

Analysis the Effect of Internal and External Factors the Return of Infrastructure Stocks and Supporting

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Abstract: This research aims to identify performance and to determine internal and external factors that influence the return of infrastructure stocks included its supporting. This research uses data from Quarterly Financial Report of Companies including Indonesian Stock Exchange (IDX), Central Bank of Indonesia (BI), and *quandl.com*. The number of population for this research is 18 companies and the number of sample that examined after passing the purposive sampling method is 14 companies registered under SMinfra18 index within period of 2013-2016:9. Technical analysis used in the research is panel data analysis. The result of this research shows that CR, ROE, inflation, exchange rate, HSI index, Nikkei225 index, and STI index have significant influence to stock return of SMinfra18. While inflation, exchange rate, HSI index, Nikkei225 index, and STI index influence the return of infrastructure stocks and its supporting significantly. The result of the research expects that inflation, exchange rate, HSI index, Nikkei225 index, STI index and any other external variables can be used as references by investors in determining investment strategy, by stock issuers in managing company, and by government in making decision.

Keywords: Stock Returns, Data Panel Analysis, Infrastructure Stock (SMinfra18).

1. Introduction

One factor that affects economics development is infrastructure that becomes a barometer of a country in improving the implementation of development. Inadequate infrastructure could hinder economic growth and could weaken the country's position in the international world. The Government has a program in policy development of infrastructure and has been set forth in the Presidential Decree No. 32 of 2011 regarding the instrument called Masterplan for Accelerating and Expanding Indonesian Economic Development (MP3EI). The instrument is a policy of the infrastructure development acceleration performed by the Government in order to improve the performance of national infrastructure.

On 31st of January, 2013 the Indonesia Stock Exchange (IDX) in cooperation with PT Sarana Muti Infrastructre (SMI) established an index that consists of companies with business line of infrastructure and its supporting. The index is then called SMinfra18 index. The criteria for companies in the index include good fundamental factor, large market capitalisation, having a free float of shares, and high stocks' activity (value, frequency, and the daily transaction). The SMinfra18 index becomes the guideline for investors in investing in the issuers stock that have a role in infrastructure development.

One of the factors that affects an investor to invest capital to a company is *return*. *Return* is obtained from the change of stock's price. The *Return* of SMinfra18 index has always experienced fluctuations from March 1995 until September 2016 (See Figure 1). In the 2nd quarter of 2015, the return of

SMinfra18 shares experienced the lowest return during that period. The *Return* of stocks is influenced by several factors including the internal and external factors of a company.

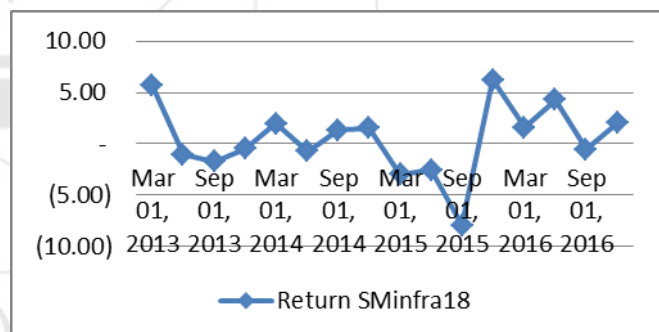


Figure 1: Stock return SMinfra18 index 2013-2016

Research on the influence of internal and external factors to the return of shares have been conducted both from within and outside the country. Research on the influence of the internal factors include some research conducted by Prihantini (2009), by Aditya and Isnurhadi (2013), by Legiman et al. (2015), and by Utami (2015). The results of the research mostly show that internal factors influence the *return* of stock. While, research conducted by Hernendiastoro (2005) and Jauhari (2014) shows that the internal factors have not affected the stock return. Research on the influence of the external factors include some research conducted by Maysami et al (2004), by Al-Sharkas (2004), and by Al-Zararee and Ananzeh (2014). The results of their research conclude that external factors (from macro economics' side) give impact on stock *return*.

So far the research on stock return are limited only to

sectoral, the composite (IHSG), and LQ45. Meanwhile, research on infrastructure is very rarely done especially SMinfra18 index was just registered in Indonesia Stock Exchange (IDX). Research on factors that affect the return of infrastructure and construction stocks include some research conducted by Prihantini (2009), by Aditya and Isnurhadi (2013), and by Utami (2015). Therefore it is necessary to examine SMinfra18 shares any further with a concentration towards the infrastructure stock and its supporting. So that this study attempts to analyze the influence of internal and external factors to the return of stocks in SMinfra18 index within the period of March 2013 - September 2016.

2. Data

The type of data used is secondary data. Internal variables are derived from the financial statements of companies listed on the Indonesia Stock Exchange (IDX) from the 1st quarter of 2013 to the 3rd quarter of 2016. While external variables are derived from Central Bank of Indonesia (BI) and quandal.com. The population in this research is 18 companies. Since the purposive sampling technique is applied, then the samples used in this study is 14 companies. These 14 companies have represented companies which are engaged in the building and non building construction, energy, highways, manufacturing, big trades, and telecommunication.

3. Methodology

3.1 Variables

The dependent variable in this study is the return of stock. While the independent variables consist of current ratio, debt to equity ratio, price earning ratio, return on equity, inflation, exchange rates, the Hang Seng Index (HSI), the Nikkei225 index, and the Strait Time Index (STI).

3.2 Regression Model and Technical Estimates

The study uses panel data analysis. The panel data is a combination of *time series* data and of *cross section* data. Data processing is carried out using E-views 9. The equation model in this study as follows:

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \dots + \beta_9 X_{9it} + e_{it} \quad (1)$$

Y_{it} = n stock return company (%)

X_1 = CR (Ratio)

X_2 = DER (Ratio)

X_3 = PER (Ratio)

X_4 = ROE (%)

X_5 = Inflation (%)

X_6 = Exchange rate (IDR)

X_7 = Hang Seng Index (IDR)

X_8 = Nikkei225 Index (IDR)

X_9 = Strait Time Index (IDR)

β_0 = intercept coefficient

β_{1-9} = slope coefficient variable

ε = error

Hypotheses: $\beta_1, \beta_3, \beta_4, \beta_7, \beta_8, \beta_9 > 0$; $\beta_2, \beta_5, \beta_6 < 0$

At first we neutralize the variables of Exchange rate, HSI index, Nikkei225 index, and STI index in a logarithms. The

usage of regression in panel data is performed using three approaches, namely Pooling List Square (PLS), Fixed Effects Model (FEM), and Random Effects Model (REM). After obtaining the estimated model, then perform some tests to get the most appropriate model in generating three estimations. The first stage of testing will use an F test or a Chow test in order to choose whether the PLS or the FEM is going to be used. If the test results state that H_0 is accepted, then the PLS model will be selected and vice versa. The next stage is to test the Hausman Test in order to choose whether the FEM or the REM model will be selected. If the test results state that H_0 is accepted, then the REM model will be used and vice versa. When the model chosen using Chow Test is FEM and FEM model is also selected in Hausman Test, then Langerange Multiplier Test (LM Test) does not need to be done. However, when the model chosen using Chow Test is PLS model and REM model is selected in Hausman Test, then Langerange Multiplier Test (LM Test) need to be performed. LM test is conducted to select the PLS model or the REM.

4. Empirical Results and Analysis

4.1 Descriptive statistics

The results of the analysis of descriptive statistics in this research is reflected in Table 1 which include an average sample (*mean*), maximum value, minimum value, and standard deviation for each variable over the period of March 2013 - September 2016. Based on the table, it is shown that the mean value of the stock return is 0.20 or amounted to 2.0 percent, with the lowest stock return of -8.94, and the highest stock return of 7.61 or 76.1 percent. The return data indicates that the stock return on average experiences a positive change. Meanwhile, the standard deviation of the stock return is 2.35 or 23.5 percent, meaning that the magnitude of deviations of data shows that the variables of stock return are highly fluctuate during the observation period. In this study its mean variable return, PER and ROE smaller than the standard deviation.

Current ratio (CR) used to measures the firm in pay off an obligation in short term. The value of CR is a fine more than 1, in this case there are four companies that have value mean CR under 1 namely a EXCL, ISAT, JSMR, and TBIG. Debt to Equity Ratio (DER) shows structure of the capital company with comparing between total of a debt for equity. If value DER below 1 it means company share larger than the number of loan company. This research there are five companies the value DER firm under 1 namely INTP, PGAS, SMGR, TLKM, and UNTR. Price Earning ratio (PER) showing how much the amount of money spent by investor willing to pay for every currency unit reported. Return on Equity (ROE) showing the extent to which a company can manage its own capital. In the year 2015 the value of its Rupiah denomination very depreciate, this may be due to an indication that the Fed would raise its interest rate so that the effect to the other like return the IHSG, LQ45, Sector of infrastructure, utility, and transportation, Nikkei225 index, HSI index, and STI index.

Table 1: Descriptive statistics stock SMinfra18 index within period of March 2013 until September 2016

Variable	Mean	Max	Min	Std Dev
Return	0.20	7.61	-8.94	2.35
CR	1.72	9.19	0.35	1.50
DER	2.12	13.39	0.10	2.06
PER	357.32	15000.00	-1216.67	1476.38
ROA	0.36	6.96	-0.10	1.03
ROE	1.13	26.38	-0.16	3.37
Inflation	6.02	8.40	3.07	1.86
Exchange rate	12386.47	14657.00	9719.00	1343.75
HIS	22661.92	26250.03	20776.70	1575.07
Nikkei225	16339.04	20235.73	12397.91	2132.07
STI	38.37	43.80	28.81	4.50

4.2 Regression Model Panel data Analysis

Table 2 is the result of a panel data test for SMinfra18 index which has been weighted using the PLS method. Probability Value (F-statistic) for SMinfra18, infrastructure company, and support company infrastructure respectively is 0.0000, 0.0199, 0.0001 α less than 1 %. That means there is at least one independent variable that influence the stock return or all

of the independent variables are influential simultaneously to stock return. *Goodness of Fit Test* can be seen from the R-squared value for SMinfra18, infrastructure company, and support company infrastructure respectively is 0.2343, 0.2502, 0.2706. It means the independent variables are capable to explain the stock return of 23.43 % for SMinfra18 index, 25.02% infrastructure company and 27.06% for support company infrastructure can be explained by other variables. From the table, it will generate a model in Equation 2.

$$Y = 216.0066 - 0.2209 CR - 0.0766 DER + 0.0001 PER - 0.0561 ROE + 0.2695 Inflation - 19.7830 LnEx - 19.9709 LnHSI + 14.2397 LnNikkei225 + 8.7073 LnSTI + e \quad (2)$$

$$Y = 214.6371 - 0.2062 CR - 0.0993 DER + 0.0001 PER - 0.7342 ROE + 0.3657 Inflation - 18.2681 LnEx - 15.5819 LnHSI + 8.0435 LnNikkei225 + 9.4853 LnSTI + e \quad (3)$$

$$Y = 219.8421 - 0.1678 CR - 0.0411 DER + 0.0001 PER - 0.0452 ROE + 0.2092 Inflation - 20.7957 LnEx - 22.7070 LnHSI + 17.7498 LnNikkei225 + 8.4727 LnSTI + e \quad (4)$$

Table 2: Test Result panel data SMinfra18 index

Variable	SMinfra18 index		Infrastructure company		Infrastructure company supported	
	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
C	216.0066	0.0000	214.6371	0.0003	219.8421	0.0000
CR	-0.2209	0.0421*	-0.2062	0.4410	-0.1678	0.2123
DER	-0.0766	0.2483	-0.0993	0.7151	-0.0411	0.5923
PER	0.0001	0.3570	0.0001	0.5711	0.0001	0.9333
ROE	-0.0561	0.0831*	-0.7342	0.2630	-0.0452	0.1974
Inflation	0.2695	0.0037*	0.3657	0.0152*	0.2092	0.0781*
LnEx	-19.7830	0.0000*	-18.2681	0.0005*	-20.7957	0.0000*
LnHSI	-19.9709	0.0000*	-15.5819	0.0045*	-22.7070	0.0000*
LnNikkei225	14.2397	0.0000*	8.0435	0.0789*	17.7498	0.0000*
LnSTI	8.7073	0.0000*	9.4853	0.0074*	8.4727	0.0018*
R-squared	0.2343		0.2502		0.2706	
Adjusted R-squared	0.1998		0.1464		0.2180	
Prob (F-statistic)	0.0000		0.0199		0.0000	

Information: * $\alpha <$ significant at the significance level of 10%

Current ratio (CR) variable has a negative and significant correlation to stock return. It means that the increase of 1% of CR variable will reduce the return as many as 0.2209 units. This case differs from the theory stating that the CR variable has a positive effect on stock returns. It presumably happens because there are companies with CR ratio of less than 1. Nevertheless, this research is supported previous studies conducted by Khotimah and Murtaqi (2015). Figure 2 shows the negative correlation between stock returns and CR variable on SMinfra18 index.

In this case, Debt to Equity Ratio (DER) and Price Earning Ratio (PER) variables are still not enough to prove that these variables can affect stock returns. However, the correlation between the two variables has been consistent with theory and hypothesis so that it can be used for further research. We estimate that it happens because there are 5 companies with DER ratio below 1. While, PER variable allegedly has a standard deviation greater than the mean value so that the

distribution of the data is too large, meaning that the data is not good.

Return on equity (ROE) variable has a negative and significant correlation to the stock return on SMinfra18 index. It means, the increase of 1% ROE variable will reduce the stock return as many as 0.0561 units. This case differs from the theory stating that the ROE variable has a positive impact on stock returns. It is suspected because there two companies (ADHI and AKRA) with outliers data resulting the standard deviation value is higher than mean value. Nevertheless, this study is supported by previous studies conducted by Komala and Nugroho (2013). However, the result of this research is contrary to research conducted by Prihantini (2009) which shows that ROE has a positive correlation to stock return. Figure 2 shows the negative correlation between stock returns and ROE variable on SMinfra18 index.

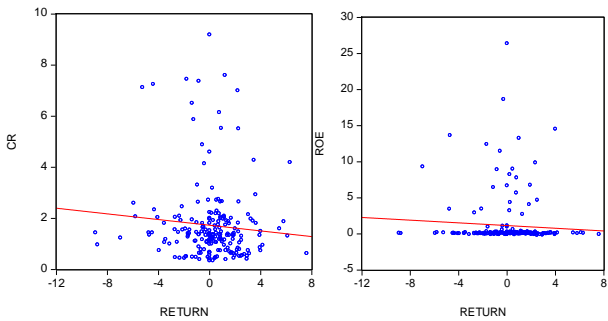


Figure 2: Chart scatter plot internal factor to return

Inflation variable has a positive correlation and significant to stock returns of SMinfra18 index, of infrastructure company, and of infrastructure supporting company. It means that the increase of 1% inflation variable will increase the stock return as many as 0.2695 units (equation 2), as well as for equation 3 and 4. This case is different from the theory stating that the inflation variable has a negative impact on stock returns. It is assumed that the inflation variable has fluctuated a lot during the period of observation. The results of this research are supported by Mubarak (2014), but contrary to the research conducted by Prihantini (2009), Jayadi (2012), Pasaribu and Koswanda (2013), Jauhari (2014), and Utami (2015). Their studies show that inflation variable has a positive correlation to stock returns. Figure 3 shows the positive correlation between stock returns and Inflation variable on SMinfra18 index.

Exchange rate variable has a negative and significant correlation to stock returns of SMinfra18 index, of Infrastructure Company, and of infrastructure supporting company. It means that when exchange rate is appreciated by 1%, it will reduce the return as many as 19.7830 units (equation 2), as well as for equation 3 and 4. The results of this study are supported by Erdogan and Ozalale (2004), Chabachib and Witjaksono (2011), Alam and Rashid (2014), and Utami (2015). Figure 4 shows the negative correlation between stock returns and Exchange Rate variable on SMinfra18 index.

HSI index variable has a negative and significant correlation to stock returns of SMinfra18 index, of Infrastructure Company, and of infrastructure supporting company. It means that the increase of 1% HSI index variable will reduce the stock return as many as 19.9709 units (equation 2), as well as for equation 3 and 4. The results of this study are supported by previous research conducted by Achسانی (2000). But contrary to the research conducted by Chabachib and Witjaksono (2011). Their studies show that HSI index has a positive correlation to stock returns. Figure 3 shows the negative correlation between stock returns and HSI index variable on SMinfra18 index.

Nikkei225 index variable has a positive and significant correlation to stock returns of SMinfra18 index, of Infrastructure Company, and of infrastructure supporting company. It means that the increase of 1% Nikkei225 index variable will increase the stock returns as many as 14.2397 units (equation 2), as well as for equation 3 and 4. This study has been in accordance with the theory and supported by research conducted by Witjaksono (2010). Meanwhile, the

research conducted by Chabachib and Witjaksono (2011) shows that Nikkei225 index has a negative correlation impact to the Composite Index (IHSG). Figure 2 shows the positive correlation between stock returns and Nikkei225 index variable on SMinfra18 index.

STI index variable has a positive and significant correlation to stock returns of SMinfra18 index, of Infrastructure Company, and of infrastructure supporting company. It means that the increase of 1% Nikkei225 index variable will increase the stock returns as many as 8.7073 units (equation 2), as well as for equation 3 and 4. This study has been in accordance with the theory and supported by research conducted by Achسانی (2000). Meanwhile, a research conducted by Pasaribu and Kowanda (2013) shows that STI index has a negative correlation impact to stock returns. Figure 3 shows the positive correlation between the stock returns and STI index variable on SMinfra18 index.

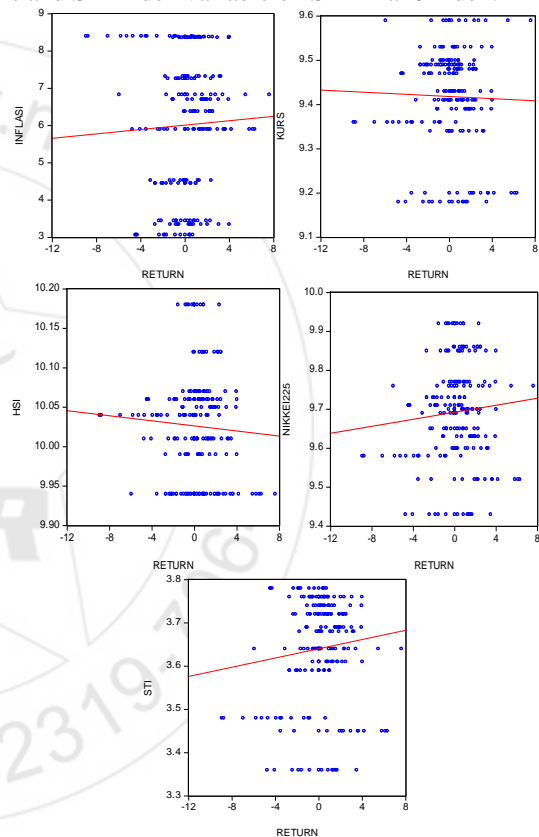


Figure 3: Chart scatter plot external factor to return

5. Conclusion

Based on the research that has been done, it is concluded that internal and external factors give influence to stock returns of infrastructure and its supporting. The internal factors that influence the stock return of Sminfra18 index include CR and ROE variables, while DER and PER variables are not enough to prove that DER and PER give impact to stock returns. While the external factors that affect stock returns include inflation variable, exchange rate variable, index of HSI, the Nikkei225 index, and the index of STI. Although CR variable, ROE variable, and inflation variable are contradicted to the theory, but these variables are worth to consider in taking a decision to invest in the infrastructure. Meanwhile, Inflation variable, Exchange Rate variable, HSI

index, Nikkei225 index, and STI index can influence the stock returns of infrastructure company and its supporting.

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