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## The Influence of Economic Factors on The Indonesian State Stock Price Index in 2014-2023

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### Abstract:

In addition to foreign direct investment, domestic direct investment (PMDN) also helps Indonesia in carrying out development. Domestic investment is used to develop the Indonesian economy, create jobs, increase national income and strengthen the competitiveness of domestic industries. This study aims to determine the effect of interest rates on investment. The data used in this study are secondary data from investment and interest rate variables. This research uses panel data which is a combination of cross-section data and time series data. In this study, the cross-section data is 34 provinces in Indonesia and the time series data is data from 2014-2023. This study will look at the effect of interest rates on investment using panel data regression. Based on the results of the analysis, it is found that interest rates have a negative and significant effect on domestic investment.

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### Keywords:

Domestic direct investment; interest rate; panel data regression

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## 1. Introduction

There is generally a close relationship between changes in the price level and interest rates. If prices are stable, or the inflation rate is very low, interest rates tend to be at a low level. The higher inflation, the higher interest rates tend to be. Capital owners will try to earn a fixed real interest rate and this is done by demanding a higher nominal interest rate at an accelerating inflation rate. There is also a close relationship between interest rates and investment, i.e. higher interest rates lead to a decline in investment. A slump in investment leads to a reduction in aggregate expenditure. Thus an increase will lead to the following process of change (a) rising prices cause interest rates to rise, (b) rising interest rates cause investment to fall, and (c) falling investment causes aggregate expenditure and real national income to fall. The purpose of this study is to determine the effect or test the impact of interest rates on investment in 34 provinces in Indonesia in the 2014-2023 period.

a. Classical Investment Theory

Classical economists contend that investment is influenced by the interest rate. People are less likely to invest when the interest rate is greater. Lower interest rates will make more entrepreneurs want to invest because they can use less money. Sadono Sukirno said the same thing: there is a direct link between interest rates and investment, and higher interest rates will lead to less investment.

b. Keynes' Theory of Investment

John Maynard Keynes wrote *The General Theory of Employment, Interest, and Money* in 1936. He founded his theory on the idea of investment demand or the marginal efficiency of capital (MEC). MEC can be defined as the anticipated net rate of return on supplementary capital investment. More specifically, MEC is the discount rate that makes the present cost of new capital equal to the expected future stream of profits. Keynes said that two things affect investment demand: the interest rate and the Marginal Efficiency of Capital (MEC). MEC is the amount of money that you expect to make from an investment. Expected profit is the percentage of prospective profit that will be made compared to the current interest rate. The investment function of Keynes has a negative slope, which means that as the interest rate goes down, the amount of investment goes up. But even if the interest rate is very low, investment will still be low or limited if the benefit from the investment is less than the interest rate.

The entrepreneur's decision to invest is as follows:

- 1) If MEC is greater than the interest rate, the investment is made
- 2) If MEC is less than the interest rate, the investment is not made.
- 3) If the MEC is equal to the interest rate, the investment can be implemented or not.

c. Interest Rate

When deciding whether or not to invest in the future, interest rates are a big deal. Anna (2012) says that the interest rate is the cost of borrowing money or the amount charged or paid for using it. When interest rates go up, investment goes down, and when interest rates go down, investment goes up. This is because the cost of investing has gone down (Ernita, 2013)

## **2. Literature Review**

Analysis of Factors Influencing Investment Demand in Indonesia is the subject of the study by Pardamean Lubis and Salman Bin Zulam (2016). To what extent do domestic interest rates (IR) and national income (NI) influence the demand for investment in Indonesia, both from inside the country and from outside, is the overarching goal of this research. An econometric model utilizing the ordinary least square (OLS) equation approach in the eviews 4.1 application is used for data analysis. The estimation results show that the demand for investments in Indonesia is negatively and statistically significantly affected by the domestic interest rate. Investor interest in Indonesia is positively and statistically significantly correlated with the country's GDP. The impact of interest rates, taxes, and economic growth on FDI is investigated in this paper by Putu Kartika Dewi and Nyoman Triaryati (2015). The purpose of this research is to ascertain how changes in GDP, interest rates, and tax policies influence FDI. In this research, we employ methods of multiple linear regression analysis. According to the data, FDI is positively and significantly affected by economic growth, while FDI is negatively and significantly affected by interest rates and taxes.

Messayu Eliza and Munawar Ismail (2000) investigate the impact of macroeconomic variables on foreign investment in Indonesia. This study seeks to ascertain the impact of macroeconomic variables (gross domestic product, inflation, exchange rate, and SBI interest rate) on foreign investment in Indonesia in 2000. Utilizing the Error Correction Model (ECM) methodology. This study categorizes foreign investment into two types: foreign direct investment and foreign portfolio investment. This study demonstrates that the gross domestic product and SBI interest rate variables positively influence foreign direct investment in Indonesia, both in the short and long run. Inflation and exchange rate variables do not impact foreign direct investment in Indonesia, neither in the short term nor the long term. The findings of this analysis indicate that only gross domestic product characteristics can positively influence foreign portfolio investment in Indonesia over the long term. The inflation rate, the exchange rate, and the SBI interest rate have little effect, either in the short or long term.

### 3. Data and Methodology

The study utilizes secondary data sourced from 34 provinces in Indonesia. The data were sourced from two origins:

- a. Investment data: Ministry of Investment and Investment Coordinating Board
- b. Data on interest rates: Bank Indonesia utilizes domestic investment realization data (PMDN), measured in billion rupiah, for investment analysis.

In Maluku Province, the investment data for the years 2014 and 2015 recorded a value of 0 billion rupiah. Additionally, the interest rate data employs BI rate data expressed in percentage units. The BI rate data is calculated by averaging the monthly BI rates, achieved by summing the rates for each month and dividing the total by 12. Thus, we obtain the BI rate for the year. This research examines the impact of interest rates on investment through the application of panel data regression analysis. Panel data integrates cross-sectional data with time series data. This study utilizes cross-sectional data from 34 provinces in Indonesia and time series data spanning from 2014 to 2023. The total number of samples in this study is 340, calculated as 34 multiplied by 10. This study's econometric model is outlined as follows:

$$lit = \alpha_0 + \beta_1 Rit + \epsilon_{it}$$

Where I represents investment, the dependent variable, and R denotes the interest rate, the independent variable. To handle the investment value data, we apply the natural logarithm (Ln) transformation, however we do not modify the interest rate data as it is already expressed in percentage form.

### 4. Result and Discussion

- a. Descriptive Statistics

**Table 1.** Descriptive Statistics

Variable	Type	Mean	Std. Dev.	Min	Max
lnInvestasi	overall	8.235622	1.741069	1.280934	11.46376
	between		1.375884	5.474909	10.77321
	within		1.100094	2.390957	10.75723
Tingkat A	overall	5.392	1.315799	3.52	7.54
	between		0	5.392	5.392
	within		1.315799	3.52	7.54

The descriptive test findings indicate the data distribution for the investment variable and the interest rate variable in this study as follows:

- 1) Investment Variable (I): The data distribution indicates a minimum investment value of 1.28 percent, a maximum value of 11.46 percent, an average investment of 8.23 percent, and a standard deviation of 1.74 percent. The results indicate that investors allocate substantial amounts of capital, as the average investment value approaches the maximum investment value. The data exhibits significant variance, as evidenced by the huge disparity between the mean and the standard deviation, indicating a broad distribution.
- 2) Variable interest rate (R), The data distribution indicates a minimum interest rate of 3.52 percent, a maximum of 7.54 percent, an average of 5.39 percent, and a standard deviation of 1.32 percent. The results indicate that interest rates are relatively low, since the average interest rate approaches the minimum rate. The substantial disparity between the mean and the standard deviation indicates a great volatility in the data, suggesting a broad distribution.

- b. The Effect of Interest Rates on Investment in 34 Provinces in Indonesia

The subsequent step is to assess the impact of the independent variable, specifically interest

rates, on the dependent variable, namely investment, across 34 provinces in Indonesia from 2014 to 2023, via panel data regression as illustrated in equation (1). The regression results for Pooled Least Squares (PLS), Fixed Effects Model (FEM), and Random Effects Model (REM) are presented in Table 2.

**Table 1.** Panel Data Regression Results

Variabel	Koefisien Regresi		
	PLS	FEM	REM
C	10,34304	10,44519	10,42392
Suku Bunga (R)	-0,3917606	-0,4107508	-0,4094017
Uji Hausman			
Cross-section random $\chi^2 (1) = 0,13$ ; Prob $\chi^2 = 186$ 0,7			

Once the PLS, FEM, and REM regression findings are available, the Hausman Test is conducted. The Hausman test is used to find out which model is better for estimating panel data: the Random Effects Model (REM) or the Fixed Effects Model (FEM). The random cross-section probability value is what the Hausman Test uses to make decisions. The FEM approach is chosen if the cross-section random probability value is less than 0.05. The REM approach is used if the cross-section random probability value is more than 0.05. Based on table 1, the probability value of  $\chi^2 = 0.7186 (> 0.05)$ , which means that the Random Effects Model (REM) is the best choice.

The t-test is conducted to ascertain whether the independent factors have a significant effect on the dependent variable separately.  $H_0$  t test on the selected model states that,  $\beta_1 = 0$ , which means that interest rates (R) have no real effect on investment (I). According to the t-test on the specified model with  $H_A$ ,  $\beta_1 < 0$ , indicating that the interest rate (R) adversely affects investment (I).

According to Figure 2, the p-value (0.000) in the chosen Random Effects Model (REM)  $< \alpha$  (0.01) with a significance threshold of 1% demonstrates that the interest rate (R) significantly influences investment (I). This indicates that the interest rate affects the level of investment, hence the findings of this study align with and support investment theory. The constructed model is as follows:  $lit = 10.42 - 0.41Rit + \epsilon_{it}$

Due to the fact that the model has been constructed, it is possible to assert that the amount of investment will be 10.42 when the interest rate in this equation is equal to zero. It is also possible to deduce from this equation that the value of an investment will decrease by 0.41% for every one percent increase in interest rates.

**Figure 2.** Regression Results of REM Model

Variabel	Koefisien	Std. Err.	z	P> z	95% Confidence Interval
1Investasi					
TingkatSukuBunga	-0.4094017	0.0423801	-9.66	0.000	-0.4924652
_cons	10.42392	0.3233996	32.23	9.790065	11.05777

## 5. Conclusion

The aim of this study is to examine the effect of interest rates on investment across 34 provinces in Indonesia from 2014 to 2023. The large role demonstrated validates the existence of an influence between interest rates and investment. The outcome indicates a substantial negative correlation between interest rates and investment. So, as the interest rate goes up by one unit, the value of the

investment goes down. Based on these findings, researchers suggest that the government should set a suitable interest rate, specifically one that is not excessively high, to attract more investors. And for future research, researchers can include independent variables like national income, taxes, and other independent variables to give the government a better idea of how to get more investment.

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