The effect of interest rates, exchange rates and capital structure on banking profitability of BUMN and Private Go Public in Indonesia

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ABSTRACT

This study aims to examine and analyze the influence of interest rates, exchange rates and capital structure on profitability in state-owned and private banking go public in Indonesia. This research is a quantitative research based on the study of empirical rational principles. Collecting data using secondary data with purposive sampling technique, the sample consists of Commercial Banks Business Group (BUKU IV) with core capital > Rp 30 trillion. The data analysis technique used panel data regression analysis using EVIEWS version 11 software. The results showed that the interest rate had a positive and significant effect on banking profitability; Exchange Rate has a negative and significant effect on Banking Profitability; Capital Structure has a positive and significant effect on Banking Profitability; Interest Rate, Exchange Rate and Capital Structure simultaneously have a positive and significant effect on Banking Profitability.

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Introduction

Banking institutions are one of the backbones of a country's economy, because they have an intermediary function or as an intermediary between the owners of capital (fund suppliers) and users of funds (fund users). Law Number 10 of 1998 concerning Banking, banking is everything related to a bank, including institutions for business activities as well as the methods and processes of carrying out their business activities. Banks are business entities that collect funds from the public in the form of savings and distribute them to the public in the form of credit and/or other forms to improve the standard of living of many people (Kasmir, 2014). This is because banks have an important role in the economic life of the community. The importance of this information will have an impact on the income earned by the bank. Through these financial reports, the public can find out the health condition of the bank. Indicators to find out how the bank's performance in obtaining and increasing profits can be seen in the profitability ratio through Return on Assets (ROA), which focuses on the company's ability to earn earnings in the company's banking operations on investment and credit. The profits earned are not only used to finance the company's operations, such as paying salaries and other costs, but are also used for company expansion through various activities in the future.

Credit risk is often experienced by banks because in addition to their function of collecting funds from the public, banks also function to provide credit to the public so that they do not rule out problems such as bad credit in their operational activities. The interest rate is the price determined from the use of money for a certain period of time (Boediono, 2017). Interest rates can influence people's decisions in making loans or credits and saving funds in accounts in the banking world (Puspoprano, 2004). Banking in Indonesia refers to the Bank Indonesia interest rate, which is the interest rate set by Bank Indonesia as a reflection of the attitude of monetary policy. The size of the Bank Indonesia interest rate will have an impact on the condition of the national economy (Mukhlis, 2015). The bank will adjust the interest rate according to the development of the Bank Indonesia interest rate. When interest rates rise, the bank will charge more fees to each borrower, this means that customers have to pay more to pay for loans at the bank. The increase

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in credit interest rates will affect banking operational activities in financing and channeling funds, so that it will increase bank income or profit.

Operational efficiency is also needed by banks in carrying out their business activities because it involves the issue of costs that will be used or incurred by the bank in carrying out its business activities. The bank is expected to be able to minimize costs incurred for activities carried out and not exceed the spending limit so that there is no loss to the bank. There is a contribution from non-interest income, namely income from trading securities and foreign exchange transactions (forex) and fee-based income. Banks do not only rely on income from the credit business, but also rely on non-interest income, especially those based on fees. According to (Sukirno, 2006) the exchange rate is a value measured based on the value of a country's currency expressed in terms of other currencies. Exchange rates are fluctuating which can lead to appreciation or depreciation of a currency value. Exchange rate risk can affect bank profitability if the exchange rate depreciates. This depreciation will cause an increase in the amount of liabilities to banks, especially those with portfolios in foreign currency which will reduce bank profitability.

Capital in a bank is very important because having sufficient capital can help prevent or even cover possible risk of loss that can be experienced by a bank. With adequate capital, this can increase public confidence. Banking activities in funding decisions can be seen in terms of customers who save their funds in the bank. First, collecting funds (money) from the public in the form of savings, this is the bank as a place to save money and invest for the community. Second, channeling funds to the community is to provide loans (credit) to the people who apply. Funds from the public are debts to the bank to customers who keep their funds. This basic activity of the bank will benefit from the difference between the funds it raises and the funds it distributes. Banks that have large total assets have the opportunity to channel their credit to borrowers in larger amounts, so as to obtain high profits. The company's capital structure is measured by the ratio between total debt and total equity owned by the bank through the Debt to Equity Ratio (DER). The capital structure is used by companies to determine the source of funds used to finance operational activities, as a management decision tool in considering and determining company funding in the coming period to obtain profitability.

Therefore, considering the importance of determining factors that affect profitability in banking as well as research gaps in previous studies, this study focuses on factors that affect profitability (Return on Assets) in Go Public banking in Indonesia. The focus of the study includes the factors of interest rates, exchange rates and capital structure (Debt to Equity Ratio) in state-owned and private go public banking in Indonesia in 2015-2019.

Literature Review

Theoretical Background and Hypotheses Development

Interest Rate

Interest rates are a measure of a country's economic activity which has an impact on banking financial flows, investments and currency movements in a country. According to (Boediono, 2017) the interest rate is the price of the use of investment funds (loanable funds). Interest rates are dependents on money loans which are usually expressed as a percentage of the money lent (Pohan, 2008). According to (Kasmir, 2014) credit is the provision of money or an equivalent bill, based on a loan agreement or agreement between a bank and another party which requires the borrower to pay off its debt after a certain period of time by giving interest. The Bank Indonesia interest rate is the Bank Indonesia policy interest rate which is the reference for the interest rate on the money market as the basis for determining the loan interest rate that the bank will charge to customers.

In daily banking activities, there are two types of interest given to customers, namely:

Deposit Interest

Deposit interest is the interest that is given as incentives or remuneration for customers who save their money in the bank. Interest on deposits is the price that the bank must pay to its customers. Example: services, such as savings interest, current account interest and deposit interest.

Loan Interest

Loan interest is the interest given to borrowers or the price that the loan customer must pay to the bank. Example: credit interest.

Bank Indonesia is strengthening the monetary operation framework by implementing a new benchmark interest rate or policy interest rate, namely the BI 7-Day (Reverse) Repo Rate, which became effective on 19 August 2016, replacing the BI Rate. The BI 7-day (Reverse) Repo Rate instrument is used as the new policy rate because it can quickly influence the money market, banking and real sectors. The BI 7-Day Repo Rate instrument as a new reference has a stronger relationship to money market interest rates, is transactional or traded on the market, and encourages financial market deepening, particularly the use of repo instruments (Bank Indonesia, n.d.-b).

Exchange Rate

Currency exchange rate or what is often referred to as exchange rate is the price of a unit of foreign currency in the domestic currency or it can also be said that the price of domestic currency against foreign currencies (Simorangkir & Suseno, 2004). Exchange rates

or what are known as currency rates are notes (quotation) of the market price of a foreign currency in the domestic currency (domestic currency), or its reciprocal, namely the price of domestic currency in foreign currency, the exchange rate represents the exchange rate from one currency to another and is used in various transactions, including international trade transactions, tourism, international investment or short-term money flows between countries, which cross geographic boundaries or boundaries. legal boundaries (Karim, 2015).

Exchange rates are closely related to exchanging foreign money in the bank. To make it easier to understand, the selling rate and the buying rate are always interpreted from the bank's point of view, as follows:

Selling Rate

The selling rate is the rate used when a bank or money changer wants to sell foreign money (foreign exchange or foreign currency) to us or if you want to exchange rupiah for foreign money. Or it can be interpreted that the selling rate is the selling price of currency or foreign currency by a bank or money changer. This selling rate is known as the offer rate and usually has a higher exchange rate than the buying rate.

Buying Rate

The buying rate is the rate used when a bank or money changer wants to buy foreign money from us or if we want to exchange foreign money for rupiah. Or it can be interpreted as the exchange rate that has been applied by the bank when purchasing foreign currency or foreign currency.

The exchange rate is the price of a country's currency relative to the currencies of other countries. Since this exchange rate includes two currencies, the point of balance is determined by the supply and demand sides of the two currencies. Information on Bank Indonesia transaction rates is presented in the form of selling rates and foreign exchange buying rates against rupiah, used as a reference for Bank Indonesia transactions with third parties such as the government. Midpoint of the Bank Indonesia USD / IDR Transaction Rate using the Reference Rate (JISDOR). The Bank Indonesia Transaction Rate is announced once every working day (Bank Indonesia, n.d.-a).

Capital Structure

Banking business activities in general are collecting funds and channeling them back to the public in the form of credit (Muhamad, 2015). In banking, funding decisions can be seen in terms of customers who save their funds in the bank. Funds from the public are debts to the bank to customers who keep their funds. The company's capital structure is measured by the ratio between total debt and total equity owned by the bank. This indicates that the more customer deposits that state-owned banks collect, the more the bank's business activities will be to gain profitability.

The proxy for capital structure in this study is the Debt to Equity Ratio. According to (Darmadji & Fakhruddin, 2008) the Debt to Equity Ratio is a ratio that measures the extent to which the amount of debt can be covered by one's own capital. Debt to Equity Ratio shows the total debt compared to the invested capital of investors (equity). A company is considered safe if it has a lower ratio.

Banks can have an optimal capital structure if they are able to balance the risk of extending credit against the benefits derived from the provision of credit. The bank will be able to increase its profitability and be able to meet its operational needs with these internal funds. The more credit applications that will be fulfilled by the bank, the greater the funds needed by the bank to fulfill it. With more and more funds that can be raised through third party funds, banks can add credit or other business activities that can bring greater profitability to the bank. Therefore, banks are required to be creative in developing attractive products and according to customer needs in order to increase third party funds collected by the bank (Parenrengi & Hendratni, 2018).

Profitability

(Kasmir, 2014) the definition of profitability ratio is a ratio to assess a company's ability to seek profit. This ratio also provides a measure of the level of management effectiveness of a company. This is indicated by the profit generated from sales and investment income. The point is that the use of this ratio shows the efficiency of the company. Profitability provides information about company performance in optimizing company resources. While the income statement allows us to estimate how profitable a company is in absolute terms, it is just as important that we measure the profitability of the company in terms of percentage returns.

In this study, profitability is used in assessing the financial performance of the bank. The indicator used to measure the level of profitability is Return on Assets (ROA). Return on Asset (ROA) is a ratio used to measure the ability of bank management to gain overall profit (profit). Banks with relatively large ownership of total assets will have a better level of performance, so that the ability to achieve profit will be higher, as a result of sales activities carried out.

The purpose of the activities of each company is to generate profits because in order to continue its life, a company must be in a favorable condition (Syamsudin, 2013). The reasons for using the Return on Asset (ROA) approach in this study are:

- i. *The ROA ratio measures how the ability of bank management in its entirety. The level of profitability as measured by ROA aims to measure the ability of bank earnings management in managing profit-generating assets.*

- ii. *How is the performance of companies that use ROA to measure the company's capabilities?*

The Effect of Interest Rates on Banking Profitability

A bank is a financial institution that functions as a liaison for parties who have excess funds and lack of funds. The main function of Indonesian banking is to collect and channel public funds and aim to support the implementation of national development. As an intermediary institution, lending is the dominating activity for bank businesses. The purpose of providing credit is to seek benefits from interest, help customers, and assist the government in the form of tax revenue and increase foreign exchange. Credit interest rates are one of the important things that people consider when applying for credit. Research (Karyani & Darmawan, 2020) that BI interest rate risk has a positive effect on profitability, the results of this study indicate that changes in BI interest rate risk are one of the determining factors that can explain changes in profitability obtained by banks.

The increase in credit interest rates will affect banking operational activities in financing and channeling funds, so that it will increase bank income or profit. Research (Al Harbi, 2019) states that real interest rates encourage bank profitability, the results of the study show that the development of the banking sector and bank credit distribution will increase profitability in the long term. The results of this study support previous research, namely (Satria & Sudjarni, 2016) which states in their research that interest rates have a significant positive effect on stock returns of food and beverages companies on the Indonesia Stock Exchange.

The increase in the benchmark interest rate set by the central bank has an effect on the financial sector, especially banking. An increase in the benchmark interest rate will affect lending rates and bank deposit rates. The credit interest rate is the factor that most influences the income for the bank, and from this income it can cover the costs and cost obligations on funds obtained from savers. An increase in loan interest rates indicates that interest income from lending increases, so that with an increase in interest income, profitability increases. From this explanation and the results of the research that has been done, a hypothesis can be formulated, namely:

H1: Interest Rates have a positive effect on the Profitability of Go Public Banking in Indonesia.

The Effect of Exchange Rates on Banking Profitability

The weakening of the rupiah exchange rate can affect individual banks that have foreign currency debt, and banks that have credit portfolios denominated in foreign currencies. If the currency appreciates or depreciates, it will have an impact on bank profits. A high exchange rate will reduce bank profitability. (Hossin & Mondol, 2020) found a negative relationship between exchange rate fluctuations and financial performance on the exchange rate of the Bangladeshi taka against the US Dollar found to be high during the study period. In essence, the value of the Bangladeshi currency has depreciated against the dollar in recent years and this depreciation has had a negative effect on returns. Several banks said that foreign currency deposits had decreased every time the exchange rate between the two currencies decreased.

Exchange rate fluctuations have two directions known as appreciation and depreciation. Exchange rate appreciation and depreciation will affect bank income through foreign exchange transactions that collect fees and exchange differences. (Segun & Adedayo, 2018) the role of the exchange rate in any economy is very significant because it directly and indirectly affects the level of domestic prices, profitability of traded goods and services, allocation of resources and investment decisions. The effect of the exchange rate is proven to be a significant factor affecting the level of industrial output in the Nigerian economy. When the rupiah exchange rate depreciates, this indicates a weakening of the rupiah against the dollar and indicates a decline in the national economy. The weakening of the rupiah exchange rate against the dollar will reduce bank profitability.

The results of the study (Almaqtari et al., 2018) that the macroeconomic determinants of the exchange rate have a negative effect on Return on Assets in Indian banks. The influence of currency exchange rates on bank profitability identifies that if the exchange rate appreciates or depreciates, it will have an impact on bank profitability. Exchange rate fluctuations and a large depreciation of the rupiah will cause bank debtors to experience business difficulties, with the consequence that they are unable to pay debts to the bank. As a result, the bank experiences liquidity problems and in the end the level of profit (profitability) of the bank decreases. From this explanation and the results of the research that has been done, a hypothesis can be formulated, namely:

H2: Exchange Rate has a negative effect on the Profitability of Go Public Banking in Indonesia.

The Effect of Capital Structure on Banking Profitability

The company's capital structure is measured by the ratio between total debt and total equity owned by the bank. Companies with a large profit level have a larger internal funding source and have a need to finance investment through smaller external funding. (Alipour et al., 2015) the results of the study show that variables such as asset structure and profitability affect all measures of the capital structure of Iranian companies. Short-term debt is considered to represent an important source of financing for companies in Iran. The results show that state ownership has a significant positive relationship with the long-term debt ratio. (Chakrabarti & Chakrabarti, 2018) The inverse relationship with firm age shows that younger firms tend to rely more on borrowed funds compared to older firms.

(Alipudin, 2019) based on the results of research conducted simultaneously (F test), capital structure (DER) and profitability (ROA) affect the value of agricultural companies listed on the Indonesia Stock Exchange (IDX) for the 2014-2018 period. This means that the capital structure (DER) and profitability (ROA) provide strong support for an increase or decrease in firm value. The implication of this research is that the optimal capital structure model of the company will create value for the company itself. Company management needs to continue to maintain its capital structure which consists of debt or liabilities as well as equity. The capital structure that comes from short-term and long-term liabilities and the company's equity is optimized so that it becomes a good company performance so that the company's value increases.

(Rahayu et al., 2019) The capital structure is basically related to the source of funds, whether the funds come from internal sources or from external sources. Internal funds are company funds obtained from company revenues, while external funds come from creditors. A higher proportion of debt in the capital structure creates a larger fixed liability in the form of debt installments and interest on debt that must be paid by a company. The amount of interest a company has to pay reduces revenue and reduces profitability. The results of this study also indicate that profitability has a significant effect on firm value. These findings also provide empirical evidence that profitability is a determinant of firm value in manufacturing companies on the IDX. This needs to be considered by company management in order to form a capital structure that optimizes profitability, so the following hypothesis is formed:

H3: Capital Structure has a positive effect on the Profitability of Go Public Banking in Indonesia.

The Effect of Interest Rates, Exchange Rates and Capital Structure on Banking Profitability

BI interest rates, exchange rates and capital structure are determinants that explain changes in profitability in banking operations. Based on the previous explanation, changes in the interest rate, exchange rate and capital structure variables can have an influence on the profitability of a bank which determines its performance in generating profits. (Sari, 2019) the results of this study indicate that there is a significant influence between the SBI interest rate and the exchange rate together on the IHSG.

Research (Swandayani & Kusumaningtias, 2012) states that together the variables of interest rates, foreign exchange rates and the money supply have a significant effect on the ROA of Islamic banking in Indonesia. (Hidayat et al., 2018) based on the F test, the interest rate, the rupiah exchange rate and the money supply have a significant effect on the stock returns of the LQ 45 index listed on the Indonesia Stock Exchange. When the rupiah exchange rate appreciates, it shows the strengthening of the rupiah value against the dollar and indicates an increase in the national economy. The strengthening of the rupiah exchange rate against the dollar will increase bank profitability, where companies that carry out business development and increase exports will apply for credit to banks. Income from credit interest will increase the bank's profitability.

(Husaeni, 2017) the results of the study show that simultaneously Third Party Funds have a significant effect on the Return on Assets of BPRS in Indonesia. (Parenrengi & Hendratni, 2018) the results of the study show that the Third Party Fund (DPK) variable has a positive and significant effect on ROA of state-owned banks. (Wassie, 2020) the results of research regression show that the capital structure as measured by Debt to Equity has a significant effect, there is a positive correlation with Return on Assets (ROA) in sample construction companies in Ethiopia. It can be concluded that construction companies that have a smaller debt-to-asset ratio get a higher profit compared to construction companies that have a high debt to asset ratio in Ethiopia. Based on the description of several previous research results, it can be concluded that the interest rate, exchange rate and capital structure together have a positive effect on profitability.

H4: Interest Rates, Exchange Rates and Capital Structure have a positive effect on the Profitability of Go Public Banking in Indonesia.

Research and Methodology

The research approach used in this research is the quantitative research approach. This type of quantitative data is data in the form of certain numbers or quantities so that data like this allows it to be analyzed using a statistical approach. The research population is Commercial Banks in Business Category (BUKU IV) with core capital > IDR 30 trillion. The method of selecting or taking samples using purposive sampling technique, namely the technique of selecting or taking samples with certain considerations and criteria. Sources of research data are secondary data collected using the Non Participant Observational method, a data collection method where researchers only observe data that is already available without being part of a data system, namely by recording data listed on the official website such as data on interest rates and exchange rates. on www.bi.co.id, banking report data on www.ojk.go.id. The research sample consisted of state-owned banks, namely Bank Negara Indonesia (BNI), Bank Rakyat Indonesia (BRI), and Bank Mandiri in 2015-2019. Private banks, namely Bank Central Asia (BCA), Bank Cimb Niaga, Bank Panin and Bank Danamon in 2015-2019. Data analysis in this study used the EVIEWS version 11 software.

Findings and Discussion

Descriptive Analysis

Descriptive statistics can be seen depicting a summary of research data such as the amount of data, minimum, maximum, mean and standard deviation. Observations show the number of data or observations for 5 years, namely 2015-2019. Banking profitability as measured using Return on Assets (ROA) has a minimum value of 0.0100, a maximum value of 4.6000, a mean of 1.3514 and a standard deviation of 1.0528. The interest rate measured using the BI-7 Day Reverse Repo Rate has a minimum value of 4.2500, a maximum value of 7.7500, a mean of 5.7625 and a standard deviation of 1.1564. The exchange rate measured using the Jakarta Interbank Spot Dollar Rate (Selling Rate) has a minimum value of 12688.00, a maximum value of 15303.00, a mean of 13785.30 and a standard deviation of 540,4072. Capital structure measured using the Debt to Equity Ratio (DER) has a minimum value of 271,5800, a maximum value of 757,600, a mean of 520,4289 and a standard deviation of 100,8993.

Table 1: Descriptive Statistics

	ROA (%)	Interest Rate (%)	Exchange Rate (Rp)	DER (%)
Mean	1.351452	5.762500	13785.30	520.4289
Median	1.110000	5.625000	13661.50	529.2450
Maximum	4.600000	7.750000	15303.00	757.6400
Minimum	0.010000	4.250000	12688.00	271.5800
Std. Dev.	1.052895	1.156461	540.4072	100.8993
Skewness	1.129623	0.336073	0.510679	-0.616476
Kurtosis	3.941847	1.724321	2.856059	3.467617
Jarque-Bera	104.8472	36.38490	18.61812	30.42968
Probability	0.000000	0.000000	0.000091	0.000000
Sum	567.6100	2420.250	5789826.	218580.1
Sum Sq. Dev.	464.4980	560.3719	1.22E+08	4265696.
Observations	420	420	420	420

Model Selection Method

Chow Test

This test is conducted to test the common effect model and the fixed effect model, the test is carried out with the EVIEWS version 11 software.

Table 2: Chow Test

Effects Test	Statistic	d.f.	Prob.
Cross-section F	148.310428	(6,410)	0.0000
Cross-section Chi-square	484.619797	6	0.0000

Based on the test results of Table 2 above, the Chi-square cross-section probability figure is $0.00 < 0.05$, so it is known that the p-value is smaller than α (0.05), so the conclusion of the Chow test results is to reject H_0 , so the fixed effect model better to use than the common effect model (Pooled Least Square).

Hausman Test

This test is conducted to test between the fixed effect model and the random effect model, the test is carried out with the EVIEWS version 11 software.

Table 3: Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.094539	3	0.9925

Based on the test results in Table 3 above, the Chi-square cross-section value is $0.99 > 0.05$. If the chi-square value > critical value (0.05), then H_0 is accepted and the selected model is the random effect model. From this conclusion, the better approach to use is the random effects model. If a random effect model is selected, then proceed to the Lagrange Multiplier Test.

Lagrange Multiplier Test

This test is conducted to test the common effect model and the random effect model, the test is carried out with the EVIEWS version 11 software.

Table 4: Lagrange Multiplier Test

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	5690.528 (0.0000)	0.587495 (0.4434)	5691.116 (0.0000)
Honda	75.43559 (0.0000)	0.766482 (0.2217)	53.88300 (0.0000)
King-Wu	75.43559 (0.0000)	0.766482 (0.2217)	72.10254 (0.0000)
Standardized Honda	82.89587 (0.0000)	1.089688 (0.1379)	52.68901 (0.0000)
Standardized King-Wu	82.89587 (0.0000)	1.089688 (0.1379)	75.89941 (0.0000)
Gourieroux, et al.	--	--	5691.116 (0.0000)

Based on the test results in Table 4 above, the Both value is $0.00 < 0.05$. If the LM statistical value > the Chi-Square value, then H_0 is rejected, which means that the random effect model is selected. The conclusion in this test the random effect model was chosen because the value of Both was $0.00 < 0.05$. In the lagrange multiplier test, whatever results are selected, either the random effect model or the common effect model, this test is complete.

Panel Data Regression Model

Data processing in the study was carried out using the help of the Eviews program version 11 by analyzing using a panel regression model. The regression equation model is as follows:

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + e_{it}$$

Where:

Y_{it} = Profitability (Return on Asset)

α = Constant

β_1 - β_3 = Partial regression coefficient, which is a constant indicating the size of X role in determining the size of Y

X_{1it} = Interest Rate

X_{2it} = Exchange Rate

X_{3it} = Capital Structure (Debt to Equity Ratio)

e = Error term or confounding factor
i = Entity i
t = period t

Table 5: Panel Data Regression Model (Random Effect Model)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	14.81369	1.180617	12.54742	0.0000
Interest Rate	1.170876	0.205599	5.694943	0.0000
Exchange Rate	-0.009590	0.000721	-13.30996	0.0000
DER	0.004569	0.000715	6.385570	0.0000
Effects Specification				
			S.D.	Rho
Cross-section random			3.008168	0.7437
Idiosyncratic random			1.765889	0.2563
Weighted Statistics				
Root MSE	1.755546	R-squared		0.403769
Mean dependent var	1.134229	Adjusted R-squared		0.399469
S.D. dependent var	2.276264	S.E. of regression		1.763966
Sum squared resid	1294.416	F-statistic		93.90535
Durbin-Watson stat	0.398697	Prob(F-statistic)		0.000000
Unweighted Statistics				
R-squared	0.189550	Mean dependent var		15.00924
Sum squared resid	4060.422	Durbin-Watson stat		0.127100

Based on table 5, the panel data regression equation model is obtained using the random effect model as follows:

$$\text{ROA} = 14.8136 + 1.1708 \text{ INTEREST RATE} - 0.0095 \text{ EXCHANGE RATE} + 0.0045 \text{ DER}$$

- A constant value of 14.8136 explains that if the independent variables, namely the interest rate, exchange rate and capital structure do not exist (0), bank profitability will be at a constant level of 14.8136.
- The interest rate coefficient of 1.1708 explains that each increase in the interest rate of one unit will result in an increase in bank profitability of 1.1708 units, assuming other variables are constant. This means that the higher the interest rate, the higher the level of bank profitability.
- The exchange rate coefficient of -0.0095 explains that every one-unit increase in the exchange rate will result in a decrease in bank profitability by -0.0095 units, assuming other variables are constant. This means that the higher the exchange rate, the lower the level of bank profitability.
- The capital structure coefficient of 0.0045 explains that every one-unit increase in the capital structure will result in an increase in banking financial performance of 0.0045 units, assuming other variables are constant. This means that the higher the level of capital structure, the higher the level of bank profitability.

Classic Assumption Test

Normality Test

The normality test aims to test whether in the regression model, confounding or residual variables have a normal distribution. In this study, the normality test can be seen from the probability value greater than 0.05, it can be concluded that the data is normally distributed.

Figure 1: Normality Test

Based on Figure 1 above, it can be seen that the Jarque Bera test value is 5.0189 with a probability of $0.08 > 0.05$, it can be concluded that the data is normally distributed. Thus the research data in this research model can be declared normal.

Multicollinearity Test

The multicollinearity test aims to test whether the regression model finds a correlation between the independent variables. In this study, to detect the presence or absence of multicollinearity, it can be seen from the correlation value < 0.90 , so there is no multicollinearity problem in each variable.

Table 6: Multicollinearity Test

	Interest Rate	Exchange Rate	DER
Interest Rate	1.000000	-0.087692	0.104849
Exchange Rate	-0.087692	1.000000	-0.029213
DER	0.104849	-0.029213	1.000000

Based on table 6 above, the correlation value between interest rates, exchange rates and capital structure is -0.08 , 0.10 and $-0.02 < 0.90$, then there is no multicollinearity problem. Thus it can be concluded that the regression model formed is free of heteroscedasticity symptoms.

Heteroscedasticity Test

The heteroscedasticity test aims to test whether in the regression model there is an inequality of variance from the residuals of one observation to another. If the variance from one observation to another is the same, it is called homoscedasticity. And if the variance is different it is called heteroscedasticity. A good regression model is one that is homoscedastic or does not occur heteroscedasticity (Ghozali, 2013).

Table 7: Heteroscedasticity Test

F-statistic	11.72338	Prob. F(9,410)	0.0000
Obs*R-squared	85.96216	Prob. Chi-Square(9)	0.0000
Scaled explained SS	102.5168	Prob. Chi-Square(9)	0.0000

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.262449	7.439671	1.245008	0.2138
Interest Rate^2	5.719922	2.747030	2.082220	0.0379
Interest Rate* Exchange Rate	-0.073691	0.011970	-6.156170	0.0000
Interest Rate*DER	-0.007203	0.014456	-0.498250	0.6186
Interest Rate	-4.096767	7.771147	-0.527177	0.5984
Exchange Rate^2	0.000135	6.73E-05	2.002088	0.0459
Exchange Rate*DER	0.000166	6.81E-05	2.433846	0.0154
Exchange Rate	0.007835	0.034254	0.228732	0.8192
DER^2	-5.04E-06	6.11E-05	-0.082440	0.9343
DER	-0.007606	0.036532	-0.208208	0.8352

R-squared	0.204672	Mean dependent var	9.651061
Adjusted R-squared	0.187213	S.D. dependent var	15.06633
S.E. of regression	13.58300	Akaike info criterion	8.079037
Sum squared resid	75644.19	Schwarz criterion	8.175234
Log likelihood	-1686.598	Hannan-Quinn criter.	8.117059
F-statistic	11.72338	Durbin-Watson stat	0.554385
Prob(F-statistic)	0.000000		

Based on table 7 above, it can be seen that the Obs*R-Square value is 85.9621 with Prob. equal to $0.00 < 0.05$, it can be stated that the regression model has Heteroscedasticity symptoms. The model chosen in this study is a random effect model containing cross section weights that is able to treat diseases in the classic assumption test, namely heteroscedasticity. The advantage of using a random effect model is that it can eliminate heteroscedasticity.

Autocorrelation Test

The autocorrelation test aims to test whether in the regression there is a correlation between the confounding error in period t and the confounding error in period $t - 1$ (previous). If there is a correlation, it is called an autocorrelation problem. A data is said to be free from autocorrelation if the value is sig. above 5% alpha (0.05) (Ghozali, 2013).

Table 8: Autocorrelation Test

F-statistic	1258.737	Prob. F(2,414)	0.0000
Obs*R-squared	360.6851	Prob. Chi-Square(2)	0.0000

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.308715	0.205033	1.505682	0.1329
Interest Rate	-0.427191	0.127961	-3.338439	0.0009
Exchange Rate	0.000394	0.000480	0.821741	0.4117
DER	0.000348	0.000478	0.728923	0.4665
RESID(-1)	0.808318	0.048369	16.71163	0.0000
RESID(-2)	0.130708	0.048568	2.691253	0.0074

R-squared	0.858774	Mean dependent var	6.37E-16
Adjusted R-squared	0.857069	S.D. dependent var	3.110321
S.E. of regression	1.175897	Akaike info criterion	3.176122
Sum squared resid	572.4513	Schwarz criterion	3.233839
Log likelihood	-660.9855	Hannan-Quinn criter.	3.198934
F-statistic	503.4949	Durbin-Watson stat	1.926033
Prob(F-statistic)	0.000000		

Based on the table above, the Prob value. Chi-Square (which is Obs*R-squared) is $0.00 < 0.05$, so it can be concluded that this regression model has autocorrelation problems. Autocorrelation is the correlation between sample members who are sorted by time. This assumption deviation usually appears in observations using time series data (Algifari, 2000). Autocorrelation testing on data that is not time series (cross section or panel) will be pointless or meaningless (Iqbal, 2015).

Hypothesis Test

F Test

The model suitability test (F test) aims to test whether the model used in this study is feasible or not to be used as an analytical tool in examining the effect of the independent variable on the dependent variable.

Table 9: F Test and analysis R^2

Weighted Statistics			
Root MSE	1.755546	R-squared	0.403769
Mean dependent var	1.134229	Adjusted R-squared	0.399469
S.D. dependent var	2.276264	S.E. of regression	1.763966
Sum squared resid	1294.416	F-statistic	93.90535
Durbin-Watson stat	0.398697	Prob(F-statistic)	0.000000

The results of testing the suitability of the model in this study have been presented in Table 9, it can be seen that the Prob value (F-statistic) is $0.00 < 0.05$ so that the variables of interest rates, exchange rates and capital structure together (simultaneously) have an effect on profitability. This shows that this study is suitable to be used as an analytical tool to test the effect of the independent variable on the dependent variable.

Analysis Coefficient Determination (R^2)

Analysis of the coefficient of determination is used to measure how far the ability of all independent variables is in explaining the variation of the dependent variable (Ghozali, 2013).

Based on the analysis of the coefficient of determination (R^2) in table 9, it can be seen that the Adjusted R-squared value is 0.39, this means that 39% of the dependent variable bank profitability can be explained by the three variables, namely the interest rate, exchange rate and capital structure. While the remaining 61% is explained by other variables outside the model. The R-squared correlation value of 0.40 indicates a correlation or closeness of the relationship between the independent variable and the dependent variable by 40%.

t Test

The t statistical test is carried out to determine how far the influence of one independent variable individually explains the variation in the dependent variable. The t statistical test was carried out by comparing the results of the significance value with $\alpha = 0.05$ and can be explained as follows:

Table 10: t Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	14.81369	1.180617	12.54742	0.0000
Interest Rate	1.170876	0.205599	5.694943	0.0000
Exchange Rate	-0.009590	0.000721	-13.30996	0.0000
DER	0.004569	0.000715	6.385570	0.0000

Constants (Coefficient a)

The constant value is 14.8136, which means that if the independent variables consisting of interest rates, exchange rates and capital structure are equal to zero, the change in bank profitability will be 14.8136.

Interest Rate Coefficient (β_1)

Based on Table 10, it can be seen that the variable interest rate with a two-sided test using a significant level of $\alpha = 5\%$, obtained a t-statistic value of 5.6949 and a probability of $0.0000 < 0.05$. Thus H_01 is rejected and H_{a1} is accepted, meaning that the interest rate partially has a positive and significant effect on bank profitability. The positive regression coefficient shows that the greater the interest rate, the higher the profitability of the banking system. Thus the first hypothesis which states "Interest rates have a positive and significant effect on bank profitability" can be supported.

Exchange Rate Coefficient (β_2)

Based on Table 10, it can be seen that the exchange rate variable with a two-sided test using a significant level of $\alpha = 5\%$, obtained a t-statistic value of -13.3099 and a probability of $0.0000 < 0.05$. Thus H_02 is rejected and H_{a2} is accepted, meaning that the exchange rate partially has a negative and significant effect on bank profitability. The negative regression coefficient shows that the greater the exchange rate, the lower the profitability of the banking system. Thus the second hypothesis which states "The exchange rate has a negative and significant effect on bank profitability" can be supported.

Capital Structure Coefficient (β_3)

Based on Table 10, it can be seen that the capital structure variable with a two-sided test using a significant level of $\alpha = 5\%$, obtained a t-statistic value of 6.3855 and a probability of $0.0000 < 0.05$. Thus H_03 is rejected and H_{a3} is accepted, meaning that the capital structure partially has a positive and significant effect on bank profitability. The positive regression coefficient shows that the greater the capital structure, the higher the profitability of the banking system. Thus the third hypothesis which states "Capital structure has a positive and significant effect on bank profitability" can be supported.

Discussion

This research discusses the influence model of interest rates, exchange rates and capital structure on bank profitability. The results of this study indicate that the 4 hypotheses are supported. The first hypothesis in this study is that interest rates have a positive and significant effect on bank profitability as found by (Al Harbi, 2019) that real interest rates drive bank profitability. In addition, the results of the study indicate that the development of the banking sector and the distribution of bank credit will increase profitability in the long term; (Adetunji & Oladele, 2017) the findings show that there is a significant positive relationship between credit interest rates and bank profitability. And there is a significant positive relationship between interbank interest rates and bank profitability; (Murty & Roshma, 2018) show that interest rates have a significant effect on profitability (ROA) at commercial banks (Alternate

Accepted). The results of statistical tests in Table 10 support the First Hypothesis in this study. These results prove the existence of an important role in the interest rate on lending with a large amount, indicating the high sales made by a bank so that it affects high profits or profitability. This is because all financing and the largest source of bank income comes from interest income. The magnitude of the loan interest rate is a form of competition to channel bank credit as much as possible. Bank Indonesia issues a BI 7-Day (reverse) Repo Rate with a shorter time span, which is expected to reduce the risk of bad credit due to changes in annual interest rates that can soar sharply, affecting the stability of customer spending and income.

The second hypothesis in this study is that the Exchange Rate has a negative and significant effect on Banking Profitability as the findings of previous research by (Almaqtari et al., 2018); (Elhussein & Osman, 2019); (Yeboah & Takacs, 2019). The results of statistical tests in table 10 support the Second Hypothesis in this study. These results prove that foreign currency exchange rates play an important role in banking profitability. Basically, the activity of a bank to provide buying and selling foreign currency is very profitable because the transaction generates a profit in the form of a foreign exchange difference. The bank identifies if the exchange rate appreciates or depreciates, it will have an impact on the bank's foreign currency liabilities at maturity. As a result, the bank's profitability will change if in that case the bank does not perform hedging. Exchange rate fluctuations and a large depreciation of the rupiah will cause bank debtors to experience business difficulties, with the consequence that they are unable to pay debts to the bank. As a result, the bank experiences liquidity problems and in the end the level of profit (profitability) of the bank decreases. The greater the outflow of capital, the greater the demand for foreign exchange and its subsequent weakening of the exchange rate. Capital outflows include the payment of debts of Indonesian residents (both private and government) to foreigners and placement of Indonesian residents' funds abroad.

The third hypothesis in this study is that capital structure has a positive and significant effect on bank profitability as found by (Chakrabarti & Chakrabarti, 2018); (Seissian et al., 2018); (Alarussi, 2019). The results of statistical tests in table 10 support the third hypothesis in this study. These results prove the important role of capital structure on bank profitability. The increase in capital structure indicates that the company is carrying out operational activities by utilizing funds originating from debt greater than equity. When a company uses debt, the company is considered to have the ability to increase capacity and pay off debt. Investors' perceptions will be more positive and will increase company value. Therefore, banks are required to be creative in developing attractive products and according to customer needs in order to increase third party funds collected by the bank. Banks can have an optimal capital structure if they are able to balance the risk of extending credit against the benefits derived from providing credit to increase its profitability and meet operational needs with these internal funds. With more and more funds that can be raised through third party funds, banks can add credit or other business activities that can bring greater profitability to the bank.

The fourth hypothesis in this study is that the interest rate, exchange rate and capital structure simultaneously have a significant effect on banking profitability as found by (M. Ali & Puah, 2019); (Karyani & Darmawan, 2020); (Budiono & Firdayasa, 2017); and (Husaeni, 2017). The results of statistical analysis in Table 9 show that the fourth hypothesis in this study is supported. It can be seen that the value of Prob (F-statistic) is $0.00 < 0.05$ so that the variables of interest rates, exchange rates and capital structure together (simultaneously) have an effect on profitability. This shows that this study is suitable to be used as an analytical tool to test the effect of the independent variable on the dependent variable. Changes in the interest rate, exchange rate and capital structure variables can have an influence on the profitability of a bank which determines its performance in generating profit.

Conclusions

The results of this study indicate that the interest rate has a positive and significant effect on the bank profitability variable. The exchange rate has a negative and significant effect on the bank profitability variable. Capital structure has a positive and significant influence on the bank profitability variable. Interest rates, exchange rates and capital structure have a positive and significant effect on bank profitability variables. Banks are expected to pay attention to the loan interest rates given, because the performance of financial institutions is very dependent on all financing and the largest source of bank income comes from interest income. The high loan interest rates given will increase bank profitability.

The exchange rate will determine the real investment return. A declining currency will clearly reduce the purchasing power of the income and the capital gains earned from any type of investment. This decline in investment will affect the bank's operational activities, which in turn will affect the bank's financial ratios. The essence of bank fund management is how the bank manages and aligns its sources of funds with the distribution of funds. Banks can have an optimal capital structure if they are able to balance the risk of providing loans with the benefits obtained from providing credit to increase their profitability and meet their operational needs.

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