

# Fundamental and Macroeconomic Factors on Manufacturing Companies' Stock Returns

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## ABSTRACT

Investments are made to obtain future benefits. Stocks are one of the most popular investments in the capital market. The advantage that can be obtained from the stock investment is stock returns, where the returns obtained can be positive or negative. This study aims to analyze the influence of fundamental and macroeconomic factors on stock returns of manufacturing companies listed on the Indonesia Stock Exchange from 2016 to 2019. This study used secondary data and the sample of this research was 37 manufacturing companies obtained through the purposive sampling method with panel regression as the data analysis. The results showed that the fundamental factors that affect stock returns are Price to Book Value (PBV), while the Debt to Equity Ratio (DER) and Price to Earnings Ratio (PER) do not affect manufacturing stock returns. Some macroeconomic factors such as inflation, the BI Rate, and changes in world oil prices proved to not affect the stock returns of manufacturing companies. This research implies that manufacturing companies need to pay attention to Price to Book Value (PBV) in determining stock returns.

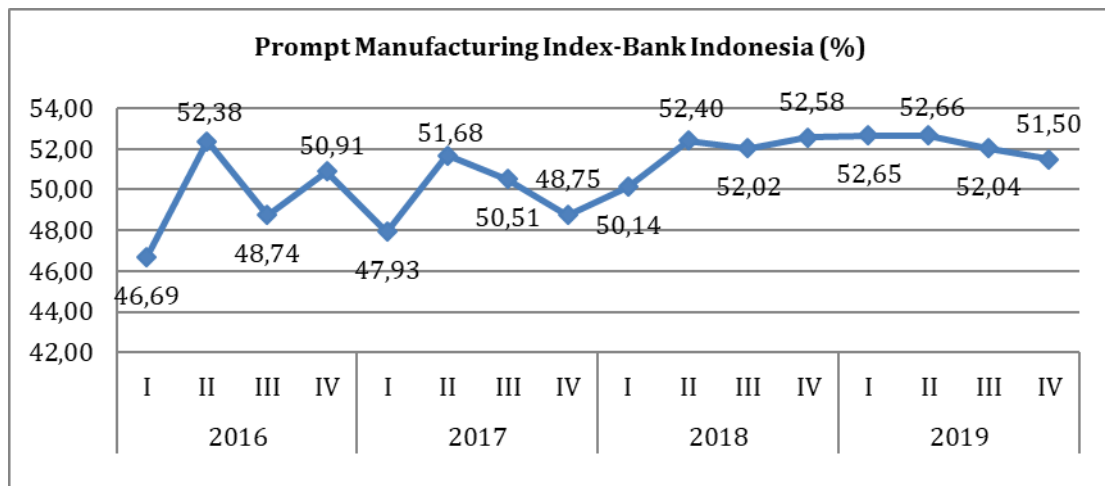
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## 1. Introduction

The capital market is funding means for companies (issuers) through investment activities of capital owners (Ika & Listiorini, 2017). For the economy of a country, the capital market plays an important role because it can perform two functions simultaneously, namely an economic function and a financial function (Basarda et al., 2018). One of the investments that many investors are interested in is stocks, which are financial market instruments that are easily traded and can provide good returns in the form of stock returns, which can be positive and negative. When stock returns are positive, investors will get capital gains, while negative stock returns illustrate that investors experience capital loss (Ramdoni & Gantino, 2019).

The stock market in Indonesia is known as the Indonesia Stock Exchange (IDX), where the companies in IDX are grouped into several sectors according to the type of industry they are running. Manufacturing companies are the industry with the most listed companies and the largest market capitalization on IDX and become the industry with the highest contribution to the national economy. Prompt Manufacturing Index-Bank Indonesia (PMI-BI) is an indicator that describes the condition of the manufacturing sector by using five indexes, which are production volume, total order volume, labor, the delivery time of input goods, and volume of inventory. Figure 1 shows the fluctuating PMI-BI growth rate from 2016-2019. Even though there was instability in PMI-BI growth, the average PMI-BI value was above 50%, which means that the manufacturing industry is experiencing expansion and still has good prospects forward ([www.bi.go.id](http://www.bi.go.id)).

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Source: ([www.bi.go.id](http://www.bi.go.id))

**Figure 1.** Prompt Manufacturing Index-Bank Indonesia

The increase or decrease in the growth rate of the manufacturing industry can be influenced by various factors, such as company fundamentals and macroeconomic. So investors need to analyze first when they want to buy shares to make the right investment decisions. Fundamental factors such as financial ratios, management performance, prospects, and company conditions can affect the amount of return received by investors (Karim, 2015). Meanwhile, political conditions, markets, exchange rates, inflation, interest rates, and regional stock indexes are macro factors that have an impact on stock returns (Basarda et al., 2018).

Debt to Equity Ratio (DER) is used as a proxy for the solvency ratio that affects stock returns, reflecting the ability of the company's assets to meet its liabilities compared to equity. Research by (Sari & Hutagaol, 2009) stated that stock returns are influenced by DER. Meanwhile, according to (Purwaningrat & Suaryana, 2015) stock returns are not influenced by DER.

Stock returns are also influenced by market ratios as proxied by the Price to Earnings Ratio (PER) and Price to Book Value (PBV) which can provide information to investors regarding the company's performance and prospects. Research according to (Almumani, 2014; Basarda et al., 2018) explained the influence of PBV and PER on stock returns. Meanwhile, according to (Carlo, 2014; Khairi, 2012), stock returns are not significantly affected by PBV and PER.

Macroeconomic factors such as high inflation can cause stock returns to decline along with the decline of the company's profitability (Karim, 2015). However, (Kirui et al., 2014) that an increase in inflation does not affect investor returns. Apart from inflation, the BI Rate also affects stock returns. The high BI Rate can affect capital owners to invest their funds in banks rather than stocks, thereby reducing company profits (Satoto & Budiwati, 2013). The price of world oil has an impact on the stock market. The increase in world oil prices causes suffer losses to the property sector on the IDX because it can increase company operating costs so that operating profits decrease, and can reduce investors' desire to invest (Iqbal & Masbar, 2019).

Previous studies have shown inconsistent results due to differences in the sectors studied, different timeframes, and different analysis techniques, most of which use multiple regression analysis which is considered inaccurate to analyze the combined time-series and cross-section data. Therefore, this study uses panel regression analysis because it is more precise in analyzing combined data, the research period from 2016-2019 with the object of research focusing on the manufacturing industry which continues to develop in that year and has the most listed companies on the IDX and also is considered more vulnerable to changes in the macro economy, and adding the price of world oil variable as a macro factor because it is the main source of energy for the production process in most industrial sectors, especially manufacturing.

Based on the background and the diversity of previous researches, researchers are interested in knowing the influence of fundamental and macroeconomic factors on stock returns of manufacturing companies listed on the IDX. This research is expected can be a consideration for investors in making investment decisions, especially for manufacturing companies in Indonesia. In addition, it is hoped that this research can be used as material for company evaluation to optimize company performance and minimize risks that can affect stock returns. This research is also expected to increase the contribution of literature in the world of education.

## 2. Methods

This study uses panel data, sourced from secondary data in the form of annual reports on idx.co.id for DER, PBV, and PER variable data. Meanwhile, the data of the inflation rate variable is obtained through bps.go.id, the BI Rate is obtained from bi.go.id and the world oil price variable (WTI) is obtained through www.eia.gov. All manufacturing companies on the IDX for the 2016-2019 period are the population in the study. The sampling method used was purposive sampling based on the criteria which can be seen in Table 1.

**Table 1.** Sample Selection Process Based on Criteria

Number	Criteria	Amount of the Company
1	All manufacturing companies on the IDX 2016-2019	182
2	Manufacturing companies that are not consistently listed on the IDX for the 2016-2019 period	(50)
3	Manufacturing companies that have negative profits	(49)
4	The financial statements of manufacturing companies are denominated in dollars	(13)
5	Manufacturing companies that have incomplete financial reports	(4)
6	Manufacturing companies that have a negative PER	(2)
7	Companies with extreme values	(27)
<b>Final sample amount</b>		<b>37</b>
<b>Observation year</b>		<b>4</b>
<b>Amount of observations</b>		<b>148</b>

To find out the fundamental and macroeconomic factors on the stock returns of manufacturing companies, the following variables are used:

**Table 2.** Operational Definition of Variable

Variable	Operational Definition	Formula	Source
<b>Stock Return</b>	Return on investment from the current share price and the previous period	$R_i = \frac{P_t - P_{t-1}}{P_{t-1}} \times 100\%$	(Yunita & Robiyanto, 2018)
<b>Debt to Equity Ratio</b>	The ratio that measures the amount of debt the company can bear by the company's equity	$DER = \frac{\text{Total Liabilities}}{\text{Total Equity}}$	(Sari & Hutagaol, 2009)
<b>Price to Book Value</b>	The ratio that measures the stock's market price to book value	$PBV = \frac{\text{Price per Share}}{\text{Book Value per Share}}$	(Basarda et al., 2018)
<b>Price to Earnings Ratio</b>	The ratio that compares the share price in the market to the earnings per share received	$PER = \frac{\text{Share price}}{\text{Earnings per Share}}$	(Saputri et al., 2018)
<b>Inflation</b>	An inflation rate that causes price increases continuously and has an impact on company activities	The data obtained from the annual inflation rate sourced from bps.go.id	bps.go.id
<b>BI Rate</b>	Expenses for debt that must be paid by the company	The data obtained from the annual average 7-days repo rate sourced from bi.go.id	bi.go.id
<b>Changes in World Oil Prices</b>	Changes in world oil prices from time to time	$\Delta WTI_t = \frac{WTI_t - WTI_{t-1}}{WTI_{t-1}} \times 100\%$	(Salim, 2018)

The panel regression analysis technique is used to test the effect of independent variables, which are DER, PBV, PER, inflation, BI Rate, and world oil prices on the dependent variable, namely stock returns

using the EViews test tool. The first step is to determine the best model between the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM) through the Chow test, Hausman test, and Lagrange Multiplier test. The panel regression equation model is as follows:

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + \beta_6 X_{6it} + e_{it}$$

Information:

- $Y_{it}$  : Stock Return i company, year t  
 $\alpha$  : Constant  
 $\beta$  : Regression coefficient  
 $X_{1it}$  : DER company i, year t  
 $X_{2it}$  : PBV company i, year t  
 $X_{3it}$  : PER company i, year t  
 $X_{4it}$  : Inflation i company i, year t  
 $X_{5it}$  : BI Rate i company i, year t  
 $X_{6it}$  : Change in world oil prices, year t  
 $e_{it}$  : Error company i, year t.

### 3. Results and Discussions

#### Results

##### Descriptive Statistics

Descriptive statistical analysis consists of mean, standard deviation, minimum, and maximum can be seen in Table 3.

**Table 3.** Descriptive Statistics

Variable	Obs	Mean	Std. dev	Min	Max
<b>Stock Return (%)</b>	148	0.02	0.23	-0.51	0.54
<b>DER (X)</b>	148	0.62	0.43	0.00	1.95
<b>PER (X)</b>	148	19.92	10.78	0.25	59.26
<b>PBV (X)</b>	148	2.25	1.70	0.05	7.45
<b>Inflation (%)</b>	148	3.12	0.32	2.72	3.61
<b>BI Rate (X)</b>	148	5.32	0.55	4.56	6.00
<b>Changes in World Oil Prices (X)</b>	148	0.06	0.18	-0.13	0.28

Table 3 shows an average stock return of 0.02% with a minimum value of -0.51% owned by WIIM in 2018 and a maximum value of 0.54% by SIDO in 2018. High stock returns indicate that stock investors will get profit from the capital invested in the company and increase the prosperity of shareholders.

The average of DER is 0.62 times with a minimum value of 0.00 times by SMSM in 2018 and a maximum value of 1.95 times by WTON in 2019. The lower the DER indicates that the company's ability to fulfill its obligations is higher so that the company's return also increases.

PBV in this study has a mean of 2.25 times with a minimum value of 0.05 times by UNIT in 2019 and a maximum value of 7.45 times in MYOR in 2018. Meanwhile, the mean of the PER variable is 19.92 times with a minimum value of 0.25 times by AUTO in 2019 and a maximum of 59.26 times in 2018 by INTP companies. The higher PBV and PER can affect the investor's assessment of the stock returns received along with the increase in stock prices. The average inflation rate is 3.12% with a minimum value of 2.72% by all samples in 2019 and a maximum value of 3.61% owned by all samples in the study in 2017. High inflation can cause stock returns to decline due to the generally rising prices which causes the cost of equity to increase.

The BI Rate has a mean of 5.32% with a minimum value of 4.56% owned by all samples in 2017 and a maximum value of 6.00% by all samples in 2016. The high BI Rate affects the return on shares that investors receive will lower as production costs and corporate debt increase. Changes in world oil prices have a mean of 0.06% with a minimum value of -0.13% by all samples in 2019 and the maximum value owned by all samples in 2018 is 0.28%. An increase in world oil prices can lead to an increase in stock returns along with an increase in aggregate demand and social welfare.

### Classical Assumption Test

A normality test is used to see the distribution of research data if it's distributed normally or not. By using the Jarque-Bera test, the probability value of 0.56 which exceeds the significance of 0.05 so that the data is normally distributed and fulfills the classical assumption of normality. The heteroscedasticity test is used to see whether there are deviations in the assumptions of the regression model. The results of the Chi-Square probability of 0.487 which exceed the significance of 0.05 so that the data is homoscedasticity and passes the heteroscedasticity test. The multicollinearity test was used to assess the correlation between the independent variables in the regression model. The value of Variance Inflation Factors (VIF) for the DER variable is 1.039, PBV is 1.238, PER is 1.222, inflation is 3.050, BI Rate is 4.695, and changes in world oil prices are 2.757. All VIF results show values below 10 so there is no multicollinearity problem between the independent variables.

### Determination of the Regression Model

The results of the Chow test, Hausman test, and Lagrange Multiplier test used to determine the best regression model can be seen in Table 4.

**Table 4.** The Results of the Chow Test, Hausman Test, and Lagrange Multiplier

<b>Chow Test</b>	<b>Statistic</b>	<b>Prob</b>
	<b>65.8078</b>	<b>0.0018</b>
<b>Hausman Test</b>	Chi-Sq. Statistic	Prob.
	0.0000	1.0000
<b>Lagrange Multiplier Test (Breusch-Pagan)</b>	Cross-section	Prob.
	0.6981	0.4034

The Chow test results in this study is 0.0018 which less than  $\alpha$  (5%) so that the best estimation model is the Fixed Effect Model (FEM), then the Hausman test is carried out to choose between FEM or Random Effect Model (REM) as a determinant of which method will be more appropriate. The result of the Hausman test is 1,000 which greater than  $\alpha$  (5%) so that the best model is REM and it is necessary to continue the Lagrange Multiplier test to determine the best model between REM and CEM. The Lagrange Multiplier test result is 0.4034 which more than  $\alpha$  (5%), so the best estimation model for this study is to use the Common Effect Model.

### Panel Regression Analysis Results

Based on the model determination test, the Common Effect Model was chosen as the most appropriate model for conducting panel regression tests in research.

**Table 5.** The Estimation Results of Common Effect Model

<b>Variable</b>	<b>Coefficient</b>	<b>Prob.</b>
<b>C</b>	-0.947025	0.1356
<b>DER</b>	0.007503	0.8621
<b>PBV</b>	0.037554	0.0020*
<b>PER</b>	7.19e-05	0.9694
<b>Inflation</b>	0.105845	0.2881
<b>BI Rate</b>	0.101966	0.1617
<b>Changes in World Oil Prices</b>	0.042254	0.8038
<b>R-squared</b>		0.102509
<b>Adjusted R-squared</b>		0.064318

\*) Sig.  $\alpha = 0,05$

The panel regression equation based on the results of the analysis in Table 5 is as follows:  
Information:

$$Y_{it} = -0,95 + 0,01X1_{it} + 0,04X2_{it} + 0,00X3_{it} + 0,11X4_{it} + 0,11X5_{it} + 0,04X6_{it} + e_{it}$$

$Y_{it}$  : Stock Return company i, year t

$\alpha$  : Constant

$\beta$  : Regression coefficient

$X1_{it}$  : DER company i, year t

$X2_{it}$  : PBV company i, year t

$X3_{it}$	: PER company i, year t
$X4_{it}$	: Inflation year t
$X5_{it}$	: BI Rate year t
$X6_{it}$	: Changes in world oil prices, year t
$e_{it}$	: Error company i, year t

The test results show that the Adjusted R-squared is 0.064, meaning that 6.4% of the stock return variable is influenced by DER, PBV, PER, inflation, BI Rate, and changes in world oil prices. Then the rest is explained by other factors outside the model.

## Discussion

The first hypothesis is that DER has a negative effect on stock returns. The test in Table 5 shows a probability of 0.8621 which exceeding  $\alpha$  (5%) so that H1 is rejected. In this study, it is proven that DER has no negative effects on stock returns, meaning that when a company has a high or low DER it will not affect the amount of stock returns. There is also conformity with the findings of (Akhmadi & Prasetyo, 2018; Ramdoni & Gantino, 2019; Suselo et al., 2015; Widyastuti & Andamari, 2013) who said that stock returns are not influenced by changes in the amount of company debt compared to total equity. These results indicate that when making investment decisions, investors do not pay much attention to DER as a consideration. Debt is also a natural thing that companies do in meeting their capital needs to develop their business so that based on the findings of this study, investors continue to invest even though there is a decrease or increase in the amount of corporate debt by the equity they have (Akhmadi & Prasetyo, 2018).

The second hypothesis of this study is that PBV has a positive effect on accepted stock returns with a significant probability value of 0.0020 which less than  $\alpha$  (5%) and a positive coefficient of 0.0376. This study is following the findings of (Basarda et al., 2018; Sugiarto, 2011; Suselo et al., 2015) which stated that the company's stock return is positively influenced by PBV. When the stock price per book value rises, investors get an increase in stock returns. The PBV value above 1 indicates that the stock price is higher than the book value so that the company's performance is getting better from the investor's perspective (Basarda et al., 2018). Therefore, PBV is an important consideration for investors in determining their investment decisions because a high PBV is expected to provide high returns for investors.

The third hypothesis is that PER has a positive effect on rejected stock returns, as evidenced by a probability of 0.9694 which more than  $\alpha$  (5%). Following researches by (Carlo, 2014; Ramdoni & Gantino, 2019) said that PER does not affect stock returns. Based on the results of this study, PER does not have a significant impact on stock returns either when PER is high or low. This can occur because investors think PER is formed by supply and demand and is more related to factors other than stock returns such as profit-taking by investors when stock prices rise or fall due to uncertain economic and political conditions on the stock market itself. Therefore, high PER does not always guarantee the number of investors who buy shares due to the many influences of other factors such as stock splits and stock price index (Ginting & Erward, 2013).

The fourth hypothesis is that inflation has a negative effect on stock returns. Based on the panel regression test, the probability value of the inflation variable is 0.2881 which greater than  $\alpha$  (5%) so that H4 is rejected. This supports the findings by (Andes et al., 2017; Janor et al., 2010; Kurniadi et al., 2014) who said that inflation has no impact on stock returns. The average inflation rate in this study is 3.12% and all research samples have an inflation rate below 10% each year where inflation below 10% is still considered reasonable for investors because it is low and stable (Andes et al., 2017). The company must also have a special strategy in dealing with inflation so that investors believe that the company can manage this risk. Because inflation is still in reasonableness amount, investors don't make the inflation as a determinant of stock returns and pay more attention to high company profits so that the returns received are also high.

The fifth hypothesis of this study is that the BI Rate has a negative effect on rejected stock returns. Based on the panel regression test which showed a probability value of 0.1617 is more than  $\alpha$  (5%) and received H<sub>0</sub>. These results are consistent with the findings of (Andes et al., 2017; Dwita & Rahmidani, 2012) explained that stock returns are not influenced by changes in interest rates. According to (Wismantara & Darmayanti, 2017), making investment decisions is driven by the psychological factors of investors so that they are not always fixated on factors that affect stock returns. Changes in the BI Rate which do not have an impact on returns can also be caused by the type of investor who enters Indonesia to make short-term investments (speculation), so they prefer to take profit rather than invest in Bank Indonesia Certificate (Kewal, 2012).

Changes in world oil prices in this study are proven not positively affect stock returns, as evidenced by the panel regression test which shows a probability value of 0.8038 so that  $H_0$  is rejected. These results are consistent with the findings of (Dewi, 2020; Izza, Muhammad; Wulandari, 2019; Kuwornu, 2012) explained that stock returns are not positively influenced by changes in world oil prices. Based on the results of this study, when the oil price changes in a positive or negative direction, stock returns will not have an impact so that in making investment decisions in a company, investors do not pay much attention to changes in world oil prices because there are still other factors that more influence returns such as fundamentals, political conditions, as well as exchange rates

#### 4. Conclusion

Based on the research that has been done, it is concluded that the variable that influences the stock returns of manufacturing companies is PBV which any increase in stock price per book value will be followed by an increase in stock returns received by investors. Other fundamental factors, namely DER and PER have no impact on stock returns of manufacturing companies. Likewise, the macroeconomic factors such as inflation, the BI Rate, and changes in world oil prices also proved have no impact on manufacturing stock returns. Based on the research that has been done, the company can pay attention to the company's fundamental factors, especially PBV which is proven to affect the stock returns of manufacturing companies. This aims to maintain the company's performance to remain good and be able to attract investors to invest so that the company's capital adequacy is met and stock returns increase. Further researches are suggested to add to the variables of fundamental factors such as ownership structure because managerial information can give a positive signal for the investor to make an investment decision, and further researches can also add other macro factors such as exchange rates, national income levels, and the money supply that can influence the amount of stock return. Further research can also use other sectors on the IDX to get a clearer picture of the factors that affect stock returns.

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