statistically. The first is the exchange rate (Alsharif, 2023; Ardiansyah et al., 2020; Kusumaningtyas et al., 2021; Narayan et al., 2014; Nurazi & Usman, 2016; Prastuti & Setianingrum, 2018; Priti, 2016; Rjoub et al., 2017; Rolle et al., 2020; Tumbelaka et al., 2023). The second is the interest rate (Alsharif, 2023; Kusumaningtyas et al., 2021; Narayan

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et al., 2014; Nurazi & Usman, 2016; Priti, 2016; Rjoub et al., 2017; Tumbelaka et al., 2023). The third is inflation (Ardiansyah et al., 2020; Kusumaningtyas et al., 2021; Nurazi & Usman, 2016; Prastuti & Setianingrum, 2018; Rjoub et al., 2017). Unfortunately, their results are contrary: positive, negative, and insignificant, as Table 1 exhibits.

Table 1. The contrary result from the effect of the exchange, interest, and inflation rates on banking share return

The name of the scholars	Exchange rate	Interest rate	Inflation rate
Narayan et al. (2014)	Positive	Negative	Positive
Priti (2016)	A positive sign exists for a short-term exchange rate for medium and money-center banks. However, this rate is insignificant for large banks. In the long term, a positive mark happens for medium and large, but a negative mark occurs for money-center banks.	A positive sign exists for a short-term interest rate for medium and large banks. However, this interest rate is insignificant for money-center banks. In the long term, a positive mark happens for medium and money-center banks, but a negative sign occurs for large banks.	Unavailable
Nurazi and Usman (2016)	Negative	Negative	Negative
Rjoub et al. (2017)	Insignificant	Negative	Insignificant
Prastuti and Setianingrum (2018)	Insignificant	Unavailable	Insignificant
Ardiansyah et al. (2020)	Insignificant	Unavailable	Insignificant
Rolle et al. (2020)	Insignificant	Unavailable	Unavailable
Kusumaningtyas et al. (2021)	Negative	Insignificant	Insignificant
Alsharif (2023)	A positive sign occurs for conventional banks, but a negative mark happens for Islamic banks.	A positive sign exists for conventional and Islamic banks.	Unavailable
Tumbelaka et al. (2023)	Positive	Negative	Unavailable

Note: Unavailable means that the variable is not studied

Based on the inconsistent facts in the first table, this study appears with one purpose, i.e., investigating and analyzing the impact of exchange, interest, and inflation rates on Indonesian banking share return in the Kompas100 index from 2015 to 2022. Besides market capitalization and firm fundamental performance, according to Hartono (2017), high

liquidity is another feature. Consequently, Le and Gregoriou (2020) explain that public investors can speedily transact stocks easily and cheaply.

LITERATURE REVIEW

The exchange rate is defined as the price of foreign currency in domestic currency. If the foreign currency strengthens, the domestic currency weakens or depreciates, and vice versa (Mishkin & Eakins, 2018). For illustration, the change from IDR14,993/USD to IDR15,065/USD demonstrates the IDR depreciation and USD appreciation (Gideon, 2023). The IDR depreciation towards USD happens because foreign investors sell the Indonesian currency and buy USD (Pratiwik & Prajanti, 2023). Ideally, reputable banks should be able to diversify the risk from the exchange rate. Therefore, they can increase the share price although the local currency depreciates towards foreign currency (Alsharif, 2023). This explanation is confirmed by Priti (2016) after demonstrating a positive association between exchange rate and stock return for medium and money-center banks in the short-term period and for medium and large banks in the long term. Also, Alsharif (2023) affirms this relationship for conventional banks. Furthermore, without differing the type of bank, Tumbelaka et al. (2023) confirm this positive propensity. According to this explanation, the first hypothesis is as follows:

H_1: The effect of the exchange rate on stock return is positive.

One of the monetary policies to manage the money supply is through the interest rate. If the central bank increases the interest rate, the commercial banks have to upsurge the credit and deposit interest rates to their borrowers and depositors (Mishkin & Eakins, 2018). When it happens, debtors unenthusiastically take loans (Wulandari & Sipahutar, 2021), but depositors save more money in the banks (Suharyanto & Zaki, 2021). As a result, the bank cannot optimally distribute the credits and cannot be profitable (Wulandari & Sipahutar, 2021). Hence, public investors knowing this circumstance, will sell their banking shares, and the market price will reduce. This circumstance is confirmed by Narayan et al. (2014), Nurazi and Usman (2016), and Rjoub et al. (2017), showing the negative impact of an interest rate on banking stock return. According to this explanation, the second hypothesis is as follows:

H_2: The effect of interest rate on stock return is negative.

Inflation is a condition where the price of goods increases (Jensen & Jones, 2019). One of the reasons is the demand-pull, where the aggregate demand is larger than its supply (Samuelson & Nordhaus, 2021). Consequently, the firms can get revenue by selling the products to their consumers and producing after-tax profits for their shareholders or return on equity (Raharjo & Widarti, 2021). The creation of ROE happens after the firms can pay interest and principal to the banks (Zutter & Smart, 2018). Furthermore, these banks will have higher profits, attracting public investors to buy their stock in the capital market. The more investors buy the shares, the higher their price (Rusdiyanto & Narsa, 2019). In their research, Narayan et al. (2014) prove this tendency by documenting a positive association between inflation and the stock return of the top thirteen banks in India from 1998 to 2008. According to this explanation, the third hypothesis is as follows:

H_3: The effect of inflation on stock return is positive.

Based on these hypotheses, the research model can be drawn in the first figure as follows.

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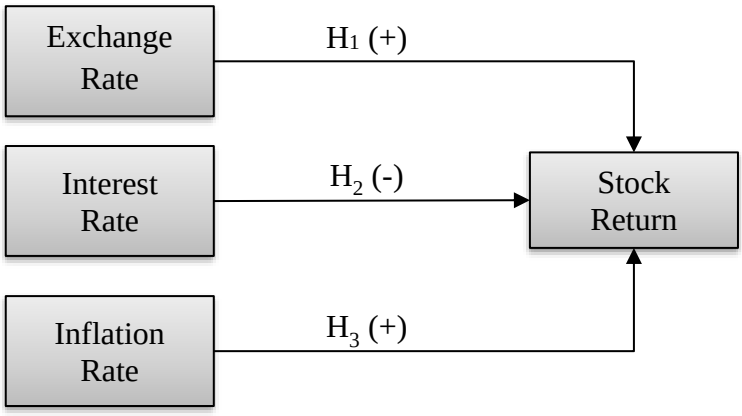

Figure 1. Research Model

METHOD

Research variables

This study has two types of variables. The first is determined, i.e., stock return. The second is determinants: exchange, interest, and inflation rates, where the measurement is available in the second table. Furthermore, this study uses secondary data from the Indonesian capital market to know the name of banks selected to be Kompas 100 index constituents and their historical market price as the components to calculate the return. Also, the Central Agency of Statistics website is utilized to identify exchange and interest rates. Meanwhile, the inflation is based on the Bank Indonesia website. The detailed measurement can be seen in the second table.

Table 2. Variable definition

Research Variable	Measurement
Stock return	Return is calculated by subtracting the stock price (SP) at the end of the previous year from the SP at the end of the current year divided by the SP at the end of the preceding year.
Exchange rate	The middle rate of the IDR per USD at the end of the year
Interest rate	The rate of Bank Indonesia at the end of the year
Inflation rate	The rate provided by the website of Bank Indonesia at the ending year

Samples

This study employs all the banking shares selected into Kompas 100 index for eight years, between 2015 and 2022, as the samples. Their name is Bank Central Asia (BBCA), Bank Negara Indonesia (BBNI), Bank Rakyat Indonesia (BBRI), Bank Tabungan Negara (BBTN), Bank Danamon Indonesia (BDMN), Bank Pembangunan Daerah Jawa Barat dan Banten (BJBR), Bank Pembangunan Daerah Jawa Timur (BJTM), Bank Mandiri (BMRI), Bank CIMB Niaga (BNGA), Bank Permata (BNLI), and Panin Bank (PNBN).

Method to analyze the data

This study utilizes the regression model and t-statistic to test the causal relationship declared in the hypothesis. In detail, the model is obtained in the first equation:

$$SR_{it} = \beta_0 + \beta_1 ER_t + \beta_2 INTR_t + \beta_3 INFR_t + \varepsilon_{it} \qquad (1)$$

SR = stock return, ER = exchange rate, INTR = interest rate, INFR = inflation rate, i = cross-sectional units = banking shares, t = time-series unit = time observation

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The regression model must fulfill the classical assumptions set to produce the best, linear, unbiased estimators. Additionally, the intended ones are as follows: (1) the residuals have to be normally distributed, (2) no heteroskedasticity, (3) no autocorrelation, and (4) no multicollinearity.

RESULT

Statistics to describe the data

As declared earlier, this study employs 11 banking shares in the Kompas 100 index for eight years between 2015 and 2022. Therefore, 88 observations exist. Moreover, the five statistics to describe them, consisting of the mean, median, maximum, minimum, and standard deviation of stock return (SR), exchange, inflation, and interest rates (ER, INFR, and INTR), are obtainable in the third table.

Table 3. Descriptive statistics to describe the research variables

Description	SR	ER (IDR/USD)	INFR	INTR
Mean	0.099280	1,4203.25	3.098750	5.072500
Median	0.004950	1,4003.00	3.075000	4.830000
Maximum	3.490100	1,5731.00	5.510000	7.520000
Minimum	-0.784300	1,3436.00	1.680000	3.520000
Standard Deviation	0.545562	700.2415	1.108569	1.214279
Observations	88	88	88	88

Source: The output of E-Views 6

The result of the classical assumption examination

Figure two presents the normality testing of Jarque-Bera. In this figure, the probability of the JB statistic is 0.0000. It means the residuals are not normally distributed. The situation can be tolerated in the regression model because the observation in this study is 88, exceeding 30, as the central limit theorem declares [see LibreTexts Statistics (2021)].

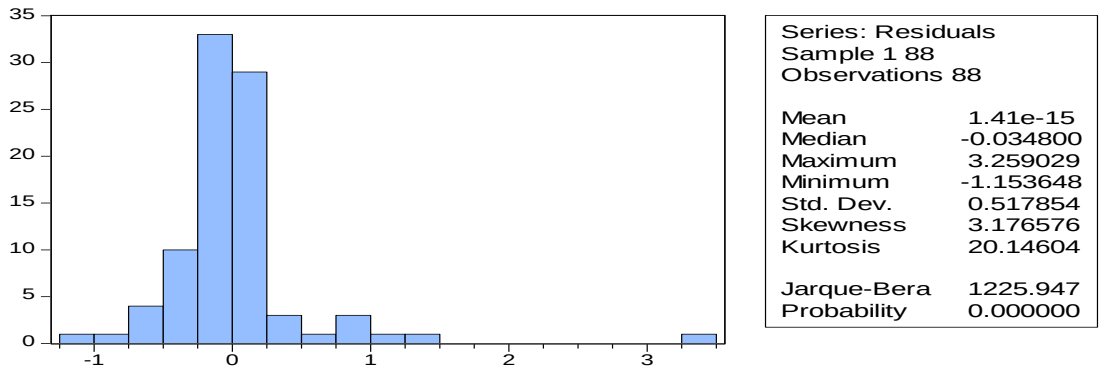

Figure 2. Normality examination result based on Jarque-Bera
Source: The output of E-Views 6

The fourth table exhibits the White heteroskedasticity testing result with Chi-Square (3) probability on the observed R-square of 0.4106. The regression model does not contain heteroskedasticity because this value exceeds the 5% significance level.

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Table 4. The result of White Heteroskedasticity

F-statistic	0.947110	Probability of F-statistic (3,84)	0.4217
Obs*R-squared	2.879240	Probability of Chi-Square (3)	0.4106
Scaled explained SS	25.11424	Probability of Chi-Square (3)	0.0000
Test Equation: Dependent Variable: RESID^2 Method: Least Squares Sample: 1 88 Included observations: 88			
Variable	Coefficient	Std. Error	t-Statistic	Probability
C	3.726650	2.136510	1.744270	0.0848
ER^2	-1.70E-08	1.03E-08	-1.652387	0.1022
INFR^2	0.023144	0.022310	1.037371	0.3025
INTR^2	-0.009944	0.011890	-0.836277	0.4054

Source: The modified output of E-Views 6

The fifth table presents the autocorrelation testing by runs technique with the asymptotic significance (2-tailed) of the Z-statistic of 0.456. This value is higher than the 5% significance level; therefore, the model does not have autocorrelation, as Gujarati et al. (2019) declare. Additionally, this table displays the multicollinearity detection reflected by the variance inflation factor for ER, INTR, and INFR of 2.518, 1.878, and 1.739. Because these values are less than 10, the multicollinearity does not occur, as Gujarati et al. (2019) explain.

Table 5. The result of autocorrelation and multicollinearity detection

Classical assumption	The technique to detect	The result
Autocorrelation	Runs test based on average residual as the cut-off point	Asymptotic significance (2-tailed) is 0.456
Multicollinearity	Variance inflation factor (VIF)	VIF for ER, INTR, and INFR is 2.518, 1.878, and 1.739

Source: The modified output of IBM SPSS 19

The estimation result of the regression model

The sixth table depicts the estimation result of the regression model with the statistical probability for ER is 0.0067 with a negative coefficient of 0.000356. Because this probability is less than the 5% significance level; therefore, hypothesis one, declaring a positive effect of exchange rate on stock return, is rejected. Instead, this study demonstrates a negative impact of the exchange rate on stock return. For the second and third hypotheses, the statistical probability for INTR and INFR is 0.0344 and 0.0081, with a negative coefficient of 0.137112 and a positive coefficient of 0.182314, respectively. Because these probabilities are less than a 5% significance level and each sign supports the direction of the hypothesis, the interest rate negatively influences stock return. Still, the inflation rate positively affects this return.

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Table 6. The estimation result of the regression model: The impact of exchange, interest, and inflation rates on banking stock return

Variable	Coefficient	Std. Error	t-statistic	Probability
C	5.289497	1.924778	2.748107	0.0073
ER	-0.000356	0.000128	-2.782008	0.0067
INTR	-0.137112	0.063761	-2.150407	0.0344
INFR	0.182314	0.067215	2.712420	0.0081
R-squared	0.098996	Mean dependent variable		0.099280
Adjusted R-squared	0.066817	SD dependent variable		0.545562
SE of regression	0.527021	Akaike info criterion		1.601235
Sum squared resid	23.33105	Schwarz criterion		1.713841
Log-likelihood	-66.45432	Hannan-Quinn criterion		1.646601
F-statistic	3.076439	Durbin-Watson statistic		2.091988
Probability (F-statistic)	0.031955			

Source: The modified output of IBM SPSS 19

DISCUSSION

The first hypothesis testing result demonstrates that the exchange rate negatively influences banking stock return, not aligning with the hypothetical explanation. It indicates banks cannot diversify the currency risk optimally yet. Hence, when the depreciation of the local currency appears, their stock price in the capital market drops, leading to capital loss. This situation is similar to Alsharif (2023) documented a negative relationship between the exchange rate and Islamic banking return in the Saudi Arabian capital market from 2010 to 2019. This tendency is confirmed by Priti (2016) when investigating money-center banks listed on the capital market in the United States from 1997 to 2002. Furthermore, this study confirms Nurazi and Usman (2016) utilizing 16 banks listed on the Indonesian capital market (ICM) between 2002 and 2011 and Kusumaningtyas et al. (2021) using 12 banks listed on the ICM from 2015 to 2019.

The second hypothesis testing result exhibits that the interest rate negatively affects banking stock return, supporting the hypothetical enlightenment. It means a high-interest rate motivates society to save its money in the banks. Besides, banks are challenging to distribute credit because the borrower waits for the bank to decrease the lending rate. Conversely, idle funds in the banks reflecting their liquidity occur and obtain negative responses from the capital market, i.e., declining stock price. Therefore, this situation aligns with Narayan et al. (2014) after investigating the top 13 banks in India between 1998 and 2008, and Nurazi and Usman (2016) studying the 16 Indonesian capital market-listed banks from 2002 to 2011. Also, this study supports Rjoub et al. (2017), researching seven banks in Turkey between 1995Q3 and 2015Q4, and Tumbelaka et al. (2023), studying 26 banks listed on the Indonesian stock exchange from 2011 to 2021.

The third hypothesis testing result proves that the inflation rate positively influences banking stock return, reinforcing the hypothetical explanation. Inflation does not always negatively affect the company and banks. The demand-pull inflation causes banks to be profitable. In this situation, they can get interest payments from gainful companies. Therefore, this study supports Narayan et al. (2014), utilizing the 13 major banks in India between 1998 and 2008. Although employing a different research object: manufacturing firms in the LQ45 index, Raharjo and Widarti (2021) find the same evidence and highlighted explanations: Manufacturing companies can result in profits when inflation happens because the demand for goods is greater than the supply. The higher the profits, the greater the stock return.

CONCLUSION

The return attracts public investors to trade their stocks in the capital market. Based on the result of this study, with the 11 banks listed on the Indonesian stock exchange selected to be Kompas 100 index from 2015 to 2022, the stock return is negatively affected by the exchange and interest rates. However, it is positively influenced by the inflation level. Based on these facts, public investors can buy these shares to get a positive change in the stock price when the exchange rate of IDR per USD strengthens. Besides, they are recommended purchase these shares when the Bank Indonesia rate decline and the inflation level rises.

Additionally, this study applies three determinants and a single capital market as theoretical limitations. Moreover, to overcome the first issue, the next scholars are expected to utilize money supply, economic growth, and unemployment as other macroeconomic features and liquidity, solvability, and profitability as the additional internal factors. Furthermore, they can employ banks from the capital market in Southeast Asian countries to fix the second issue.

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