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The Influence of Firm Fundamental and Macroeconomic to Stock Returns: A Case Study of Listed Banking Sector in IDX

Kevin Daniel Pandelaki
Student, Department of Management, Persada YAI University, Indonesia
Farida Farida
Lecturer, Faculty of Economic, Persada YAI University, Indonesia

Abstract:
This research aims to prove the influence of fundamental and macroeconomic factors to the stock return banking sector listed on Indonesia Stock Exchange (IDX). The analysis method used is the multiple regression panel data with fixed effect model. The fundamental factors of company used are the debt to equity ratio and firm size. The result proved that these variables significantly influence the stock return. In the other hand, macroeconomic factor, which are the interest rate and the exchange rate do not influence the stock return.

Keywords: *Panel data, fixed effect model, DER, firm size, interest rate, exchange rate*

1. Introduction

In the world of investment, every investor has an aim to increase their investment value in the future. Every type of investment has different expected return that is suitable with the risk it holds. Particularly for stock investment, the investor has to be careful in analyzing the right company for their investment. Investor should do an analysis prior to investing by observing the company's data. Various analysis instruments and company's data both from external and internal that have been provided will facilitate the investor in deciding the right company.

Investor can analyze from general data provided from specific publications that intentionally are for analysis material, such as activity ratio, liquidity, solvability, profitability and others which are provided in both direct and indirect manner, with analyzing it beforehand by the company's data such as balance sheet and income statement.

Especially in stock investment, investor has to predict the stock return in the future. By predicting the stock return, investor is able to illustrate the expected profit from the increase of stock price or the loss due to stock price's decrease.

For the company, there are two alternatives to gain fund in order to develop themselves or to pay for their payables. Those alternatives are by issuing stocks to public and by debt. The optimal combination of capital structure has a role to maximize the growth of a company. Some of the capital structure approaches produce varying influence to the stock return depend on the industry's characteristics (Tahmoorespour et al., 2015). With the gained fund, company will gain bigger assets thus become potential to reach bigger sales. This is both directly and indirectly influences the return the investor gained. The size of the asset owned by the company reflects the size of the company itself. The size of company is considered important, referred to the theory regarding the economy scale concept (Dahmash, 2015). The bigger the economy scale of a company, the bigger its power to minimize the production cost and increase its profitability. The size of a company is attributed with the value of the assets or the fund the company holds, done in the banking sector in Indonesia. Both medium and large banks in Indonesia majorly have been listed on Indonesia Stock Exchange (IDX).

In investing in the capital market, not only fundamental factor of the company that needs to be analyzed, but macroeconomic factor also holds a big influence to the stock price. Theoretically, in the case of good macroeconomic condition, usually the stock index price is good. Yet in fact, sometimes the news of macroeconomic is not elastic enough to influence the increase of stock price. The investors experience difficulty in interpreting the macroeconomic news to the behavior of the capital market. Macroeconomic factors such as GDP and unemployment rate do not influence the stock price (Birz and Lott, 2011). How will the macroeconomic factors that have high volatility such as exchange rate and interest rate affect the stock return? The dependence of import of capital goods in Indonesia is high, thus the exchange rate greatly influences the real sector. Will this also influence the services sectors such as banking sector in Indonesia? Furthermore, Indonesia's interest rate is considered the highest among neighboring countries such as Malaysia, the Philippines and Singapore. The average condition of rupiah's value and the interest rate in Indonesia are described in Table 1 below.

Year	Interest Rate (%)	Exchange Rate (IDR/US$)	Composite Index
2012	5.77	9,380	4118.83
2013	6.02	10,451	4606.25
2014	7.54	11,878	4937.46
2015	7.52	13,391	4878.54
2016	6	13,307	5059.88

Table 1: Performance of macro indicators
Source: Bank of Indonesia and IDX

The author observed that the variables of capital structure and the size of company in banking sector are potential to be the benchmark to analyze the prospect of a stock investment. By observing the macro condition such as the exchange rate of rupiah and the fluctuate of interest rate, this research aims to find to the possibility of significant influence both partially or simultaneously between capital fund, size of the company and macroeconomic to stock returns of banking sectors listed on Indonesia Stock Exchange (IDX).

2. Literature Review

In investing the marketable securities in stock exchange, investors expect the rate of return. Rate of return is divided into two, realized return and the return expected to be realized in the future. The stock return becomes a benchmark in appreciating the profitability of an investment. While the definition of return by (Fahmi, 2013) is the difference in selling price and buying price plus other value (such as dividend). Other definition elaborated return as the profit gained by a company, individual, and an institution from their investment policy" (p. 189). A number of researches have been done to observe the factors that influence the stock return, such as (Gharaibeh, 2014; and Birz and Lott, 2011). On the other hand, there are also researches that only observe the stock price without considering dividend such as Kumar and Puja (2012) and the company's profit such as Dahmash (2015).

Capital structure is a balance done by the company to determine the source of fund of the company. Sartono (2010) stated that: "capital structure is a balance of the sum of short-term permanent debt, long-term debt, preferred stock and common stock" (p. 225). Riyanto (2008) described that capital structure is a permanent expenditure that reflects the balance between long-term debt and the owner's equity.

Researches regarding the influence of capital structure to stock return have been done by the academics such as (Goyal, 2013; Gharaibeh, 2014; Mwangi et al., 201 and Tahmoorespour et al., 2015). Other factors estimated to influence the stock return are the size of the company as done by (Duy and Huu Phuoc 2016; Wong, 1989; Farhan and Sharif 2015). Study by (Dahmash, 2015) observed the relationship between the size of the company and the skill of its innovation management. The size of the company is a variable that is easy to be implemented because it can be observed from the assets value, the number of sales and the company's equity.

The interest rate is one of the aspects of macroeconomic. Research by Zaheer and Rashid (2014) stated that the interest rate has a significant negative relationship with the stock return. Other aspect of macroeconomic that was observed is the exchange rate. The exchange rate of rupiah to dollar become the benchmark that is usually used to measure the stability of local currency. Research by Zaheer and Rashid (2014) stated that exchange rate also has a significant negative relationship with the stock return. There are many researches regarding the influence of macroeconomic to the stock return. A number of reviewed journal by Tangjitprom (2012) distinguish all of the macroeconomic variables to four groups, which are variables that reflect the general economy condition; variables that are related to the interest rate and monetary policy; variable that are related to price level; and variables that are related to international activity. Based on review by Tangjitprom (2012), the result of the researches of the relationship between macroeconomic and stock return shows varying results. However, majority shows the significant relationship between macroeconomic and return stock. Referring to the result of the review, this research includes macro variables that are the group of interest rate and monetary policy as well as the group of international activity. Thus, macro variables considered in this research are the interest rate and the exchange rate of rupiah to the stock return. The research of the relationship between macroeconomic and stock return was also done by Özlen and Ergun (2012), Rjoub et al. (2009) and Singh et al. (2011).

3. Methodology

The method to collect data in this research is desk research by employing secondary data from Indonesia Stock Exchange (IDX) and Bank of Indonesia. The research objects are the companies in banking sector listed on Indonesia Stock Exchange (IDX) as the financial report and stock price of each company in the period of 2012-2016. The sampling technique is the purposive sampling with considerations as follows: 1) the banking companies listed on IDX (43 units); 2) provide the financial report in the period of 2012-21-6 or has never been delisted on that period (11 units). From those criteria, 11 banking companies are established with codes as follows: BBNI, BEKS, BNGA, BNII, BTPN, BVIC, MAYA, MCOR, MEGA, NISP, and PNBN.

Used analysis model in this research is to determine the relationship and the influence between independent variables and a dependent variable, which is the multiple linear regression with panel data analysis with fixed effect model. The equation as follows (Torres-Reyna, 2007);

$$Y_{it} = \beta_0 + \beta_t X_{it} + \cdots + \beta_k X_{k,it} + \mu_{it} \quad (1)$$

where :

- Y_{it} is the dependent variable (stock return) where i = entity (banks) and t = time (year)
- $X_{k,it}$ represents independent variable

- β_k is the coefficient for the independent variable
- μ_{it} is the error term

The type of data used in research is panel data, which is a combination of time series data from 2012 to 2016 with cross section data from 11 banking companies listed on IDX. Classic assumption test done is the normality test with Jarque-Bera test, multicollinearity test and heteroscedasticity test. The model test also done with multiple determinant coefficient test. Other than panel data multiple regression model, this research also employed correlation to observe the relationship between independent and dependent variable. The interpretation of the model to be used is partial or simultaneous, as illustrated in figure 1.

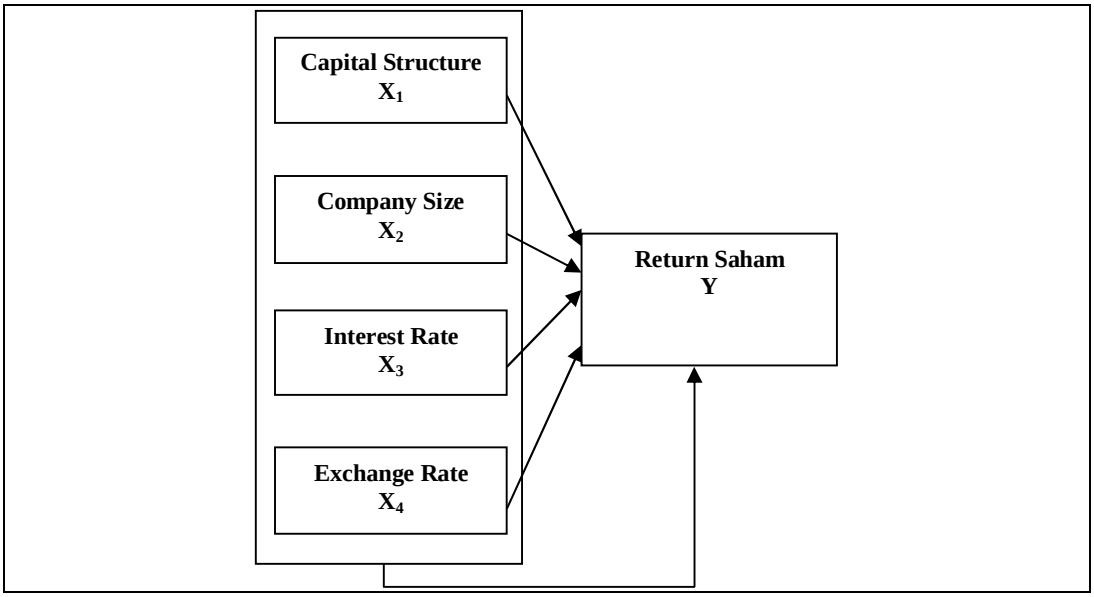

Figure 1: Conceptual framework
Source: Model developed by the authors

Dependent variable (Y) is the stock return of sample companies that was obtained from capital gain (capital loss) plus dividend. Independent variable X1 and X2 are fundamental factors of companies that are represented by capital structure or debt to equity ratio (DER) and the size of the company that represented by value of the assets of each company. On this research, firm size is calculated as natural Ln of total assets (Ln (value of asset)). This is referred to the size of the company used in the research done by Goyal (2013). Meanwhile, Goyal (2013) utilizes debt to capital ratio to represent capital structure.
Independent variable of X3 and X4 are the macroeconomic variables that each represented by the interest rate and the exchange rate of rupiah to dollar. Other model to observe the influence of macroeconomic with the stock return is the method of Bob-Jenkin Arima by Gay (2008), method of auto regressive distributed lag by Özlen and Ergun (2012).

4. Result

4.1. Panel Data Analysis

To determine the best multiple regression panel data, a trial analysis was done to each panel data model, which are fixed effect model, random effect model and common effect model. From the analysis result, three of them produced the estimation of panel data regression model summarized by table 2 below.

Model	R-square	Adjusted R-Square	F-statistic	Prob (F-statistic), α=5%	Dependent variable	Prob α=5%	
Common effect	0.179469	0.113827	2.734045	0.039056	Stock return	Capital structure	Not significant
						Size	Significant
						Interest rate	Not significant
						Exchange rate	Not significant
Fixed effect	0.43854	0.242030	0.231635	0.023808	Stock return	Capital structure	Significant
						Size	Significant
						Interest rate	Not significant
						Exchange rate	Not significant
Random effect	0.179469	0.113827	2.734045	0.039056	Stock return	Capital structure	Significant
						Size	Significant
						Interest rate	Not significant
						Exchange rate	Not significant

Table 2: Summary of panel data regression results

To determine the best model from panel data multiple regression above, Chow test, Hausman test and multiplier test were done. Chow test is intended to determine the most suitable common effect model or fixed effect model used to estimate panel data. From the Chow test, it was discovered that the best panel data model is the fixed effect, because cross-section chi-square result was 0.0220 <α (0.05). Then, Hausman test was done to determine which model is suitable between fixed effect and random effect model. From the Hausman test, it was found that random effect model produced the best result, as a cross-section random was 1 >α (0.05). Due to the different result produced by each test, the next step is to conduct Lagrangian Multiplier test to determine the most suitable model between random effect model and common effect model. The test determined common effect model as the most suitable model, because P-value of Breusch-Pagan was 0.5316 >α (0.05). The result can be seen in table 3.

Lagrange Multiplier Tests for Random Effects			
Null hypotheses: No effects			
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided			
(all others) alternatives			
	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	0.391330	0.014271	0.405601
	(0.5316)	(0.9049)	(0.5242)
Honda	-0.625564	-0.119461	-0.526812
	--	--	--
King-Wu	-0.625564	-0.119461	-0.435341
	--	--	--
Standardized Honda	-0.239364	1.168097	-3.289970
	--	(0.1214)	
			--
Standardized King-Wu	-0.239364	1.168097	-3.021417
	--	(0.1214)	--
Gourieroux, et al.*	--	--	0.000000
			(>= 0.10)

Table 3: Langrangian multiplier test result

From the three results above, it can be concluded an inconsistency of the result occurred in determining the right model test. Such inconsistency can be observed from the Chow test that chose Fixed Effect Model, Hausman test that chose Random Effect Model, and LM test that chose Common Effect Model. The determination of the model is then done by observing the adjusted R-square with the highest value, thus the model selected is Fixed Effect, with value of 0.24 (in table 2)

4.2. Multiple Regression Analysis

Multiple regression analysis using panel data in this research has passed the classic assumption tests, such as normality test, multicollinearity test, and heteroscedasticity test. Normality test in figure 2 below shows the result of JB (Jarque-Bera) of 1.240064 smaller compared to Chi Square. Thus, it can be concluded that the residual is normally distributed.

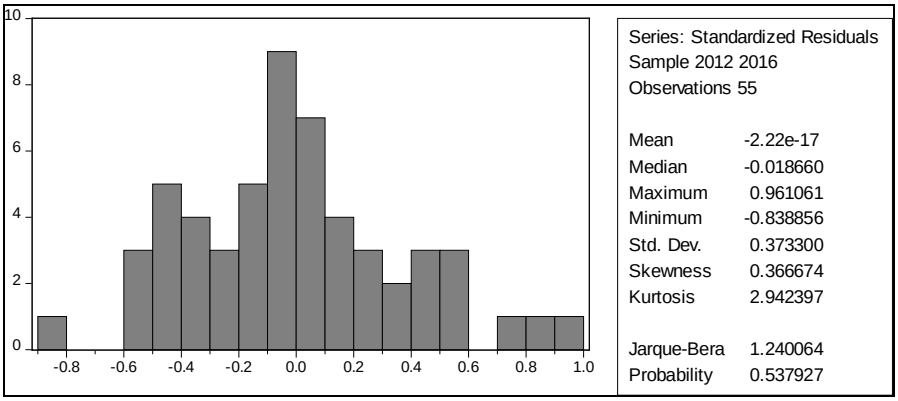

Figure 2: Normality test result

On the other hand, multicollinearity test has proved that there is no correlation between independent variables where the values of correlation matrix do not exceed 0.8 in table 4, which means there is no significant relationship between the independent variables.

	X1	X2	X3	X4
X1	1	-0.40804	0.081368	-0.24525
X2	-0.40804	1	0.047157	0.107411
X3	0.081368	0.047157	1	0.54813
X4	-0.24525	0.107411	0.54813	1

Table 4: Correlation matrix result

Bruesch Pagan-Godfrey test has also proved that no heteroscedasticity occur, where P-value of each X1, X2, X3 and X4 are bigger than 0.05. The result is shown on table 5.

Dependent Variable: P				
Method: Panel Least Squares				
Date: 08/08/17 Time: 13:21				
Sample: 2012 2016				
Periods included: 5				
Cross-sections included: 11				
Total panel (balanced) observations: 55				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1	3.026732	7.072085	0.427983	0.6710
X2	11.48296	66.03921	0.173881	0.8628
X3	-451.2148	1706.492	-0.264411	0.7928
X4	-0.005801	0.011422	-0.507843	0.6144
C	-270.9659	2028.502	-0.133579	0.8944
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	0.376309	Mean dependent var		20.01753
Adjusted R-squared	0.158017	S.D. dependent var		81.59526
S.E. of regression	74.87150	Akaike info criterion		11.69642
Sum squared resid	224229.6	Schwarz criterion		12.24388
Log likelihood	-306.6517	Hannan-Quinn criter.		11.90813
F-statistic	1.723880	Durbin-Watson stat		3.131383
Prob(F-statistic)	0.088962			

Table 5: Bruesch Pagan-Godfrey result

The result of multiple linear regression with fixed effect model shows that the value of adjusted R-square is 0.242030, indicating that the contribution of independent variable (X) in this model is able to provide influence of 24.2% to the dependent variables. Meanwhile, the other 75.8% is from the contribution of other variables that are not considered in this research. From table 6, an equation of multiple regression model can be determined as follows: $Y = 29.872 – 0.1322\ X_1 – 0.9173\ X_2 – 9.577\ X_3 + 0.0000903\ X_4$. Test F from table 6 shows the value is 0.023 lesser compared to $\alpha = 0.05$, thus it can be concluded that independent variables simultaneously influence the stock return.

Partially, the variable for capital structure (X1) significantly influence the stock return with P-value 0.0025 lesser compared to $\alpha = 0.05$. This result contradicts to (Gharaibeh, 2014) which finds no significant influence between capital structure and stock returns. Variable company size (X2) have a significant effect on stock return with p-value 0.02 smaller than $\alpha = 0.05$. This finding is aligned with research by (Dahoei and Saidi, 2012; Duy and Huu Phuoc, 2016; and Farhan and Sharif, 2015). On the contrary, variable of interest rate (X3) and exchange rate (X4) partially have P-value greater than $\alpha = 0.05$, which are 0.33 and 0.179, respectively, which indicate that the variable of interest rate and exchange rate partially do not influence the stock return. This finding agrees with research by Kotha and Sahu (2016), which also did not find the significant influence between interest rate and stock return. However, Haque and Sarwar (2012) proved a positive significant relationship between exchange rate and stock return. And also found a negative influence between interest rate and stock return. This influence happens due to discrepancy in research object which is the textile sector, where export and import strongly influence the said sector.

Dependent Variable: Y				
Method: Panel Least Squares				
Date: 07/31/17 Time: 12:55				
Sample: 2012 2016				
Periods included: 5				
Cross-sections included: 11				
Total panel (balanced) observations: 55				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1	-0.132205	0.040969	-3.226946	0.0025
X2	-0.917349	0.382569	-2.397867	0.0212
X3	-9.577643	9.885804	-0.968828	0.3385
X4	9.03E-05	6.62E-05	1.365136	0.1798
C	29.87238	11.75122	2.542066	0.0150
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	0.438540	Mean dependent var		0.124586
Adjusted R-squared	0.242030	S.D. dependent var		0.498194
S.E. of regression	0.433735	Akaike info criterion		1.394234
Sum squared resid	7.525038	Schwarz criterion		1.941689
Log likelihood	-23.34144	Hannan-Quinn criter.		1.605939
F-statistic	2.231635	Durbin-Watson stat		2.045601
Prob(F-statistic)	0.023808			

Table 6: Multiple Regression panel data using fixed effect model

5. Conclusion

The aim of this research is to empirically prove the influence of the company fundamental factor and macroeconomic to the stock return in banking sector listed on IDX. It was found that simultaneously, the company fundamental factor (DER and the size of company) and macroeconomic (interest rate and exchange rate) significantly influence the stock return. However, partially, only the company fundamental factor that significantly influences the stock return, while macro factor was tested to be not significant.

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