

## **THE INFLUENCE OF REAL INTEREST RATES, INFLATION, EXCHANGE RATE, AND GDP ON STOCK RETURN IN THE PROPERTY SECTOR**

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### **ABSTRACT**

*Stocks are one of the investment products in financial markets that need to be understood in terms of risk and return, where changes in stock returns can be influenced by external and internal factors. This study aims to determine the significant effect of real interest rates, inflation, exchange rates, and gross domestic product on property sector stock returns on the Indonesia Stock Exchange (IDX) in the 2012-2019 period. This period shows a fluctuating property market cycle due to changes in external factors, namely the economy and politics in Indonesia. Public companies in the property and real estate sector are listed on the IDX, with a total of 67 companies selected with certain criteria; 26 companies were selected. Secondary data obtained from the World Bank and Bank Indonesia were tested using panel data regression. The test results show that real interest rates, inflation, and exchange rates have a significant effect on stock returns, but the gross domestic product has no significant effect. This research proves the importance of the government's role in maintaining the economic and political stability of a country so that investors are interested in investing in the stock market. Contributions from the property and real estate sector in driving the economy from upstream to downstream also need government support regarding regulations and taxation.*

*Keywords: stock return, real interest rate, inflation, exchange rate, gross domestic product*

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### **BACKGROUND**

In 2012 the economic conditions in Indonesia were still facing risks from global economic uncertainty. The Greek debt crisis indirectly affected the Indonesian economy through the strengthening of the United States dollar exchange rate and changes in stock prices (Kompas, 2012). In 2013, Indonesia was also hit by a financial crisis, as indicated by the weakening of the Rupiah, due to the Federal Reserve System's (FRS - Central Bank of the United States) plan to reduce Quantitative Easing (QE). Quantitative Easing is an FRS program to print money and buy bonds or other financial assets from banks in the United States. As a result of the FRS announcement, currencies in several developing countries experienced a drastic decline in value, and foreign investment in the Indonesian stock market also decreased (Hussein, 2013).

Economic difficulties in Indonesia in 2015 were the continued weakening of the Rupiah exchange rate, rising bank interest rates, and declining export values. This phenomenon is related to the FRS policy of increasing the Fed Rate by 25 basis points to 0.25-0.50 percent. This policy forced global investors to divert some of their funds to the

United States, so the Jakarta Composite Index (IHSG) decreased by 12.1% compared to 2014 (Syahrul, 2015). Furthermore, in 2018 there was a trade war between the United States and China, which resulted in a slowdown in world economic growth. Global commodity prices have decreased, as have Indonesian commodities (Putra, 2019).

This global economic phenomenon had an impact on property sector stock returns, where the strengthening of the value of the United States Dollar, the reduction in QE caused foreign investors to withdraw their investment from Indonesia, the increase in the Fed Rate which caused global investors to divert their funds to the United States, continued with the trade war between the United States with China. According to the Arbitrage Pricing Theory, these macroeconomic factors affect stock returns. Therefore, the purpose of this study was to determine the effect of macroeconomic factors, namely real interest rates, inflation, exchange rates, and Gross Domestic Product (GDP), significantly on stock returns in the property sector. This research can provide benefits for investors as a reference for investing and a source of information in the literature related to macroeconomic factors on stock returns, especially in the property and real estate sectors. This research is also useful for property and real estate sector companies to study external factors, namely macroeconomics, before making decisions for the benefit of the company.

## **THEORETICAL STUDY**

Arbitrage Pricing Theory (APT) is a theory that Stephen Ross first put forward in 1976 as a renewal of the theory of the Capital Asset Pricing Model (CAPM). The APT theory assesses the relationship between risk and return of an asset. The purpose of creating this theory is to overcome the weaknesses of the CAPM theory, where the APT theory reveals more than one factor ( $n$ ) that determines asset returns other than systematic risk. The APT model is an alternative model that can measure the risks faced by investors and the benefits they gain.

In APT, investors believe that security returns are determined by a factorial model with several ( $n$ ) risk factors. Risk is defined as the sensitivity of a stock to macroeconomic factors where the amount of expected return is affected by this sensitivity. In determining the return to be obtained, there are underlying factors. Underlying factors are any factors that can affect changes in returns. Previous studies have found that macroeconomics is the underlying factor that influences stock returns. In general, domestic factors in the form of country fundamental factors such as inflation, national income, the amount of money in circulation, interest rates, exchange rates, and GDP growth affect investor expectations so that they affect the movement of stock returns (Husnan, 2016). Macroeconomics affects stock returns directly depending on the level of sensitivity to changes in macroeconomics. Changes in inaccurate interest rates, inflation, exchange rates, and GDP can increase investors' risks when investing.

According to Mankiw (2020), interest rates are divided into two, namely nominal interest rates and accurate interest rates. The nominal interest rate is the ratio between the amount of money paid back and the amount borrowed. Meanwhile, accurate interest rates emphasize the ratio of the purchasing power of the money paid back to the purchasing power of the money borrowed. The real interest rate is the difference between the nominal and the inflation rates. Simbolon & Purwanto (2018) stated that interest rates significantly affect stock returns in the property sector. The higher the interest rate, the lower the return obtained. When the interest rate is high, the mortgage rate is also higher. This makes people reluctant to do home loans. As a result, house sales decreased and impacted the company's overall performance. When a company experiences a decline in performance, investors are not interested in the company, so the demand for shares decreases. A decrease in demand for company shares will lead to a decrease in stock prices so that the stock returns received by investors will decrease.

H<sub>1</sub>: Accurate interest rates have a significant effect on property sector stock returns.

*Inflation* is a process of increasing prices in general. It is continuously related to market mechanisms caused by various factors, including increased public consumption, excess liquidity in the market, which triggers consumption or even speculation, and the result of uneven distribution of goods (Suparmoko, 2015 ). Inflation is one of the macroeconomic variables that investors need to pay attention to. The high price of goods and services in general and continuity can affect the community's economic condition. According to Karim (2015), inflation affects stock returns. High prices of goods will cause the costs incurred by the company to increase so that the profits generated will decrease. This causes a decrease in company performance, so investors are not interested in investing in companies that experience decreased profits. When investors are not interested, the demand for shares decreases. As a result, the company's stock price decreases, and investors' return also decreases.

H<sub>2</sub>: Inflation has a significant effect on stock returns in the property sector.

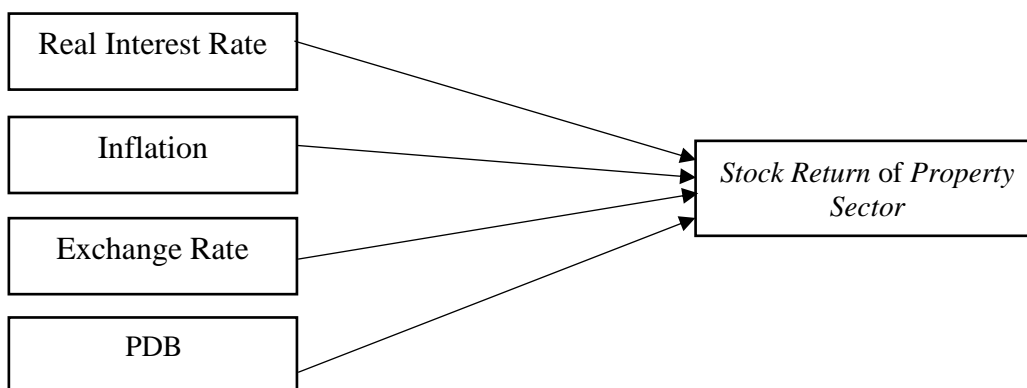
The exchange rate is the price in the exchange of two different currencies (Nopirin, 2013). This price difference between the two different currencies creates a comparison between the two currencies. Exchange rates play an important role in making shopping decisions. The exchange rate is one of the critical macroeconomic variables because a country cannot be separated from the influence of other countries. Susanto's research (2015) states that the exchange rate significantly affects stock returns in the property sector. When the dollar exchange rate falls, the raw materials imported for building materials become cheaper, so the profit generated by property companies becomes more. These conditions support the performance of companies in the property sector, and investors view this as

positive information; demand for company shares increases, and share prices also increase. When the stock price rises, the return that investors also get increases.

H<sub>3</sub>: The exchange rate significantly affects stock returns in the property sector.

In the production approach, Gross Domestic Product (GDP) is the total value of final goods and services produced by various production units in the territory of a country within a year (Kewal, 2012). GDP is defined as the value of goods and services produced by the factors of production owned by citizens of the country and foreign countries in one year. Hamzah, Musnadi & Hismendi (2016) stated that GDP significantly affects property stock returns. If GDP increases, sales of houses will increase so that companies can generate greater profits. Companies that generate much profit are considered to have good performance by investors, so investors are interested in buying shares of these companies. The demand for these shares also increases, and the stock price also increases, accompanied by an increase in stock returns. Conversely, negative GDP growth will be a negative signal for investors, so investors will use GDP as a consideration factor to decide to buy shares whether it is feasible or not.

H<sub>4</sub>: GDP has a significant effect on stock returns in the property sector.



**Figure 1. Framework**

**METHOD**

This research is associative research. Secondary macroeconomic data were obtained from the websites of Bank Indonesia, the Central Bureau of Statistics, World bank, and investing.com. The research population is all property and real estate sector companies listed on the Indonesia Stock Exchange (IDX) which were selected by purposive sampling technique according to the following criteria:

1. Registered on the IDX during the period January 2012 - December 2019 to obtain monthly share price data for companies in the property and real estate sector
2. Macroeconomic data such as real interest rates, inflation, exchange rates and monthly GDP for the period January 2012 – December 2019

The panel data regression method was used with the Eviews application to test the hypothesis, which combines time series and cross-section data. Time series is data for one object in a monthly time series. Cross-section data is data from several objects (property sector companies) in a certain period. The best model is selected in the analysis using panel data: pooled least squares (common effect), fixed effect, or random effect.

**Table 1. Variables and Operational Definitions of Variables**

Variable	Variable Operational Definitions
Dependent Variable	
Stock Return	Monthly property and real estate sector average stock return
Independent Variable	
Real Interest Rate	Monthly real interest rates in Indonesia in 2012-2019 issued by the World Bank
Inflation	Monthly inflation in Indonesia in January 2012 – December 2019 issued by Bank Indonesia
Exchange Rate	Monthly USD / IDR exchange rates for the period January 2012 – December 2019 obtained from investing.com
GDP	Nominal GDP per year in Indonesia in 2012-2019 issued by the World Bank

Source: Processed by Researchers

The panel data regression model used is as follows:

$$R_{it} = b_0 + b_1SBR_t + b_2I_t + b_3NT_t + b_4PDB_t + e_t$$

Keterangan:

$R_{it}$  = Return of property and real estate sector shares

b = coefficient

$SBR_t$  = Real Interest Rate

$I_t$  = Inflation

$NT_t$  = Exchange Rate

$GDP_t$  = Gross Domestic Product

$e_t$  = Error

## RESULTS AND DISCUSSION

After selecting companies according to the sample criteria, 26 companies were obtained which were processed further. The results of descriptive data analysis can be seen in Table 2.

**Table 2. Descriptive Statistics**

<b>Variabel</b>	<b>N</b>	<b>Maximum</b>	<b>Minimum</b>	<b>Mean</b>
Stock Return	96	240.40%	-44.44%	0.66%
Real Interest Rate	96	8.71%	4.20%	6.59%
Inflation	96	8.79%	2.48%	4.70%
Exchange Rate	96	15200.00	8980.00	12541.43
GDP	96	1169.23	854.59	961.37

Source: Processed by Researchers

Table 2 shows that the maximum return on stock owned by RBMS was 240.40% in November 2017, and the minimum return value was -44.44% by MYRX in November 2019. The highest real interest rate was 8.71% in December 2015, and the lowest was 4.20% in March 2012. In August 2013, the highest inflation was 8.79%, and the lowest in March 2019 was 2.48%. The USD exchange rate against Rp in January 2012 was at the lowest position of Rp. 8,980.00, on the other hand, the highest exchange rate occurred in October 2018 of Rp. 15,200.00. The highest GDP was 1169.23 in December 2019, and the lowest GDP was 854.59 in April 2015.

Furthermore, a hypothesis test was carried out using the variables above. Through several stages, the Random Effect Model was obtained for proof of research using panel data regression, namely Eviews 10, as shown in Table 3. Based on the Chow Test in table 3, the p-value ( $\alpha = 5\%$ ) is 0.9968, so it accepts  $H_0$ . This shows that the Common Effect Model approach is better than the Fixed Effect Model. Based on the Hausman Test, the p-value ( $\alpha = 5\%$ ) is 1.0000, so it fails to reject  $H_0$ . This shows that the Random Effect Model approach is better than the Fixed Effect Model. Considering the Chow and Hausman tests, it can be concluded that the random effect model is more suitable for this study.

**Table 3. Panel Data Regression Results**

<b>Variable</b>	<b>Coefficient</b>	<b>t-statistic</b>	<b>Prob.</b>
Real Interest Rate	0,970072	2,814433	0,0049
Inflation	-1,136872	-5,637067	0,0000
Exchange Rate	-0,0000164	-6,068023	0,0000
GDP	-0,0000544	-1,078969	0,2807
Cross-section Chi-square	0.9968		
Cross-section random	1.0000		
Adjusted R-squared	0,029543		
F-statistic	19,98874		

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<i>Prob(F-Statistic)</i>	0,000000
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Source: Processed by Researchers

The equation of this research is:

$$R_{it} = 0.254175 + 0.970072SBR_t - 1.136872I_t - 0.0000164NT_t - 0.0000544PDB_t + e_t$$

According to Gujarati, Porter & Gunasekar (2013), panel data regression using the Random Effect Model does not need to test classical assumptions because the Random Effect Model uses the Generalized Least Square (GLS) method. The GLS method can overcome the autocorrelation of time series data and the cross-sect correlation. The GLS method produces an estimator to fulfill the Best Linear Unbiased Estimation (BLUE) characteristic, which is a treatment to overcome violations of the assumptions of homoscedasticity and autocorrelation. The adjusted R2 value from Table 4 is 0.029543, meaning that the property sector stock return variable can be explained by 2.9543% by the independent variables, namely real interest rates, inflation, exchange rates, and GDP. The F-statistic value is 19.98874 with a significance of 0.000 < 0.05, so the regression model is fit to predict property sector stock returns. Real interest rates, inflation, and exchange rates have a significant effect on stock returns in the property sector. However, GDP does not have a significant effect on stock returns in the property sector.

## **DISCUSSION**

### **The Effect of Real Interest Rates on Stock Returns in the Property Sector**

The results of the study show that real interest rates have a significant positive effect on stock returns in the property sector. The higher the real interest rate, the higher the property sector stock returns. The company will try to find the right strategy to deal with rising interest rates so that it can still pay its obligations. One strategy is to provide an easy down payment in installments with 0% interest during the construction period so that the company gets cash every month from the buyer to continue project development without depending on bank loans. On the buyer's side, they also get relief because of mortgage debt, the interest rate of which has increased indirectly. The company will get profit as one indicator of good company performance. Good company performance will cause investors to be interested in investing in the company so that the demand for shares increases, accompanied by an increase in share prices (increased stock returns). According to research by Wiradharma & Sudjarni (2016), real interest rates have a significantly positive effect on stock returns. Conversely, contrary to the research of Simbolon & Purwanto (2018), interest rates negatively affect stock returns in the property sector.

**The Effect of Inflation on Stock Returns in the Property Sector**

The results of the study show that real interest rates have a significant positive effect on stock returns in the property sector. The higher the real interest rate, the higher the property sector stock returns. The company will try to find the right strategy to deal with rising interest rates so that it can still pay its obligations. One strategy is to provide an easy down payment in installments with 0% interest during the construction period so that the company gets cash every month from the buyer to continue project development without depending on bank loans. On the buyer's side, they also get relief because of mortgage debt, the interest rate of which has increased indirectly. The company will get profit as one indicator of good company performance. Good company performance will cause the results to show that inflation had a significant negative effect on stock returns in the property sector; the higher the inflation rate, the lower the property sector stock returns. The high price of goods and services in general and the continuity affect the community's economic condition. High prices of goods will cause the costs incurred by the company to increase. When the costs incurred by the company increase, the profit generated by the company decreases. This causes a decrease in company performance, so investors are not interested in investing in the company. When investors are no longer interested, the demand for shares decreases, the company's share price decreases, and the return that investors get also decreases. This is in accordance with Karim's research (2015), which states that inflation significantly negatively affects stock returns. Investors to be interested in investing in the company so that the demand for shares increases, accompanied by increased share prices (increased stock returns). According to research by Wiradharma & Sudjarni (2016), real interest rates have a significantly positive effect on stock returns. Conversely, contrary to the research of Simbolon & Purwanto (2018), interest rates negatively affect stock returns in the property sector.

**PInfluence of Exchange Rate on Property Sector Stock Return**

The results of this study indicate that the exchange rate has a significant negative effect on stock returns in the property sector; the higher the price of foreign exchange, the lower the stock return in the property sector. The high exchange rate of the Rupiah against the US Dollar will increase production costs, especially importing raw materials. This will have a negative impact on company profits, so the company's performance will decrease. A decrease in company performance will give a negative signal to investors. As a result, investors will not be interested in investing in the company. When investors are no longer interested, the demand for shares will decrease, the company's share price will decrease, and, of course, the returns that investors will get will also decrease. This is in line with research conducted by Susanto (2015), which states that the exchange rate significantly negatively affects stock returns in the property sector.



**The Effect of GDP on Stock Returns in the Property Sector**

The results of this study indicate that GDP has no significant effect on property sector stock returns. An increase in GDP does not necessarily increase the per capita income of everyone, so not all regions experience an increase in purchasing power. Only some people experience an increase in the consumption of goods and services. As a result, the profits generated by the company did not increase, and the company's performance stayed the same. This does not give any signal to investors, be it a positive or negative signal. The demand for shares has stayed the same, and stock prices have remained the same, as well as stock returns. This is different from research conducted by Hamzah, et al. (2016), which states that GDP has a significant positive effect on stock returns in the property sector. However, this study's results align with research conducted by Simbolon & Purwanto (2018), which state that GDP does not significantly affect stock returns in the property sector.

**CONCLUSION**

Based on the research conducted, real interest rates, inflation, and exchange rates significantly affected stock returns in the property sector in 2012 - 2019, except for GDP, which did not have a significant effect on stock returns in the property sector in 2012 - 2019. The contribution of this research is to stock investors, particularly in the property sector. Important investors pay attention to the macroeconomics of interest rates, inflation, and exchange rates before making stock investment transactions. For property companies, it is a source of information that macro variables support company performance, especially in the capital market related to stock returns in the property sector. This information can be used as a consideration for property companies before making operational or investment decisions in the hope that the company's financial performance will improve.

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