The Effect of Macroeconomics on Stock Prices: Case Study Indonesian

El efecto de la macroeconomía en los precios de las acciones: estudio de caso indonesio

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ABSTRACT:
This paper aims to examine the effect of macroeconomics on stock prices. Quantitative approach with numerical data to prove hypotheses. Macroeconomics is measured by the Rupiah exchange rate against the US Dollar, Bank Indonesia interest rates, inflation, data obtained from financial statements of banking companies. The results of this study indicate that the Rupiah Exchange Rate Against the US Dollar has a positive influence on stock prices. While Bank Indonesia interest rates, inflation has no effect on stock prices.
Keywords: Stock prices, Macroeconomics

RESUMEN:
Este documento tiene como objetivo examinar el efecto de la macroeconomía en los precios de las acciones. Enfoque cuantitativo con datos numéricos para probar hipótesis. La macroeconomía se mide por la tasa de cambio del Rupia frente al dólar estadounidense, las tasas de interés del Banco Indonesia, la inflación, los datos obtenidos de los estados financieros de las empresas bancarias. Los resultados de este estudio indican que el tipo de cambio de rupia frente al dólar estadounidense tiene una influencia positiva en los precios de las acciones. Mientras que las tasas de interés del Banco Indonesia, la inflación no tiene efecto sobre los precios de las acciones.
Palabras clave: precios de las acciones, macroeconomía

1. Introduction

Banks are intermediary institutions that really need community participation in carrying out their functions, people need to use bank products and services as well as vice versa that banks need communities to be able to raise funds which will then be used for bank business activities. Given that one of the bank’s business activities is to collect and channel funds, the bank needs to maintain public trust so that people want to deposit their funds in the bank, therefore banks need to be managed with the principle of prudence so that their health condition is maintained (T. Handayani & Abubakar, 2018), (Yusuf, 2018), (Akbar, P, & Djazuli, 2018), (Yundi & Sudarsono, 2018). Previous research explained that there was a different perspective on banks capital, liquidity risk had an effect on stock prices. (Gjuzi, 2018), (Majeed, 2017), (Imbierowicz & Rauch, 2014), (Berger, Bouwman, Kick, & Schaeck, 2016), higher capital means less monitoring and therefore less liquidity risk, higher capital ratios can result in reduced liquidity risk so that it will be impacted on stock prices, (Diamond & Rajan, 1999), (Sarwar, Xiao, Husnain, & Naheed, 2018), (Chockalingam, Dabadghao, & Soetekouw, 2018), (Allen, Goldstein, & Jagtiani, 2018), According to the second thought, higher capital ratios increase the
1.1. Hypothesis Theoretical Framework and Development

Unemployment arises when production factors that are willing and able to produce goods and services are not actively involved in the production. Unemployment means the economy does not achieve the macroeconomic objectives of the absorption of all workers. Unemployment is a problem because: The output is produced less and thus the problem of scarcity arises in the economy. This happens because unemployed workers receive less income. This will gradually reduce the standard of living. It can generally be observed that when the economy will grow from period to period. Economic growth is indicated by GDP growth rates and unemployment rates that tend to be low. This is due to the increase in the level of GDP, the output becomes higher, and therefore the number of workers needed to balance the level of production. In general, a good economic situation will have a lower unemployment rate and vice versa, (DosenEkonomi. 2017).

A consistent and continuous increase in the price level will cause inflation. Simply stated in Inflation there is a general increase in the prices of goods and services from time to time. In such cases, prices generally rise from month to month and year to year. With this burden, the economy does not achieve its stability goals. Inflation causes an increase in the average price of products and services. In an inflationary situation, it can be seen that some prices rise above the average, some rise below the average, and some goods prices even decline. Inflation is a problem because: Because there is an increase in the prices of goods and services, the purchasing power of money decreases. This, in turn, will reduce financial wealth and reduce living standards, greater uncertainty for long-term planning. Income and wealth tend to be distributed carelessly between various sectors of the economy and among resource owners, (DosenEkonomi. 2017).

Unemployment and inflation are problems that tend to arise at different phases of the business cycle. The possibility of this problem will vary. At certain times, the problem of unemployment decreases and inflation becomes something more to be considered. At other times, the problem of unemployment must be considered more than the problem of inflation. Now we will understand how these two problems are connected with the two main phases of the business cycle. In the contraction phase of the business cycle, there will be a general decline in economic activity. The overall aggregate demand is reduced which means that the output produced is less, and thus fewer resources are used in the production process. With this, unemployment tends to be the main problem. But at the same time, because markets tend to have more surplus than shortages, inflation tends not to be a problem during this phase (DosenEkonomi. 2017). During the expansion phase of the business cycle, there is a general increase in economic activity. Thus, the overall increase in aggregate demand leads to higher levels of production and the resources used are at a higher level. Request more than offers. Therefore, the market is more likely to have a deficiency than a surplus. Thus, inflation tends to be the main problem during this phase. However, with strong production, many people are needed to cope with the demand for labor and thus unemployment tends not to be a problem.

Interest rates are fees charged by banks to provide loans. Companies borrow money from banks from time to time and hence increasing interest rates will affect the business directly. With the increase in interest rates will cause an increase in interest expense. In such cases, the business must incur higher costs to repay the loan. Changes in interest rates also affect customers. This will also affect the company. Individuals in such cases must pay a higher amount to borrow money, which in turn causes a decrease in demand for large products (DosenEkonomi. 2017). Stagnant growth occurs when the product supply does not increase or decrease below the benchmark. An increase in the total production of goods and services is generally needed for economic growth. This is needed to offset the increase in population and the expectation of an improved standard of living. Stagnant growth arises if total production does not follow these expectations. Therefore the macroeconomic objectives of economic growth are not achieved. This makes it possible for stagnant growth to be linked to the quantity and quality of the resources used for production. The cause of stagnant growth in detail. The quantity of the four factors of production can limit production growth. These factors are labor, capital, land, and entrepreneurship (DosenEkonomi. 2017).

Banking is everything related to banks, including institutions, business activities, and ways and processes in carrying out their business activities so that it can be defined as follows: 1. Banks are business entities that collect funds from the public in the form of deposits and distribute them to the public in the form of loans and / or other forms in order to improve people's lives, 2 (OJK, 2017)(OJK, 2017)Commercial Banks are banks that carry out conventional business activities and / or based on sharia principles which in their activities provide services in payment traffic, 3 People's Credit Banks are banks that carry out business activities conventionally or based on sharia principles which in their activities do not provide services in payment traffic, 4. Conventional Banks are banks that carry out their business activities conventionally and based on their type consisting of Conventional Commercial Banks and Rural Credit Banks, 5 Sharia Banks are banks that carry out their business activities based
on Sharia Principles and according to their types consist of Sharia Commercial Banks and Sharia Rural Financing Banks, 6 Sharia Principles are the principles of Islamic law in banking activities based on a fatwa issued by an institution that has the authority to stipulate a fatwa in the field of sharia (OJK, 2017).

Fama, (1970) explains that efficient markets are a market condition where stock market prices reflect perfectly all available information. In addition, market prices also react quickly to new information reflected in changes in stock prices. The key to measuring information efficiently is by investigating the relationship between stock prices and accounting information. But which information should be used to assess an efficient market? (Fama, 1970), (F.Fama, 2013), (Brown, Lo, & Lys, 1999) states that there are three main forms of efficient markets, including weak form, weak market, semi-strong form, and strong form efficient market.

Research on value relevance is a study to determine whether there is a relationship between a value in financial statements and stock prices in the capital market. Financial statements must be relevant and reliable. Financial statements are said to be relevant if they can be used to predict a business decision and confirm the prediction that has been made. Financial statements are said to be relevant when the numbers in the financial statements have a strong relationship with the value of the company (Barth, Beaver, & Landsman, 2001), (Hodder, Hopkins, Wahlen, & Zimmerman, 2006), (Brimble & Hodgson, 2007). (Holthausen & Watts, 2001) in "The relevance of the relevance of the literature for financial standard settings" research on the relevance of values is divided into three, namely: a. Relative Association studies (Comparing the relationship between the market value of land and alternative size bottom line. For example research that investigates the relationship between earnings and stock prices), b. Incremental association studies (Investigating whether certain figures in financial statements are useful in explaining stock market values and returns), c. Marginal information content studies (This study investigates whether certain accounting numbers add to the collection of information available to investors.

Ohlson (1995) model in (Rusdiyanto & Narsa, 2018) is the best known of the value relevance model that aims to formulate the relationship between accounting values and firm value. Ohlson's model itself is a model in accounting that includes a measurement model that is concerned with the fundamental values of financial information. Ohlson's model is a strong theoretical framework for evaluating markets based on basic accounting variables, and other types of information that may be relevant in predicting company value. However, the Ohlson model is a simple model. This Ohlson model assumes that investors are neutral to risk, accounting is not biased, has clean surplus, there is no detailed role in accounting, there is no information asymmetry, tax rates faced by shareholders are irrelevant, real choices are not explicitly calculated, abnormal profits and "v" evolved autoregressive in (Rusdiyanto & Narsa, 2018). In the Ohlson (1995) model in (Rusdiyanto & Narsa, 2018), company value stated in stock price, can be seen from the following equation:

$$NP_t = NB_t + \alpha_1 LA_t + \alpha_2 VL_t$$

The equation above shows that the value of the company (NPt) at time t is influenced by the exchange rate of the rupiah against the US dollar (USD), BI interest rate (SBI), Inflation (INF) and other information (VLt) each of which is multiplied by a constant ($\alpha_1$ and $\alpha_2$). Thus the function of company value can be derived as follows:

$$NP_t = f(USD, SBI, INF, VL_t)$$

Ohlson (1995) valuation model in (Rusdiyanto & Narsa, 2018), surprising because it was derived simply, but managed to eliminate the necessity of predicting dividends in calculating the value of the company with a valuation that is identical to the present value of all expectations dividends, in (Rusdiyanto & Narsa, 2018)

Company value is the result of investor perception in observing a company as reflected in the market price of the company's stock. The company's stock price is a market reaction to the overall condition of the company that describes the wealth of shareholders / companies as a result of investment decisions, funding and asset management that are realized in the form of company stock prices (Narsa & Pratiwi, 2012), (Rusdiyanto & Narsa, 2018), (T. Y. Sari & Ridwan, 2017), (Anastassia & Firnanti, 2014), When the stock price is high, it means that the active stock is traded, so the dealer will not keep the stock for too long.

The macroeconomic condition of a country is one of the factors that can affect the performance of companies in the country (Additya, Singa, & Maulana, 2018) so that macroeconomic conditions affect stock price movements. The ability of investors to understand and forecast future macroeconomic conditions will be very useful in making profitable investment decisions so investors must pay attention to several macroeconomic indicators that can help them understand and forecast macroeconomic conditions (Additya et al., 2018). Macroeconomic indicators that are often associated with capital markets are interest rate fluctuations, inflation, the IDR exchange rate, unemployment, and stagnant growth (Additya et al., 2018).
2. Methodology

The type of research used in this research is explanatory research with its quantitative approach. According to Y. Handayani et al. (2018) "explanatory research method is a research method that intends to explain the position of the variables studied and the influence of one variable with another variable." Quantitative methods according to Y. Handayani et al. (2018) is "research that seeks to understand and solve problems based on positive or empirical, namely emphasizing testing on theory through measuring research variables with numbers and analyzing data with statistical analysis. In this case, the research was conducted to analyze the influence of macroeconomics which was focused on measuring the exchange rate of the rupiah against the US dollar, BI interest rates, and inflation on the stock prices of banking sector companies.

The sample is part of the number and characteristics possessed by the population. The sampling technique used in this study is purposive sampling. The purposive sample is a technique for determining samples with certain considerations (Y. Handayani et al., 2018). The data used as samples are stock prices, IDR exchange rate data against the US dollar, BI interest rates, and inflation. The number of samples in this study was 1,280 of the four Persero banking sector companies listed on the Indonesia Stock Exchange with the period 2010 to 2017.

The library technique in this study is in the form of data obtained from various literatures such as books, journals, newspapers, the internet and others related to the research aspects in an effort to obtain valid data. In addition, using the documentation technique used in this study in the form of data search in the form of stock price reports, the publication reports on the exchange rate of the IDR against the US dollar, BI interest rates, inflation from 2010-2017. The method used in data collection is done online, namely by accessing www.yahoofinance.com (stock price report) www.ojk.go.id and www.bi.go.id (BI rupiah exchange rate report, BI interest rate, Inflation and access to other sites related to the problem of this research.

This study uses ten types of variables to produce a regression model in measuring the relevance of the value of corporate accounting information. The variables used in this study include:

2.1. Variable

Dependent Variable
In this study, the dependent variable is the value of the company proxied by the stock market price \( (\text{NPt}) \) at the end of the month. The stock market price is the price or value of shares that occur in the capital market at a specified time point based on market demand and supply, (Malau, 2018), (Rusdiyanto & Narsa, 2018).

**Independent Variable**

The exchange rate of the IDR against the US dollar is the exchange rate determined based on the decision of Banks Indonesia. The exchange rate policy that was set was only valid until 1997. After 1997 the IDR exchange rate against the US dollar was released to demand and supply or market mechanisms. Banks Indonesia does not set exchange rates but only monitors and controls market mechanisms through market intervention policies by releasing and buying US dollars by Banks Indonesia (Y. Handayani et al., 2018).

(Y. Handayani et al., 2018), explained that interest can be interpreted as a remuneration provided by banks based on conventional principles to customers who buy and sell their products. The interest rate is the amount of money that must be paid by the creditor to the debtor in the form of a percentage. In this study, the interest rate used is the one-year national bank deposit interest rate during the observation period. The interest rate is adjusted to the SBI interest rate for the quarter period.

(Y. Handayani et al., 2018), explained that inflation is an event that describes a situation and condition in which the price of goods increases and the value of the currency weakens " . According (Y. Handayani et al., 2018) before calculating annual inflation, we must first calculate the consumer price index or it can be called the customer price index. The formula for calculating inflation is as follows:

\[
\text{Inflation} = \frac{\text{IHK}s - \text{IHK}k}{\text{IHK}k} \times 100\%
\]

Information:

- \( \text{IHK}s \) = Current Consumer Price Index
- \( \text{IHK}k \) = Previous Consumer Price Index

### 3. Results

The analysis model used in this study tests the effect of independent variables on the dependent variable in this study using multiple regression analysis, which is an analysis to express linear relationships between two or more variables. The following is the empirical model of the research:

\[
\text{NP}_t = \alpha + \beta_1 \text{USD} + \beta_2 \text{SBI} + \beta_3 \text{INF} \epsilon \ldots \ldots \ldots \ldots (1)
\]

<table>
<thead>
<tr>
<th>Information</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPt</td>
<td>Stock price</td>
</tr>
<tr>
<td>( \alpha )</td>
<td>Constants</td>
</tr>
<tr>
<td>( \beta_1, \beta_2, \beta_3 )</td>
<td>Variable regression coefficient ( \text{NB}_t, \text{USD}, \text{SBI}, \text{INF}, )</td>
</tr>
<tr>
<td>USD</td>
<td>IDR Exchange Rate Against USD</td>
</tr>
<tr>
<td>SBI</td>
<td>BI Interest Rate</td>
</tr>
<tr>
<td>INF</td>
<td>Inflation</td>
</tr>
<tr>
<td>( \epsilon )</td>
<td>Standard Error</td>
</tr>
</tbody>
</table>

#### 3.1. Description Of Research Results

Before testing the hypothesis, it is necessary to describe the characteristics of the research data by using descriptive analysis to give an overview of the variable variables under study. Data normality test is also done to detect the distribution of research data used. From the results of the sample selection, 1,280 data were obtained from 4 state-owned banking sector companies listed on the
Indonesia Stock Exchange that met the predetermined criteria. The following are descriptive statistical data from the sample.

Table 2
Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Std. Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stock price</td>
<td>128</td>
<td>470,00</td>
<td>1327,00</td>
<td>5721,1484</td>
<td>3395,39651</td>
</tr>
<tr>
<td>Exchange Rate IDR/ USD</td>
<td>128</td>
<td>9097,00</td>
<td>14657,00</td>
<td>11520,0312</td>
<td>1761,46531</td>
</tr>
<tr>
<td>BI Interest Rate</td>
<td>128</td>
<td>121,00</td>
<td>7363,00</td>
<td>4005,3438</td>
<td>2641,41861</td>
</tr>
<tr>
<td>Inflation</td>
<td>128</td>
<td>3,07</td>
<td>8,40</td>
<td>5,2172</td>
<td>1,48160</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>128</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From the table above, the IDR exchange rate against the US dollar and BI interest rates have a high value than Inflation. Inflation are far lower than the IDR exchange rate against the US dollar, and BI interest rates due to the value of the rupiah against the US dollar, and BI interest rates contain more components of the fair value of financial assets and liabilities than inflation. Successive increases in the value of the IDR exchange rate against the US dollar and the BI interest rate indicate that it contains information about the relevance of the fair value faced by the company in relation to its financial assets and liabilities. So, in other words, the size of the IDR exchange rate against the US dollar, and the BI interest rate is better than the size of Inflation like so far. The exchange rate of the IDR against the US dollar, the RBI interest rate will be higher will affect the economic situation tends to fluctuate and unstable towards the share price of the banking sector companies.

3.2. Regression Analysis

All research variables are declared stationary at degree 0, and then these variables can be directly used in the regression equation. The following are the regression results of the research variables:

Table 3
Regression Analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>t</th>
<th>Sig.t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>7077,986</td>
<td>1,147</td>
<td>0,254</td>
</tr>
<tr>
<td>Exchange Rate of IDR / USD</td>
<td>0,185</td>
<td>3,477</td>
<td>0,001</td>
</tr>
<tr>
<td>BI interest rate</td>
<td>0,109</td>
<td>1,496</td>
<td>0,137</td>
</tr>
<tr>
<td>Inflation</td>
<td>193,490</td>
<td>-1,150</td>
<td>0,253</td>
</tr>
<tr>
<td>R</td>
<td>0,743</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R Square</td>
<td>0,552</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>16,167</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig.F</td>
<td>0,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Bound Variables: Stock prices (NBt)

3.3. Discussion

The exchange rate of the IDR against the US dollar has a positive and significant influence at the level of 5% on the stock price. The results of this study mean that the IDR exchange rate against the US dollar has value relevance to stock prices. The coefficient shows that the IDR exchange rate against the US dollar has a positive relationship to stock prices. So that investors can use the information on the IDR exchange rate against the US dollar in assessing the share price of a banking sector company. The IDR exchange rate is a general expectation for investors. From the results of this test, it can be
said that investors will be more interested in stocks that have a high exchange rate of the IDR against
the US dollar than stocks that have a low exchange rate of the IDR against the US dollar. A large
number of investor requests for shares with a high rupiah exchange rate make the company's stock
price rise. Conversely, the low exchange rate of the IDR against the US dollar tends to make the stock
price fall. The results of this study agree with the results of his research (Prasetioningsih, Taunay, &
Fathoni, 2016), (Malau, 2018), while according to (R. Sari, 2018) Variable negative IDR exchange rate
has a significant effect on stock prices. This can be seen in the results of the VAR estimation analysis
showing that the table value can be seen in the results of the VAR estimation analysis showing table
values with a 95% confidence level or (α=0,05) that the t-statistic value is greater than the statistic is
greater than the value t-table.

BI interest rates do not have a positive and significant influence on stock prices. The results of this
study mean that the BI interest rate has no value relevance to stock prices. The coefficient indicates
that the BI interest rate does not have a positive relationship with the share price of the banking
sector companies. So that investors can use interest rate information in assessing the share price of
companies in the banking sector. The BI interest rate is a general expectation for investors. From the
results of this test, it can be said that investors will be more interested in stocks that have a high BI
interest rate than stocks that have a low BI interest rate. A large number of investor requests for
stocks with high BI interest rates make the company's stock price rise. Conversely, a low BI interest
rate tends to influence the price of the stock to go down. The results of this study disagree with the
results of his research, (Wahyuningsih, Andini, & Suprijanto, 2018), (R. Sari, 2018).

The inflation rate does not have a positive and significant influence on stock prices. The results of this
study mean that inflation has no value relevance to stock prices. The coefficient shows that the
inflation rate does not have a positive relationship to the stock price of the banking sector. So that
investors can use information on inflation rates in assessing the share price of banking sector
company. The inflation rate is a general expectation for investors. From the results of this test, it can
be said that investors will be more interested in stocks that have a high inflation rate than stocks that
have a low inflation rate. The number of investor requests for stocks with a high level of inflation
makes the company's stock price rise. Conversely, a low inflation rate tends to affect the price of the
stock to decline. The results of this study disagree with the results of his research, (Wahyuningsih et
al., 2018), (R. Sari, 2018).

4. Conclusions
The test results show that the rupiah exchange rate against the US dollar has a positive and significant
statistical effect at a rate of 5% on stock prices, while the interest rates of BI, Inflation, have no
influence on stock prices. With regard to conclusions, the results of this study are expected to provide
information to investors or potential investors to be more careful in paying attention to aspects of the
rupiah exchange rate against the US dollar as consideration for investing in relation to stock prices.
The results of this study are expected to be used as consideration for banking companies to make
business decisions, especially those related to Macroeconomics to share prices. The business decision
focuses on how much the stock returns will be given by the banking sector companies and how the
banking sector companies maintain the level of capital and company liquidity so that investors can put
interest in the company.

Future research should use a larger sample of companies not only in the banking sector. In addition,
future research should use a longer period of time to identify the relationship between
macroeconomics on stock prices. Further research should also use audited annual financial report data
so that the use a longer period not only for seven years. Even better, further research also examines
the relevance of the macroeconomic, capital and banking liquidity measurement models at each stage
of the company cycle as in the research conducted by Black (1998).

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Bibliographic references
Makroekonomi Dan Krisis Ekonomi Global Terhadap Indeks Harga Saham Gabungan Di Indonesia.
Kecukupan Modal, Biaya dan Pendapatan Operasional (Studi Pada Bank. Jurnal Bisnis Dan
Manajemen, 5(1), 16–33. https://doi.org/10.2527/jas2012-5761


