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Market Anomalies and Intraday Return Indonesia Stock Exchange

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Abstract

This research examined the anomalous Day of The Week Effect which are found in many developed and developing capital markets around the world, occurred in Indonesian capital market. Day of The Week Effect is a phenomenon on stock returns value that are influenced by the trading day. One example of Day of The Week Effect is Monday Effect, which is the stock return value declined or low value on Monday. The data population were Equity Indices which are listed in Indonesia Stock Exchange (IDX) during October 2012 to March 2013. The data which is primary data that obtained from the IDX, such as Jakarta Composite Index (JCI), BISNIS27, IDX30, and Srikehati. This research split the population data into two balanced data panel that are Q4 2012 (before trading hours regulation changed) and Q1 2013 (after trading hours regulation changed). The results indicate the occurrence of partially Monday Effect in Q4 2012 and partially Weekend Effect in Q1 2013 on the BEI. Test results proved that there is Day of the Week Effect and the day that influence the returns is not always the same and consistent. Monday, Tuesday, Wednesday, Thursday and Friday is alternately affect the return. In addition, the comparisons of return on Monday with another days are not always have large negative return differences and Monday is not always affect the return on each trading interval.

Keywords: Day of the week effect; Equity indices; Intraday return; Monday effect

Introduction

Damodaran [1] concluded that there was significance difference between Monday return and with the other days of the week return. Significant negative return usually occurs on Monday, while positive return occurring on the other days. Anomalies of the efficient market hypothesis is called Day of the Week Effect. Day of The Week Effect is a phenomenon that states the day of the trade affect stock returns and one common example of Day of The Week Effect is Monday Effect.

Monday Effect is an anomaly difference between Monday returns with the other days of the week in which the return is significantly negative or tend to the lowest compared to other trading days. Monday Effect term evolve and become more commonly known as the Weekend Effect. Weekend Effect is a phenomenon that indicates the Friday return will be higher or significantly positive than the other trading day, and on the contrary the Monday return will be lower or significantly negative than the other trading day.

The latest research on Day of the Week and Monday Effect in Indonesia conducted by Sumiyana in 2008 [2]. This research criticized Sumiyana [3] and Cahyaningdyah [4] that found evidence of Day of the Week and Monday Effect in IDX. Criticism focused on the test methods based on the returns of the trading session and non trading as a whole in the day [2]. Phenomenon research that associated with the return should be focused on intraday data, that the transactions based on real events every seconds continuously [5]. This concept has actually been proposed by Rogalski [6] who believes that the negative returns on Mondays only happen in 30 minutes early trade, and does not happen on the entire Monday. This suggests that the research Day of The Week Effect and Monday Effect should be using intraday data.

The analysis to what extent the trading day can affect stock returns become interesting to examine just because there were changes in trading hour regulation at the beginning of 2013. Based on the phenomenon of market anomalies, Day of the Week is a phenomenon which became the anomalies of the theory of efficient capital markets. According to this phenomenon, the daily average return is not the same for all days of the week, while according to theory efficient market stock returns would have no difference based on differences in the trading day. Thus the formulation of the problem in this research is:

1. Does trading day affect stock returns in IDX every 30 minutes on before and after the changes of trading hour regulation?
2. Does Monday Effect occurs in IDX every 30 minutes on before and after the changes of trading hour regulation?

Literature Review

According to Singal [7], the efficient market hypothesis have problems in implementations on the world practice. One of the problems are the cost of collection and analysis of information, cost information, and limited capital owned by the investor. All these factors can lead to market anomalies. Market anomalies cause markets to be inefficient so that the movement of stock prices can not be explained by asset pricing methods. Jones [8] defines anomalies as a technique or strategy to counter the market efficiently. If the existence of anomalies could provide consistently abnormal return on investors, the efficient market hypothesis can be debated. Anomalies is one of the phenomena that occur in the market, which was found things that should not be there if it is considered that an efficient market is really there.

In the stock market there is some tendency lowest returns occurred on Monday and then increased on other days. Other empirical evidence to prove that there is a pattern of daily trading activity on NYSE are conducted by individual investors, where the results showed that stock returns tend to be negative on Mondays than on other trading days . In line with these results , Kamaludin [9] found the Day of the Week Effect on the Jakarta Stock Exchange for the period 1999-2003 in which the lowest return occurs on Mondays and highest

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return on Friday. In contrast to the results of research Day Of The Week Effect performed by Nurhamedi, which stated that trading day significantly influence stock returns in the Jakarta Stock Exchange was a Wednesday and the other days did not show any significant effect. On Wednesday, the tendency has consistently generated returns higher than other days where it can be concluded that the highest return on the IDX occurred on Wednesday. Research phenomenon Day of The Week Effect was also done by Jaffe, Westerfield and Ma [10] in four countries, namely the UK, Canada, Japan and Australia. The results of this study found that the difference in returns anomaly in the four countries, with the smallest average return in the country of Japan and Australia took place on Tuesday. They also indicated that the return on Monday is affected by market conditions during the previous week. This hypothesis is also supported by the results of research of Abraham and Ikenberry [11] who found evidence that stock return patterns that occurred in the previous trading session will have consequences on the pattern of stock returns in the next session. Their study concludes that if stock returns negative on Friday, the stock return on Monday was also negative. Another research was conducted by Gibbsons and Hess [12] in Hotdiana aimed at testing the effect of trading day on stock returns. The research came to the conclusion that a low or negative stock returns occurred on Monday (Monday Effect).

Monday Effect is one part of the phenomenon Day of the Week Effect. Monday Effect is the difference between Monday's return to the other days of the week in which the Monday's return is significantly negative and tend lowest compared to the other trading days. The term Monday Effect evolve and become more commonly known as the Weekend Effect. Weekend Effect is a phenomenon that suggests the Friday's return will be higher or positive than the other trading day, otherwise the Monday's return will be lower than any other day or negative.

The first Monday Effect research is conducted by Fields in 1931 [13]. Emphasis to this phenomenon increased after the Cross [14] and French [15] bring forward the presence of abnormal stock returns and different during all weekend. A number of researchs then appeared to strengthen the Monday Effect phenomenon using a variety of time periods, stock returns of various indices, and different methods of measurement. Lakonishok and Maberly [16] and Abraham and Ikenberry [11] put forward that the Monday Effect related to the behavior of individual investors in doing the sale (selling). In their research, stated that more investors are doing selling transactions on Monday and causes the Monday Effect. This contention is supported by the opinion of Miller [17] that the negative returns on Monday caused due to two things, namely the uniqueness of the cost of each individual investor in evaluating their portfolio and information received by each individual investor from the broker. All investors need charge cost to collect information. The cost involved would be greater if the process of information gathering is done on weekdays (weekdays) as investors preoccupied with their activities. At the moment investors are delaying the process until the end of the week (weekend), so it will be more investors who do the selling at the beginning of the week.

Rogalski [6] found an interesting relationship between the January Effect and Monday Effect. The average Monday's return on January is positive, while the Monday's return on the other months are negative. This phenomenon approach about the interesting relationship between the degree of stock return anomalies on Monday with a particular month, where stock returns on Mondays are negative tend to disappear in a given month. This phenomenon then known as Rogalski Effect [6]. In addition Rogalski also stated that the value of a negative return on Monday only occur at the beginning of the trade (30 minutes of early trading), not the whole Monday. Return close-to-open on Monday (closing returns Friday to the opening Monday) more negative when compared with the return of close-to-close (Friday close to Monday close).

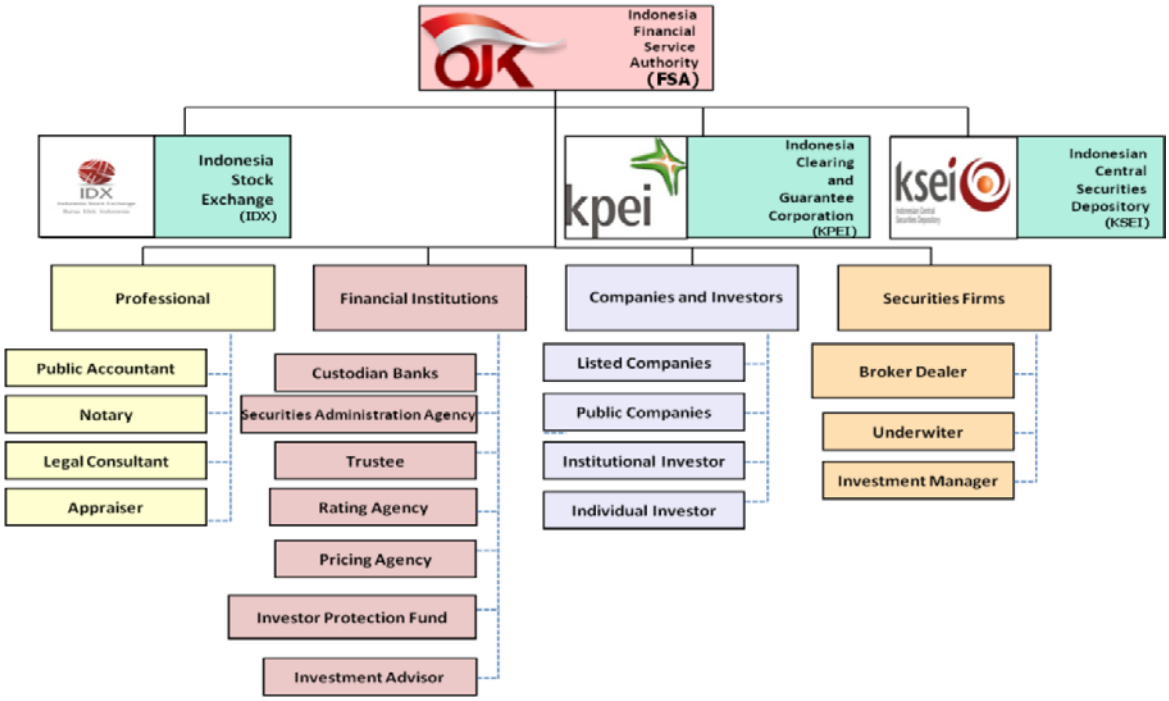
Wood, McInish, and Ord [18] stated that the average intraday return market pattern that resembles the letter U. This means that the highest average returns tend to occur at the beginning and end of the trading period. In that study they used NYSE data transaction period September 1971-February 1972 and 1982 along with the observation interval of 1 minute. The similar letter U pattern was also found by Jain and Joh [19] using data Standard and Poor's 500 in 1979 to 1983. They found that the greatest average return obtained in the first hour (except Monday) and the last one hour of trading. In contrast to previous studies, Cheung [20] did not find U-shaped pattern of the average intraday returns on the Hong Kong Stock Exchange (HSE). Cheung conducted research using data on the Hang Seng Index (HSI) from the period April 26, 1986 until December 31, 1990. The results of these studies stated that the market return increases by the time of the lunch break, higher than the return on the opening. The highest return increasing occurred before trading ended. This results also supported by Lam and Tong [21] who found that the tendency of the average return of HSI dropped dramatically in the first 10 minutes and increased at the end of trading. In contrast to the results of studies on the NYSE and HSE, Ding and Lau [22] found a U-shaped two-letter U pattern of intraday returns on Stock Exchange of Singapore (SES). First U occurred after the opening, returns tend to fall, then relatively flat, and rode back towards the lunch break. The second letter U occurs because the return back down after break hour, then leveled off, and climbed back towards the close. The study was conducted using the 15-minutes observation interval and transaction data period March 11, 1996 until July 1, 1996. All these researchs proved that markets with different structures can produce different patterns of intraday returns anyway .

Indonesian Capital Market Structure in 2013 consisted of Indonesia Financial Service Authority (IFSA), Indonesia Stock Exchange (IDX), Indonesia Clearing and Guarantee Corporation (KPEI), Indonesian Central Securities Depository (KSEI) [23], Professional, Financial Institutions, Companies and Investors, and Securities Firms (Figure 1).

Trading system which had been used in IDX is JATS (Jakarta Automated Trading System). Since March 2, 2009, IDX renew its system became JATS-NG which stands for Jakarta Automated Trading System-Next Generation [24-26]. There were some changes on schedule of trading hour regulation on the IDX in early 2013. Regulation changes in the trading hour refers to the Decree of the IDX No.Kep-00399/IDX/II-2012 concerning Amendment No. II-A of Equity Trading on November 14, 2012, and entered into force on January 2, 2013 (Tables 1-6).

Changes in trading hour intended to align trading time in IDX with other exchanges in the same region and provide additional time for investors who trade in the central and eastern part of Indonesia [24-26].

Return is the result obtained from the investment. Return can be a realization that has occurred and expectations that have not occurred but is expected to occur. Realized return is used as one measure of corporate performance and calculated based on historical data. Expected return is the return that is expected to be acquired by investors in the future. Stock return is the results obtained by calculating the difference between the investment share current period to the prior period by ignoring dividends [27]. Formulation of the return is as follows:



Source: Indonesia Stock Exchange (2013:17)

Figure 1: Indonesian Capital Market Structure.

Trading Session	Market	Before Changes	After Changes
Pre-Opening Session	Reguler	09.10.00 – 09.25.00	08.45.00 – 08.55.00
Closing price formation and allocation of the transaction at the Opening Session	Reguler	09.25.01 – 09.29.59	08.55.01 – 08.59.59
Session 1	Reguler, Cash, Negotiated	09.30.00 – 12.00.00 (Monday - Thursday) 09.30.00 – 11.30.00 (Friday)	09.00.00 – 12.00.00 (Monday - Thursday) 09.00.00 – 11.30.00 (Friday)
Session 2	Reguler	13.30.00 – 16.00.00 (Monday - Thursday) 14.00.00 – 16.00.00 (Friday)	13.30.00 – 15.49.59 (Monday - Thursday) 14.00.00 – 15.49.59 (Friday)
	Negotiated	13.30.00 – 16.00.00 (Monday - Thursday) 14.00.00 – 16.00.00 (Friday)	13.30.00 – 16.15.00 (Monday - Thursday) 14.00.00 – 16.15.00 (Friday)
Pre-Closing	Order Entry without allocation	--	15.50.00 – 16.00.00
Closing price formation and allocation of the transaction at the Closing Session		-	16.00.01 – 16.04.59
Post-Closing	Reguler	-	16.05.00 – 16.15.00

Source: Indonesia Stock Exchange (2013): 11, modified by the Author

Table 1: Summary Trading Hour Changes Before and After 2013.

$$R_{it} = \frac{P_{it} - P_{it-1}}{P_{it-1}} \quad \text{.....(1)}$$

Where:

R_{it}=Profit share i on interval t.

P_{it}=Stock price i on interval t.

P_{it-1}=Stock price i before interval t

The equation above shows that stock returns are influenced by stock prices. If the stock price goes up then the stock returns will go up and vice versa, if the stock price drops stock returns will fall. The stock price is the price that is formed from the interaction between buyers and sellers of stocks. Therefore, investors need information that related to the establishment of stock price when making trading decisions.

Methodology

Type of research methodology used was regression testing, and Analysis of Variances (ANOVA). Before performing data processing, researchers must first calculate the return on the stock price intraday data. After getting stock returns, researchers conducted descriptive statistic that will be used to see the return value of trade. In regression testing, researchers used Ordinary Least Square (OLS) with dummy variables to see the relationship between trading day and intraday return. Researchers used ANOVA to determine the differences in average return of between one day and the other trading days. From the data processing, researchers hope to have the results which can be analyzed to be a result of research [28].

Monday is the beginning of the trading day after the holiday weekend (non-trading day). With the holidays cause less stimulation

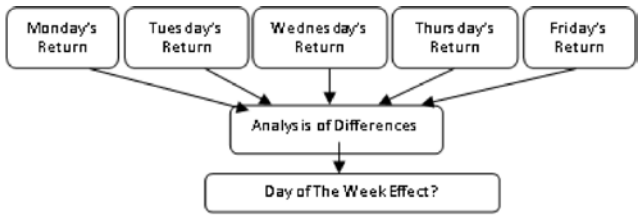
of the capital markets and low investor wishes to invest, so the market's performance will be low. The low return on Monday also arise because issuers companies delayed the announcement of bad news until Friday, which will be responded by the market on Monday [16]. There are two broad framework in this research:

- First, the researchers wanted to know whether trading day affect the return.
- Second, researchers wanted to know whether the stock returns on Mondays (or any other day) tend to produce negative returns (or positive) than the return of any other day.

Simply put, this research model is as follows, This research used primary raw data intraday price of some stock indices that obtained directly from the Stock Trading Division Indonesian Stock Exchange, which include: the date of the trade stock indices, the code of the stock indices, the time of the stock indices in trade transactions , the transaction value of the stock indices (Figure 2).

Stock indices sampling collection done by purposive sampling, which samples are taken comprised of issuers whose shares mostly liquid and have large market capitalization using intraday data price with a span of 30 minutes during stock trading session 1 and session session 2 [29]. The reasons for using intraday data because the processed 30 minutes price data is more accurate compared with the data processed daily interday return. Stock indices selection criteria in this research are the use of stock indices data representing the Indonesian capital market, IPOs forming component of the indices is not frequently changed and also have the full information price recorded during research. So the indices used in the study are: Jakarta Composite Index, BISNIS27, IDX30, SRIKEHATI.

Data type in this research is panel data or pooled panel data. Panel data have the same amount of time units for every type of individual, called balanced panel [29]. Ajija [30], citing Verbeek, Gujarati [29], and Aulia, states that the advantage possessed such panel data is not have to do the classic assumption test in panel data models. Also on the panel data multicollinearity problem does not arise because of combining cross section and time series data.



Source: Modified by the Author (2014)

Figure 2: Research Model.

Researchers chose the period of the data in this study were (Q4 2012) before and (Q1 2013) after trading hour regulations change, that is October to December 2012 for the period before trading hour changes and January to March 2013 for the period after trading hour changes. After taking into account various holiday, the number of trading days during the period Q4 2012 is 60 days, which consists of 12 Monday, 12 Tuesday, 13 Wednesday, 12 Thursday, 11 Friday. While the number of trading days in Q1 2013 were 60 days, consisting of 12 Monday, 11 Tuesday, 13 Wednesday, 12 Thursday, 12 Friday. Bellow is an overview illustration of the research interval (Figure 3).

Regression analysis is one of the analysis aimed to determine the effect of an independent variable on the dependent variable. If the regression equation there is only one independent variable and one dependent variable, it is called a simple regression equation, whereas if more than one independent variable, it is called a multiple regression equation [28]. In previous research, Abraham and Ikenbery [11] found that the overall average return Monday was negative and substantially consequence of the information posted in the previous session, or can be called as Monday Effect. Based on the statement formulated as follows hipotesis$_1$:

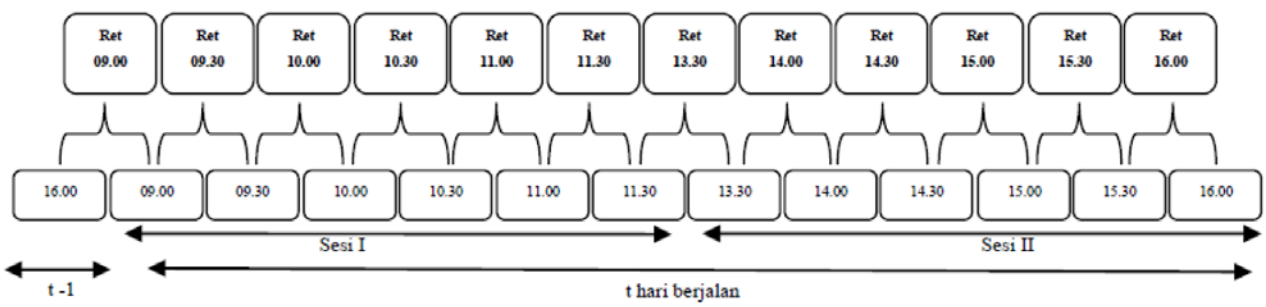
- H_1 : (β_n=0) Trading day does not affect the intraday returns.
- H_{1a} : ($\beta_n \neq 0$) Trading day affect the intraday returns.

To test the effect of trading day on stock returns, can be used multiple linear regression model with a dummy model as follows [11]:

$$r_t=\beta_1 D_1 + \beta_2 D_2 + \beta_3 D_3 + \beta_4 D_4 + \beta_5 D_5 + et \quad (2)$$

Where as:

- $r_{t=}$*return* in period *t*
- D_1=dummy variables for Monday. Value is 1 if Monday and 0 for the other.
- D_2=dummy variables for Tuesday. Value is 1 if Tuesday and 0 for the other.
- D_3=dummy variables for Wednesday. Value is 1 if Wednesday and 0 for the other.
- D_4=dummy variables for Thursday. Value is 1 if Thursday and



Source: Modified by the Author (2014)

Figure 3: Illustration of Interval Research.

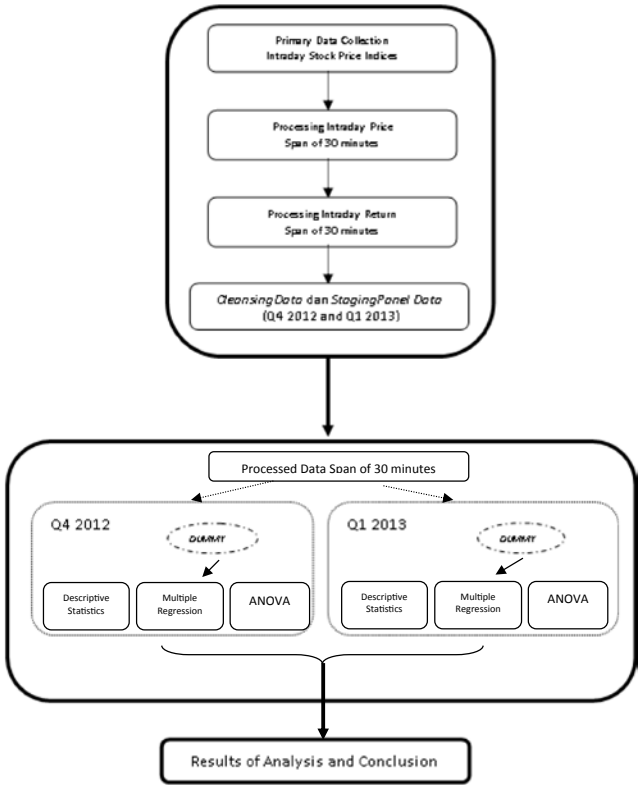
0 for the other.

- D_5=dummy variables for Friday. Value is 1 if Friday and 0 for the other.
- *et*=error-term.
- β1-β5 is the coefficient for the dummy variables regression results Monday through Friday. Regression coefficient indicates the magnitude of the average return of each stock on the trading day.

Regression test is done with a model without constants. It is used to eliminate the influence of multicollinearity variance [29].

Analysis of variance is used in researchs that involves a lot of comparative testing that test the dependent variable by comparing it to the observerd groups of independent variables. Single classification analysis of variance or one-way ANOVA was used to test the hypothesis of comparative average k samples [31]. So as to examine whether the Monday Effect occurs, was done by testing hipotesis$_2$:

- H_2=There is no difference between the average intraday return one day trade with other trading days. Mean between groups are same. ($\mu_{Senin}=\mu_{Selasa}=\mu_{Rabu}=\mu_{Kamis}=\mu_{Jumat}$).
- H_{2a}=There are differences between the average intraday return one day trade with other trading days (anomaly Day of the Week Effect occurred, as Monday Effect). Mean between groups are different.



Source: Modified by the Author (2014)

Figure 4: Stage of Research.

ANOVA testing followed by analyzing at the results of the mean differences between groups that have significant value with using Post Hoc Tukey Honestly Significant Difference (HSD) analysis. Tukey HSD was performed after the analysis of the data collected and tested [28].

Phases of this research are as follows (Figure 4)

Stages of research:

1. Primary data processing stock indices (JCI, BISNIS27, IDX30, Srikehati), the intraday prices processed becomes intraday returns so there are 12 pieces for each interval group stock indices.
2. Perform the data cleansing and panel data staging. Clean the data and discard holidays. Classify the big data into 2 panel intraday returns event study, namely: before trading hour changes (Q4 2012) and after trading hour changes (Q1 2013).
3. Conduct descriptive statistics analysis per index, multiple regression analysis with dummy on every panel with Eviews6, ANOVA analysis on every panel with SPSS20.
4. Drawing conclusion.

Empirical Results

Before performing any further analysis, descriptive statistics will be displayed on each stock indices (JCI, BISNIS27, IDX30, Srikehati) with a span of 30 minutes intervals on every panel (Q4 2012 and Q1 2013).

Descriptive statistics for each stock indices showed variety of results (Tables 2-5), namely:

- The lowest mean of return with a span of 30 minutes in the period Q4 2012 is at time interval 14:00 with the mean value for JCI (-0.00072100), BISNIS27 (-0.00092200), IDX30 (-0.00089100) , SRIKEHATI (-0.00098300). Similarly, in the period Q1 2013 the lowest is also at time interval 14:00 with mean value for the JCI (-0.00035500), BISNIS27 (-0.00067000), IDX30 (-0.00059000), SRIKEHATI (-0.00054300).
- The highest mean of return with a span of 30 minutes in the period Q4 2012 is at time interval 16.00 with the mean value for JCI (0.00248900), BISNIS27 (0.00274500), IDX30 (0.00267600), SRIKEHATI (0.00269900). While, in the period Q1 2013 the highest is at time interval 09.00 with the mean value for JCI (0.00252200), BISNIS27 (0.00336100), IDX30 (0.00316000), SRIKEHATI (0.00314000).
- The median, maximum, minimum, standard deviation, skewness, kurtosis, and the sum is attached in a row after the mean. The number of observations used on each stock indices is same.

Information will be reflected in the stock price [32]. Price at any time is a reflection of public information, but not necessarily a reflection of the specific information. Specific information will be gradually transformed into public information [33].

Researchers found in the time interval 09.00 or opening interval when the market opened for trading, the market will continue to represent the information circulated from yesterday afternoon until after the market closed into the next morning shortly before the market opened. The process of price formation occurs because the information that accumulated in the previous day, to be followed up by new

	2012 Return 0930?	2012 Return 1000?	2012 Return 1030?	2012 Return 1100?	2012 Return 1130?	2012 Return 1330?	2012 Return 1400?	2012 Return 1430?	2012 Return 1500?	2012 Return 1530?	2012 Return 1600?	2013 Return 0900?	2013 Return 0930?	2013 Return 1000?	2013 Return 1030?	2013 Return 1100?	2013 Return 1130?	2013 Return 1330?	2013 Return 1400?	2013 Return 1430?	2013 Return 1500?	2013 Return 1530?	2013 Return 1600?
Mean	1.21E-05	-0.00017	-0.00035	-0.00049	-9.32E-05	0.000248	-0.00072	-0.00035	-0.00027	4.77E-06	0.002489	0.002522	0.000482	-0.00013	-7.52E-05	-0.00013	-0.00035	0.000311	-0.00045	-0.00036	-0.00012	-0.00029	0.000818
Median	0.000238	-1.35E-05	-0.00037	-0.00057	-0.00024	0.000113	-0.00071	-0.00026	-0.0003	0.000121	0.002354	0.002563	0.000495	-0.00017	-0.00029	-0.00013	-0.00032	9.99E-06	-0.00034	-4.40E-05	-0.00026	-0.00026	0.000847
Maximum	0.004523	0.005561	0.003436	0.002412	0.00342	0.002592	0.001506	0.00179	0.001448	0.002564	0.006485	0.011256	0.006075	0.00278	0.003927	0.004248	0.002673	0.002883	0.003075	0.002632	0.002612	0.002593	0.006698
Minimum	-0.00855	-0.00611	-0.00481	-0.00357	-0.00286	-0.00224	-0.00443	-0.00432	-0.00358	-0.00473	-0.00089	-0.00376	-0.0052	-0.00293	-0.00274	-0.00571	-0.00427	-0.00266	-0.00423	-0.0046	-0.00653	-0.00298	-0.00718
Std. Dev.	0.002722	0.002419	0.00156	0.001222	0.001252	0.000921	0.001142	0.00106	0.000953	0.001289	0.001657	0.002751	0.001934	0.001443	0.001448	0.001607	0.001159	0.000941	0.001303	0.00137	0.001305	0.001234	0.00257
Skewness	-0.86916	-0.24528	-0.08394	-0.01639	0.25981	-0.11867	-0.51409	-0.89837	-0.77188	-0.76832	0.161586	0.349728	0.239379	0.123443	0.694507	-0.97872	-0.39577	0.431669	-0.0294	-0.87666	-1.83858	-0.04527	-0.30871
Kurtosis	3.959206	2.939981	3.832546	3.436428	3.20541	4.056086	3.986826	4.829303	4.219655	4.828621	2.213223	3.663726	4.038092	2.47668	3.510584	6.275255	4.611801	4.738911	4.151199	3.930185	11.20376	2.625355	3.626285
Jarque-Bera	9.854566	0.610616	1.803299	0.478861	0.780498	2.929108	5.077493	16.43651	9.676926	14.26281	1.808645	2.324428	3.267107	0.837039	5.475141	36.39719	8.061104	9.422908	3.321792	9.848468	202.058	0.371388	1.933571
Probability	0.007246	0.736896	0.4059	0.787076	0.676888	0.231181	0.078965	0.00027	0.007919	0.0008	0.404816	0.312793	0.195235	0.65802	0.064727	0	0.017765	0.008992	0.189969	0.007268	0	0.830528	0.380304
Sum	0.000727	-0.01037	-0.0208	-0.02922	-0.00559	0.014904	-0.04326	-0.02099	-0.01643	0.000286	0.149333	0.151344	0.02891	-0.00783	-0.00451	-0.00778	-0.02089	0.018649	-0.02671	-0.0213	-0.00723	-0.01735	0.049101
Sum Sq. Dev.	0.000437	0.000345	0.000144	8.81E-05	9.24E-05	5.01E-05	7.70E-05	6.64E-05	5.36E-05	9.80E-05	0.000162	0.000446	0.000221	0.000123	0.000124	0.000152	7.92E-05	5.23E-05	0.0001	0.000111	0.0001	8.99E-05	0.00039
Observations	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
Cross sections	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Source: Modified by the Author (2014)

Table 2: Descriptive Statistic JCI Q4 2012 and Q1 2013.

	2012 Return 0930?	2012 Return 1000?	2012 Return 1030?	2012 Return 1100?	2012 Return 1130?	2012 Return 1330?	2012 Return 1400?	2012 Return 1430?	2012 Return 1500?	2012 Return 1530?	2012 Return 1600?	2013 Return 0900?	2013 Return 0930?	2013 Return 1000?	2013 Return 1030?	2013 Return 1100?	2013 Return 1130?	2013 Return 1330?	2013 Return 1400?	2013 Return 1430?	2013 Return 1500?	2013 Return 1530?	2013 Return 1600?
Mean	-0.00042	7.66E-05	-0.00027	-0.00056	-7.96E-05	0.000438	-0.00092	-0.00032	-0.00041	0.000217	0.002745	0.003361	-8.02E-05	-0.00032	0.000177	-2.08E-05	-0.00034	0.000533	-0.00067	-0.00036	-0.0001	-0.00018	0.000361
Median	0.000471	0.000369	2.84E-05	-0.00067	-8.63E-05	0.000127	-0.00071	-0.00022	-0.00024	0.000455	0.002356	0.003337	-3.05E-05	-0.00046	1.46E-05	-8.27E-05	-0.00027	0.000141	-0.00046	-4.11E-05	-3.51E-05	-0.00013	0.000305
Maximum	0.006282	0.007525	0.004574	0.004331	0.004754	0.003764	0.00232	0.002946	0.001714	0.003874	0.009209	0.014358	0.007755	0.004452	0.007123	0.005605	0.003523	0.004561	0.003963	0.002509	0.002949	0.004275	0.011547
Minimum	-0.01322	-0.0062	-0.00664	-0.00466	-0.00453	-0.00268	-0.00578	-0.0046	-0.00449	-0.00577	-0.00282	-0.00479	-0.00589	-0.00599	-0.00371	-0.00514	-0.00467	-0.00352	-0.00626	-0.0045	-0.00692	-0.00379	-0.01316
Std. Dev.	0.004061	0.003038	0.002199	0.001766	0.001821	0.001365	0.001635	0.00151	0.00136	0.001825	0.002444	0.003881	0.002823	0.00196	0.002105	0.001825	0.001459	0.001315	0.001806	0.001648	0.00167	0.001708	0.003997
Skewness	-1.19734	-0.11328	-0.39862	0.246529	0.079132	0.261966	-0.63325	-0.33709	-0.66752	-0.44162	0.358664	0.269735	0.302716	-0.01414	0.707655	0.14667	-0.11017	0.512981	-0.0652	-0.70752	-1.09219	-0.03634	-0.35768
Kurtosis	4.596268	2.665257	3.564084	3.147037	3.562934	3.215987	3.826796	2.884165	3.213717	3.505998	2.89203	3.182891	2.783278	3.438653	4.195662	4.301341	3.88693	4.677327	3.810581	3.005544	6.203981	2.922474	4.609432
Jarque-Bera	20.70645	0.408444	2.384443	0.661814	0.854857	0.80289	5.719029	1.169841	4.569979	2.59033	1.315542	0.811191	1.03379	0.483039	8.58177	4.448843	2.08798	9.665055	1.68512	5.005853	37.59247	0.028229	7.755005
Probability	0.000032	0.815282	0.303546	0.718272	0.652184	0.669352	0.057297	0.55715	0.101775	0.273853	0.518005	0.66658	0.596369	0.785433	0.013693	0.10813	0.352047	0.007966	0.430607	0.081845	0	0.985985	0.020702
Sum	-0.02518	0.004596	-0.01629	-0.03351	-0.00478	0.026251	-0.05532	-0.01933	-0.02481	0.01305	0.16471	0.201661	-0.00481	-0.0191	0.010606	-0.00125	-0.02044	0.032001	-0.04023	-0.02147	-0.00602	-0.01053	0.02164
Sum Sq. Dev.	0.000973	0.000544	0.000285	0.000184	0.000196	0.00011	0.000158	0.000135	0.000109	0.000196	0.000352	0.000889	0.00047	0.000227	0.000261	0.000196	0.000126	0.000102	0.000192	0.00016	0.000165	0.000172	0.000943
Observations	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
Cross sections	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Source: Modified by the Author (2014)

Table 3: Descriptive Statistic BISNIS27 Q4 2012 and Q1 2013.

	2012 Return 0930?	2012 Return 1000?	2012 Return 1030?	2012 Return 1100?	2012 Return 1130?	2012 Return 1330?	2012 Return 1400?	2012 Return 1430?	2012 Return 1500?	2012 Return 1530?	2012 Return 1600?	2013 Return 0900?	2013 Return 0930?	2013 Return 1000?	2013 Return 1030?	2013 Return 1100?	2013 Return 1130?	2013 Return 1330?	2013 Return 1400?	2013 Return 1430?	2013 Return 1500?	2013 Return 1530?	2013 Return 1600?
Mean	-0.00053	4.52E-05	-0.0002	-0.00056	-9.59E-05	0.000349	-0.00089	-0.00027	-0.00034	8.96E-05	0.002676	0.00316	-4.36E-05	-0.00033	-4.73E-05	3.94E-06	-0.00036	0.000488	-0.00059	-0.00026	-6.53E-05	-0.00022	0.000441
Median	2.72E-06	-1.58E-05	-2.92E-05	-0.00073	-0.00012	0	-0.00086	-7.09E-05	-0.0003	0.000172	0.002541	0.003106	4.66E-05	-0.00033	-0.00022	-5.04E-05	-0.00033	1.56E-05	-0.0005	-5.02E-06	-0.00019	-8.15E-05	0.00067
Maximum	0.006107	0.007355	0.005336	0.004386	0.004889	0.003696	0.002358	0.002514	0.001811	0.003544	0.008327	0.014215	0.006933	0.004068	0.005737	0.004607	0.003306	0.004098	0.004562	0.00263	0.003253	0.004774	0.010674
Minimum	-0.01216	-0.0074	-0.00607	-0.00458	-0.004	-0.00276	-0.00542	-0.00424	-0.00367	-0.00549	-0.00222	-0.0048	-0.00633	-0.00576	-0.00342	-0.00511	-0.00407	-0.00326	-0.00604	-0.00435	-0.00731	-0.0039	-0.01194
Std. Dev.	0.004041	0.002954	0.002072	0.001729	0.001709	0.001258	0.001503	0.001413	0.00122	0.001792	0.002436	0.003683	0.002713	0.001986	0.001938	0.001676	0.001327	0.001303	0.001734	0.001641	0.001644	0.001642	0.003744
Skewness	-0.92699	-0.11953	-0.11584	0.12577	0.18627	0.276522	-0.47636	-0.40859	-0.53804	-0.52211	0.26583	0.288247	0.180272	-0.02603	0.862892	-0.27899	0.122209	0.709543	0.030469	-0.62656	-1.35986	0.038927	-0.4282
Kurtosis	3.836914	2.989827	3.764976	3.42655	3.641361	3.413679	3.689876	2.823197	3.019355	3.192247	2.500184	3.324974	2.848083	3.08984	4.288296	4.167634	4.144584	4.453862	4.245898	2.974025	8.12685	3.423138	4.234908
Jarque-Bera	10.34425	0.143123	1.597164	0.613043	1.375325	1.192471	3.459035	1.747577	2.895771	2.81836	1.331193	1.094885	0.382676	0.026951	11.59509	4.186775	3.424531	10.3188	3.889938	3.927458	84.20372	0.462767	5.646058
Probability	0.005673	0.930939	0.449966	0.736003	0.50275	0.550882	0.17737	0.417367	0.235067	0.244344	0.513967	0.578427	0.825853	0.986615	0.003035	0.123269	0.180456	0.005745	0.142992	0.140334	0	0.793435	0.059426
Sum	-0.03167	0.002711	-0.01174	-0.03363	-0.00576	0.020912	-0.05346	-0.01628	-0.0206	0.005379	0.160534	0.189583	-0.00262	-0.01951	-0.00284	0.000237	-0.02134	0.029294	-0.03543	-0.01534	-0.00392	-0.01337	0.026446
Sum Sq. Dev.	0.000964	0.000515	0.000253	0.000176	0.000172	9.33E-05	0.000133	0.000118	8.78E-05	0.00019	0.00035	0.0008	0.000434	0.000233	0.000222	0.000166	0.000104	0.0001	0.000177	0.000159	0.000159	0.000159	0.000827
Observations	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
Cross sections	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Source: Modified by the Author (2014)

Table 4: Descriptive Statistic IDX30 Q4 2012 and Q1 2013.

	2012 Return 0930?	2012 Return 1000?	2012 Return 1030?	2012 Return 1100?	2012 Return 1130?	2012 Return 1330?	2012 Return 1400?	2012 Return 1430?	2012 Return 1500?	2012 Return 1530?	2012 Return 1600?	2013 Return 0900?	2013 Return 0930?	2013 Return 1000?	2013 Return 1030?	2013 Return 1100?	2013 Return 1130?	2013 Return 1330?	2013 Return 1400?	2013 Return 1430?	2013 Return 1500?	2013 Return 1530?	2013 Return 1600?
Mean	-0.00053	-7.82E-05	-0.00026	-0.00049	-7.29E-05	0.000412	-0.00098	-0.00023	-0.00035	4.49E-05	0.002699	0.00314	-7.27E-05	-0.00035	0.000106	-4.02E-05	-0.00031	0.000626	-0.00054	-0.00029	-0.00015	-0.00011	0.000346
Median	-7.98E-05	0.000119	-7.57E-05	-0.00085	-0.00012	0	-0.00097	7.02E-05	-0.00019	0.000367	0.002429	0.003303	-7.64E-05	-0.0006	-0.00021	-0.00012	-0.0003	0.00011	-0.00033	4.01E-06	-0.00016	-9.81E-05	0.000551
Maximum	0.006689	0.006904	0.004573	0.004975	0.005034	0.003684	0.002442	0.002512	0.002239	0.00369	0.00949	0.01374	0.007463	0.004652	0.006834	0.005228	0.003909	0.00464	0.004829	0.003143	0.003518	0.004427	0.011137
Minimum	-0.01333	-0.00686	-0.00807	-0.00433	-0.00426	-0.00317	-0.00575	-0.00428	-0.00424	-0.00613	-0.00265	-0.00449	-0.00606	-0.0063	-0.0039	-0.00526	-0.00501	-0.00364	-0.00552	-0.0042	-0.00727	-0.00387	-0.01467
Std. Dev.	0.004056	0.002977	0.00225	0.001836	0.001784	0.001355	0.001579	0.001495	0.001359	0.001929	0.002663	0.003833	0.002791	0.002028	0.001994	0.001809	0.001463	0.001412	0.001782	0.001622	0.001708	0.001634	0.004143
Skewness	-0.9729	-0.08853	-0.64713	0.385537	0.067672	0.249718	-0.42654	-0.4366	-0.5532	-0.60539	0.471534	0.296124	0.243013	0.042372	0.735366	-0.06088	-0.08619	0.64154	0.176894	-0.44542	-1.05411	0.090529	-0.65881
Kurtosis	4.222906	2.627531	4.737964	3.529429	3.875293	3.451919	3.575286	2.793452	3.188759	3.317037	2.767239	3.073549	2.84359	3.425452	4.315629	4.135273	4.883684	4.684442	3.796055	2.885256	6.815343	3.100841	4.89504
Jarque-Bera	13.2041	0.425208	11.73901	2.187122	1.96114	1.13417	2.646743	2.01287	3.149338	3.916199	2.358885	0.890416	0.651714	0.470478	9.734829	3.259167	8.944953	11.2091	1.897173	2.016862	47.50354	0.107376	13.31828
Probability	0.001358	0.808476	0.002824	0.335021	0.375097	0.567176	0.266236	0.36552	0.207076	0.141126	0.30745	0.640691	0.721909	0.790382	0.007693	0.196011	0.011419	0.003681	0.387288	0.364791	0	0.947728	0.001282
Sum	-0.03198	-0.00469	-0.01548	-0.02956	-0.00438	0.024716	-0.05897	-0.01395	-0.02069	0.002694	0.16194	0.188429	-0.00436	-0.02097	0.006383	-0.00241	-0.01866	0.037542	-0.03255	-0.01723	-0.00913	-0.00667	0.020774
Sum Sq. Dev.	0.00097	0.000523	0.000299	0.000199	0.000188	0.000108	0.000147	0.000132	0.000109	0.000219	0.000418	0.000867	0.000459	0.000243	0.000235	0.000193	0.000126	0.000118	0.000187	0.000155	0.000172	0.000158	0.001012
Observations	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
Cross sections	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Source: Modified by the Author (2014)

Table 5: Descriptive Statistic SRIKEHATI Q4 2012 and Q1 2013.

market participants at the start of operation [34,35], where it affects the intraday return on early trading. From the results of descriptive statistic on the IDX above, found that the mean of intraday return at time interval 09:00 valued higher than other intervals and then tend to move downhill. Based on the results of focus group discussions and interviews, the opening interval is the start of the battle between the rational and irrational agents. Generally in the morning tends to be crowded market, especially after investors saw significant movement in the regional market is closing Dow Jones in the morning and opening in Singapore and Hong Kong markets. Besides the characteristics of traders that are likely to buy a particular stock in the morning (around 09:00 to 10:00) and in the late afternoon (around 15:00 to 16:00) traders tend to take off/take profit shares. For the market condition in 2013, where the market tends to be bearish for the action of the Fed and the value of IDR weakened, so that whatever is purchased in early trade tends to decline at the end of the trading session.

As for time interval 14:00, when it shows the market conditions after lunch break when occur the dissemination of information and rumors such as lunch meetings, meetings of investors and issuers, and other information distribution activities in which the decision was made when the market was still closed and the results of such information is likely to be reflected when reopening the market interval, ie 13:30 and 14:00. From the results of descriptive statistic on the IDX above found the mean time interval 14:00 intraday returns are less than other interval after the lunch break, the return value of intraday is moving down. Based on the results of focus group discussions and interviews, at 14:00 interval period many brokers are still resting, more focused on administrative activities such as filling out job (shaped form), and they are preparing to make trades when approaching the final hour of trading. Traders and brokers to trade around the clock waiting for 15.00 to 16:00 where market conditions are already closing in Asia such as Japan, the European markets open and they tend to see the movement of the Dow Jones Future. From the FGD and interview also mentions that the active trader on 14:00 is a trader who immediately took off his portfolio, which is due cutloss or in need of money. So that it can push the indices down. Most types of Indonesia traders is a one-day trader, where there is a turning point at the beginning of second session. If the conditions in the morning session tends to go down, then the trader will tend to do cutloss.

At 16:00 or when the market closes trading interval, the descriptive statistics on the IDX showed that mean intraday returns peaked or are likely to move up. Researchers speculate that the increasing in returns due to interest investment managers often use the closing price of the end of the day to assess the assets in their portfolios so they tend raise the stock price at the close of trading portfolios. Price increases ahead of the close of trading is also supported by Miller [17] who argued that the end of the day at 16.00 effects caused by actions to maintain continuity specialist or keep the price close to the opening price and not much different from the previous day's closing price. In addition, the FGD and interview mentions that most large order book tends to occur near close of the session. Because traders tend to waiting see the state and towards the close of trading the new lot. Shortfall implementation occurs where everyone wants to get the best price and best volume but there is closing time pressure and the broker must do the order book on the market.

According to the central limit theory, the minimum requirement for the number of data to do regression is 30. Although not necessary doing the classic assumption test because using panel data intraday returns but first researchers conduct testing to determine the feasibility

Q4 before																									
	9:30		10:00		10:30		11:00		11:30		13:30		14:00		14:30		15:00		15:30		16:00	
Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
DSENIN?	-0.00215	**0.0001**	-0.00037	0.364	0.000566	**0.0465**	-0.00113	**0.0000**	-0.00013	0.5776	-0.00135	**0.0000**	-0.00135	**0.000**	-0.00014	0.4603	-0.00103	**0.0000**	-8.28E-05	0.7395	0.003427	**0.000**
DSELASA?	0.000968	0.0674	0.000805	**0.0495**	-0.00124	**0.0000**	0.000253	0.2668	-0.00065	**0.0065**	-0.00113	**0.0000**	-0.00113	**0.000**	-0.00068	**0.0005**	-0.00029	0.0887	-0.00015	0.5351	0.002455	**0.000**
DRABU?	-0.00059	0.2438	-0.00018	0.6525	-0.00011	0.6932	-0.00014	0.5107	0.000135	0.552	-0.00137	**0.0000**	-0.00137	**0.000**	0.000148	0.4261	-0.0002	0.2199	0.000324	0.1757	0.002434	**0.000**
DKAMIS?	-0.00075	0.1539	-0.00054	0.1905	-0.00029	0.3011	-0.0008	**0.0006**	0.000211	0.3718	-0.00084	**0.0000**	-0.00084	**0.000**	-0.00015	0.4379	1.40E-06	0.9934	0.000161	0.5175	0.002681	**0.000**
DJUMAT?	0.00061	0.2693	0.000143	0.7378	-0.00028	0.3418	-0.00087	**0.0003**	-6.55E-06	0.9788			0.000445	**0.027**	-0.00071	**0.0005**	-0.0002	0.273	0.000186	0.4742	0.002249	**0.000**

Source: Modified by the Author (2014)

Table 6: Regression *Coefficient* and *Prob. t* on Panel Data Q4 2012.

Q4 before																						
	9:00		9:30		10:00		10:30		11:00		11:30		13:30		14:00		14:30		15:00		15:30		16:00	
Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
DSENIN?	0.00353	**0.0000**	-0.00076	0.0346	4.54E-05	**0.8656**	-0.00036	**0.1722**	-0.00025	0.3165	-0.00018	**0.340**	9.76E-05	**0.6172**	-0.00111	0.000	-0.00095	**0.000**	0.000179	0.4266	-5.25E-04	0.0189	0.001752	0.001
DSELASA?	0.001685	0.0014	-4.93E-05	**0.8945**	-0.00023	**0.4200**	-0.00055	0.0480	-0.00036	**0.1623**	-0.00022	**0.273**	0.000645	**0.0018**	-0.00022	**0.361**	0.000134	0.543	0.000212	0.3673	0.000227	0.330	0.000177	0.736
DRABU?	0.00427	0.0000	-0.00039	0.2603	-0.00058	0.0255	0.000514	0.0433	0.000115	0.6318	-0.00029	**0.1184**	0.00083	**0.0000**	-0.00065	0.003	-0.00055	0.007	0.000115	0.5936	-0.00018	0.4064	0.001541	0.002
DKAMIS?	0.002076	0.0000	-0.00014	0.7036	-8.40E-05	0.7546	-0.00024	**0.3566**	4.98E-05	0.8415	-0.00086	**0.000**	0.00086	**0.0000**	-0.00104	0.000	0.000619	0.0037	-6.39E-04	0.0048	-0.00055	0.0136	0.000478	0.341
DJUMAT?	0.003453	0.0000	0.001709	0.0000	-0.00053	0.0491	0.000749	**0.0048**	0.000176	0.4797	-1.30E-04	0.501			0.000254	**0.2708**	-0.00077	0.0003	-0.00041	0.0717	6.42E-05	0.7729	-0.00161	0.002

Source: Modified by the Author (2014)

Table 7: Regression *Coefficient* and *Prob. t* on Panel Data Q1 2013.

of stationary regression models that used. The data must be stationary to reduce the impact of autocorrelation and heteroscedasticity [28]. Stationarity of data tested using the Augmented Dickey Fuller test (ADF) Choi Z-stat. Regression testing conducted in this study with the model without constants. It aims to eliminate the influence of multicollinearity variance. Below is a Table of the results of the panel data regression in both the periods (Table 6).

From the Table above, can be seen that the period Q4 2012 interval 13:30, 14:00 and 16:00; Monday (where the value of the coefficient tends to have the largest contribution), Tuesday, Wednesday, Thursday, and Friday significantly affect returns. All trading days affect the returns on intervals 13:30, 14:00 and 16:00 (Table 7).

From the Table above, can be seen that the period Q1 2013 interval 09.00; Monday, Tuesday, Wednesday (where the value of the coefficient tends to have the largest contribution), Thursday, and Friday significantly affect returns. All trading days affect the returns on the trading day interval 09:00 (Table 8).

Before performing one way ANOVA test, must be done first assumption, namely: the data sample comes from an independent group and inter-group variance should be homogeneous. Assumption of independent test met when the time sampling is done at random on several independent groups, where the value in one group does not depend on the value of another group. Testing of homogeneous variance were performed using Levene Statistic criteria:

- If Levene Statistic >α (α=0.05000000), then the variance between groups homogeneous and ANOVA test done with F test
- If Levene Statistic <α (α=0.05000000), then the variance between groups is not homogeneous and ANOVA test done with the Brown-Forsythe test.

Below is a Table of the results of Levene Statistic and ANOVA Significant values in both the data panel (Table 8).

From the experimental results above, there are 6 groups of interval period Q4 2012 and 8 group interval 2013 where there were mean difference or Day of the Week Effect (Table 9). After that, the research was continued by looking at the results of the mean difference between groups that have significant value by using analysis of Post Hoc Tukey Honestly Significant Difference (HSD). It aims to examine all pairwise comparisons between groups that statistically significant only. Here is a summary Table of the results of the Tukey HSD Post Hoc test at intervals of 14 groups (Table 10).

From the Post Hoc Tukey HSD results in both periods was found that:

- At intervals of 09:30, Monday's return is always lower than Friday and Friday's returns tend to be higher than the other (partially occurred Monday and the Weekend Effect Effect) (Table 11).
- At intervals of 10.30, Tuesday's return is always lower than Wednesday and tend to be smaller than other trading days (Tuesday partially occurred Effect). Another interesting point is that the interval was found that the return is always higher on Wednesday than on Tuesday (where the mean difference between groups is large enough).
- At intervals of 14:00, Monday's return is always lower than Friday, Wednesday's return is always lower than the Friday and return on Thursday is always lower than Friday. Fridays's return tend to be higher than the other

Although there is no definite similar return patterns obtained between groups and the results of the trading day Tukey HSD Post Hoc Tests on each trading period and interval, but from the results shows the tendency of decrease in the return or low return on Monday (or earlier in the week) compared other trading days and increase return or high return on Fridays (or weekends) compared to other trading days. Researchers think there is tendency to be partially Monday Effect in Q4 2012 and partially Weekend Effect in Q1 2013.

The advantages of information asymmetry occurs on Monday due to result of 2 days off Saturday and Sunday. However, the more the value of this information superiority has declined because every day there is always a partial publication and dissemination of such information. The low return on Monday indicated that more sell than buy. Thus there is a surplus sell on Monday. Individual investors tend to be sellers, while institutional investors are just beginning to plan his weekly investment strategy and not make deal on Monday or early Sunday. This led to the return on Monday or early the week tend to be negative or move down. In other words, more individual investors than institutional investors transact and demand for sell more dominating on Monday. It is also supported by data on the number of investors and descriptive statistics which obtained from Indonesian Central Securities Depository. Below is a Table of the number of investors and their descriptive statistics.

From the Table above, can be seen that the number of investors registered in Indonesian Central Securities Depository per 30 April 2013 as many as 202 996 investors, which consists of 96.5% and 3.5% local investors foreign investors (Table 11a). The number of total asset value of shares listed on Indonesian Central Securities Depository as

	9:30	10:00	10:30	11:00	11:30	13:30	14:00	14:30	15:00	15:30	16:00
Levene Statistic	0.018	0.025	0.431	0.051	0.036	0.000	0.001	0.002	0.063	0.000	0.022
Jenis ANOVA	BROWN	BROWN	F ANOVA	F ANOVA	BROWN	BROWN	BROWN	BROWN	F ANOVA	BROWN	BROWN
Sig. ANOVA	**0.000**	0.155	**0.000**	**0.000**	0.084	0.147	**0.000**	**0.006**	**0.000**	0.620	0.107

Source: Modified by the Author (2014)

Table 8: Levene Statistic result, ANOVA and significance of ANOVA Data Panel Q4 2012.

	9:00	9:30	10:00	10:30	11:00	11:30	13:30	14:00	14:30	15:00	15:30	16:00
Levene Statistic	0.0000	0.0020	0.0040	0.0000	0.0000	0.0000	0.0570	0.0000	0.0000	0.0560	0.2090	0.0000
Jenis ANOVA	BROWN	BROWN	BROWN	BROWN	BROWN	BROWN	F ANOVA	BROWN	BROWN	F ANOVA	F ANOVA	BROWN
Sig. ANOVA	**0.0010**	**0.0000**	0.3800	**0.0010**	0.4670	0.0530	**0.0210**	**0.0000**	**0.0000**	**0.0200**	0.0540	**0.0000**

Source: Modified by the Author (2014)

Table 9: *Levene Statistic* result, ANOVA and significance of ANOVA Data Panel Q1 201.

(*I*) Hari	(*J*) Hari	Q4 2012-09.30		Q4 2012-10.30		Q4 2012-11.00		Q4 2012-14.00		Q4 2012-14.30		Q4 2012-15.00	
		Mean Difference (I-J)	Signifikan	*Mean Difference (I-J)*	Signifikan	*Mean Difference (I-J)*	Signifikan	*Mean Difference (I-J)*	Signifikan	*Mean Difference (I-J)*	Signifikan	*Mean Difference (I-J)*	Signifikan
Senin	Selasa	-0,00311513	**0,00100000**	0,00180482	**0,00000000**	-0,00138218	**0,00000000**	-0,00021595	0,93100000	0,00053850	0,28700000	-0,00073775	**0,02100000**
	Rabu	-0,00155509	0,23300000	0,00067322	0,42500000	-0,00098460	**0,01700000**	0,00001670	100,000,000	-0,00029187	0,81400000	-0,00082790	**0,00500000**
	Kamis	-0,00139282	0,36000000	0,00085889	0,20300000	-0,00033336	0,83900000	-0,00050862	0,33200000	0,00000727	100,000,000	-0,00103132	**0,00000000**
	Jumat	-0,00275623	**0,00400000**	0,00084722	0,23600000	-0,00025976	0,93400000	-0,00179477	**0,00000000**	0,00057092	0,25200000	-0,00083374	**0,00800000**
Selasa	Senin	0,00311513	**0,00100000**	-0,00180482	**0,00000000**	0,00138218	**0,00000000**	0,00021595	0,93100000	-0,00053850	0,28700000	0,00073775	**0,02100000**
	Rabu	0,00156004	0,20900000	-0,00113160	**0,03400000**	0,00039758	0,71700000	0,00023264	0,90600000	-0,00083037	**0,01900000**	-0,00009015	0,99600000
	Kamis	0,00172231	0,14500000	-0,00094593	0,12800000	0,00104881	**0,01100000**	-0,00029268	0,81700000	-0,00053123	0,30000000	-0,00029357	0,74300000
	Jumat	0,00035890	0,99000000	-0,00095760	0,13500000	0,00112242	**0,00700000**	-0,00157882	**0,00000000**	0,00003242	100,000,000	-0,00009599	0,99500000
Rabu	Senin	0,00155509	0,23300000	-0,00067322	0,42500000	0,00098460	**0,01700000**	-0,00001670	100,000,000	0,00029187	0,81400000	0,00082790	**0,00500000**
	Selasa	-0,00156004	0,20900000	0,00113160	**0,03400000**	-0,00039758	0,71700000	-0,00023264	0,90600000	0,00083037	**0,01900000**	0,00009015	0,99600000
	Kamis	0,00016227	0,99900000	0,00018567	0,99000000	0,00065123	0,24000000	-0,00052532	0,28000000	0,00029914	0,80000000	-0,00020342	0,91200000
	Jumat	-0,00120114	0,49500000	0,00017399	0,99300000	0,00072484	0,16800000	-0,00181147	**0,00000000**	0,00086279	**0,01600000**	-0,00000584	100,000,000
Kamis	Senin	0,00139282	0,36000000	-0,00085889	0,20300000	0,00033336	0,83900000	0,00050862	0,33200000	-0,00000727	100,000,000	0,00103132	**0,00000000**
	Selasa	-0,00172231	0,14500000	0,00094593	0,12800000	-0,00104881	**0,01100000**	0,00029268	0,81700000	0,00053123	0,30000000	0,00029357	0,74300000
	Rabu	-0,00016227	0,99900000	-0,00018567	0,99000000	-0,00065123	0,24000000	0,00052532	0,28000000	-0,00029914	0,80000000	0,00020342	0,91200000
	Jumat	-0,00136341	0,38200000	-0,00001168	100,000,000	0,00007360	0,99900000	-0,00128615	**0,00000000**	0,00056365	0,26400000	0,00019758	0,93100000
Jumat	Senin	0,00275623	**0,00400000**	-0,00084722	0,23600000	0,00025976	0,93400000	0,00179477	**0,00000000**	-0,00057092	0,25200000	0,00083374	**0,00800000**
	Selasa	-0,00035890	0,99000000	0,00095760	0,13500000	-0,00112242	**0,00700000**	0,00157882	**0,00000000**	-0,00003242	100,000,000	0,00009599	0,99500000
	Rabu	0,00120114	0,49500000	-0,00017399	0,99300000	-0,00072484	0,16800000	0,00181147	**0,00000000**	-0,00086279	**0,01600000**	0,00000584	100,000,000
	Kamis	0,00136341	0,38200000	0,00001168	100,000,000	-0,00007360	0,99900000	0,00128615	**0,00000000**	-0,00056365	0,26400000	-0,00019758	0,93100000
Analisis		*Return* Senin < Selasa, Jumat.		*Return* Senin > Selasa.		*Return* Senin< Selasa, Rabu.		*Return* Senin < Jumat.		*Return* Selasa < Rabu.		*Return* Senin < Selasa, Rabu, Kamis, Jumat.	
		Return Selasa > Senin.		*Return* Selasa < Senin, Rabu.		*Return* Selasa > Senin, Kamis, Jumat.		*Return* Selasa < Jumat.		*Return* Rabu > Selasa, Jumat.		*Return* Selasa > Senin.	
		Return Jumat > Senin.		*Return* Rabu > Selasa.		*Return* Rabu > Senin .		*Return* Rabu < Jumat.		*Return* Jumat < Rabu		*Return* Rabu > Senin.	
						Return Kamis < Selasa.		*Return* Kamis < Jumat.				*Return* Kamis > Senin.	
						Return Jumat < Selasa.		*Return* Jumat > Senin, Selasa, Rabu, Kamis				*Return* Jumat > Senin.	

Source: Modified by the Author (2014)

Table 10: *Post Hoc Tests Tukey* HSD result Data Panel Q4 2012.

at 30 April 2013 amounted to IDR 3,075 trillion, with the composition of the value of its assets is 58.51% owned by foreign investors and the remaining 41.49% is owned by local investors. Total volume of shares 52.53% of assets owned by local investors and the remaining 47.47% is owned by foreign investors. Although the number of local investors more than the foreign investors but the number of shares of assets owned by local investors still can not match the number of shares of assets owned by foreign investors.

On million IDR rupiah

From the Table above, can be seen that the average local investors perform sell transactions with a value of IDR 2.5 trillion each day and buy transactions IDR 2.45 trillion each day. The maximum value of transactions that occurred during the period of IDR 7.1 trillion for sell and IDR 7.6 trillion for the buy transaction. Foreign investors in the same period the average each day perform transactions with a value of IDR 1.4 trillion for sell and IDR 1.5 trillion for buy transaction. The maximum value of transactions that occurred in the period amounted to IDR 4.6 trillion for sale and IDR 4.2 trillion for buy transaction. Seen on average in the period that the transaction value of local investors is higher than the value of transactions by foreign investors. And it can be said that the type of local investors are net sellers, while the type of foreign investors are net buyers (Table 12).

Possible causes for an increase in return at the end of the week is the activity of fund managers, investors and majority owner of large capital at the end of the week that have an interest in the valuation of its stock portfolio and because they want to maintain the value and image of the company and also wants to provide a good signal to the market that they are taking action to buy massively. On the other hand, if there is a decrease at the end of the week then it is due to some market participants are seeking to sell their stock portfolio. This is because they do not want to bear the risk of price changes due to unexpected information during the market close. Other alleged decline in return on Mondays and Fridays are the increase in behavioral psychology of investors who have a tendency to dislike Mondays because the beginning of the workday. This resulted in a Monday which considered a boring day and Friday is the best day because it is the last working day. Investors tend to feel pessimistic on Monday and optimistic on Friday. Our analysis is supported by the results of focus group discussions and interviews between investigators with stock analysts, individual traders, regulators, analysts and institutions. The results from the interview mentioned that on Monday or Friday is fluctuating due to enough to follow the movement of the regional market the previous day. When towards the end of the week/month on the market often happened window dressing that caused positive movement in the end of the week/month. So it can be said Monday or Friday is more important than the other days because it is the beginning and the end of the week as investors tend to adjust their portfolios.

(*I*) Hari	(*J*) Hari	Q1 2013 –09.00		Q1 2013 –09.30		Q1 2013 –10.30		Q1 2013 –13.30	
		Mean Difference (I-J)	**Signifikan**	***Mean Difference (I-J)***	**Signifikan**	***Mean Difference (I-J)***	**Signifikan**	***Mean Difference (I-J)***	**Signifikan**
Senin	Selasa	0.00184476	0.081	-0.00070551	0.645	0.00018606	0.988	-0.00054706	0.214
	Rabu	-0.00073951	0.822	-0.00036966	0.944	-0.0008741	0.12	-0.00073273	**0.037**
	Kamis	0.00145373	0.24	-0.00061949	0.732	-0.00011734	0.998	-0.00076211	**0.032**
	Jumat	0.00007689	1	-0.00246387	**0**	-0.00110931	**0.026**		
Selasa	Senin	-0.00184476	0.081	0.00070551	0.645	-0.00018606	0.988	0.00054706	0.214
	Rabu	-0.00258426	**0.003**	0.00033584	0.963	-0.00106016	**0.039**	-0.00018567	0.908
	Kamis	-0.00039103	0.983	0.00008601	1	-0.0003034	0.931	-0.00021505	0.871
	Jumat	-0.00176787	0.105	-0.00175837	**0.006**	-0.00129537	**0.007**		
Rabu	Senin	0.00073951	0.822	0.00036966	0.944	0.0008741	0.12	0.00073273	**0.037**
	Selasa	0.00258426	**0.003**	-0.00033584	0.963	0.00106016	**0.039**	0.00018567	0.908
	Kamis	0.00219324	**0.015**	-0.00024983	0.987	0.00075676	0.235	-0.00002938	1
	Jumat	0.0008164	0.762	-0.00209421	**0**	-0.00023521	0.968		
Kamis	Senin	-0.00145373	0.24	0.00061949	0.732	0.00011734	0.998	0.00076211	**0.032**
	Selasa	0.00039103	0.983	-0.00008601	1	0.0003034	0.931	0.00021505	0.871
	Rabu	-0.00219324	**0.015**	0.00024983	0.987	-0.00075676	0.235	0.00002938	1
	Jumat	-0.00137684	0.292	-0.00184438	**0.003**	-0.00099197	0.062		
Jumat	Senin	-0.00007689	1	0.00246387	**0**	0.00110931	**0.026**		
	Selasa	0.00176787	0.105	0.00175837	**0.006**	0.00129537	**0.007**		
	Rabu	-0.0008164	0.762	0.00209421	**0**	0.00023521	0.968		
	Kamis	0.00137684	0.292	0.00184438	**0.003**	0.00099197	0.062		
Analisis		*Return* Selasa < Rabu.		*Return* Senin < Jumat.		*Return* Senin < Jumat.		*Return* Senin < Rabu, Kamis.	
		Return Rabu > Selasa, Kamis.		*Return* Selasa < Jumat.		*Return* Selasa < Rabu, Jumat.		*Return* Rabu > Senin.	
		Return Kamis < Rabu		*Return* Rabu < Jumat.		*Return* Rabu > Selasa.		*Return* Kamis > Senin.	
				Return Kamis < Jumat.		*Return* Jumat > Senin, Selasa.			
				Return Jumat > Senin, Selasa, Rabu, Kamis.					

Source: Modified by the Author (2014)

Table 11: Post Hoc Tests Tukey HSD result Data Panel Q1 2013.

(*I*) Hari	(*J*) Hari	Q1 2013 –14.00		Q1 2013 –14.30		Q1 2013 –15.00		Q1 2013 –16.00	
		Mean Difference (I-J)	**Signifikan**	***Mean Difference (I-J)***	**Signifikan**	***Mean Difference (I-J)***	**Signifikan**	***Mean Difference (I-J)***	**Signifikan**
Senin	Selasa	-0.00089225	0.059	-0.00108045	**0.004**	-0.000033	1	0.0015753	0.193
	Rabu	-0.00045764	0.605	-0.00039453	0.662	0.00006353	1	0.00021093	0.998
	Kamis	-0.00006985	1	-0.00156463	**0**	0.00081817	0.078	0.00127426	0.377
	Jumat	-0.00136563	**0**	-0.00017851	0.975	0.0005847	0.352	0.0033573	**0**
Selasa	Senin	0.00089225	0.059	0.00108045	**0.004**	0.000033	1	-0.0015753	0.193
	Rabu	0.00043461	0.671	0.00068592	0.152	0.00009653	0.998	-0.00136437	0.31
	Kamis	0.00082241	0.1	-0.00048418	0.508	0.00085117	0.069	-0.00030104	0.994
	Jumat	-0.00047337	0.612	0.00090193	**0.028**	0.0006177	0.318	0.001782	0.104
Rabu	Senin	0.00045764	0.605	0.00039453	0.662	-0.00006353	1	-0.00021093	0.998
	Selasa	-0.00043461	0.671	-0.00068592	0.152	-0.00009653	0.998	0.00136437	0.31
	Kamis	0.0003878	0.742	-0.0011701	**0.001**	0.00075464	0.112	0.00106333	0.544
	Jumat	-0.00090799	**0.038**	0.00021602	0.947	0.00052117	0.452	0.00314638	**0**
Kamis	Senin	0.00006985	1	0.00156463	**0**	-0.00081817	0.078	-0.00127426	0.377
	Selasa	-0.00082241	0.1	0.00048418	0.508	-0.00085117	0.069	0.00030104	0.994
	Rabu	-0.0003878	0.742	0.0011701	**0.001**	-0.00075464	0.112	-0.00106333	0.544
	Jumat	-0.00129578	**0.001**	0.00138612	**0**	-0.00023347	0.948	0.00208305	**0.029**
Jumat	Senin	0.00136563	**0**	0.00017851	0.975	-0.0005847	0.352	-0.0033573	**0**
	Selasa	0.00047337	0.612	-0.00090193	**0.028**	-0.0006177	0.318	-0.001782	0.104
	Rabu	0.00090799	**0.038**	-0.00021602	0.947	-0.00052117	0.452	-0.00314638	**0**
	Kamis	0.00129578	**0.001**	-0.00138612	**0**	0.00023347	0.948	-0.00208305	**0.029**
Analisis		*Return* Senin < Jumat.		*Return* Senin < Selasa, Kamis.		Tidak terdapat perbedaan yang signifikan dengan α= 0.05000000		*Return* Senin > Jumat.	
		Return Rabu < Jumat.		*Return* Selasa > Senin, Jumat.				*Return* Rabu > Jumat.	
		Return Kamis < Jumat.		*Return* Rabu < Kamis.				*Return* Kamis > Jumat.	
		Return Jumat > Senin, Rabu dan Kamis.		*Return* Kamis > Senin, Rabu, Jumat.				Return Jumat < Senin, Rabu, Kamis	
				Return Jumat < Selasa, Kamis.					

Source: Modified by the Author (2014)

Table 11a: *Post Hoc Tests Tukey* HSD result Data Panel Q1 2013 (Continue).

Investor Type	Number of Investors	% Number of Investors	Assets Volume	% Assets Volume	Assets Values	% Assets Values
Local	195.897	96,50%	979.604.254.487	52,53%	1.276.121.234.606.910	41,49%
Foreign	7.099	3,50%	885.333.465.142	47,47%	1.799.878.124.583.890	58,51%

Source: Indonesian Central Securities Depository (2013), Modified by the Author

Table 12: Number of Investor dan Stock Asset Price on 30 April 2013.

Investor Type	Transaction	N	Mean	Standard Deviation	Minimum	Maximum
Local	Sell	306	2.500.092	887.704	534.028	7.187.150
	Buy	306	2.457.357	819.299	525.297	7.675.488
Foreign	Sell	306	1.487.995	553.58	200.793	4.697.176
	Buy	306	1.529.973	548.116	210.302	4.217.269

Source: Indonesian Central Securities Depository (2013), Modified by the Author

Table 13: Descriptive Statistics Investor on February 2012-April 2013.

The results obtained from this research is in line with Sumiyana's research [2] that the test results prove that there is a Day of the Week Effect and the day that affect the returns are not always the same and consistent day. Monday, Tuesday, Wednesday, Thursday and Friday in turn affect the return. From the results of the research also found a comparison of Monday's return with others not always have a large negative return differences and Mondays do not always affect the return on each trading interval (Table 13).

Conclusions

Based on the results of the discussion, calculation, and analysis conducted in the previous chapter , it can be concluded as follows:

1 . a) From the results of the regression analysis can be seen that the phenomenon Day of the Week will occur but not consistent:

- Q4 2012 period interval 13:30, 14:00 and 16:00; Monday (where the value of the coefficient tends to have the largest contribution), Tuesday, Wednesday, Thursday, and Friday significantly affect returns. All trading days affect returns at intervals 13:30, 14:00 and 16:00.
- Q1 2013 period interval 9:00; Monday, Tuesday, Wednesday (where the value of the coefficient tends to have the largest contribution) , Thursdays, and Fridays significantly affect returns . All trading days affect returns at interval 09:00.

b) It can be seen in the descriptive statistics that the lowest mean intraday return in Q4 2012 and Q1 2013 was in the interval of time 14.00. As for the highest mean intraday return in Q4 2012 was at 16.00 and the time interval in Q1 2013 was the time interval 09:00. The visible pattern return is the letter U.

2. From the results of the ANOVA and Tukey HSD Post Hoc on Monday Effect, in both period it was found that there is a downward trend in the value of the return or low return on Monday (or early in the week) compared to other trading days or occurred partially Monday Effect in Q4 2012 and a trend towards increase in return or a high return on Friday (or the end of the week) compared to other trading days or occured partially Weekend Effect in Q1 2013.

Based on the conclusions of this research then the recommendations that can be given are:

1. For policy makers in the Indonesian capital market (Indonesia Financial Service Authority and Self Regulatory Organization: IDX, KPEI , KSEI) , with the discovery of anomalies and return the letter U pattern, can provide oversight and monitoring of capital market in Indonesia, especially in the early period of trade , lunch break , and late trading as well as the beginning and end of the week to anticipate the extreme movement of the increase and decrease in return, so that the Indonesian capital market could becomes larger and near to efficient market form.

2. For investors, investors can know the Day of the Week Effect and this research can be used as a reference for decision-making or trading strategies to determine when to buy and sell do so to get optimal returns, which do buy at the lowest point which tends to happen when lunch break and on Monday and do sell at the highest point which tends to occur at the end of the trading period and on Friday.

3. For academics and researchers can conduct further research, specifically:

a. Technical weakness is due to the data retrieved only from a snapshot of data every 30 minutes . Historical data only saved if there is changes on the value of the stock index. In further researchs are expected to use samples data with different types of industries or different sectoral indices with observation intervals shorter than 30 minutes and intraday observation period longer than 3 months so as to obtain a more accurate research results.

b. This research just including trading day and intraday stock returns into the regression model, thus ignoring other factors that also affect the IDX's return. In further researchs should perform quality improvement on regression modeling by adding variable that is expected to affect the stock returns in IDX such as trading volume, investor characteristics, performance and macroeconomic variables.

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