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A Testing of Efficient Markets Hypothesis in Indonesia Stock Market

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Abstract

This research's objective is to see market efficiency form on Indonesia stocks market. Using daily stocks price data gathered from LQ45 Index, Jakarta Islamic Index (JII), and Kompas 100 Index during the periods of 2013 until 2014. Statistical test using run test and serial correlation test to examine weak form efficiency. The result findings showing that Indonesia stock market has been categorized as weak form efficiency. The statistical testing was done and the result are: 1) the daily stocks price movement is random walk, 2) the stock price movement has no correlation between the present day and the previous day.

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Keywords: Capital Market, Efficient Markets Hypothesis (EMH), Indonesia Stock Exchange, Jakarta Islamic Index, Kompas 100 Index, LQ45 Index, Run Test, Serial Correlation Test, Stock Price, and Weak Form.

1. Introduction

Stock markets have an important role for country development. Stock markets offerings investment alternatives for investors and funding sources for the company. Indonesia stock market performances over the past five years has increased, reflected in Jakarta Composite Index (JCI). Financial Services Authority (OJK) states that in the last five years, JCI is still better than the development of the global stock market indices such as the Australian (ASX), Malaysia (KLCI), Singapore (STI) and others. It is referenced from the point of JCI in 2015 showing an increase of 32% compared with the year 2010 shows the point at 3203.51, while in 2015 demonstrate the point at 4228.501 per August, 2015 (www.idx.co.id, 2015)

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On the other hand, the stock market in Indonesia is experiencing a slowdown in 2013. The JCI point (3.07%) was ranked third worst after China (Shanghai) amounted to -7.72% and Thailand (SET) by -7.73%. This is due to the pressures of global and domestic conditions. Later seen in particular in 2015, the point of JCI since the opening of the market until the month of August, the point of JCI continued to decline. It is the impact of the Greek debt crisis, the condition of the domestic Chinese market and other conditions. Yet overall, Indonesian stock market performance showed an increase over the last five years.

Increased performance of the stock market in Indonesia can occur due to several event such as a change of government and the emergence of related information immediately enforced ASEAN Economic Community (AEC). It can affect financial performance due to such events as a basis in the decision making in the future (Bodie *et al*., 2014; Gitman and Joehnk, 2008). According to regulations, companies are also required to be more open to the public to provide information related to company performance information (RI Law, UU No.14 of 2008 on Public Information). This regulation will provide good news for the public and investors to invest their money.

1.1 Previous Study and Literature Review

As stated by Fama (1970) regarding the efficiency of stock markets stating that a market can be efficient if all market participants get income equal to one another, no matter the investor is a beginner or an expert. While, a market is efficient, the financial resources will be allocated in an economic way. Efficient stock markets encourage individuals to invest in stocks and help firms' managers to maximize wealth of stockholders (Saeedi *et al*., 2012). The three levels of market efficiency entitled ''weak-form, semi-strong-form, and strong form'' require different levels of information to test their relevance (Fama, 1970; Fama and French, 1989).

In this paper, we concentrate on the weak-form, which asserts that stock prices fully reflect all information contained in the past price history of the market. This version of the hypothesis implies that trend analysis is fruitless. Past stock price data are publicly available and virtually costless to obtain. The weak-form hypothesis holds that if such data ever conveyed reliable signals about future performance, all investors already would have learned to exploit the signals (Bodie *et al*, 2010). Fama (1970) defined the weak form by focusing on three points are (1) tests for return predictability; (2) event studies; and (3) tests of private information (Jarrett, 2010).

Previous studies have been done to test the weak-form efficiency in Indonesia. Husnan (1990), Legowo (1998), Istiana (2000), Didik (2005), Astuti (2008), and Nasruldin (2011). Results found that Indonesia has a weak-form efficiency. However, this is contrast with Dewi (2009) that found different results in his research entitled Capital Market Efficiency Test Through Movement Evaluation LQ-45 index in Indonesia Stock Exchange. Using the ARIMA methods, the results of these studies indicate that the Indonesia stock market couldn't be said to be efficient in the weak form for the return movement of the LQ-45.

1.2. Research purpose

In this research, we interest to examine the movement of stock prices of listed companies on the Jakarta Islamic Index (JII), LQ45, and Kompas 100 Index over the period 2013-2014. In addition, to determine the relationship changes daily stock prices of some of the index during the period 2013-2014. This study focuses on the daily stock price movements from 3 index in the Indonesia Stock Exchange as well as capital market efficiency theory test. This research using run test and serial correlation test which are the method recommended by some researchers to conduct testing efficiency in weak form (Fama, 1970; Hartono, 2013). Differences of this study with previous research that is larger sample size, larger index, and different periods, namely the period 2013 to 2014.

2. Research Methodology

This study using daily stock price data of listed company in LQ-45 Index, Kompas 100 Index and JII (Jakarta Islamic Index) in the period 2013 to 2014. The sample of the study were purposively selected to select the proper sample based on criteria the following: a). Company are listed in the index during the period 2013-2014, and b). the sample represents the entire population that is actively traded in several indexs, at least 3 times listed (60%) over the period 2010 to 2014. There are sixty-eight companies selected samples meet the criteria, namely Jakarta Islamic Index

(JII) was elected the twenty-two companies, nine companies selected in LQ45 index, as well as elected thirty-seven firms on the Compass 100 Index. We gathered secondary data from the website www.idx.com and www.yahoofinance.com.

The design of this research is explanatory research where we test a theory that has been tested empirically by some previous researchers. In this context, variables tested relationship is the movement of the stock price period of 2013 and 2014. The analysis technique processed using Statistical Software SPSS version 20. The data used is the adjusted close and converted into a return form that aims to see the movement of the stock price. Researcher tested whether the stock price movements follow a random-walk or following a certain probability distribution using Z test. Researcher also conducted serial correlation test are recommended and used by some previous researcher. This test is to see the relationship daily stock price today with the previous stock price before using t test on a simple linear regression model. Researchers set two hypothesis proposed in this study are as follows:

H_1: Stock prices movement in Indonesia period 2013 to 2014 follow a random-walk.

H_2: There is a relationship of change daily stock price between the present day and the previous day.

3. Findings and Discussion

The results of daily stock price return movements in the period 2013 to 2014 using the Run Test to see whether the pattern of stock prices follow a random walk. Researcher used a significance level of 95% (α = 5%) with Z_{table} = 2.05. Thus, hypothesis accepted if $Z_{result} < Z_{table}$ and prob. value or PV > α.

3.1 Run Test Result

Table 1. Run Test Result

		2013		2014	
Result (Average)	Z table value and α	2.05	0.05	2.05	0.05
	Average	-0.39	0.44	-0.34	0.49
	Price Patern	Random	Random	Random	Random

The overall results ahow that the average value is -0.3948 at $Z_{result} < Z_{table}$ (2.05) and the average PV value (0.44238) > α (0.05). It means that the H_1 results received thus indicating the stock price changes year period 2013 is random walk in the Indonesia Stock Exchange. That is, overall in the period in 2013, Indonesia Stock Exchange has been efficient in the weak-form.

Then viewed as a whole that the average value is -0.3366 at $Z_{result} < Z_{table}$ (2.05) and the average PV value (0.48716) > α (0,05), so in other words H_1 received that indicates that the stock price changes year period 2014 also is random walk in the Indonesia Stock Exchange. So overall, in the period 2014 streamlined the Indonesia Stock Exchange in the weak-form.

The results showed that only six stocks (8.8%) that its H_1 is rejected. While supporting the stock H_1 is accepted by 91.2%, which indicates that the individual, changes in stock prices are random period of 2013 (a random walk) in the Indonesia Stock Exchange. That is, in the period 2013 Indonesia Stock Exchange has been efficient in the weak-form.

3.2 Serial Correlation Test Result

Table 2. Serial Correlation Test Result

		2013		2014	
Result (Average)	t table value and α	1.96	0.05	1.96	0.05
	Average	-0.32	0.66	0.71	0.41
	Correlation	no	no	no	no

The results of the daily stock price of Jakarta Islamic Index (JII), LQ45 Index, and Kompas 100 Index, in the period of 2013 showed that the average value of -0.3215 at $t_{result} < t_{table}$ (1.96) and the average value of PV (0.65538) >

α (0.05), so H_2 rejected suggesting that there is no correlation between the daily stock price t changes with the daily stock price previous day in the period in 2013 in the Indonesia Stock Exchange. That is, in the period 2013 Indonesia Stock Exchange has been efficient in the weak-form.

In the period of 2014, the results showed that the average value is 0.71129 at $t_{result} < t_{table}$ (1.96) and the PV value average (0.41163) > α (0.05), so in other words H_2 rejected suggesting that there is no correlation between daily stock price t changes with the daily stock price previous day in the period in 2014 in the Indonesia Stock Exchange.

3.2 Discussion

Results from the study showed that during the period 2013-2014, the stock market in Indonesia has been included into the category of weak-form efficient market, both in patterns and relationships of price changes. It can be seen from the two trials that have been conducted that overall, the samples showed the capital market in Indonesia is not efficient in the weak form is markedly lower than 10% (in 2013 showed the value of 8.8%, whereas in 2014 showed the value of 4.4% in the run test, and in 2013 showed the value of 4.4%, and in 2014 showed 8.8% on the value of the correlation test).

The comparison pattern of price changes, capital market in Indonesia has increased efficiency in the period of 2014 compared with the period in 2013 due to the pattern of price changes in the second period followed a random walk. This can occur because every year, market participants are actively growing and the products traded also increased. Later, technological developments rapidly also affect the increase in the efficient market because the information available is spread fairly evenly distributed in a relatively close to the stock market, so that these investors can react rapidly also to the emergence of an information and so prices quickly too make adjustments to that information. As we know, there are a number of applications that support the dissemination of such information as the application in the form of media (detik.com, kompas.com) that makes it easier to get the investors of such information in the same time period relatively quickly.

Viewed from the price changes in the period 2014, Indonesia stock market decreased efficiency when compared to 2013. Then, seen from the financial behavior that react in case of an event. The possibility of a decrease in efficiency caused by the replacement of Indonesia president. The replacement of Indonesia president conducted over five years. Although the amount of the percentage of companies that show a correlation of price changes showed a low yield, it is not impossible that there are a number of investors who use the information changes in the stock price five years earlier at a time when replacement of president to obtain abnormal return. It can disrupt the equilibrium price in the market because some investors do not capture signals such price changes, so the return obtained relatively the same, causing a decrease in the efficiency in relation to price changes.

Based on the analysis stated that the capital market in Indonesia has been efficient in the weak-form. However, there are a number of companies that can be said to be inefficient in terms of both the pattern and relationship changes in stock prices. Some conditions that can make the market inefficient and likely to happen to the company over the study period was due to some investors may affect the price of securities of the company, some companies alleged to have access to information that can only be reached by some investors only, and the rapid development of technology supports speeds decision-making.

There are a number of events which allegedly caused some companies are not efficient either inefficient in 2013, as well as inefficient in 2014. These events can be considered as the tendency of the market where the tendency of the market is a condition of the formation of prices tend to be similar each year. There are four market anomalies known in financial theory. Not only the tendency of price increase in January, especially a few days early, there are many market trends such as the increasing trend of prices on some days the end of each month, the tendency of increasing prices on Mondays and Fridays as well as some of the market trends of other categories that have been mentioned by Jones (in Hartono 2013) in 1996, called the market anomalies.

4. Conclusion

The results are consistent with previous research which claimed that the stock market in Indonesia is the weak form efficient market. There is no correlation between the present of daily stock price with the previous day in the period 2013 to 2014. The results also showed that the efficiency of the markets in the Indonesian stock market is increasing

every year on the results of the test run. Thus, the more difficult for investors to earn abnormal returns by using past information. This is because the pattern of stock price changes in Indonesian stock market is random walk so the investors will be difficult to predict future price changes. The limitation of this study are number of index and data time series. We also suggest for future research to find the influence the market anomalies or market trend towards the efficient markets theory. The implication of the study in practice are several companies has no weak-from the test results, but when viewed as a whole stock market in Indonesia has been efficient in the weak-form. So, that parties interested in the stock market of Indonesia still get abnormal return. The investors also have to react rapidly for information's using fundamentals analysis and updating market condition rapidly by utilizing news from digital media.

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