

# ANALYSIS OF PHENOMENON OF MARKET ANALYSIS

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# ANA LYSIS OF PHENOMENON OF MARKET ANOMALY MONTH OF THE YEAR EFFECT ON RETURN

(Case Study Index - Indonesian Index and World Major Index Period 2010-2016)

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## Abstract

*This research aims to analyze the market anomaly month of the year effect on return in Indonesian and world major indexes during the period of 2010 – 2016. The sample period divided into two sub-periods, there are sub-period 2010 – 2013 and sub-period 2014 – 2016 in order to indicate the persistence of month of the year effect. The sample selection method used in this research is a purposive sampling method or known as a judgmental sampling method of weekly return from Indonesian indexes and world major indexes based on certain criteria. As the result, the samples that meet the criteria are consist of 6 Indonesian indexes (BISNIS27, JKSE, KOMPAS100, LQ45, PEFINDO25, SRIKEHATI) and 4 world major indexes (CAC40 from France, DAX from Germany, FTSE100 from England, IBEX35 from Spain). Ordinary least squares (OLS) and Generalized Autoregressive Conditional Heteroskedasticity (GARCH) (1, 1) model is used to analyze the data. The finding shows anomaly month of the year effect exists in some of Indonesian indexes and world major indexes during the research period with various occurrences. A few number of month of the year effect anomalies in earliest sub-period (2010 – 2013) diminishing in the next sub-period. In conclusion that the intensity of month of the year anomalies is diminishing with time. September effects can be found in most of Indonesian indexes such as JKSE in earlier sub-period. January and April effect too can be found in the later sub-period. For the major world indexes, May effect can be found in IBEX35 (Spain) in the earlier sub-period and February effect can be found in FTSE100 (England) in the later sub-period. The research also indicates that the month of the year effects were more persistent among indexes with smaller market capitalization.*

**Keywords:** market anomalies, month of the year effect, return, GARCH model

## PRELIMINARY

### Introduction

The greater the profit the investor gains, the greater the risk that must be willing to bear. Therefore, investors need relevant information in making investment decisions. Relevant

information on the condition and direction of the market will be easy for investors to find if the market is efficient (Maharani and Witiastuti, 2015).

Suad (1998) argues in his book, efficient market is a market that is able to show actual stock prices as well as can provide assurance for the correctness of the circumstances displayed. Research on the efficiency of a capital market is mostly done. These studies find the opposite of the concept of efficient capital markets in some capital markets, i.e. when the state of the stock does not match the existing information.

Bodie (2014) in his book has classified three categories of market efficiency is based on information that is a weak form efficiency, semi-strong form efficiency, and strong form efficiency.

The discussion of efficient market testing cannot be separated from discussing the existence of deviations and irregularities associated with efficient market hypotheses. Deviations and irregularities is called market anomaly. Virginita Pandansari (2008) in Saputro (2014), various conditions that occur in a capital market will cause various impacts that can be seen from the fluctuation of stock prices in the capital market. Unpredictable conditions with paradigms or empirical theories in the capital market are commonly called market anomalies. In other words, the market anomaly is a symptom of deviation or inconsistency toward the capital market hypothesis.

One such market anomalies is the month of the year effect. Jahfer (2015), month of the year effect means the stock returns in a few months are higher than in other months. The most common and interesting findings from the above studies of the monthly effect anomaly within a year are the "January effect" and "April effect".

Thus, the stock price may increase or decrease from month to month in one trading year in the capital market. This behavior is called the month of the year effect. Month of the year more effect refers to the difference on monthly returns in each month of the year.

This study aimed to analyze the phenomenon of market anomaly month of the year effect on the index of Indonesia and World major index.

## **THEORITICAL BASIS**

### **Understanding Capital Market**

Capital market is an important means in an economy that serves to mobilize funds from society to productive sector. The company as a party in need of funds can raise funds through the capital market by selling its shares to the public or issuing bonds, while investors as a party with funds can use the capital market as an alternative investment to gain profit (Nursanti, 2015).

Sunariyah (2011) in his book mentions that the benefits of capital markets is providing sources of financing (long term) for the business world as well as allow optimal allocation of fund resources; providing investment vehicles for investors while enabling diversification efforts; providing lending indicators for the country's economic trends; distribution of company ownership to the middle class; spreading ownership, openness and professionalism, creating a

healthy business climate; creating increased employment or profession; gives the opportunity to have a healthy and prospective company.

### **Efficient Market**

Market efficiency can be defined as the relationship between securities prices with information in circulation. A market is said to be efficient if no-one, both individual investors and institutional investors, will be able to earn abnormal returns, adjusted for risk, by using the existing trading strategies (Christian and Lester, 2013).

Bodie (2014) in his book distinguishes three types of efficient market hypotheses based on "all available information". Hypothesis weak form states that stock prices already reflect all information that can be gained by examining the market trading data such as history of past price, trading volume, or short-term interest rates. Hypothesis semi-strong form stating that all publicly available information regarding the company's prospects should be reflected in stock prices. Hypothesis strong form of the efficient market hypothesis states that stock prices reflect all relevant information on the company, even including information which is only available to people within the company.

### **Market Anomaly**

Market anomaly is an irregular condition, inappropriate or deviating from an efficient market hypothesis. The anomaly here is one of the phenomena in the marketplace, where things are found that should not exist where it is assumed that efficient markets exist. Investors can take advantage of the conditions in the event of market anomalies to gain abnormal return on its investments. (Christian and Lestari, 2013).

Woś Żarnowski (2000) in Pawel (2014), anomalous analysis is usually based on observations of long-term series financial time to study its effects and its repetition. Long time series must have significant because it lowers the likelihood of detecting incidental phenomenon. An ongoing anomaly is a necessary condition to create a profitable investment strategy.

### **Month of the Year Effect**

Schwert (2002) on Robiyanto (2015), argued that the calendar anomalies are empirical evidence that is inconsistent with the behavior theory of asset valuation. One of the anomalies that surfaced calendar month of the year is the effect that is the pattern in certain months in each year.

Jahfer (2015), suggests the most common findings of the study month of the year effect is the "January effect" and "effect April". It is well known that stock returns in January and April are different and significant from other months of the year yield. This violates the efficient market hypothesis (EMH) partly developed by Fama in the 1960s.

Sharpe (1999) says there are three causes of the January effect, i.e. a tax-loss selling; Window dressing; Small and beta stocks. Tax-loss selling is selling stocks with low value with tax debt reduction goal, while window dressing sells stocks with low value to improve year-end portfolio of the company in order to look good. Small beta stock is a tendency when in January, more small companies provide a higher level of return compared to the large companies.

### **Return Stock**

Rodoni and Ali (2010) in his book that return is the results obtained from an investment. Return may be a return realization has occurred or return expectations that has not happened yet but is expected to happen in the days to come.

Counting stock returns for each day can be observed using the formula (Christos and Andreas, 2015):

$$R_t = \ln(P_t/P_{t-1}) \times 100$$

Information:

<sup>23</sup>  
R<sub>t</sub>: Return of stock on day t

P<sub>t</sub>: The closing price (closing price) on day t

P<sub>t-1</sub>: The closing price (closing price) on day t – 1

## RESEARCH METHODS

The scope of this study are several indexes in Indonesia including Jakarta Composite Index (JKSE), LQ45 (JKLQ45), BISNIS27 (JKBI27), KOMPAS100 (JKKM100), PEFINDO25 (JKPEF25), SRIKEHATI (JKSRI) and index are included in the Index of World Major namely CAC40 (F40) from France, DAX (GDAXI) from Germany, IBEX35 (IBEX) from Spain, and FTSE100 (FTSE) from the UK. The study period is from January 2010 to December 2016, sub-period 2010-2013 and sub-period 2014-2016. The data used in this study is a weekly report consistent historical price index during the study period.

Methods of data analysis done by the rules that must be passed through several stages, namely calculating each return during the period January 2010 to December 2016 and then grouping return index has been calculated into the months of trading in January, February, March, April, May, June, July, August, September, November, December. Furthermore, conduct market analysis test anomaly month of the year effect.

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In this test, the examiner tries to analyze the existence of market anomalies month of the year effect on some indices of Indonesia and the world index major during the observation period, i.e. the period of 2010-2016 and 2010-2013 sub-period, 2014-2016. Researchers will use linear regression test (OLS) and Generalized Autoregressive Conditional Heteroskedasticity (GARCH) method.

### Linear Regression Test

Here is a modeling by entering the dummy variable with the following regression equation:

$$R_t = \beta_1 D_{Jan} + \beta_2 D_{Feb} + \beta_3 D_{Mar} + \beta_4 D_{Apr} + \beta_5 D_{May} + \beta_6 D_{Jun} + \beta_7 D_{Jul} + \beta_8 D_{Aug} + \beta_9 D_{Sept} + \beta_{10} D_{Okt} + \beta_{11} D_{Nov} + \beta_{12} D_{Des} + \epsilon_t$$

Information:

R<sub>t</sub>: Monthly Return index in t.

β<sub>1</sub>, β<sub>2</sub>, ..., β<sub>12</sub>: The regression coefficient for *the dummy* variable of each month.

D<sub>Jan</sub>, D<sub>Feb</sub>, ... D<sub>Dec</sub>: Dummy for each month

D<sub>Jan</sub> value = 1 for the return on trade in January and 0 to return in other trades. D<sub>Feb</sub> value = 1 to return in February trading and 0 to return in other trades, and so on. The regression coefficient indicates the magnitude of the average return on the trading day to t.

Abdul Hakim (2014: 38) to obtain estimator with desired properties, i.e. BLUE (Best Linear Unbiased Estimator), OLS should meet the assumption - classical assumptions. Some of the classical assumptions in the linear regression model are as follows:

- 1)  $E(u_i|X_i) = 0$ , the *mean residual* is 0.
- 2)  $E(U_i|X_i - E(U_i|X_i))^2 = \sigma^2$ . the variance of the residuals is constant, known as the assumption homokedastitas.
- 3)  $E(U_i|X_i - E(U_i|X_i)) (U_j|X_j - E(U_j|X_j)) = 0, i \neq j$ , i.e. no serial correlation between the residuals, known as the assumption of *no serial correlation*.

### ARCH and GARCH Test

Because the data used by the researcher is the time series data, often found error variance conditions that are not constant so that the time series data has heteroskedasticity problem. Ekananda (2014: 258), model of ARCH or GARCH (Auto Regressive Conditional Heteroskedasticity or General Auto Regressive Conditional Heteroskedasticity) error that does not assume constant variance (heteroskedasticity) not as a problem, but it can be used for modeling and forecasting. Here is the basic equation using ARCH modeling:

$$R_t = \beta_1 D_{Jan} + \beta_2 D_{Feb} + \beta_3 D_{Mar} + \beta_4 D_{Apr} + \beta_5 D_{Mei} + \beta_6 D_{Jun} + \beta_7 D_{Jul} + \beta_8 D_{Aug} + \beta_9 D_{Sept} + \beta_{10} D_{Oct} + \beta_{11} D_{Nov} + \beta_{12} D_{Dec} + \sum_{j=1}^4 b_j + s_{t-j} + \varepsilon_t$$

Nachrowi and Usman (2006) in his book ARCH model is used to overcome the uncertainty of residual risk. The advantage of this approach is the conditional variance or short-term volatility is a function of the error on the return of the past. To find the appropriate modeling, we can add a larger number of order (q) to the ARCH model (q). Addition order (q) will result in variance of residual changes. In addition, the relatively large number of (q) orders will result in many parameters to be estimated. The more parameters that must be estimated can result in less precise estimators. This is commonly encountered in tests using monthly data

Bollerslev (1986) in Robiyanto (2015), GARCH method is used when there is an error variance in the amount depends on the squared error terms in a few years ago. Here is a modeling from GARCH:

$$\sigma_t^2 = \alpha_0 + \sum_{i=1}^q \alpha_i \varepsilon_{t-1}^2 + \sum_{i=1}^p \gamma \sigma_{t-1}^2$$

Appropriate model in describing the volatility of stock returns during the observation period, it will be the detection of the presence effect month of the year on the results. Here is the research hypothesis for the test:

$$H_0: \beta_1, \beta_2, \dots, \beta_{12} = 0$$

$$H_1: \beta_1, \beta_2, \dots, \beta_{12} \neq 0$$

When the probability value  $< \alpha = 5\%$ , then there is an anomaly month of the year effect, or in other words reject  $H_0$ . This indicates that the return of the twelfth month different from each other. Meanwhile, when the probability value  $> \alpha = 5\%$ , then there is no anomaly month of the year so that the conclusions drawn effect is not reject  $H_0$ . Here is a diagnostic check further as a feasibility test for GARCH, the sum of ARCH and GARCH coefficient of not more than 1 ( $\alpha + \beta < 1$ ) (Shochrul R. Ajija, 2011: 112).

## RESEARCH RESULT AND DISCUSSION

Some of the indexes in the period 2010 to 2016 and the sub-period shows a significant probability value at  $\alpha = 5\%$ , it indicates that the phenomenon of market anomaly month of the year effect. In the period 2010 - 2016 on several indexes seen the effect of March, July, August, September, and October. Furthermore, for sub-period 2010 - 2013, effects of March, May, July, September, and October. And for sub-period 2014 - 2016, significant in January, February, April, August, and September.

Ricky Chee-Jiun Chia and Venus Khim-Sen Liew (2012) examine any month of the year effect on Nikkei225 index of the Tokyo Stock Exchange (Tokyo Stock Exchange / TSE). The method used is Regression and TGARCH. The result of this research is November effect in NIKKEI225 index. Their month of the year effect shows that through the correct strategy of investment of time, money managers, financial counselors and investors can take advantage of the pattern.

### Summary The existence of Month of the Year Effect period 2010-2016

Indeks	Metode	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
BISNIS27	OLS	0.0040	0.0071	0.0077	-0.0019	-0.0043	0.0014	0.0077	-0.0057	0.0017	0.0063	-0.0013	0.0031
	GARCH (1,1)	0.0073	0.0079	0.0072	-0.0053	-0.0056	0.0048	0.0062	-0.0036	0.0092	0.0050	-0.0035	0.0020
JKSE	OLS	0.0037	0.0061	0.0078	0.0013	-0.0031	0.0001	0.0067	-0.0051	0.0021	0.0051	-0.0004	0.0027
	GARCH (1,1)	0.0037	0.0061	0.0078	0.0013	-0.0031	0.0001	0.0067	-0.0051	0.0021	0.0051	-0.0004	0.0027
KOMPAS100	OLS	0.0038	0.0069	0.0075	-0.0001	-0.0039	0.0000	0.0062	-0.0059	0.0013	0.0055	-0.0007	0.0024
	GARCH (1,1)	0.0077	0.0075	0.0067	-0.0042	-0.0034	0.0028	0.0062	-0.0042	0.0086	0.0037	-0.0018	0.0003
LQ45	OLS	0.0043	0.0067	0.0074	-0.0003	-0.0030	0.0011	0.0064	-0.0053	0.0020	0.0060	-0.0010	0.0024
	GARCH (1,1)	0.0088	0.0074	0.0068	-0.0041	-0.0030	0.0040	0.0058	-0.0039	0.0090	0.0041	-0.0022	0.0013
PEFINDO25	OLS	0.0030	0.0069	0.0105	0.0032	0.0011	-0.0028	0.0044	-0.0112	0.0009	0.0061	-0.0025	0.0045

	GARCH (1,1)	0.0063	0.0080	0.0102	0.0031	-0.0007	0.0037	0.0107	-0.0091	-0.0073	0.0021	-0.0011	0.0045
SRI KEHATI	OLS	0.0040	0.0069	0.0084	-0.0004	-0.0033	0.0022	0.0088	-0.0047	0.0018	0.0049	-0.0020	0.0022
	GARCH (1,1)	0.0081	0.0076	0.0077	-0.0042	-0.0042	0.0053	0.0085	-0.0031	0.0088	0.0040	-0.0032	0.0022
CAC40	OLS	0.0006	0.0071	0.0018	-0.0010	-0.0073	-0.0002	0.0006	-0.0035	0.0016	0.0069	0.0010	0.0022
	GARCH (1,1)	0.0017	0.0060	0.0023	0.0025	-0.0049	-0.0003	0.0044	-0.0020	0.0023	0.0050	-0.0001	0.0030
DAX	OLS	0.0017	0.0062	0.0042	0.0000	-0.0046	-0.0012	-0.0005	-0.0067	0.0031	0.0109	0.0066	0.0010
	GARCH (1,1)	0.0016	0.0057	0.0051	0.0002	-0.0041	-0.0043	0.0023	-0.0032	0.0041	0.0089	0.0074	0.0022
FTSE100	OLS	-0.0006	0.0085	-0.0019	0.0019	-0.0065	0.0006	0.0017	-0.0023	0.0000	0.0057	-0.0005	0.0037
	GARCH (1,1)	-0.0006	0.0085	-0.0019	0.0019	-0.0065	0.0006	0.0017	-0.0023	0.0000	0.0057	-0.0005	0.0037
IBEX35	OLS	-0.0039	0.0023	0.0000	-0.0031	-0.0107	-0.0005	-0.0007	-0.0015	0.0069	0.0038	-0.0019	0.0020
	GARCH (1,1)	-0.0024	0.0019	0.0019	0.0004	-0.0089	-0.0027	0.0028	-0.0024	0.0056	0.0043	-0.0027	0.0026

Source: research data processed by Eviews9 (2017)

## Summary The existence of Month of the Year Effect sub-period 2010-2013

Indeks	Metode	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
BISNIS27	OLS	-0.0012	0.0078	0.0102	0.0044	-0.0080	0.0004	0.0068	-0.0079	0.0094	0.0068	-0.0059	0.0010
	GARCH (1,1)	0.0026	0.0066	0.0126	0.0018	-0.0141	0.0075	0.0039	-0.0029	0.0138	0.0059	-0.0064	-0.0007
JKSE	OLS	0.0000	0.0060	0.0112	0.0060	-0.0062	-0.0005	0.0064	-0.0061	0.0084	0.0061	-0.0029	0.0014
	GARCH (1,1)	0.0026	0.0051	0.0124	0.0035	-0.0092	0.0030	0.0044	0.0006	0.0147	0.0051	-0.0031	-0.0004
KOMPAS100	OLS	-0.0012	0.0066	0.0106	0.0050	-0.0076	-0.0003	0.0059	-0.0076	0.0086	0.0061	-0.0044	0.0008
	GARCH (1,1)	0.0021	0.0058	0.0124	0.0024	-0.0102	0.0047	0.0041	-0.0034	0.0153	0.0045	-0.0044	-0.0014
LQ45	OLS	-0.0015	0.0070	0.0102	0.0044	-0.0064	0.0011	0.0065	-0.0073	0.0093	0.0067	-0.0056	0.0005
	GARCH (1,1)	0.0016	0.0061	0.0125	0.0020	-0.0096	0.0066	0.0047	-0.0056	0.0148	0.0043	-0.0052	-0.0006
PEFINDO25	OLS	0.0021	0.0026	0.0153	0.0073	-0.0009	-0.0048	0.0009	-0.0147	0.0143	0.0092	-0.0019	0.0031
	GARCH (1,1)	0.0052	0.0030	0.0139	0.0076	-0.0090	0.0070	0.0095	-0.0156	0.0077	0.0046	0.0010	0.0037
SRI KEHATI	OLS	-0.0024	0.0075	0.0111	0.0057	-0.0072	0.0020	0.0091	-0.0067	0.0096	0.0055	-0.0069	-0.0001
	GARCH (1,1)	0.0007	0.0061	0.0134	0.0038	-0.0129	0.0078	0.0075	-0.0039	0.0128	0.0047	-0.0064	-0.0004
CAC40	OLS	0.0026	0.0025	0.0012	-0.0037	-0.0124	0.0012	0.0004	-0.0050	0.0060	0.0092	-0.0016	0.0028
	GARCH (1,1)	0.0070	0.0005	0.0030	0.0030	-0.0089	0.0018	0.0123	-0.0023	0.0045	0.0076	-0.0012	0.0025
DAX	OLS	0.0052	0.0027	0.0045	0.0017	-0.0077	-0.0002	0.0003	-0.0102	0.0106	0.0135	0.0049	-0.0006
	GARCH (1,1)	0.0052	0.0027	0.0045	0.0017	-0.0077	-0.0002	0.0003	-0.0102	0.0106	0.0135	0.0049	-0.0006
FTSE100	OLS	0.0025	0.0067	-0.0009	-0.0001	-0.0099	-0.0006	0.0017	-0.0005	0.0018	0.0092	-0.0019	0.0044
	GARCH (1,1)	0.0025	0.0067	-0.0009	-0.0001	-0.0099	-0.0006	0.0017	-0.0005	0.0018	0.0092	-0.0019	0.0044
IBEX35	OLS	-0.0021	-0.0015	-0.0047	-0.0067	-0.0177	0.0050	-0.0010	0.0001	0.0157	0.0037	-0.0034	0.0028
	GARCH (1,1)	0.0007	-0.0037	-0.0033	0.0019	-0.0173	0.0014	0.0076	-0.0020	0.0138	0.0045	-0.0046	0.0038



Source: research data processed by Eviews9 (2017)

In the overall period and sub-periods of 2010 - 2013, the September effect is seen in almost all Indonesian indices. This means that there are matters affecting Indonesia's capital market during the month. The Islamic holy day of Eid al-Adha occurred in September during the study period, the possibility of Eid al-Adha affecting the Indonesian capital market in September due to the large majority of Indonesian population is Islamic so that this celebration affects the Indonesian capital market but not the World Major capital market in the researcher's test. In addition, in sub period 2014-2016 seen the effect of April in almost all indices of Indonesia. The celebration of the Prophet's mawlid occurred in April during that sub-period.

Based on the research results, the sub-period 2014-2016 January effect was significant probability of 5%, but in sub-earlier period indicated that the lack of effect in January in Indonesia index and world major indices.

Based on research Qiwei Chen (2012) reason why the risk is higher only in January can be seen from the results of the sample period implies that the market return volatility increases when the announcement of closure of the financial statements. Due to the uncertainty associated with the company's performance, investors will sell stocks to avoid possible risks, leading to increased market volatility. Research results show that the seasonal effect, which is defined as the fact that in a given calendar month, the mean market return is significantly higher than other months throughout the year, due to the compensation of the higher market volatility. Increased market volatility associated with the uncertainty of financial statement announcement.

From the results of the entire study, it appears that the number of the <sup>5</sup> month of the year effect on the index of Indonesia there have been more than the World Major Index. Indonesia Stock Exchange (BEI) revealed the growth of Indonesia's stock index experienced the second highest growth in the Asia Pacific region. However, the stock market capitalization of Indonesia is far behind compared to other countries. JCI's growth beat the benchmark indexes in Thailand, the Philippines, Hong Kong, Singapore, Malaysia and Japan. But unfortunately, despite the high growth experience, the stock market capitalization in Indonesia is still quite small. (Business.Liputan6.com)

According to research Dhiman Tajinder Jassal and Babli (2015) which examines the <sup>18</sup> month of the year effect on the BSE (Bombay Stock Exchange). Anomalies are still on the Indian stock market but they are more prominent in small capitalized stocks and medium capitalization stocks. Therefore, there are opportunities available to investors in the Indian stock market. Investors can plan strategy for the portfolio in accordance with the anomaly abnormal benefit of Indians stock Market.

Indeks	Metode	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
BISNIS27	OLS	0.0116	0.0061	0.0046	-0.0107	0.0005	0.0028	0.0089	-0.0031	-0.0099	0.0057	0.0040	0.0063
	GARCH (1,1)	0.0125	0.0078	0.0031	-0.0183	0.0004	0.0049	0.0122	-0.0026	-0.0031	0.0057	0.0000	0.0058
JKSE	OLS	0.0090	0.0062	0.0037	-0.0054	0.0009	0.0008	0.0072	-0.0038	-0.0074	0.0037	0.0025	0.0046
	GARCH (1,1)	0.0096	0.0075	0.0023	-0.0080	0.0012	0.0023	0.0102	-0.0022	-0.0043	0.0039	0.0009	0.0037
KOMPAS100	OLS	0.0112	0.0072	0.0037	-0.0075	0.0010	0.0006	0.0066	-0.0039	-0.0095	0.0046	0.0034	0.0048
	GARCH (1,1)	0.0125	0.0089	0.0015	-0.0115	0.0014	0.0026	0.0102	-0.0028	-0.0038	0.0052	0.0011	0.0030
LQ45	OLS	0.0127	0.0062	0.0039	-0.0069	0.0013	0.0011	0.0062	-0.0028	-0.0089	0.0051	0.0042	0.0054
	GARCH (1,1)	0.0144	0.0082	0.0013	-0.0105	0.0017	0.0033	0.0089	-0.0027	-0.0031	0.0058	0.0017	0.0041
PEFINDO25	OLS	0.0043	0.0127	0.0047	-0.0025	0.0036	-0.0002	0.0092	-0.0070	-0.0192	0.0017	-0.0033	0.0065
	GARCH (1,1)	0.0079	0.0135	0.0067	-0.0017	0.0039	0.0010	0.0110	-0.0047	-0.0187	0.0008	-0.0035	0.0063
SRI KEHATI	OLS	0.0132	0.0061	0.0053	-0.0089	0.0017	0.0024	0.0084	-0.0022	-0.0099	0.0041	0.0036	0.0056
	GARCH (1,1)	0.0139	0.0082	0.0030	-0.0132	0.0024	0.0053	0.0119	-0.0026	-0.0004	0.0054	0.0007	0.0054
CAC40	OLS	-0.0023	0.0131	0.0026	0.0027	-0.0007	-0.0021	0.0008	-0.0017	-0.0051	0.0038	0.0040	0.0012
	GARCH (1,1)	-0.0023	0.0131	0.0026	0.0027	-0.0007	-0.0021	0.0008	-0.0017	-0.0051	0.0038	0.0040	0.0012
DAX	OLS	-0.0036	0.0109	0.0039	-0.0023	-0.0005	-0.0025	-0.0015	-0.0025	-0.0081	0.0072	0.0086	0.0034
	GARCH (1,1)	-0.0020	0.0130	0.0032	-0.0061	0.0005	-0.0012	-0.0005	0.0014	-0.0047	0.0190	0.0098	0.0046
FTSE100	OLS	-0.0052	0.0110	-0.0030	0.0047	-0.0020	0.0022	0.0016	-0.0044	-0.0028	0.0007	0.0011	0.0026
	GARCH (1,1)	-0.0038	0.0116	-0.0036	0.0047	-0.0019	-0.0007	0.0033	-0.0019	-0.0028	0.0001	0.0015	0.0075
IBEX35	OLS	-0.0065	0.0074	0.0057	0.0020	-0.0017	-0.0076	-0.0002	-0.0034	-0.0065	0.0039	-0.0001	0.0007
	GARCH (1,1)	-0.0090	0.0076	0.0055	0.0027	-0.0020	-0.0076	-0.0003	-0.0038	-0.0066	0.0037	0.0001	0.0012

### Summary The existence of Month of the Year Effect sub-period 2014-2016

## CONCLUSIONS AND RECOMMENDATIONS

From the results of data analysis and discussion of research results that have been done, it can be concluded as follows:

1. The results showed the phenomenon of month of the year effect by using GARCH (1,1) and OLS models in Indonesia index in the period 2010 - 2016 and the sub-period 2014-2016. In sub-period from 2010 to 2013, the research revealed a phenomenon month of the year effect on indexes Indonesia Using the GARCH (1,1) model, however, there were no phenomena month of the year in the sub-period effect by using OLS model.
2. Results in the period 2010 to 2016, using GARCH (1,1) is not found month of the year effect on world major indices. However, using the OLS model, has a positive effect in October on the DAX. In the sub-period 2010 to 2013, the results of the research show the effect of May on IBEX35 index by using GARCH model (1,1). While using the OLS model, the May effect was found on the IBEX35 index and the October effect on the DAX Index. In the sub-period 2014 to 2016, the results of the study showed the effects of February the FTSE100 index with test GARCH (1,1). However, by using OLS model, no finding of any month of the year.
3. Phenomenon month of the year effect on Indonesia and the world major indices in the sub-period 2010-2013 appear not persistent on the sub-period 2014 - 2016. Some of the effects found in the sub-earlier period seems to disappear in the next sub-period but found effects of other months in the sub-period next. From the output of data, GARCH (1,1) looks better describe the phenomenon of market anomaly month of the year compared with the effect using OLS model. The results show that the Indonesian Capital Market is inefficient compared with some major world capital markets. The Indonesian capital market is inefficient compared to that of the country in Indonesia because of its large market capitalization. From the above conclusions, if investors can take advantage of the phenomenon of effect month of the year to earn more profit, we recommend investors to invest in Indonesia capital market compared to some of the world major capital markets due to the high volatility of the stock price.

Here are some suggestions that researchers can provide for future researchers who will conduct similar research:

1. Researchers are further advised to use analytical testing with different techniques. And compare it with the method that has been used in this research. And give the result which method is better.
2. Further research is expected to examine all of the indices are in Indonesia and test more world major indices in comparing this research so as to provide a broader view.
3. It is expected that the research period undertaken by the researcher can then be extended and use several more sub-periods to be able to compare from sub-period to sub-period and obtain better results.

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