



**THE ANALYSIS OF CAPITAL MARKET REACTION  
BEFORE AND AFTER FUEL RESTRICTION POLICY  
IMPLEMENTATION IN INDONESIA**

**(Case study of LQ-45 stocks listed in Indonesia Stock Exchange)**

**By**

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**SKRIPSI ADVISER**  
**RECOMMENDATION LETTER**

This skripsi entitled “**THE ANALYSIS OF CAPITAL MARKET REACTION BEFORE AND AFTER FUEL RESTRICTION POLICY IMPLEMENTATION IN INDONESIA (A Case Study of LQ-45 Stocks listed in Indonesia Stock Exchange )**” prepared and submitted by Ditta Ariska in partial fulfillment of the requirements for the degree of bachelor in the Faculty of Business has been reviewed and found to have satisfied the requirements for a skripsi fit to be examined. I therefore recommend this skripsi for Oral Defense.

Cikarang, Indonesia, January 13, 2015

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Skripsi Adviser

## **DECLARATION OF ORIGINALITY**

I declare that this skripsi, entitled **“THE ANALYSIS OF CAPITAL MARKET REACTION BEFORE AND AFTER FUEL RESTRICTION POLICY IMPLEMENTATION IN INDONESIA(A Case Study of LQ-45 Stocks listed in Indonesia Stock Exchange)”** is, to the best of my knowledge and beliefs, an original piece of work that has not been submitted, either in a whole or in a part, to another university to obtain a degree.

Cikarang, Indonesia, January 13, 2015

**DITTA ARISKA**

## **PANEL OF EXAMINERS APPROVAL SHEET**

The Panel of Examiners declares that the skripsi entitled “**THE ANALYSIS OF CAPITAL MARKET REACTION BEFORE AND AFTER FUEL RESTRICTION POLICY IMPLEMENTATION IN INDONESIA(A Case Study of LQ-45 Stocks listed in Indonesia Stock Exchange)**” that was submitted by Ditta Ariska majoring in Management from the Faculty of Business was assessed and approved to have passed the Oral Examinations on (January 20, 2015).

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## **ABSTRACT**

This research aimed to determine the capital market reaction on the announcement of fuel restriction policy that was held 3 times continuously on August, 1<sup>st</sup>, August 4<sup>th</sup>, and August 6<sup>th</sup>. In measuring capital market reaction, the variables used in this study were Abnormal Return (X1), Price Earning Ratio (X2), Security Return Variability (X3), and Trading Volume Activity (X4) of LQ-45 stocks listed in IDX (Indonesian Stock Exchange) in period of August 2014 – January 2015. In this study, data were collected through IDX website and several secondary data sources. Data obtained in the form of quantitative analysis by doing event study analysis, the classic assumption test and comparative analysis that serve to prove the research hypothesis. The result of this research is there are no significant differences of Abnormal Return (X1), Price Earning Ratio (X2), Security Return Variability (X3), and Trading Volume Activity (X4) before and after the event of fuel restriction policy. In conclusion, the market participants are react normally and there is no shock level appear eventhough the Trading Volume Activity are showing decreasing values in almost stocks, this is because market are already anticipate as issues regarding this event has been spread ahead of the announcement.

***Keywords : Fuel restriction policy, capital market reaction, LQ45 stocks***

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# Chapter I

## INTRODUCTION

### 1.1 Background of the study

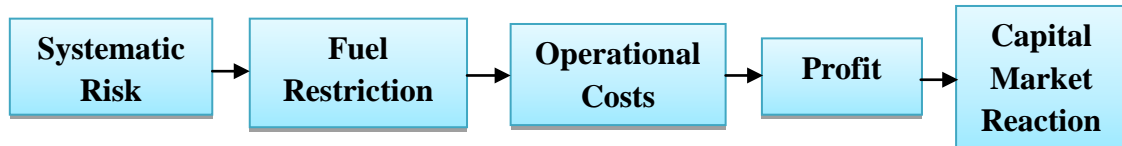
In this era, doing investment activities has become compulsory to every one in order to enhance their economic level and to prepare their future economic life. One of the attractive investment tool is investing in capital market, when it can give higher return compare with several types of investing tools. Capital market as an institution that works to bring together the parties have excess funds and those who need funds to use in order to invest on asset in the operation of a company. For this purpose, the parties have excess funds or investors can choose investment alternatives that provide optimal returns by investing in stocks of the most productive companies in the capital market (Lasmanah and Bagja, 2014).

In doing investment activities there are several things that an investor needs to pay attention on, which are investment return and investment risk. Investment risk in stock market depends tightly towards stock price volatility, which the fluctuation of stock prices that are influenced by information available in the market. Moreover, in doing investment activities especially investing in stocks, in order to gain higher return or capital gain, investor should aware of events surroundings. It is that the stock price movements are affected by internal and external factors. Thus, investing in capital market can be profitable if investor know in what kind of situation best to invest in or out from the market. Capital Market has become one of the economic instrument that strongly been influenced by several events that contain information for investors. The more important capital market's role is in one country economic condition, the more sensitive capital market will be towards several events surrounding (Suryawijaya & Setiawan, 1998).

Recently, there is a new policy has been made by government , called fuel restriction policy which restricting the total amount of subsidized fuel in the

market. Fuel is one of commodity that has a vital role in almost entire economic activities. Subsidized fuel has become the primary needs of personal and industrial activities nowadays. Thus, it becomes interesting to see the domino effect caused by subsidized fuel restriction policy .

Reza Nugraha , PT MNC Securities analyst, said that the increasing in electricity tariff and time constraints of the distribution of subsidized diesel have affected to several sectors in stock market, such as consumer and basic industrial sectors, especially stock for cement company. However, according to Finance director, of PT Kalbe Farma Tbk, Vidjongtius said that , this time its company has not been affected by the distribution of time restriction of subsidized diesel. However, the copartnership company needs to re-arrange the schedule of freight distribution products (Liputan6 ,August 10th,2014).



**Figure 1.1**  
**Problem Flow**

Source : Developed by researcher

According to Halim (2003), there are 2 kind of risks in investing in stocks :

1. Unsystematic Risk

Unsystematic risk is the risk that can be eliminated by diversification, because this risk only happen in a particular company or industry. The fluctuating of this risk are different from one stock to another.

2. Sytematic Risk

Systematic risk is the risk that can't be eliminated by doing diversification, because the fluctuation of this risk are influenced by macroeconomic

factors that can influence the entire market. For instance, there are changes in interest rate, foreign exchange rate, inflation rate and government policies. Thus, it is generally affected and applicable to all stocks listed in particular stock market.

As fuel restriction policy is the recent policy made by government, then there is systematic risk that seems to influence the entire market. Before investing in stocks, investor should consider and pay attention those 2 risks in order to taking advantage or to avoid lost that is caused by certain events. Indonesia logistic association stated that fuel restriction policy which is diesel type has caused systemic impact to transportation industry. The systemic impact means the increasing of production cost as well as long queuing of freight. Later on, it would also cause additional time for delivery process. This long delivery time will then resulted in higher operational cost primarily to pay drivers (Liputan6.com, 2014).

The increasing of operational costs is also because several industry should move from using subsidized fuel to non-subsidized fuel which will cost them higher. Then, they will get higher operational cost, and as cost increase logically it will be followed by the decreasing profit of one company. However, company may have several options by increasing their selling price or suffering profit reduction. Thus, the stocks condition of those company will fluctuate.

Logically, as subsidized fuel volume has been restricted, consequently several industries should reduce the fuel consumption amounts or they shift to non-subsidized fuel to have the same consumption amount. As they choose the second option, then they have to pay more cost and resulting on increasing their finished goods price. Furthermore, this situation will give whether big or less impact to capital market. Therefore, through this study we may determine how the capital market will react in this situation.

To the best of our knowledge, no researches or studies have examined yet the event of fuel restriction policy for capital market reaction. In Indonesia,

government has prepared a portion from its state budget for subsidizing Fuel for citizens with middle to low income. However, the implementation of providing subsidized fuel for the targeted market hasn't been meet to its purpose. Citizens with high income are also consuming the subsidized fuel , therefore the budget for preparing subsidized fuel has increased drastically. Hence, Government have announced new policy to reduce this swelling budget by restricting the consumption of subsidized fuel .

This research aims to examine the information content of an event being announced and effects appear from those announcement on the reaction of capital market . As Capital market has become one of the biggest market that support the economic growth in Indonesia ,therefore it's important to determine the capital market reaction towards several important events such as Fuel restriction policy . In the end, this research may be found helpful for predicting capital market reaction towards events related with fuel policy in the future.

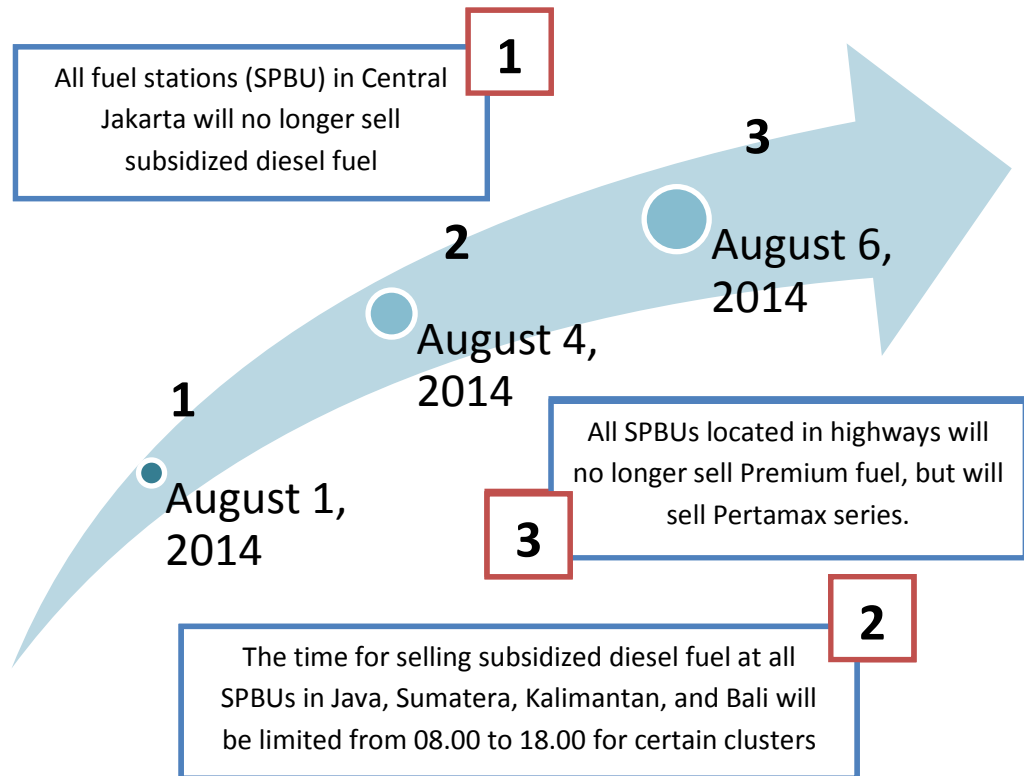
## **1.2 Fuel Restriction Policy**

In recent years, during Susilo Bambang Yudhoyono governance era, several programs in purpose to reduce the fuel consumption have been done, such as fuel consumption restriction for luxury cars, for government vehicles , changed government's vehicle from fuel type to gas and implemented ( Radio Frequency Identification) RFID system , however those programs still can't reduce fuel consumption. This year, before the ending of Susilo Bambang Yudhoyono governance era, as it is not possible to increase fuel price to protect Indonesia fiscal side , then government decide to launch policy in purpose to control fuel consumption , which is fuel restriction policy (Harian Merdeka, 2014).

In line with the letter from the Downstream Oil and Gas Regulatory Agency (BPH Migas) No. 937/Ka BPH/2014 dated 24 July 2014, PT Pertamina (Persero), as one of state owned companies tasked to distribute subsidized fuels, will begin implementing the restriction of subsidized fuels distribution, especially diesel



fuel, starting 1 August 2014. (Pertamina, 2014). The 2014 law on the revised state budget had been enacted and the quota for subsidized fuels was cut from 48 million KL to only 46 million KL (Pertamina, 2014)



**Figure 1.2**

### **Fuel Restriction Scheme**

Source : Constructed by Researcher

#### **1.2.1 Fuel Restriction Purpose**

The subsidized fuel restriction policy aim to suppress the state budget from swelling as big portion of state budget are allocated to subsidize fuel. Then, the excess budget resulted from fund for subsidizing fuel can be allocated to productive sectors that can improve economic growth , such as infrastructure,

industrial , banking and etc. According to government , this can be done by distributing subsidized fuel properly to the targeted level , which is citizens with middle to low income . It is that from previous experience, people with high income also consuming the subsidized fuel. Thus , for controlling and monitoring purpose the fuel consumption then be restricted in certain areas and there is time constraint for buying subsidized fuel.

### **1.3 Problem Identification**

There are a lot of indicators can be used to identify the stock price movement. The first indicator is by looking at the issues or any important informations and news related with that stocks. The other indicator is by looking at the historical movement trend. Fuel policy issue has become one of the most influencing factor that affect stock price movement as fuel is compulsory and necessary for every one including market participants in capital market .However, the new policy in restricting the subsidized fuel volume is being questioned on how stock market will react on especially the stocks with highly trading activities. It is that stock market is one of the most influential sector that may give great contribution to economic and financial growth in Indonesia, then it becomes an important issue to learn and understand the trend on how sensitive the capital market would like to be to policies that were created by government.

Study result conducted by Setyawan (2006) about capital market reaction towards increasing fuel price find the capital market react on the information contained in increasing fuel price event, resulting no significant abnormal return and trading volume activity as market have already predicted and well prepared during this event. However, study result conducted by Manulang (2004) find that the capital market did not react towards the event of increasing fuel price in all days included in event windows. There is a gap between information available in the market on what effects that appear caused by the increasing fuel price event . Therefore , it will be interesting to review about the capital market reaction with the recent policy related with fuel policy, wich is subsidized fuel restriction policy

by using the most liquid stocks listed in Indonesia capital market to see the reflection of market activity and reaction during this event. Therefore, LQ 45 stocks will be used as the sample for this research.

The purpose of this research as it's mentioned in the title, 'The analysis of capital market reaction before and after fuel restriction policy implementation in Indonesia.' Thus, this research will emphasize more on the capital market reaction by seeing its Abnormal Return ( $X_1$ ), Price Earning Ratio ( $X_2$ ), Security Return Variability ( $X_3$ ), and Trading Volume Activity ( $X_4$ ) before and after the fuel restriction policy have been applied by using stocks joined in LQ 45 for period of August 2014 to January 2015.

#### **1.4 Statement of Problems**

There are several problems that are going to be discussed in this research, such as:

- a. Is there any significant difference of abnormal return before and after fuel restriction policy implementation ?
- b. Is there any significant difference of price earning ratio before and after fuel restriction policy implementation ?
- c. Is there any significant difference of Security Return Variability (SRV) before and after fuel restriction policy implementation ?
- d. Is there any significant difference of trading volume activity (TVA) before and after fuel restriction policy implementation ?

#### **1.5 Research Objectives**

This study aimed to determine the linkage between Fuel restriction policy towards capital market reaction.

Specifically, this research objectives are :

- a. To find out if abnormal return has significant difference before and after fuel restriction policy implementation.
- b. To find out if price earning ratio (PER) has significant difference before and after fuel restriction policy implementation.
- c. To find out if Security Return Variability (SRV) has significant difference before and after fuel restriction policy implementation.
- d. To find out if trading volume activity (TVA) has significant difference before and after fuel restriction policy implementation.

## **1.6 Significance of study**

This study is addressed to gain information relating with government new policy on restricting subsidized fuel volume and the linkage to capital market reaction in Indonesia which is hopefully will give certain impacts to the following :

- a. Government: By this research, government may be able to evaluate its action in implementing fuel restriction policy and effects of implementing those policies especially towards capital market.
- b. Investor: By this research, investor may be able to find out the trend on how capital market may react and can be used as references in considering when choosing stocks to invest in during the implementation of fuel restriction policy.
- c. Researcher: By this research , researcher may implement certain knowledge regarding collecting datas and also solving problems. Moreover, it will also enhance the knowlede regarding the topic.
- d. Future Researcher: This research is expected to give a clear point of view regarding Capital market reaction on the new fuel restiction policy in Indonesia and may be used as references for the future researchs.
- e. The University: By this research, hopefully may enhance the literatures and studies in field of Fuel restriction policy effects, LQ-45 Stocks information and trend on sensitivity LQ-45 stocks reaction.

## **1.7 Definitions of terms**

- a. Capital market: a market where buyers and sellers engage in trade of financial securities like bonds, stocks, etc.
- b. IDX: Indonesia Stock Exchange; a stock exchange based in Jakarta Indonesia.
- c. LQ-45 stocks: Stock market index for the Jakarta Stock Exchange (JSX), which consists of 45 companies which have good financial conditions, prospect of growth and high transaction value and frequency.
- d. PER: Price Earning Ratio; it is the ratio that is used to calculate how much market should pay for a company's earnings.
- e. RFID system: Radio Frequency Identification system ; the wireless use of electromagnetic fields to transfer data, for the purposes of automatically identifying and tracking tags attached to objects.
- f. SRV: Security Return Variability; it is the variability of stock return during certain period of time.
- g. State Budget: a budget that details financial plan for states' financing activity and expenditures .
- h. TVA: Trading Volume Activity; it is the total number of shares transacted in certain times.

## **1.8 Scope and Limitations**

### **Scope**

The Study is conducted with title of “The Analysis of Stock Market Reaction towards Fuel Restriction Policy in Indonesia (A case study of LQ-45 stocks listed in Indonesian Stock Exchange)”. This study will test how capital market will react on recent policy which is fuel restriction policy that has been implemented started from August 1st,2014.

## **Limitation**

This Study is focused on testing Indonesian LQ-45 stocks reaction listed in Indonesian Stock Exchange (IDX) towards the fuel restriction issue in Indonesia. The Study will limit on analyzing capital market reaction on stocks joined in LQ-45 and this Study only analyze the reaction of new policy on capital market which is the fuel restriction policy by comparing Abnormal Return, Price Earning Ratio, Security Return Variability and Trading Volume Activity before and after the event.

## **Chapter II**

### **REVIEW OF LITERATURE**

#### **2.1 Theoretical Review**

In this section, each variable will be defined by showing several literatures which are taken from several resources such as previous researchs, journals and internet sources. Theories that are taken will be used as a guidance in selecting methods, implementing methods selected during research process and at the end to support the research result as well.

##### **2.1.1 Capital Market**

Basically, capital market is a market for several long term financial instrument that can be traded ,in form of loans, stocks, derrivative instruments and other instruments (Darmadji, 2008). Capital market has two functions which are economic function and financial function (Husnan, 2000).The economic function happens when capital market provide facility to distribute funds from the one that is having excess fund (lenders) to the one that needs fund (borrowers). Moreover, the financial function is done by providing funds needed by borrowers and lenders.

The primary role of the capital market is allocation of ownership of the economy's capital stock (Fama, 1970). Capital markets promote economic efficiency by channeling money from those who do not have an immediate productive use for it to those who do (Woepking, 2011). The importance of capital marketsis confirmed by the extensive volume of trades taking place globally, while the number and type of private and institutional investors has considerably increased (Subeniotis et al, 2011).

### **2.1.2 Capital Market Reaction**

Intrinsically in doing investment activities, investors will try to invest their capital on stocks that will be able to give return or in other words, profit in the form of dividend and or capital gain (Sartono, 2005). Investor then will see the exact condition or moment to invest in capital market or to take out their investment from capital market. It depends on the situation surroundings, information provided and other internal or external factors. In other words, there will be a reaction from the capital market towards those signals. Generally, in economic literature mentioning that saving is identical or same with investment, thus when saving is decreasing then the investment will decrease as well (Soediyono, 1985).

Market reaction is a signal given by investors on stock prices of companies in the capital market (Joni and Dwi Ratnadi, 2014). (Dzielinski, 2011) provide evidence about the drop of stock returns in the week following a high degree of economic uncertainty.

Based on the assumption of efficient capital market theory, it states that economic information will get fast reactions by capital market players. In order to measuring capital market efficiency, the main key is to see the relation between stock price with events information (Hartono, 2000). That Information then will become as the basis for investor to do analysis before taking investment decision and by this information all investors may get clear picture about all go public companies and about market condition that is important for those who are responsible for taking investment decision (Ajie, 2003).

Investor may react towards information provided and they will use the information as a consideration to take investment decision . There are 3 categories of investment decision, which are :



### 1. Buy Decision

In several conditions, investor may decide to buy certain stocks. The first condition if they consider certain stocks are in cheap category, or in other words there is significant difference between current selling price from the highest selling price that had been reached by that stock with range of time of last three months to one year. The other condition is if the stock price has an increasing pattern in the last one week and followed by high trading volume in each trading days.

### 2. Sell Decision

Investor may decide to sell stocks if they consider the stock price is expensive in which there is close difference between current buying price with the highest buying price that had been reached in the last three months to one year.

### 3. Hold Decision

Hold decision will be considered by investor if the stock price is technically stable, located in the middle of trend and not showing any increasing or decreasing trend. However, the market reaction still positive followed by high trading volume in every trading days.

## **2.1.3 Efficient Capital Market**

A capital market is said to be efficient with respect to an information item if the prices of securities fully impound the returns implications of that item. In an efficient market, when a new information item is added to the market, its revaluation implications for security returns are instantaneously and unbiasedly impounded in the current market price (Raja and Sudhahar, 2010).

Eugene Fama (1960) and Jogiyanto (2000) classify the market efficiency into the following three categories depending on the information set that is fully reflected in the security prices.

### **1. Weak Form of efficiency**

Popularly known as Random Walk Theory. The weak form of efficient market hypothesis exercises whether the current security price has fully incorporated all information contained in the past prices. The theory states that if the market is efficient in a weak form, future share price will not be able to be predicted by the series of historical share price. For that reason, the use of technical analysis will be violated (Nikita, 2012).

In this category, with the consideration of this widely known historical information, thus the role of technical analysis will be useless. Trying to examine the overbought and oversold stocks will be wasting time base on this theory. It is that if the technical analysis suggests people to buy, hold or sell certain security by observing the signal and trend-line, the Weak Form of Efficient Market Hypothesis believes that such signal will lose its power since all investors will come up with the typical decisions. When the data determines good signal about future condition , all people have already studied to exploit the signals so thus the buying signal will lead to the immediate increase in price. The similar assumption will also happen when the bad signal about future performance comes and result in the immediate decrease in security price .Finally, the condition stated in this theory indicates that it will be hard for people to beat the market and earn abnormal return (Fabozzi, 2003).

### **2. Semi Strong Form of efficiency**

The Market can be categorized in semi strong form of efficiency if the market participants (investor) react quickly towards information published to get abnormal return and aim to create new equilibrium (Jogiyanto, 2010).

It examines empirically that any information may reflect historical stock prices. This test is also known as the event study. It is the category in which current market prices not only reflect all information content of historical prices but also reflect all the information, which are publicly available about the companies being studied. The information that are publicly available, such as:

1. Information that are publicly available that influencing security price of the companies that publishing the information. This information usually related with corporate event. For instance, net profit announcement, dividend announcement, new product launching, merger and acquisition announcement, and etc.
2. Information that are publicly available that influencing security prices of several companies. The published information can be in the form of government policy or regulatory policy in which will only give impacts on security prices of companies that become the subject to the policy. For instance, the reserves requirement policy that should be implemented in the banking sector. This information will give direct impact not only to one bank, but the whole banking sector.
3. Published information that will affect security prices of all companies listed in Stock Exchange. Information could be the government regulacy for example fuel policy, electricity tariffs policy, and etc that will give impact to all companies listed in capital market.

### **3. Strong Form of efficiency**

It is the category in which current market prices reflect all information whether it is publicly available or private information (insiders information).

#### 2.1.4 Stock Return

According to Jogiyanto (2008) the return is one factor making investor motivated to continue invest and at the same time as a reward for all the courage in investing and risk. The return can be divided in to two, namely :

1. Realized Return (Actual Return)

It is a return that has happened, usually called as actual return . Realized return calculated based on historical data. Realized return is important for the reason that it is used as one of measuring performance of a company.

2. Expected Return

The key issue in investments is estimating expected return (Black , 1995). It is the return that would be obtained by investor in the future. In estimating expected return, there are three models that can be used to measure expected return, namely (Jogiyanto, 2008 and Lasmanah and Bagja, 2014):

- a. Mean adjusted model

In Mean Adjusted Model, it assumes that expectation return constant value equal to the average realized return earlier during estimation period. In this model, expected return of securities at certain period obtained by distribution of realized return of securities with the length of the estimation period, common period ranged from 100 to 300 days to obtain daily data and from 24 to 60 months for monthly data.

- b. Market model

In Market Model, the calculation is happened in two stages ,namely forming expectation model using realization data during estimate return period. Then use the model to estimate the expected return on the window period. Expectation model can be formed by OLS regression techniques (Ordinary Least Square).

c. Market adjusted model

This model assumes that the best estimator to estimate return of a securities is market index return at the time. By using this model it is not necessary to use estimated period to establish estimation model, because securities return estimated is the same as the market index return.

### **2.1.5 Abnormal Return**

Capital market reaction towards information contents in one event can be measured by using return as price changing value or by using abnormal return which the difference between actual return with investor expected return (Jogiyanto, 2003). The positive abnormal return indicates that in this case from fuel restriction event, investor gets return above the normal return. Moreover, the negative abnormal return indicates that investor gets return below the normal return from fuel restriction event.

To separate the general movement of stock returns from an individual stock's return, economists calculate what are called "abnormal returns." Abnormal returns, also called "excess returns," represent the firm's return after subtracting out returns attributable to overall movements of the stock market (Schweitzer, 1989).

Abnormal return is used to test the information content from one event by looking at how market participants would react (Prayitno, 2012). According to Jogiyanto (2010), "An announcement that has information content would give abnormal return to the market."

### **2.1.6 Trading Volume Activity**

Stocks trading volume is one of indicator of market reaction towards one event. Trading Volume Activity (TVA) is an instrument that can be used to see capital market reaction towards information provided through stocks trading volume as a parameter (Marwan Asri and Faisal, 1998). Investor also can make observation about trading volume information associated with stock prices. Stock with high trading volume will result in a high stock return (Chordia, 2000). Trading volume is the ratio between total shares traded at any given time (Husnan, 2005).

Information content of an announcement of an event is not only will affect on stock price but also on the its trading volume. (Suryawijaya and Setiawan, 1998) stated that Trading Volume Activity is an instrument that can be used too see capital market reaction towards information by looking at the trading volume activity movement in capital market. (Suryawijaya and Setiawan, 1998) stated that the increasing trading volume in capital market is the form of capital market reaction towards certain events, it has 2 definitions. If the increasing trading volume is caused by the increasing demands, it indicates that event is a good news for market players, otherwise if the increasing trading volume is the effect of selling activity, then it can be defined as bad news.

The expansion of stocks trading volume reflects the power of supply and demand which are the reflection of investor behaviour (Robert Ang, 1997). Moreover, according to Robert Ang (1997), trading volume activity approach can be used as market reaction determinant. As stock trading volume is more reflecting investor activity because of a new event through the total amount of stocks been traded.

### **2.1.7 Security Return Variability (SRV)**

Apart from Abnormal Return, the stock price movement can also be measured with Security Return Variability (SRV) (Zaqi, 2006). Security Return Variability (SRV) is used to see the market reaction (Qoyum, 2011).

By using SRV, it can detect whether the aggregate market assesses an information event or not, in the sense of whether the incident resulted in a change in the distribution of stocks returns (Zaqi, 2006).

When the abnormal return is being averaged, there is a possibility of positive and negative values tend to destructive one another. While in SRV indicators, all values become positive. Thus, the heterogeneity of information can be eliminated. The impact of heterogeneous information can be detected by SRV, although the direction of the movement can not be seen (Husnan, et al, 1999).

According to Pope and Inyangete (1992), SRV measure the level of shock at the time of the event relative to the period beyond the incident. The advantage of the use of SRV is that this method does not pay attention to the direction of price movement, because in reality we often have difficulties in determining whether a message or information announced is interpreted as good news or bad news. For instance, at the announcement of financial statements, profit growth could perhaps be interpreted as bad news if the increase is not as great as the one that is anticipated by the market. Conversely, a decrease in earnings might be good news if the decline is not as great as the one that is expected by the market (Husnan et al, 1999).

The reaction in the stock prices to the implementation of fuel restriction policy is studied in this chapter with the help of security returns variability (SRV) model. SRV model can be calculated as the square of abnormal returns to the variance of abnormal returns of window period (Prakash, 2013).

To see the stock price reaction on an event, it can be analyzed by using SRV, which calculated from abnormal return of a company divided by abnormal return variance (Foster, 1986).

### **2.1.8 Price Earning Ratio**

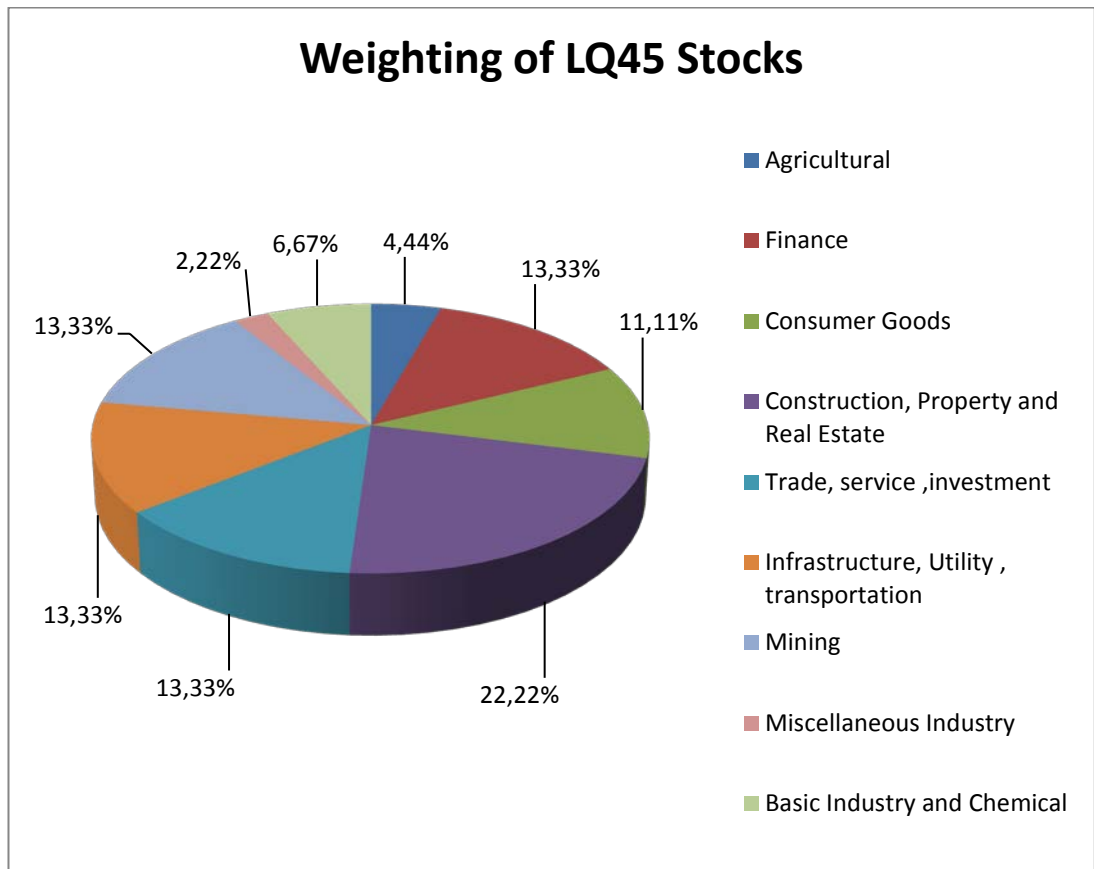
Researchers, market analysts, fund managers and investors mostly rely on Price to earnings ratio for analyzing relative attractiveness of equity investments and use it as a valuation technique for performance evaluation of individual stocks, sectors, and markets (Molodovsky, 1953). The P/E ratio can help in such weighting the prevailing share “price” against the “true value” of the share when investor should buy only if the “value” exceeds the “price” (Gupta and Jain ,1998).

According to Gupta and Jain (1998), P/E ratio is an indispensable tool for equity investing. It means without considering speculation, by understanding P/E ratio, investor will be better able to choose the right stocks at the right time and with the right price. Moreover, P/E ratio can also be used to determine the swings in market’s moods by seeing the market’s average P/E ratio rather than looking at the absolute levels of index.

### **2.1.9 LQ-45 Stocks**

Capital market in Indonesia is classified as the thin market, which most securities (stocks) listed in capital market are rarely been traded (Munawarah, 2009). Thus, JKSE that includes all stocks listed in IDX (mostly less active stocks) are considered not suitable to be used as capital market activities indicator.





**Figure 2.1 :LQ45 Stocks Weight**

Source : Developed by Researcher

Based on IDX (2014) The LQ45 Index comprises of 45 most liquid Common Stock (hence the name LQ is referring to Liquid) listed on the IDX that have been chosen and scrutinized through the following criteria:

1. The selection process started by selecting Top 60 common stocks with highest average transactions value in Regular Market for the last 12 months.
2. Out of the 60 stocks; further 45 stocks is selected weighted by Transaction value, market capitalization, Trading Day Number, and Transaction Frequency in Regular Market over the last 12- month period.

3. The stocks must be included in the calculation of the Composite Index (JCI).
4. The stocks should have been listed in the IDX for at least 3 months.
5. The stocks should have a good financial condition, prospect of growth, high trading frequency and transactions in Regular market.

## **2.2 Previous Research**

There are several studies has researching fuel policy which are the increasing fuel price and several studies that doing research about capital market policy used Abnormal Return, Trading Volume Activity (TVA), and Security Return Variability (SRV).

The study shows that the changes in economic policy uncertainty in Europe negatively affect all stock market returns in the Eurozone , Croatia, Norway , Russia, Switzerland, Turkey, and Ukraine ,and the effect is statistically significant for all countries except Croatia and seven members (Bulgaria, Estonia, Latvia, Lithuania, Malta, Slovakia and Slovenia) of the European Union (Sum, 2012b).

Generally, in investment climate the increasing fuel price will affect on the increasing investment costs which then lead to decreasing capital gain from that investments, resulting on negative response from capital market (Arisyahidin,2012). Another Multiple effect from increasing fuel price policy are the increasing of economic costs , because this increasing fuel price will affect on inflation rate increasing which means the increasing goods price generally as well (Sadli,2001).

Husnan et al (1996) did research on capital market towards financial report announcement. The indicators being used in this research are Trading Volume Activity (TVA) and Security Return Variability (SRV). By using 30 stocks as its

sample that has published their financial report on December 1993 and March 1994, it finds that there is differences among TVA on the day around the announcement day with on the announcement day, before and after announcement day, and also on December with March before, after and even the entirely. Generally, the trading volume before the announcement is greater than the trading volume after the announcement of financial report. This result shows the investor anticipation towards financial report. However, the testing towards SRV indicator only found the significant difference among before and after announcement on March and among days around the announcement with the announcement day on December.

Affandi et al (1998) tested the semi strong market efficiency on IDX in period 1996- 1997, towards net profit announcement event, using 50 stocks as its sample, resulting that stocks price has slow reaction towards net profit announcement event, thus it indicated that BEJ is not efficient in semi strong market form.

Setyawan (2006) tested the capital market reaction towards the increasing fuel price event on March 1st, 2005 and October 1,2005 by using stocks in LQ 45 as its sample. This study is resulting that there is insignificant abnormal return and trading volume activity before and after the increasing fuel price announcement .Moreover, there is no significant difference of Cumulative Average Abnormal Return (CAAR) on the increasing day (March 1st, 2005 and October 1st, 2005).

Chanki (2007) analyzed the event of earthquake in Jogjakarta on May 27th, 2006 towards insurance stocks listed in Indonesia Stock Exchange by testing the difference in return, abnormal return, trading volume activity (TVA), and security return variability (SRV). The result in this research is that there is no significant difference between return ,abnormal return, trading volume activity (TVA), and security return variability (SRV) before and after the event has happened.

Suparsa and Ratnadi (2014) tested the difference of abnormal return and trading volume activity on the event of increasing fuel price announcement in 2013by

using stocks joined in LQ45. This research that is using 39 companies out of 45 from LQ45 index resulting there is no significant difference of abnormal return and trading volume activity after the event announcement. The same result is also appeared in research that was done by Astuti (2006) in her research stated that there is no difference of abnormal return after the event of increasing fuel price announcement in 2005. Utami (2009) stated there is no difference of trading volume activity on the event of increasing fuel price announcement in 2008.

Dhamastuti (2014) analyzed the difference of Security Return Variability (SRV) before and after dividend announcement of companies listed in Indonesia Stock Exchange (IDX), and she found that there is no significant difference on days before and after increasing dividend announcement. Moreover, there is also no significant difference on days before and after decreasing dividend announcement because the market has already get used to the event of dividend announcement and thus it creates no shock levels to the market.

Pramana (2012) analyzed the Trading Volume Activity (TVA) and Abnormal Return before and after stock split event in 2007- 2011. The results are there are significant difference of Trading Volume Activity(TVA) before and after the event and there are no significant difference of Abnormal Return before and after the event.

Suparsa and Ratnadi (2014) analyzed the difference of Abnormal Return and Trading Volume Activity towards increasing fuel price announcement on stocks joined in LQ45, which resulting that there is no significant difference of Abnormal Return and Trading Volume Activity towards the event. It is because the information regarding the increasing fuel price announcement has been predicted by market participants.

Marisca (2014) analyzed the Abnormal Return before and after increasing fuel price announcement on LQ45 stocks on June 21, 2013. The result is there is a significant difference on LQ45 share price before and after the announcement.

## 2.3 Theoretical Framework

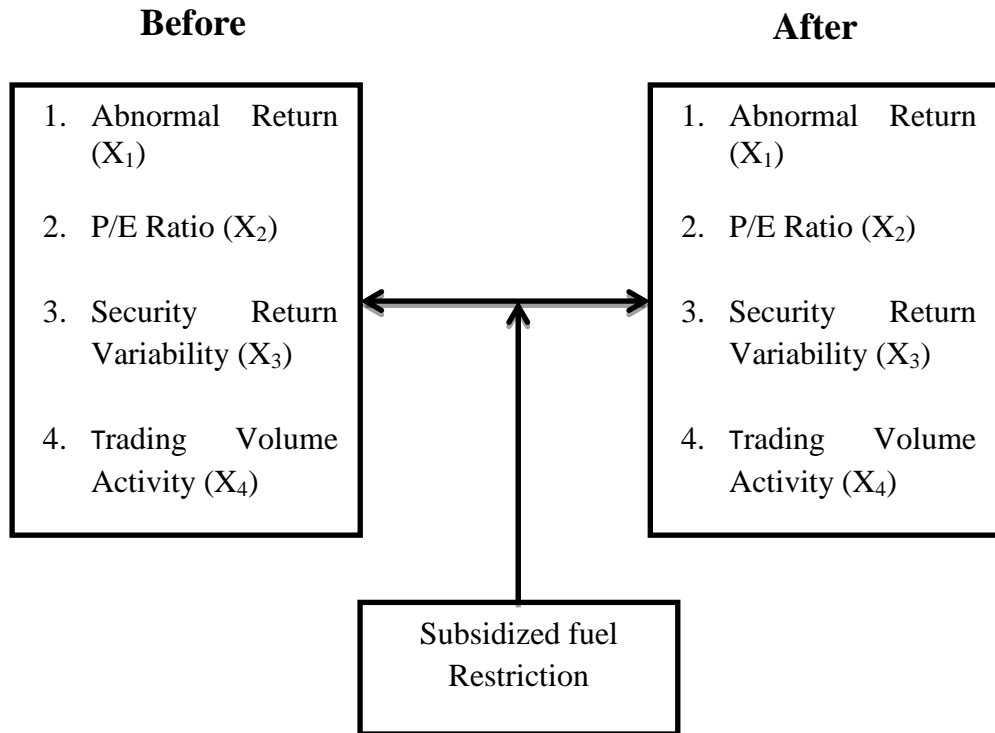


Figure 2.2

### Theoretical Framework

Source : Constructed by researcher

## 2.4 Operational Definition

1. Abnormal return is the actual ex post return of the security over the event window minus the normal return of the firm over the event window (Tjurins and Nikitins, 2011). In other words, abnormal return can be defined as return during event window minus normal return (Dwyer, 2001).
2. Estimation window is the period over which parameters are estimated (Dwyer, 2001).
3. Event window is the period over which the event tested occurs (Dwyer, 2001).

4. Event Study is a study of the changes in stock price beyond expectation (Abnormal Returns) over a period of time (Event window) (Woon, 2014).
5. Fuel Restriction policy is a policy made by government in restricting the volume of subsidized fuel in two ways; by restricting gas stations that are located in tolls facility to sell subsidized fuel and restricting selling time for subsidized fuel for certain clusters in Java, Sumatera and Kalimantan.
6. Normal Return is defined as the expected return without conditioning on the event taking place (Tjurins and Nikitins, 2011).
7. Post window is the period after the event tested occurs (Dwyer, 2001).
8. Price Earning Ratio is a ratio to determine how much market is paying for a company's earnings at any given moment by dividing the company's price-per-share with its earning per share (Yahoo finance, 2014).
9. Security Return Variability is a method used to test the variability of security return.
10. Trading Volume Activity is the ratio between total shares traded at any given time (Husnan, 2005).

## **2.5 Hypothesis**

- H1o : There is no significant difference of abnormal return before and after subsidized fuel restriction policy implementation.
- H1a : There is a significant difference of abnormal return before and after subsidized fuel restriction policy implementation.
- H2o : There is no significant difference of price earning ratio before and after subsidized fuel restriction policy implementation.

- H2a : There is a significant difference of price earning ratio before and after subsidized fuel restriction policy implementation.
- H3o : There is no significant difference of security return variability (SRV) before and after fuel restriction policy implementation.
- H3a : There is a significant difference of security return variability (SRV) before and after subsidized fuel restriction policy implementation.
- H4o : There is no significant difference of trading volume activity before and after subsidized fuel restriction policy implementation.
- H4a : There is a significant difference of trading volume activity before and after subsidized fuel restriction policy implementation.

## **Chapter III**

### **RESEARCH AND METHODOLOGY**

#### **3.1 Research Design**

There are two methods in doing scientific research those are qualitative and quantitative research. The differences between qualitative and quantitative research are the type of data, research process, instrument in collecting data and the purpose of research.

- a. Qualitative method usually gathered by observations, interviews or focus groups and the data also is gathered from written documents and through case studies, it less emphasis on counting numbers of people who think or behave in certain ways and more emphasis on explaining why people think and behave in certain ways.
- b. Quantitative method involves smaller numbers of respondents, Utilizes open-ended questionnaires or protocols, Best used to answer how and why questions. (Civicpartnership.org, 2013).

The researcher use quantitative method in conducting this research as the data needed for this research is quantitative data such as stock price movement, trading volume, and circulating share in the market. Quantitative observations are made using scientific tools and measurements. The results can be measured or counted, and any other person trying to quantitatively assess the same situation should end up with the same results. In Quantitative method pieces of information that can be counted mathematically, it usually gathered by surveys from large numbers of respondents selected randomly and it is analyzed using statistical methods Best used to answer what, when and who questions (Civicpartnership.org,2013).

In researching capital market reaction towards fuel restriction event, the method that will be used are event study, comparative analysis and classic assumption



test. Event study will be used to see the changes happened that are caused by the event of fuel restriction policy . Comparative analysis and Classic assumption test are used to analyse the difference of all independent variables which are Abnormal Return ( $X_1$ ), Price Earning Ratio ( $X_2$ ), Security Return Variability ( $X_3$ ) and Trading Volume Activity ( $X_4$ ) before and after the event.

The variables that used to predict the value of the dependent variable are called the independent variables (or sometimes, the predictor, explanatory variables) (statistics.laerd.com, 2013). The independent variables in this study are abnormal return ( $X_1$ ), Price Earning Ratio( $X_2$ ), Security Return Variability (SRV) ( $X_3$ ) and Trading Volume Activity ( $X_4$ ). Therefore, this study uses the quantitative method with event study analysis, comparative analysis and classic assumption test to answer the research questions.

### **3.2 Sampling Design**

Sampling Design is part of statistical methodology that related in taking a portion of the population. If a sampling is done correctly, statistical analysis can be used to generalize a whole population. There are two major types of sampling design: probability and nonprobability sampling. In probability sampling, the elements in the population have some known non-zero chance or probability of being selected as sample subjects. In non-probability sampling, the elements do not have a known or predetermined chance of being selected as subjects (Sekaran, Bougie, 2010).

In this research, the researcher will use non- probability sampling which is purposive sampling technique. Non-probability sampling focuses on sampling techniques where the units that are investigated are based on the judgement of the researcher. The main goal of purposive sampling is to focus on particular characteristics of a population that are of interest , which will best enable the researcher to answer research questions (Statisticlaerd, 2014).

The purposive sampling technique, also called judgement sampling, is the deliberate choice of an informant due to the qualities the informant possesses. It is a non random technique that does not need underlying theories or a set number of informants. Simply put, the researcher decides what needs to be known and sets out to find people who can and are willing to provide the information by virtue of knowledge or experience (Bernard 2002, Lewis & Sheppard 2006).

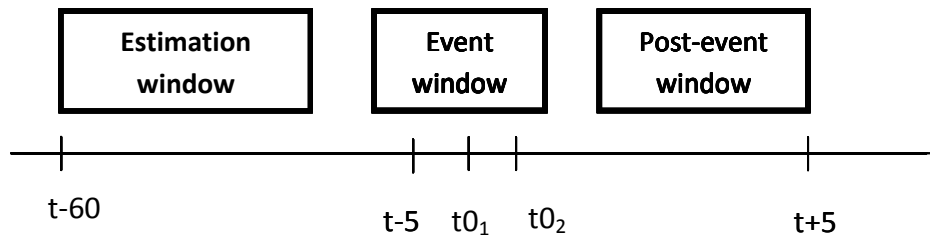
As this research is measuring on how capital market will react, then one of the good criteria in choosing sample is to choose stocks with high trading activities in each trading days, because market reaction reflects on the market activity. Therefore, purposive sampling technique is suitable in choosing sample for this research.

### **3.2.1 Population**

Population is all elements, individuals, or units that meet the selection criteria for a group to be studied (businessdictionary.com, 2013). The Population refers to the entire group of people, events, or things of interest that the researcher wishes to investigate (Sekaran, Bougie, 2010, pp. 262). In this study, research population is focused on the stocks listed in Indonesian Stock Exchange (IDX) for total of 508 stocks, as this research studying the capital market reaction towards fuel restriction event that happened in the market on August 2014.

### **3.2.2 Sample**

Sample is a subset of population (Sekaran, Bougie, 2010, pp. 263). Sample on this research will be used to investigate the research problems. This Research will use the event study method.



**Figure 3.2 Event study sample timeline**

Source : Developed by Researcher

Thus, researcher takes 12 days of capital market active days samples in this research which are 5 days before the event of fuel restriction policy and 5 days after the event of fuel restriction policy. The reason of researcher used t-5 until t+5 is to avoid the confounding effect of event outside from fuel restriction event. Setyawan (2006) that analyse the capital market reaction towards increasing fuel price support that using short term event window to avoid any confounding effect of event outside.

By using purposive sampling method, the sample that will be used in this study is stocks joined in LQ-45, by studying the abnormal return that can be seen from stock price movement, Security Return Variability (SRV), Price earning Ratio and trading volume activity movement.

As this research is using purposive sampling as its sampling method, then the criteria to determine Research sample are :

1. Stocks listed in IDX (Indonesian Stock Exchange)
2. Liquid stocks with high trading volume to detect capital market reaction (stocks joined in LQ 45 for period August 2014 to January 2015)
3. Availability of data of all stocks return in LQ 45 during event period

### **3.2.3 Source of Data**

The researcher use quantitative data, in which will collect LQ 45 stock price movement and the trading volume. Thus , the source of data for this research are coming from :

1. The LQ-45 Stock price movements and trading volume activity (TVA) will be taken from IDX (Indonesian Stock Exchange), Earning per share from Company's financial statement that are taken from Company's website and yahoo finance website for period of July 21, 2014 to August 13, 2014.
2. Theories and previous researches that will be used to support this research will be taken from library research and internet browsing . Researcher will collect data by reading several literatures and journals in library and internet related with this topic.

### **3.3 Research Instrument**

Research Instrument is the tool that used to answer the research questions that stated in the previous chapter. The Researcher's intention is to gather the information from as much various sources. Data can be obtained from primary or secondary data, Primary data refers to information obtained first-hand by the researcher on the variables of interest for specific purpose of the study and secondary data refer to information gathered from sources that already exist (Sekaran, Bougie, 2010). In order to fulfill the validity of this research, the researcher use only the secondary data.

#### **3.3.1 Secondary Data**

Secondary data is information gathered for purposes other than the completion of a research project and Secondary data is also used to gain initial insight into the research problem (steppingstones.ca, 2013). Secondary data is the data that have

been already collected by and readily available from other sources. Such data are cheaper and more quickly obtainable than the primary data and also may be available when primary data cannot be obtained at all (managementstudyguide.com, 2013).

Secondary data on this research is the literature studies. A literature studies is a technique of data collection based on information gathered from books and journals related to the research discussion. Data collected by learning and selecting from previous literature studies, books, journals and related websites.

Data needed for doing this research :

1. Subsidized fuel restriction Implementation date to conduct the event study analysis
2. Stocks price, stocks trading volume, total circulating share, and earning per share during the period to be used as the independent variables to determine the capital market reaction.
3. LQ45 index price and JCE for comparison purpose to see the stock price movement during the event period.

### **3.4 Data Collection Procedure**

The main topic of this research is the analysis of capital market reaction towards fuel restriction policy with LQ-45 stocks as the sample. As described in Chapter 2, capital market often react on the publication and information outside. The reaction in capital market then will impact on the volatility or the stock price movements ,it can be positive impact or even negative impact. The fuel restriction policy in which limiting the subsidized fuel volume in market then is predicted to give an impact on volatility of stock price in capital market.

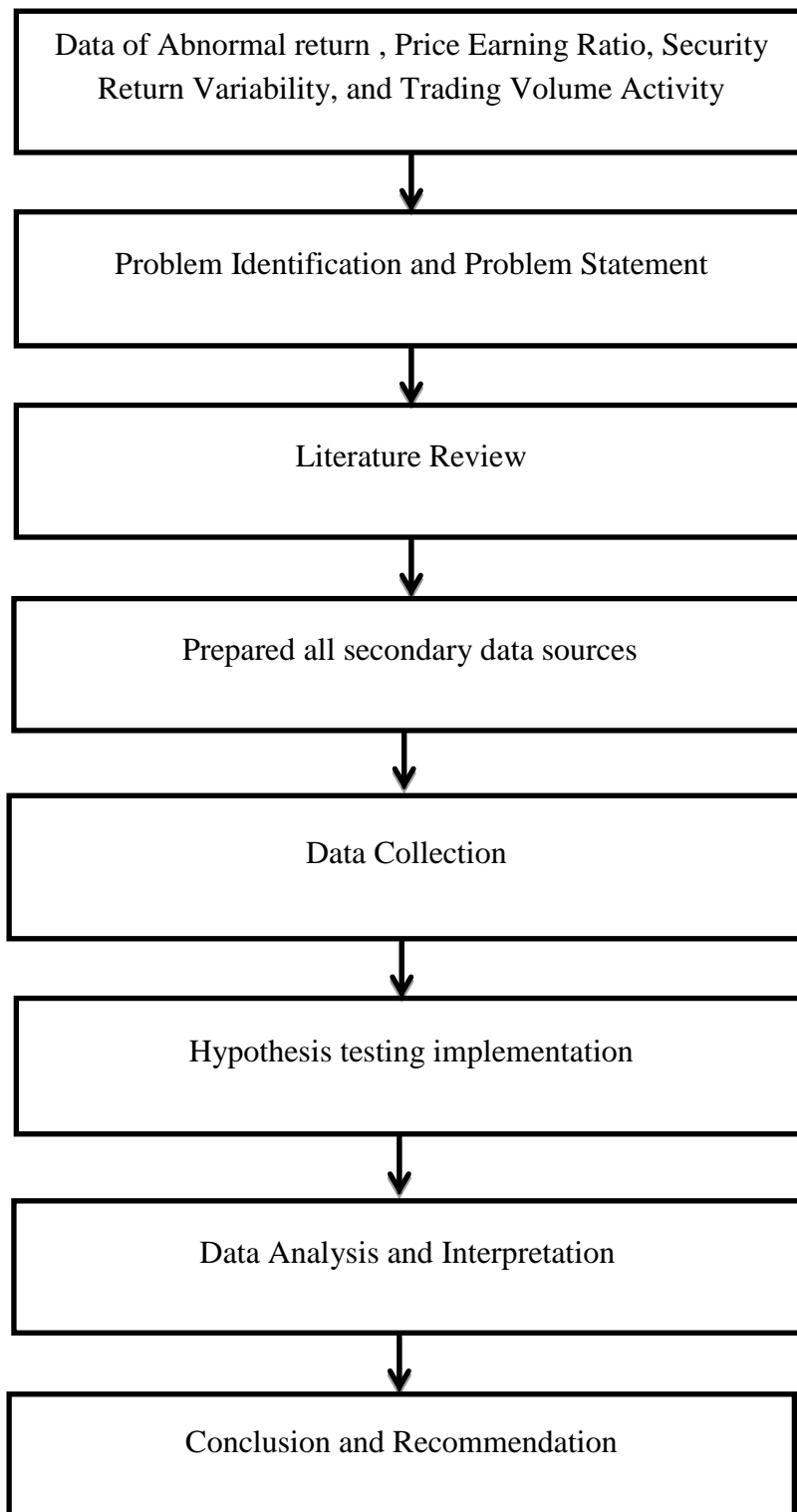
Before conducting this research, the researcher had to collect data containing the movement of stock price before and after the fuel restriction policy implementation, also stocks trading volume, circulating share to calculate the

trading volume activity (TVA) before and after the fuel restriction policy is being implemented and other data needed to calculate all independent variables.

After collecting the data, the researcher directly proceeded to the problem identification. From the data from previous researchers obtained, researcher found that there is significant movement on stock price and trading volume activity when there is increasing fuel price, however this study would like to measure the almost different policy which is the subsidized fuel restriction policy. This encouraged the researcher's curiosity to find out why it could happen. After reading some supporting passages from journals and articles, it could be identified that fuel restriction policy might also take part in influencing stock price movement in capital market . Furthermore, the problem statement was constructed as the basic view of the topic. To support the problem statement, theories and opinions are explored. All those findings are expressed in Chapter 2 of Literature Review.

Before secondary data were gathered from different sources, researcher determined first which data that should be processed to the next step by relying on literature review as the basis. Moreover, secondary data that were taken then, were used to calculate the independent variables. Furthermore, those data were described by using descriptive analysis to get better understanding about the position of all independent variables before proceeded to the next test. Then, all independent variables data were tested using normality test and one sample t-test afterwards followed by paired sample t-test and comparative analysis.

In this research, SPSS was utilized to analyze the data. Finally, the points of conclusion and recommendation are drafted. All steps conducted by the researcher from problem identification to the result accomplishment are reflected in the following figure of research framework.



**Figure 3.1: Research Framework**

Source: Constructed by Researcher

## 3.5 Hypothesis Testing

Statistical treatments that are used in this research are event study, abnormal return, trading volume activity and multiple regression.

### 3.5.1 Event Study

An event study methodology determines whether there is an ‘abnormal’ stock price effect associated with an anticipated event. From this analysis the researcher can infer the significance of the event (McWilliams and Siegel, 1997).

An event study methodology is a statistical technique that estimates the stock price impact of occurrences such as mergers, earnings announcement and so forth. The basic notion is to disentangle the effects of two types of information on stock prices –information that is specific to the firm under question (e.g, dividend announcement) and information that is likely to affect stock prices market wide (e.g, change in interest rates) (Mitchell and Netter, 1994).

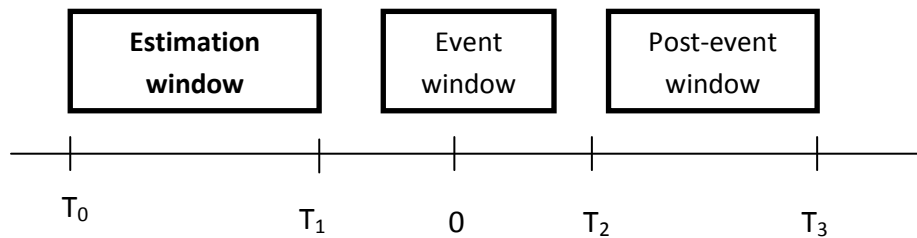
According to Woon (2014), The procedure of an event study comprises of :

1. Identify the event in question
2. Identify estimation, event and post-event windows
3. Estimate parameters using data in estimation window
4. Measure abnormal returns in the event window
5. Aggregate abnormal Returns:  $CAR_i(T_1, T_2) = \sum_{t=T_1}^{T_2} AR_{it}$

Broadly event studies are classified into three. Market efficiency studies assess the speed and accuracy of market’s reaction and incorporation of original news. Information impact researches evaluate the extent to which firms returns response to an event. Apart from these two , a few event studies examine the abnormal return after segregating securities into various sub sections. Event study methodology looks into the impact in both short and long horizon (Nageswara and Sreejith, 2014).



Event studies measure the relationship between an event that affects securities and the return of those securities . Event studies are often used to test the efficient market hypothesis. For example, abnormal returns that persist after an event occurs or abnormal returns that are associated with an anticipated event contradict the efficient market hypothesis. Aside from tests of market efficiency ,event studies are valuable in gauging the magnitude of an event’s impact (Kritzman, 2012).



**Figure 3.3 Event study timeline**

Source : Developed by researcher

### 3.5.2 Abnormal Return

Abnormal Return is the difference between Actual return and Expected return. In calculating Abnormal return of Stock  $i$  on the day  $t$  , the equation is :

$$AR_{it} = R_{it} - E(R_{it})$$

Where,

$AR_{it}$  = Abnormal Return of Stock  $i$  on the day  $t$

$R_{it}$  = Actual Return of Stock  $i$  on the day  $t$

$E(R_{it})$  = Expected Return of Stock  $i$  on the day  $t$

## 1. Actual Return

Actual return is the actual gain or loss of an investor, or in other words it is what investors actually receive from their investments (Investopedia.com, 2014).

$$R_{it} = \frac{P_t - P_{t-1}}{P_{t-1}}$$

Where,

- $R_{it}$  = Actual return
- $P_t$  = Stock Price on t
- $P_{t-1}$  = Stock Price on t-1

## 2. Expected Return

Expected return is a tool used to determine whether or not an investment has a positive or negative average net outcome- it is not a hard and fast figure of profit or loss (Investopedia.com, 2014).

$$E(R_{it}) = \alpha_i + \beta_i R_{mt}$$

Where,

- $E(R_{it})$  = Expected return to Stock i in period t
- $R_{mt}$  = Return to the market portfolio in period t
- $\alpha_i$  = Stock's alpha, or abnormal return
- $\beta_i$  = Stock's beta, or responsiveness to the market return

### 3.5.3 Cumulative Abnormal Return

$$CAAR_k = \sum_{t=1}^k AAR_t$$

Where,

$CAAR_k$  = Cumulative Average Abnormal Return for the k period

$\sum_{t=1}^k AAR_t$  = Average Abnormal Return of sample at time t

### 3.5.4 Price Earning Ratio

$$P/E \text{ Ratio} = \frac{\text{Price per share}}{EPS}$$

Where,

EPS = Earning Per Share of a stock

### 3.5.5 Average Price Earning Ratio

$$APER = \frac{PER_{i,t}}{n}$$

Where,

APER = Average Price Earning Ratio

$PER_{i,t}$  = Price Earning Ratio of security i in time t

n = Number of days of fuel restriction in the sample

### 3.5.6 Security Return Variability (SRV)

$$SRV_{i,t} = \frac{(AR_{i,t})^2}{V(AR_i)}$$

Where,

$SRV_{i,t}$  = Security Return Variability of stocks  $i$  on day  $t$

$AR_{i,t}$  = abnormal return of stock  $i$  on day  $t$

$V(AR_i)$  = Abnormal return variance on stock  $i$  on estimation period

### 3.5.7 Average Security Return Variability (ASRV)

$$ASRV_t = \frac{SRV_{i,t}}{n}$$

Where,

$ASRV_t$  = Average Security Return Variability at time  $t$

$SRV_{i,t}$  = Security Returns Variability of security  $i$  in time  $t$

$n$  = Number of days of fuel restriction in the sample

### 3.5.8 Trading Volume Activity (TVA)

Trading Volume Activity (TVA) calculation doing by comparing total share traded in a given period with total share outstanding of the company at the same time (Wismar'ien, 2004)

$$TVA = \frac{\sum \text{Stocks } i \text{ traded on time } t}{\sum \text{Circulating stocks } i \text{ on time } t}$$

### 3.5.9 Average Trading Volume Activity

$$ATVA_{i,t} = \frac{TVA_{i,t}}{n}$$

Where,

$ATVA_{i,t}$  = Average Trading Volume Activity stock i in time t

$TVA_{i,t}$  = Trading Volume Activity stock i in time t

n = Number of days of fuel restriction in the sample

### **3.6 Comparative Analysis**

A primary goal of comparative analysis is to achieve a meaningful interpretation of the observed variables by comparing variables value before and after the event. The primary reason for comparative analysis is the explanatory interest of gaining a better understanding of the causal processes involved in the production of an event, feature or relationship (Pickvance, 2005).

### **3.7 Classic Assumption Test**

Classical assumption is the statistical requirements that must be met in multiple linear regression analysis (hellomgz.blogspot.com, 2013). In order to use multiple regression models, classic assumption test need to implement such as normality testing, heteroscedascity testing and multicollinearity.

#### **3.7.1 Descriptive Analysis**

Descriptive analysis is used to describe the data as it is difficult to make sense of a large amount of quantitative data. In this research , the descriptive statistics that will be measured are means , standard deviation, minimum and maximum value. Means is the most commonly tool to measure the central value of a set of quantitative data. It is calculated as the sum of all observations divided by the total number of observations. Each observation makes a contribution to the mean value and thus it is sensitive to the behaviour of outlying

data; as the largest value increases this causes the mean value to increase and conversely, as the value of the smallest observation becomes smaller the value of the mean decreases (Freeman,2014).

The tool for measuring the spread is standard deviation. It provides a summary of the differences of each observation from the mean value (Freeman, 2014).

### **3.7.2 Normality Test**

Normality test used to test the independent variable(X) and the dependent variable(Y) whether normally distributed or not distributed normally. Normality Tests performed using Kolmogorov- smirnov test ,in which has at least two major advantages over the chi-square test (Lilliefors, 1967 ) :

1. It can be used with small sample sizes, where the validity of the chi-square test would be questionable.
2. Often it appears to be a more powerful test than the chi-square test for any sample size.

### **3.7.3 T-test**

T-test are used for the *partial* regression coefficients intended to determine how far the influence of one variable independent (abnormal return, price earning ratio, security return variability, and trading volume activity) individually in explaining the dependent variable (fuel restriction event).

#### **1. One sample t-test**

One sample t-test is a statistical procedure often performed for testing the mean value of a distribution. It can be used under the assumption that sampled distribution is normal. In interpreting the One sample t-

test result , the p value is used to determine whether variables that are being tested are significant or not.

One sample t-test is used when we want to know whether our sample comes from a particular population but we do not have full population information available for us. The one sample t-test compares a sample to a defined population, when “defined” population means the parameters of the population are known (Psychology.emory.edu, 2014).

p value < 0,05	Significant
P value > 0,05	Not significant

## 2. Paired sample T-test

A paired t-test is used to compare two population means where you have two samples in which observations in one sample can be paired with observations in the other sample. This test can be used to test cases such as :

1. Before and after observations on the same subjects
2. A comparison of two different methods of measurement or two different treatments where the measurements/treatments are applied to the same subjects.

Furthermore, a paired sample t-test is used to determine whether there is a significant difference between the average values of the same measurement made under two different conditions. Both measurements are made on each unit in a sample, and the test is based on the paired differences between these two values (Statistic Glossary, 2014).

In interpreting the result of Paired Sample t-test , there are 2 conditions that should be considered :

1. If  $-t_{table} \leq t_{calculated} \leq t_{table}$  then  $H_0$  is accepted.
2. If  $-t_{calculated} < -t_{table}$  or  $t_{calculated} > t_{table}$  then  $H_0$  is ignored.



## Chapter IV

### ANALYSIS AND INTERPRETATION

In this chapter, the researcher will interpret the data taken and analyze those data to determine the proper hypothesis that are mentioned in chapter I. In analyzing and interpreting data, the researcher is using SPSS version 16 program.

#### 4.1 Sample Profile

Sample that will be used during this research are 45 stocks that joined in LQ 45 index in IDX (Indonesia Stock Exchange) for period of August 2014 to January 2015. The LQ 45 stocks are stocks listed in IDX that consist of the most liquid stocks from 9 business sectors .

**Table 4.1**  
**LQ45 stock sectors**

Sector	Total stocks per sector	Percentage	Stock Name
Agricultural	2	4.44%	AALI , LSIP
Finance	6	13.33%	BBCA, BBNI, BBRI, BBTN, BDMN, BMRI
Consumer Goods	5	11.11%	GGRM, ICBP, INDF, KLBF, UNVR
Construction, Property and Real Estate	10	22.22%	ADHI, ASRI, BSDE,LPKR, PTPP, PWON, SMRA, WIKA, WSKT, CTRA

Trade,Service, Investment	6	13.33%	AKRA, BMTR, LPPF, MNCN, SCMA, UNTR
Infrastructure, Utility, Transportation	6	13.33%	EXCL, JSMR, PGAS, TAXI, TLKM, TBIG
Mining	6	13.33%	ADRO, ANTM, HRUM, INCO, ITMG, PTBA
Basic Industry and Chemicals	3	6.67%	CPIN, INTP, SMGR
Miscellaneous Industry	1	2.22%	ASII
<b>Total</b>	<b>45</b>	<b>100%</b>	

Source: Constructed by researcher

As seen on the table 4.1, LQ 45 stocks already represent all 9 business factors, thus it may suitable to use to represent capital market as a whole. It consists of 2 Agricultural stocks ,6 Finance stocks, 5 Consumer goods stocks, 10 Construction, Property and Real Estate stocks, 6 Trade,Service, Investment stock, 6 Infrastructure, Utility, Transportation stocks, 6 Infrastructure, Utility, Transportation stocks, 6 Mining stocks, 3 Basic Industry and Chemicals stocks, and 1 Miscellaneous industry stock. Furthermore, during this research sample period will be taken during event period as this research is using event study analysis. Thus, data will be gathered from July 21, 2014 to August 13, 2014.

## 4.2 Data Result Analysis

In this research, the researcher is using data of stock price during the event period, market return ,trading volume, circulating shares, earning per share during the event period. Furthermore, researcher calculates abnormal return,

trading volume activity , price earning ratio and security return variability from data provided which then will be used as four independent variables to determine the capital market reaction towards the event of fuel restriction policy.

The data gathered from several sources was used to meet the objectives of the study. The objectives of the study were to (1) Find out if abnormal return has significant difference before and after subsidized fuel restriction policy implementation. (2) Find out if Security Return Variability (SRV) has significant difference before and after subsidized fuel restriction policy implementation. (3) Find out if price earning ratio has significant difference before and after subsidized fuel restriction policy implementation. (4) Find out if trading volume activity (TVA) has significant difference before and after subsidized fuel restriction policy implementation.

Firstly, all raw data were used to calculate independent variables (Abnormal Return, Price Earning Ratio, Security Return Variability and Trading Volume Activity). Then ,each variable were analysed descriptively to find those means, standard deviation, minimum and maximum values . To meet the objectives, the researcher then continuing to do normality test to know whether all data are distributed normally or not and to be able to decide whether the researcher may continue to do t-test analysis or not. It is that to do one-sample t test ,all data should have normal distribution. Furthermore, if all data normally distributed, the researcher may proceed to do one- sample t-test for each independent variables in purpose to test whether a certain value (that were used as comparator) significantly different with mean value. Finally, to test the hypothesis, the researcher use paired sample t-test to compare mean value of independent variables before and after event to determine whether there is significant difference before and after event .

#### 4.2.1 Descriptive Analysis

Descriptive analysis are done for all independent variables, which are Abnormal Return, Trading Volume Activity, Security Return Variability and Price Earning Ratio .

##### 1. Abnormal Return

**Table 4.2**  
**Descriptive Analysis of Abnormal Return**

	Mean	Std. Dev	Minimum	Maximum
t-5	0.0114679	0.007178503	-0.0017411	0.024933
t-4	-0.00960739	0.0055598	-0.0204628	0.003509
t-3	0.0037846	0.004660771	-0.0040479	0.015501
t-2	0.002694224	0.004423241	-0.0049335	0.01437
t-1	-0.001153564	0.004008379	-0.0090977	0.010378
t01	0.009023187	0.006266733	-0.0018345	0.021735
t02	-0.001223957	0.004007849	-0.0091797	0.010305
t03	-0.011473346	0.006193505	-0.023634	0.003081
t+1	0.003552817	0.004606625	-0.0042362	0.015261
t+2	-0.002026898	0.004020745	-0.010115	0.009472
t+3	0.016463477	0.009199635	-0.0015503	0.034558
t+4	0.006146986	0.005307046	-0.0023095	0.018036
t+5	0.010315853	0.006740279	-0.0017851	0.023397

Source : Constructed by researcher

As seen on table 4.1, mean of abnormal return in t-5 is 0.0114679 with standard deviation of 0.007178503. The value of mean in t-5 is greater than its standard deviation, which means there is smaller variation of abnormal return LQ 45 stocks between its maximum and minimum value. In other words, abnormal return LQ 45 stocks are be in groups around its mean value. In addition, the positive AAR (Average Abnormal Return) in t-5 shows generally investors are having wealth improvement (positive Abnormal Return) during that day, whereas the maximum and minimum value are 0.024933 and - 0.0017411.

In t-4, the mean of abnormal return is -0.00960739 which is smaller than its standard deviation of 0.0055598. The higher standard deviation value shows there is a large variation between its maximum and minimum value (Santoso, 2000). Moreover, there is a negative AAR (Average Abnormal Return) in t-4 which means generally investors are having wealth declining (negative Abnormal Return) during that day, whereas the maximum and minimum value are 0.003509 and -0.0204628.

The mean of abnormal return in t-3 is 0.0037846 which is smaller than its standard deviation of 0.004660771. The small difference of standard deviation value with the mean value shows there is small variation between its maximum and minimum value. Moreover, the positive AAR (Average Abnormal Return) in t-3 shows generally investors are having wealth improvement (positive Abnormal Return) during that day, whereas the maximum and minimum value are 0.015501 and -0.0040479.

In t-2, as seen on table 4.1 the mean of abnormal return is 0.002694224 which is smaller than its standard deviation of 0.004423241. The small difference of standard deviation value with the mean value shows there is small variation between its maximum and minimum value. The positive AAR (Average Abnormal Return) in t-2 shows generally investors are having wealth improvement (positive Abnormal Return) during that day, whereas the maximum and minimum value are 0.01437 and -0.0049335.

Meanwhile, the mean of abnormal return in t-1 is -0.001153564 which is smaller than its standard deviation of 0.004008379. The small difference of standard deviation value with the mean value shows there is small variation between its maximum and minimum value, whereas the negative AAR (Average Abnormal Return) in t-1 shows generally investors are having wealth declining (negative Abnormal Return) during that day. Moreover, the maximum and minimum value are 0.010378 and -0.0090977.

Furthermore the mean of abnormal return in t01 which is the first event day is 0.009023187 with standard deviation of 0.006266733. The value of mean in t01 is greater than its standard deviation, which means there is smaller variation of abnormal return LQ 45 stocks between its maximum and minimum value. In other words, abnormal return LQ 45 stocks are be in groups around its mean value. In addition, the positive AAR (Average Abnormal Return) in t01 shows generally investors are having wealth improvement (positive Abnormal Return) during that day, whereas the maximum and minimum value are 0.021735 and -0.0018345.

In t02, as seen on table 4.1 the mean of abnormal return is -0.001223957 which is smaller than its standard deviation of 0.004007849. The small difference of standard deviation value with the mean value shows there is a variation between its maximum and minimum value. The negative AAR (Average Abnormal Return) in t02 shows generally investors are having wealth declining (negative Abnormal Return) during that day, whereas the maximum and minimum value are 0.010305 and -0.0091797.

As seen on table 4.1 the mean of abnormal return in t03 is -0.011473346 which is smaller than its standard deviation of 0.006193505. As the difference between the standard deviation and its mean is quite small, it shows there is a small variation between its maximum and minimum value. The negative AAR (Average Abnormal Return) in t03 shows generally investors are having wealth declining (negative Abnormal Return) during that day, whereas the maximum and minimum value are 0.003081 and -0.023634.

The mean of abnormal return in t+1 is 0.003552817 which is smaller than its standard deviation of 0.004606625. As the difference between the standard deviation and its mean is quite small, it shows there is a small variation between its maximum and minimum value. Moreover, the positive AAR (Average Abnormal Return) in t+1 shows generally investors are having

wealth improvement (positive Abnormal Return) during that day, whereas the maximum and minimum value are 0.015261 and -0.0042362.

As seen on table 4.1 the mean of abnormal return in t+2 is -0.002026898 which is smaller than its standard deviation of 0.004020745. As the difference between the standard deviation and its mean is quite small, it shows there is a small variation between its maximum and minimum value. Moreover, the negative AAR (Average Abnormal Return) in t+2 shows generally investors are having wealth declining (negative Abnormal Return) during that day, whereas the maximum and minimum value are 0.009472 and -0.010115.

The mean of abnormal return in t+3 is 0.016463477 which is greater than its standard deviation of 0.009199635. It shows there is smaller variation between its maximum and minimum value. Moreover, the positive AAR (Average Abnormal Return) in t+3 shows generally investors are having wealth improvement (positive Abnormal Return) during that day, whereas the maximum and minimum value are 0.034558 and -0.0015503.

In t+4 the mean of abnormal return is 0.006146986 which is greater than its standard deviation of 0.005307046. It shows there is smaller variation between its maximum and minimum value. Moreover, the positive AAR (Average Abnormal Return) in t+4 shows generally investors are having wealth improvement (positive Abnormal Return) during that day, whereas the maximum and minimum value are 0.018036 and -0.0023095.

The mean of abnormal return in t+5 is 0.010315853 which is greater than its standard deviation of 0.006740279. It shows there is smaller variation between its maximum and minimum value. Moreover, the positive AAR (Average Abnormal Return) in t+5 shows generally investors are having wealth improvement (positive Abnormal Return) during that day, whereas the maximum and minimum value are 0.023397 and -0.0017851.

**Table 4.3**  
**Comparison table of Abnormal Return**  
**before and after the Fuel restriction**

<b>T</b>	<b>AAR<sub>t</sub> (before)</b>	<b>T</b>	<b>AAR<sub>t</sub> (After)</b>
<b>-5</b>	<b>0.011468</b>	<b>+5</b>	<b>0.003553</b>
<b>-4</b>	<b>-0.00961</b>	<b>+4</b>	<b>-0.00203</b>
<b>-3</b>	<b>0.003785</b>	<b>+3</b>	<b>0.016463</b>
<b>-2</b>	<b>0.002694</b>	<b>+2</b>	<b>0.006147</b>
<b>-1</b>	<b>-0.00115</b>	<b>+1</b>	<b>0.010316</b>
<b>Mean</b>	<b>0.001437</b>	<b>Mean</b>	<b>0.00689</b>
<b>St. Dev</b>	<b>0.007688</b>	<b>St.Dev</b>	<b>0.006975</b>

Source : Constructed by researcher

By looking at the table above, during 5 days before the event of fuel restriction policy and the implementation day of fuel restriction ,the negative abnormal return are shown only at the four and one day before the event (t-4 and t-1) ,the average abnormal return are -0.96% and -0.1153%. This means the real return is not as big as the return that is expected in the market, or in other words this indicates as bad news. The market starts to give negative reaction only on one day before and at the day of the event and after the event period, thus it may indicates that investors act normally and do not interest or shock of this event.

## 2. Price Earning Ratio

**Table 4.4**  
**Descriptive Analysis of Price Earning Ratio**

	Mean	Std. Dev	Minimum	Maximum
t-5	25.95258	19.77469	-50.9345794	63.622754
t-4	25.68813	19.64913	-50.4672897	62.874251
t-3	25.75683	19.66353	-50.4672897	62.5



t-2	25.61435	19.75014	-51.635514	61.002994
t-1	25.57087	19.57574	-50.4672897	60.628743
t01	25.79861	19.98264	-53.9719626	63.717068
t02	25.92668	19.99586	-53.271028	62.5
t03	25.57804	19.71936	-53.5046729	61.751497
t+1	25.55147	19.53593	-52.3364486	61.751497
t+2	25.47554	19.42118	-51.635514	61.377246
t+3	25.84647	19.85907	-53.271028	63.248503
t+4	26.05788	20.14663	-53.9719626	65.494012
t+5	26.30468	20.48077	-56.0747664	65.494012

Source : Constructed by researcher

As seen on table 4.4, all means of Price Earning Ratio (PER) are greater than its standard deviations. In t-5 the mean of Price Earning Ratio (PER) is 25.95258, greater than its standard deviation of 19.77469 with maximum and minimum value of 63.622754 and -50.9345794. As the difference between the standard deviation and its mean is small, it shows there is smaller variation between its maximum and minimum value. The average price earning ratio in t-5 of 25.95 shows the average comparison between stocks price and its earning per share are 25.95 times.

In t-4 the mean of Price Earning Ratio (PER) is 25.68813, greater than its standard deviation of 19.64913 with maximum and minimum value of 62.874251 and -50.4672897. As the difference between the standard deviation and its mean is small, it shows there is smaller variation between its maximum and minimum value. The average price earning ratio in t-4 of 25.69 shows the average comparison between stocks price and its earning per share are 25.69 times, decreased for 0.26 times from t-5.

In t-3 the mean of Price Earning Ratio (PER) is 25.75683, greater than its standard deviation of 19.66353 with maximum and minimum value of 62.5 and -50.4672897. As the difference between the standard deviation and its mean is small, it shows there is smaller variation between its maximum and minimum value. The average price earning ratio in t-3 of 25.76 shows the

average comparison between stocks price and its earning per share are 25.76 times, increased for 0.07 times from t-4.

In t-2 the mean of Price Earning Ratio (PER) is 25.61435, greater than its standard deviation of 19.75014 with maximum and minimum value of 61.002994 and -51.635514. As the difference between the standard deviation and its mean is small, it shows there is smaller variation between its maximum and minimum value. The average price earning ratio in t-2 of 25.61 shows the average comparison between stocks price and its earning per share are 25.61 times, decreased for 0.15 times from t-3.

In t-1 the mean of Price Earning Ratio (PER) is 25.57087, greater than its standard deviation of 19.57574 with maximum and minimum value of 60.628743 and -50.4672897. As the difference between the standard deviation and its mean is small, it shows there is smaller variation between its maximum and minimum value. The average price earning ratio in t-1 of 25.57 shows the average comparison between stocks price and its earning per share are 25.57 times, decreased for 0.04 times from t-2.

In t01 the mean of Price Earning Ratio (PER) is 25.79861, greater than its standard deviation of 19.98264 with maximum and minimum value of 63.717068 and -53.9719626. As the difference between the standard deviation and its mean is small, it shows there is smaller variation between its maximum and minimum value. The average price earning ratio in t01 of 25.80 shows the average comparison between stocks price and its earning per share are 25.80 times, increased for 0.23 times from t-1.

In t02 the mean of Price Earning Ratio (PER) is 25.92668, greater than its standard deviation of 19.99586 with maximum and minimum value of 62.5 and -53.271028. As the difference between the standard deviation and its mean is small, it shows there is smaller variation between its maximum and minimum value. The average price earning ratio in t02 of 25.93 shows the

average comparison between stocks price and its earning per share are 25.93 times, increased for 0.13 times from t02.

In t03 the mean of Price Earning Ratio (PER) is 25.57804, greater than its standard deviation of 19.71936 with maximum and minimum value of 61.751497 and -53.5046729. As the difference between the standard deviation and its mean is small, it shows there is smaller variation between its maximum and minimum value. The average price earning ratio in t03 of 25.58 shows the average comparison between stocks price and its earning per share are 25.58 times, decreased for 0.35 times from t02.

In t+1 the mean of Price Earning Ratio (PER) is 25.55147, greater than its standard deviation of 19.53593 with maximum and minimum value of 61.751497 and -52.3364486. As the difference between the standard deviation and its mean is small, it shows there is smaller variation between its maximum and minimum value. The average price earning ratio in t+1 of 25.55 shows the average comparison between stocks price and its earning per share are 25.55 times, decreased for 0.03 times from t03.

In t+2 the mean of Price Earning Ratio (PER) is 25.47554, greater than its standard deviation of 19.42118 with maximum and minimum value of 61.377246 and -51.635514. As the difference between the standard deviation and its mean is small, it shows there is smaller variation between its maximum and minimum value. The average price earning ratio in t+2 of 25.47 shows the average comparison between stocks price and its earning per share are 25.47 times, decreased for 0.08 times from t+1.

In t+3 the mean of Price Earning Ratio (PER) is 25.84647, greater than its standard deviation of 19.85907 with maximum and minimum value of 63.248503 and -53.271028. As the difference between the standard deviation and its mean is small, it shows there is smaller variation between its maximum and minimum value. The average price earning ratio in t+3 of 25.85 shows the

average comparison between stocks price and its earning per share are 25.85 times, increased for 0.38 times from t+2.

In t+4 the mean of Price Earning Ratio (PER) is 26.05788, greater than its standard deviation of 20.14663 with maximum and minimum value of 65.494012 and -53.9719626. As the difference between the standard deviation and its mean is small, it shows there is smaller variation between its maximum and minimum value. The average price earning ratio in t+4 of 26.06 shows the average comparison between stocks price and its earning per share are 26.06 times, increased for 0.21 times from t+3.

In t+5 the mean of Price Earning Ratio (PER) is 26.30468, greater than its standard deviation of 20.48077 with maximum and minimum value of 65.494012 and -56.0747664. As the difference between the standard deviation and its mean is small, it shows there is smaller variation between its maximum and minimum value. The average price earning ratio in t+5 of 26.30 shows the average comparison between stocks price and its earning per share are 26.30 times, increased for 0.24 times from t+4.

**Table 4.5**  
**Comparison table of Price Earning Ratio**  
**before and after the Fuel restriction**

<b>T</b>	<b>PER<sub>t</sub> (before)</b>	<b>T</b>	<b>PER<sub>t</sub> (After)</b>
<b>-5</b>	<b>25.95258</b>	<b>+5</b>	<b>25.55147</b>
<b>-4</b>	<b>25.68813</b>	<b>+4</b>	<b>25.47554</b>
<b>-3</b>	<b>25.75683</b>	<b>+3</b>	<b>25.84647</b>
<b>-2</b>	<b>25.61435</b>	<b>+2</b>	<b>26.05788</b>
<b>-1</b>	<b>25.57087</b>	<b>+1</b>	<b>26.30468</b>
<b>Mean</b>	<b>25.71655</b>	<b>Mean</b>	<b>25.84721</b>
<b>St. Dev</b>	<b>0.149839</b>	<b>St.Dev</b>	<b>0.346144</b>

Source : Constructed by researcher

Price Earning Ratio (PER) is one of the ratio used to detect whether one stock is being offered too expensive or not . From the table 4.5, stocks joined in LQ45's PER is not moving too extreme . However it can be seen the stocks is having the decreasing PER (or tend to become cheap) on the three days before the event and on the third event day up to the two days after the event. Moreover, the PER starts to increase (tend to become expensive) on the t+3 to t+5.

### 3. Security Return Variability

**Table 4.6**  
**Descriptive Analysis of**  
**Security Return Variability**

	Mean	Std. Dev	Minimum	Maximum
t-5	3.169482	5.367413	0.012036	31.8498911
t-4	3.511946	10.00766	0.036765	68.1225048
t-3	1.716181	6.653867	4.27E-05	43.4954425
t-2	1.656664	6.888326	2.56E-05	45.2948503
t-1	1.738065	7.784645	0.001119	51.9361418
t01	2.510638	5.693624	0.000991	35.3589086
t02	1.743785	7.801895	0.000943	52.0618711
t03	4.198826	10.52886	0.001548	71.9905551
t+1	1.700477	6.702872	0.000492	43.8748939
t+2	1.819779	8.000518	5.77E-05	53.5067566
t+3	5.085851	5.024444	0.057709	26.2147066
t+4	1.970234	6.183105	0.003461	39.7219881
t+5	2.836167	5.509705	0.000527	33.4806404

Source : Constructed by researcher

As seen above in table 4.6 , mostly In t-5 the mean of security return variability are smaller than its standard deviation. In t-5 the mean of security return variability (SRV) is 3.169482 , smaller than its standard deviation of

5.367413 with maximum and minimum value of 31.8498911 and 0.012036. As the difference between the standard deviation and its mean is quite small, it shows there is a small variation between its maximum and minimum value.

In t-4 the mean of security return variability (SRV) is 3.511946 , smaller than its standard deviation of 10.00766 with maximum and minimum value of 68.1225048 and 0.036765. As the difference between the standard deviation and its mean is quite small, it shows there is a small variation between its maximum and minimum value.

In t-3 the mean of security return variability (SRV) is 1.716181 , smaller than its standard deviation of 6.653867 with maximum and minimum value of 43.4954425 and 4.27E-05. As the difference between the standard deviation and its mean is quite small, it shows there is a small variation between its maximum and minimum value.

In t-2 the mean of security return variability (SRV) is 1.656664, smaller than its standard deviation of 6.888326 with maximum and minimum value of 45.2948503 and 2.56E-05. As the difference between the standard deviation and its mean is quite small, it shows there is a small variation between its maximum and minimum value.

In t-1 the mean of security return variability (SRV) is 1.738065, smaller than its standard deviation of 7.784645 with maximum and minimum value of 51.9361418 and 0.001119. As the difference between the standard deviation and its mean is quite small, it shows there is a small variation between its maximum and minimum value.

In t01 the mean of security return variability (SRV) is 2.510638 , smaller than its standard deviation of 5.693624 with maximum and minimum value of 35.3589086 and 0.000991. As the difference between the standard deviation

and its mean is quite small, it shows there is a small variation between its maximum and minimum value.

In t02 the mean of security return variability (SRV) is 1.743785, smaller than its standard deviation of 7.801895 with maximum and minimum value of 52.0618711 and 0.000943. As the difference between the standard deviation and its mean is quite small, it shows there is a small variation between its maximum and minimum value.

In t03 the mean of security return variability (SRV) is 10.52886, smaller than its standard deviation of 4.198826 with maximum and minimum value of 71.9905551 and 0.001548. As the difference between the standard deviation and its mean is quite small, it shows there is a small variation between its maximum and minimum value.

In t+1 the mean of security return variability (SRV) is 1.700477, smaller than its standard deviation of 6.702872 with maximum and minimum value of 43.8748939 and 0.000492. As the difference between the standard deviation and its mean is quite small, it shows there is a small variation between its maximum and minimum value.

In t+2 the mean of security return variability (SRV) is 1.819779, smaller than its standard deviation of 8.000518 with maximum and minimum value of 53.5067566 and 5.77E-05. As the difference between the standard deviation and its mean is quite small, it shows there is a small variation between its maximum and minimum value.

In t+3 the mean of security return variability (SRV) is 5.085851, greater than its standard deviation of 5.024444 with maximum and minimum value of 26.2147066 and 0.057709. As the difference between the standard deviation and its mean is small, it shows there is smaller variation between its maximum and minimum value.

In t+4 the mean of security return variability (SRV) is 1.970234, smaller than its standard deviation of 6.183105 with maximum and minimum value of 39.7219881 and 0.003461. As the difference between the standard deviation and its mean is quite small, it shows there is a small variation between its maximum and minimum value.

In t+5 the mean of security return variability (SRV) is 2.836167, smaller than its standard deviation of 5.509705 with maximum and minimum value of 33.4806404 and 0.000527. As the difference between the standard deviation and its mean is quite small, it shows there is a small variation between its maximum and minimum value.

**Table 4.7**  
**Comparison table of Security Return Variability**  
**before and after the Fuel restriction**

<b>T</b>	<b>AASRV<sub>t</sub>(before)</b>	<b>T</b>	<b>AASRV<sub>t</sub>(After)</b>
<b>-5</b>	<b>3.169482</b>	<b>+5</b>	<b>1.700477</b>
<b>-4</b>	<b>3.511946</b>	<b>+4</b>	<b>1.819779</b>
<b>-3</b>	<b>1.716181</b>	<b>+3</b>	<b>5.085851</b>
<b>-2</b>	<b>1.656664</b>	<b>+2</b>	<b>1.970234</b>
<b>-1</b>	<b>1.738065</b>	<b>+1</b>	<b>2.836167</b>
<b>Mean</b>	<b>2.358468</b>	<b>Mean</b>	<b>2.682502</b>
<b>St. Dev</b>	<b>0.90592</b>	<b>St.Dev</b>	<b>1.4156</b>

Source : Constructed by researcher

Security Return Variability is one of the ratio used to detect the increasing and decreasing of stock return or in other word is to check the variability of stock return. From the table 4.7, stocks joined in LQ45's SRV is not moving too extreme . However it can be seen the stocks is having the decreasing SRV on



the three days before the event and then start to increase after the event. The SRV mean after the event is also showing an increasing value of 0.33 point from 2.35 to 2.68.

#### 4. Trading Volume Activity

**Table 4.8**  
**Descriptive Analysis of**  
**Trading Volume Activity (TVA)**

	Mean	Std. Dev	Minimum	Maximum
t-5	0.003211	0.005689	0.00014406	0.0331406
t-4	0.00407	0.006975	0.00026362	0.0371829
t-3	0.002932	0.00619	5.8281E-05	0.0378816
t-2	0.002431	0.00382	0.0001203	0.0199928
t-1	0.002045	0.001946	0.00020868	0.0110091
t01	0.002496	0.002186	0.00026811	0.0113917
t02	0.002464	0.002999	0.00017927	0.0123467
t03	0.00198	0.002665	0.00013666	0.0143794
t+1	0.001909	0.001828	0.00017118	0.0071857
t+2	0.001288	0.001208	6.4469E-05	0.0044973
t+3	0.001733	0.002211	9.4417E-05	0.0096239
t+4	0.002723	0.00477	0.00010949	0.0216652
t+5	0.001897	0.002374	0.00021649	0.0101326

Source : Constructed by researcher

As seen on table 4.8 the mean of trading volume activity in t-5 is 0.003211 which is smaller than its standard deviation of 0.005689 with maximum and minimum value are 0.0331406 and 0.00014406. As the difference between the standard deviation and its mean is quite small, it shows there is a small variation between its maximum and minimum value.

Moreover, the mean of trading volume activity in t-4 is 0.00407 which is smaller than its standard deviation of 0.006975 with maximum and minimum value are 0.0371829 and 0.00026362. As the difference between the standard

deviation and its mean is quite small, it shows there is a small variation between its maximum and minimum value. In addition, the trading volume has increased for 0.00086 ,from 0.00321 to 0.00407.

In t-3 the mean of trading volume activity is 0.002932 which is smaller than its standard deviation of 0.00619 with maximum and minimum value are 0.0378816 and 5.8281E-05. As the difference between the standard deviation and its mean is quite small, it shows there is a small variation between its maximum and minimum value. In t-3, the trading volume activity is decreasing from 0.00407 (t-4) to 0.002932.

In t-2 the mean of trading volume activity is 0.002431 which is smaller than its standard deviation of 0.00382 with maximum and minimum value are 0.0199928 and 0.0001203. As the difference between the standard deviation and its mean is quite small, it shows there is a small variation between its maximum and minimum value. Moreover, in t-2, the trading volume activity is decreasing from 0.002932 (t-3) to 0.002431.

The mean of trading volume activity in t-1 is 0.002045 which is greater than its standard deviation of 0.001946 with maximum and minimum value are 0.0110091 and 0.00020868. It shows there is smaller variation between its maximum and minimum value. Moreover, in t-1, the trading volume activity is decreasing from 0.002431(t-2) to 0.002045.

In t01 ,the mean of trading volume activity is 0.002496 which is greater than its standard deviation of 0.002186 with maximum and minimum value are 0.0113917 and 0.00020868. It shows there is smaller variation between its maximum and minimum value. Moreover, in t01 the trading volume activity is starting to increase from 0.002045 (t-1) to 0.002496.

Furthermore, in t02 the mean of trading volume activity is 0.002464 which is smaller than its standard deviation of 0.002999 with maximum and minimum value are 0.0123467 and 0.00017927. As the difference between the standard

deviation and its mean is quite small, it shows there is a small variation between its maximum and minimum value. Moreover, in t02 the trading volume activity is decreasing from 0.002496 (t01) to 0.002464 .

In t03 the mean of trading volume activity is 0.00198 which is smaller than its standard deviation of 0.002665 with maximum and minimum value are 0.0143794 and 0.00013666. As the difference between the standard deviation and its mean is quite small, it shows there is a small variation between its maximum and minimum value. Moreover, in t02 the trading volume activity is decreasing from 0.002464 (t03) to 0.00198.

In t+1 ,the mean of trading volume activity is 0.001909 which is greater than its standard deviation of 0.001828 with maximum and minimum value are 0.0071857 and 0.00017118 . It shows there is smaller variation between its maximum and minimum value. Moreover, in t+1 the trading volume activity is decreasing from 0.00198 (t03) to 0.001909.

In t+2 ,the mean of trading volume activity is 0.001288 which is greater than its standard deviation of 0.001208 with maximum and minimum value are 0.0044973 and 6.4469E-05. It shows there is smaller variation between its maximum and minimum value. Moreover, in t+2 the trading volume activity is decreasing from 0.001909 (t+1) to 0.001288.

In t+3 the mean of trading volume activity is 0.001733 which is smaller than its standard deviation of 0.002211 with maximum and minimum value are 0.0096239 and 9.4417E-05. As the difference between the standard deviation and its mean is quite small, it shows there is a small variation between its maximum and minimum value. Moreover, in t+3 the trading volume activity starts to increase from 0.001288 (t+2) to 0.001733.

In t+4 the mean of trading volume activity is 0.002723 which is smaller than its standard deviation of 0.00477 with maximum and minimum value are

0.0216652 and 0.00010949. As the difference between the standard deviation and its mean is quite small, it shows there is a small variation between its maximum and minimum value. Moreover, in t+4 the trading volume activity is keep increasing from 0.001733 (t+3) to 0.002723.

In t+5 the mean of trading volume activity is 0.001897 which is smaller than its standard deviation of 0.002374 with maximum and minimum value are 0.0101326 and 0.00021649. As the difference between the standard deviation and its mean is quite small, it shows there is a small variation between its maximum and minimum value. Moreover, in t+5 the trading volume activity starts to decrease from 0.002723 (t+4) to 0.001897.

**Table 4.9**  
**Comparison table of Trading Volume Activity**  
**before and after the Fuel restriction**

<b>T</b>	<b>ATVA<sub>t</sub> (before)</b>	<b>T</b>	<b>ATVA<sub>t</sub> (After)</b>
<b>-5</b>	<b>0.003211</b>	<b>+5</b>	<b>0.001909</b>
<b>-4</b>	<b>0.00407</b>	<b>+4</b>	<b>0.001288</b>
<b>-3</b>	<b>0.002932</b>	<b>+3</b>	<b>0.001733</b>
<b>-2</b>	<b>0.002431</b>	<b>+2</b>	<b>0.002723</b>
<b>-1</b>	<b>0.002045</b>	<b>+1</b>	<b>0.001897</b>
<b>Mean</b>	<b>0.002938</b>	<b>Mean</b>	<b>0.00191</b>
<b>St. Dev</b>	<b>0.000776</b>	<b>St.Dev</b>	<b>0.000519</b>

Source : Constructed by researcher

From Trading Volume Activity side, the affect of the event can be seen clearly on the decreasing amount of trading volume on three days before the event day. The increasing trading volume is happened during t-5 to t-4, however the TVA on t-3 to t-1 is keep decreasing afterwards. The trading volume is keep decreasing on the second event day until the two days of event.

#### 4.2.2 Normality Test

**Table 4.10**  
**One-Sample Kolmogorov-Smirnov**  
**Test for Abnormal Return before and after the event**

**One-Sample Kolmogorov-Smirnov Test**

		AR_before	AR_after
N		5	5
Normal Parameters <sup>a</sup>	Mean	...	...
	Std. Deviation	...	...
Most Extreme Differences	Absolute	.180	.142
	Positive	.180	.142
	Negative	-.168	-.116
Kolmogorov-Smirnov Z		.403	.318
Asymp. Sig. (2-tailed)		.997	1.000

a. Test distribution is Normal.

Source :Constructed in SPSS

Based on the normality test on the average abnormal return before and after the fuel restriction event indicate a normal distribution. It can be seen on the probability (2 tailed) value before and after the event , 0.997 and 1.000 which are bigger than 0.05. Thus, the data of average abnormal return before and after the fuel restriction event are normally distributed and data are suitable to proceed to paired sample t-test.

**Table 4.11**  
**One-Sample Kolmogorov-Smirnov Test for Price Earning Ratio**  
**before and after the event**

**One-Sample Kolmogorov-Smirnov Test**

		PER_before	PER_after
N		5	5
Normal Parameters <sup>a</sup>	Mean	2.5716552E1	2.58472E1
	Std. Deviation	...	...
Most Extreme Differences	Absolute	.194	.204
	Positive	.194	.204
	Negative	-.165	-.141
Kolmogorov-Smirnov Z		.434	.455
Asymp. Sig. (2-tailed)		.992	.986

a. Test distribution is Normal.

Source : Constructed in SPSS

Based on the normality test on the average price earning ratio before and after the fuel restriction event indicate a normal distribution. It can be seen on the probability (2 tailed) value before and after the event , 0.992 and 0.986 which are bigger than 0.05. Thus, the data of average price earning ratio before and after the fuel restriction event are normally distributed and data are suitable to proceed to paired sample t-test.

**Table 4.12**  
**One-Sample Kolmogorov-Smirnov**  
**Test for Security Return Variability before and after the event**

**One-Sample Kolmogorov-Smirnov Test**

		SRV before	SRV after
N		5	5
Normal Parameters <sup>a</sup>	Mean	2.358467E0	2.68250E0
	Std. Deviation	...	1.41559E0
Most Extreme Differences	Absolute	.353	.293
	Positive	.353	.293
	Negative	-.219	-.244
Kolmogorov-Smirnov Z		.790	.654
Asymp. Sig. (2-tailed)		.560	.785

a. Test distribution is Normal.

Source :Constructed in SPSS

Based on the normality test on the average security return variability before and after the fuel restriction event indicate a normal distribution. It can be seen on the probability (2 tailed) value before and after the event , 0.560 and 0.785 which are bigger than 0.05. Thus, the data of average security return variability before and after the fuel restriction event are normally distributed and data are suitable to proceed to paired sample t-test.

**Table 4.13**  
**One-Sample Kolmogorov-Smirnov**  
**Test for Trading Volume Activity before and after the event**

**One-Sample Kolmogorov-Smirnov Test**

		TVA_before	TVA_after
N		5	5
Normal Parameters <sup>a</sup>	Mean	...	...
	Std. Deviation	...	...
Most Extreme Differences	Absolute	.162	.301
	Positive	.162	.301
	Negative	-.128	-.167
Kolmogorov-Smirnov Z		.363	.673
Asymp. Sig. (2-tailed)		.999	.756

a. Test distribution is Normal.

Source : Constructed in SPSS

Based on the normality test on the average trading volume activity before and after the fuel restriction event indicate a normal distribution. It can be seen on the probability (2 tailed) value before and after the event , 0.999 and 0.756 which are bigger than 0.05. Thus, the data of average trading volume activity before and after the fuel restriction event are normally distributed and data are suitable to proceed to paired sample t-test.

### 4.2.3 One Sample T-Test

To see the availability of abnormal return on stocks before and after the event, the method that can be used is one sample t-test. Principally, this test is comparing the mean of abnormal return stocks with stock return 0 (stocks with no abnormal return) (Setyawan, 2006).

**Table 4.14**  
**One Sample T-test for Abnormal Return**

One-Sample Test						
	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
AR_5	10.717	44	.000	...	...	...
AR_4	-11.592	44	.000	-9.6073903E-3	-1.1277739E-2	-7.9370416E-3
AR_3	5.447	44	.000	...	2.3843497E-3	5.1848506E-3
AR_2	4.086	44	.000	...	1.3653353E-3	4.0231125E-3
AR_1	-1.931	44	.060	-1.1535638E-3	-2.3578141E-3	5.0686315E-5
AR01	9.270	44	.000	...	6.8805580E-3	1.0703389E-2
AR02	-2.049	44	.046	-1.2239572E-3	-2.4280484E-3	-1.9865945E-5
AR03	-11.808	44	.000	-1.1192731E-2	-1.3103144E-2	-9.2823181E-3
AR1	5.174	44	.000	...	2.1688332E-3	4.9368002E-3
AR2	-3.175	44	.003	-1.9265981E-3	-3.1496213E-3	-7.0357501E-4
AR3	12.015	44	.000	...	1.3704458E-2	1.9228763E-2
AR4	7.770	44	.000	...	4.5525734E-3	7.7413993E-3
AR5	10.267	44	.000	...	8.2908488E-3	1.2340857E-2

Source : Constructed in SPSS

As seen on table 4.14, negative abnormal return is happened in several days in before (t-4 and t-1), at the event day (t02 and t03) and also after the event day (t+2). However, most of abnormal return are positive and it means, investors or capital market did not really seen the event as bad news. This can be possibly happened because market have received signals regarding the fuel restriction event. Furthermore, the sig (2-tailed) are mostly significant as mostly sig(2-tailed) < 0.05, except on t-1 and t02. Thus, the mean of abnormal return come from a population with the know mean.



**Table 4.15**  
**One Sample t-test for Price Earning Ratio**

**One-Sample Test**

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
PER_5	8.804	44	.000	2.59525776E1	2.00116035E1	3.18935518E1
PER_4	8.770	44	.000	2.56881326E1	1.97848801E1	3.15913851E1
PER_3	8.787	44	.000	2.57568345E1	1.98492560E1	3.16644130E1
PER_2	8.700	44	.000	2.56143505E1	1.96807532E1	3.15479478E1
PER_1	8.763	44	.000	2.55708573E1	1.96896548E1	3.14520598E1
PER01	8.661	44	.000	2.57986115E1	1.97951619E1	3.18020611E1
PER02	8.698	44	.000	2.59266800E1	1.99192585E1	3.19341015E1
PER03	8.701	44	.000	2.55780362E1	1.96536856E1	3.15023868E1
PER1	8.774	44	.000	2.55514689E1	1.96822259E1	3.14207118E1
PER2	8.799	44	.000	2.54755414E1	1.96407732E1	3.13103095E1
PER3	8.731	44	.000	2.58466444E1	1.98803491E1	3.18129397E1
PER4	8.678	44	.000	2.60600577E1	2.00077119E1	3.21124036E1
PER5	8.616	44	.000	2.63046796E1	2.01515759E1	3.24577832E1

Source : Constructed in SPSS

As seen on table 4.12, all of t-result on the event period are greater than t-table of 2.015. Furthermore, the sig (2-tailed) are also all significant as sig(2-tailed) < 0.05. Thus, the mean of price earning ratio come from a population with the know mean.

**Table 4.16**  
**One Sample t-test for Security Return Variability**

One-Sample Test						
	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
SRV_5	3.961	44	.000	3.16948163E0	1.55693226E0	4.78203100E0
SRV_4	2.354	44	.023	3.51194595E0	5.0531200E-1	6.51857989E0
SRV_3	1.730	44	.091	1.71615462E0	-2.8287505E-1	3.71518430E0
SRV_2	1.613	44	.114	1.65666421E0	-4.1281803E-1	3.72614646E0
SRV_1	1.498	44	.141	1.73806519E0	-6.0070119E-1	4.07683158E0
SRV01	2.958	44	.005	2.51063754E0	8.0008360E-1	4.22119148E0
SRV02	1.499	44	.141	1.74378468E0	-6.0016419E-1	4.08773356E0
SRV03	2.675	44	.010	4.19882624E0	1.03560753E0	7.36204495E0
SRV1	1.702	44	.096	1.70047735E0	-3.1328829E-1	3.71424300E0
SRV2	1.526	44	.134	1.81977923E0	-5.8384235E-1	4.22340081E0
SRV3	6.790	44	.000	5.08585136E0	3.57634116E0	6.59536157E0
SRV4	2.138	44	.038	1.97023434E0	1.1262386E-1	3.82784482E0
SRV5	3.453	44	.001	2.83616699E0	1.18086835E0	4.49146563E0

Source : Constructed in SPSS

As seen on table 4.16, t-result on t-3, t-2, t-1, t02, t+1, t+2 are less than t-table of 2.015. However , t-result on t-5, t-4, t01, t03, t+3, t+4, t+5 are greater than t-table of 2.015. Furthermore, the sig (2-tailed) on t-5, t01, t+3 and t+5 are significant and the rest are not significant. Thus, the mean of security return variability come from a population with the know mean.

**Table 4.17**  
**One- Sample T-test for Trading Volume Activity**

One-Sample Test						
	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
TVA_5	3.786	44	.000	...	...	...
TVA_4	3.914	44	.000	...	...	...
TVA_3	3.177	44	.003	...	...	...
TVA_2	4.269	44	.000	...	...	...
TVA_1	7.052	44	.000	...	...	...
TVA01	7.661	44	.000	...	...	...
TVA02	5.512	44	.000	...	...	...
TVA03	4.985	44	.000	...	...	...
TVA1	7.008	44	.000	...	...	...
TVA2	7.151	44	.000	...	...	...
TVA3	5.257	44	.000	...	...	...
TVA4	3.829	44	.000	...	...	...
TVA5	5.360	44	.000	...	...	...

Source : Constructed in SPSS

As seen on table 4.10, all of t-result on the event period are greater than t-table of 2.015. Furthermore, the sig (2-tailed) are also all significant as sig(2-tailed) <0.05. Thus, the mean of trading volume activity come from a population with the know mean.

#### 4.2.4 Paired Sample T-test

**Table 4.18**  
**Paired Sample t-test of Abnormal Return**

Paired Samples Correlations			
	N	Correlation	Sig.
Pair 1 AR_before & AR_after	5	.362	.549

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	AR_before - AR_after	-5.452E-3	8.3003666E-3	3.7120368E-3	-1.5758666E-2	4.8538664E-3	-1.469	4	.216

Source : Constructed in SPSS

The Fuel Restriction Event that has been implemented may affect the capital market to react on this event .The presence of abnormal return is showing whether an event contains information or not for the market. As seen on paired sample t-test result above, the Sig is 0.549 or bigger than 0.05. Thus it means in comparing abnormal return before and after the event , there is no significant relation in before and after the event. Then, the correlation (r) is 0.362, hence the  $r^2$  is 0.131 or 13.1%. It means 13.1% movement of abnormal return is caused by fuel restriction policy and the other 86.9% is caused by other factors. Moreover, as Sig (2-tailed) is bigger than 0.05, in conclusion for the first hypothesis the H1o is accepted.

**H1o : There is no significant difference of Abnormal return before and after subsidized fuel restriction policy implementation**

**Table 4.19**  
**Paired Sample t-test of Price Earning Ratio**

**Paired Samples Correlations**

		N	Correlation	Sig.
Pair 1	PER_before & PER_after	5	-.711	.178

**Paired Samples Test**

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PER_before - PER_after	-1.306E-1	4.6474726E-1	2.0784129E-1	-7.0771595E-1	4.4640395E-1	-.629	4	.564

Source :Constructed in SPSS

As seen on paired sample t-test result above, the Sig is 0.178 or bigger than 0.05. Thus it means in comparing Price Earning Ratio before and after the event , there is no significant relation in before and after the event. Then, the correlation (r) is -0.711, hence the  $r^2$  is 0.505 or 50.5%. It means 50.5% movement of price earning ratio is caused by fuel restriction policy and the other 49.5% is caused by other factors. Moreover, as Sig (2-tailed) is bigger than 0.05, in conclusion there is no significant differences on price earning ratio before and after fuel restriction event. In other words, for second hypothesis the H2o is accepted.

**H2o: There is no significant difference of price earnings ratio before and after subsidized fuel restriction policy implementation**

**Table 4.20**  
**Paired Sample t-test of Security Return Variability**

		N	Correlation	Sig.
Pair 1	SRV_before & SRV_after	5	-.572	.314

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
Pair 1	SRV_before - SRV_after	-3.240E-1	2.07094451E0	9.2615454E-1	-2.8954512E0	2.24738324E0	-.350	4	.744

Source : Constructed in SPSS

As seen on paired sample t-test result above, the Sig is 0.314 or bigger than 0.05. Thus it means in comparing security return variability before and after the event , there is no significant relation in before and after the event. Then, the correlation (r) is -0.572 , hence the  $r^2$  is 0.327 or 32.7 % . It means 32.7 % movement of security return variability is caused by fuel restriction policy and the other 67.3% is caused by other factors. Moreover, as Sig (2-tailed) is bigger than 0.05, in conclusion there is no significant differences on security return variability before and after fuel restriction event. Thus, for the third hypothesis H3o is accepted.

**H3o: There is no significant difference of security return variability before and after subsidized fuel restriction policy implementation.**

**Table 4.21**  
**Paired Sample t-test of Trading Volume Activity**

**Paired Samples Correlations**

	N	Correlation	Sig.
Pair 1 TVA_before & TVA_after	5	-.684	.202

**Paired Samples Test**

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 TVA_before - TVA_after	...	...	...	-4.5410826E-4	2.5097082E-3	1.926	4	.126

Source : Constructed in SPSS

As seen on paired sample t-test result above, the Sig is 0.202 or bigger than 0.05. Thus it means in comparing trading volume activity before and after the event , there is no significant relation in before and after the event. Then, the correlation (r) is -0.684 , hence the  $r^2$  is 0.467 or 46.7%. It means 46.7% movement of trading volume activity is caused by fuel restriction policy and the other 53.3 % is caused by other factors. Moreover, as Sig (2-tailed) is bigger than 0.05, in conclusion there is no significant differences on trading volume activity before and after fuel restriction event. In conclusion, for the fourth hypothesis H4o is accepted.

**H4o: There is no significant difference of trading volume activity before and after subsidized fuel restriction policy implementation.**

#### 4.2.5 Comparative Analysis

##### 1. Abnormal Return

**Table 4.22**  
**Comparison of Average Abnormal Return before and after the event**

Code	AAR Before	AAR After
AALI	0.000476	0.000277
ADHI	-0.0031	0.003559
ADRO	0.009504	0.01561
AKRA	0.00292	0.010516
ANTM	0.006048	0.007301
ASII	-0.00089	0.005419
ASRI	0.001296	0.002266
BBCA	0.0004	0.001401
BBNI	-0.00128	0.005203
BBRI	-0.00608	0.000273
BBTN	0.00122	0.008653
BDMN	-0.00298	0.000154
BMRI	-0.00238	0.003281
BMTR	-0.00595	-0.00153
BSDE	-0.00147	0.003402
CPIN	0.000488	0.006017
CTRA	-0.00036	0.004199
EXCL	0.005605	0.016113
GGRM	0.000846	0.003662

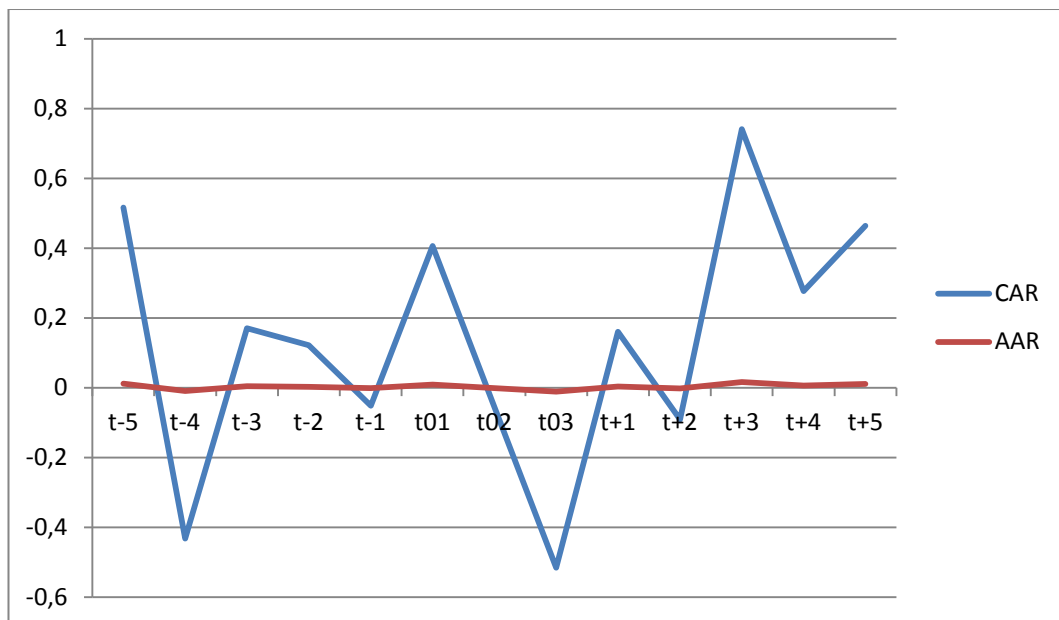
HRUM	0.000923	0.005415
ICBP	-0.00103	0.003604
INCO	0.004909	0.010265
INDF	-0.00038	0.003129
INTP	-0.00502	-0.00187
ITMG	0.005049	0.010112
JSMR	-0.00079	0.002322
KLBF	-0.00476	-0.00192
LPKR	0.004136	0.008825
LPPF	0.00547	0.013707
LSIP	-0.00212	-0.00192
MNCN	0.006427	0.015938
PGAS	-0.00169	0.007575
PTBA	0.013066	0.018724
PTPP	0.002164	0.011103
PWON	0.005101	0.012993
SCMA	0.003619	0.012124
SMGR	-0.00167	0.005155
SMRA	0.000474	0.004457
TAXI	0.011979	0.018992
TBIG	0.002417	0.009508
TLKM	0.001388	0.007442
UNTR	0.004006	0.009923
UNVR	0.001023	0.007243



WIKA	0.001876	0.010572
WSKT	0.003811	0.01087

Source : Constructed by researcher

Based on the average abnormal return calculation result seen on the table that abnormal returns before and after fuel restriction are indicating positive values. Moreover, all stocks listed in LQ 45 index are facing an increasing value of abnormal return from before event and after event, except for AALI that decrease from 0.000476 to 0.000277. As almost all of abnormal return of stocks in LQ 45 showed an increasing value after the fuel restriction event, it indicates that the information content of fuel restriction event has not been accessed as a bad news for market participant and also investors aren't worrying about the event much, it can be seen from the tendency of positive abnormal return after the event.



**Figure 4.1 Cumulative Abnormal Return (CAR) and Average Abnormal Return (AAR)**

Source : Constructed by Researcher

From Figure 4.1 , can be seen that there are slopes in t-4 and in t03. The decreasing CAR values start to happen in CAR before until the third day of event day. However, the decreasing values are going no further as there is an increasing pattern on days after the event . AsCAR values on days after the event are greater than CAR values before the event, it indicates that this event might not categorized as bad news for the market.

## 2. Price Earning Ratio

**Table 4.23**  
**Comparison of Average Price Earning Ratio**  
**before and after the event**

Code	PER Before	PER After
AALI	21.99488	22.02415
ADHI	57.23966	55.81312
ADRO	13.47433	15.06654
AKRA	29.96701	31.46839
ANTM	-20.1894	-21.1194
ASII	21.53631	21.36872
ASRI	20.39649	20.51087
BBCA	23.51515	23.58586
BBNI	12.35784	12.51225
BBRI	15.51652	14.75564
BBTN	14.98611	15.98611
BDMN	17.7796	17.48828
BMRI	16.89429	16.749

BMTR	39.24	35.9
BSDE	9.201105	9.093984
CPIN	52.13158	51.98684
CTRA	20.99656	21.01375
EXCL	-50.7944	-53.4579
GGRM	25.59257	25.67111
HRUM	24.26097	25.13857
ICBP	29.52113	29.33803
INCO	24.1388	25.17791
INDF	20.43478	20.44928
INTP	25.63099	24.22934
ITMG	16.17809	17.33682
JSMR	38.17455	37.0702
KLBF	54.53125	51.0625
LPKR	24.44877	25.42153
LPPF	39.57418	41.4011
LSIP	20.14706	20.44118
MNCN	26.19192	28.47475
PGAS	19.87258	19.26188
PTBA	15.14423	17.45192
PTPP	38.85	39.06667
PWON	15.57833	15.62958
SCMA	49.17339	51.62016
SMGR	24.29608	23.96226

SMRA	22.20408	21.63265
TAXI	25.92157	27.60784
TBIG	58.38345	59.31415
TLKM	22.57157	23.35549
UNTR	17.86328	18.78125
UNVR	58.54049	58.70998
WIKA	41.65135	41.29902
WSKT	62.12575	63.47305

Source : Constructed by researcher

There are 18 companies in LQ 45 experienced a decreasing value after fuel restriction event, which indicate the 18 companies offered a bit more cheaper stocks price comparing with its earning to market participants which are ADHI, ANTM, ASII, BBRI, BDMN, BMRI, BMTR, BSDE, CPIN, EXCL, ICBP, INTP, JSMR, KLBF, PGAS, SMGR, SMRA, and WIKA. The other 27 companies offered a bit more expensive stocks price comparing with its earning to market participants.

### 3. Security Return Variability

**Table 4.24**  
**Comparison of Average Security Return Variability**  
**before and after the event**

Code	ASRV Before	ASRV After
AALI	3.351847	1.490574
ADHI	0.823892	0.727325
ADRO	1.83008	3.57775

AKRA	0.792526	1.470961
ANTM	11.34688	16.07687
ASII	0.734276	0.933166
ASRI	1.540018	3.087164
BBCA	0.79819	1.491066
BBNI	0.742982	0.890512
BBRI	1.142978	0.597739
BBTN	0.737438	1.214961
BDMN	1.137473	0.598005
BMRI	0.805921	0.749918
BMTR	1.549637	0.651023
BSDE	0.766601	0.819485
CPIN	0.728719	1.137153
CTRA	0.727951	0.984439
EXCL	0.854955	1.669436
GGRM	0.766279	1.368032
HRUM	0.744427	1.259771
ICBP	0.747846	0.872253
INCO	1.108214	2.272049
INDF	0.730543	0.959296
INTP	1.884293	0.757916
ITMG	1.178529	2.415861
JSMR	0.754538	0.850876
KLBF	2.007827	0.80592

LPKR	1.080098	2.212668
LPPF	0.926292	1.859916
LSIP	48.13977	39.16677
MNCN	0.933489	1.877856
PGAS	0.740377	0.901608
PTBA	3.157361	5.591739
PTPP	0.75189	1.300579
PWON	0.915781	1.833362
SCMA	0.807759	1.523812
SMGR	0.752395	0.857338
SMRA	0.731634	1.168175
TAXI	2.056001	3.942077
TBIG	0.778152	1.416943
TLKM	0.749127	1.286089
UNTR	0.934134	1.879454
UNVR	0.737484	1.215285
WIKA	0.746399	1.271104
WSKT	0.858044	1.678282

Source : Constructed by researcher

Based on the average security return variability calculation result seen on the table that security return variability before and after fuel restriction are indicating positive values. As many as 36 companies experienced an increasing value of security return variability after fuel restriction event and there are 9 companies that experienced the decreasing value of security return variability after this event. It indicates market participant react normally and there is no sign of shock

reaction towards this event as they interpret this event will give no harm towards their investment in capital market .

#### 4. Trading Volume Activity

**Table 4.25**  
**Comparison of average trading volume activity**  
**before and after the event**

Code	ATVA Before	ATVA After
AALI	0.001023	0.000688
ADHI	0.027841	0.010194
ADRO	0.002041	0.001201
AKRA	0.002099	0.001693
ANTM	0.00508	0.002363
ASII	0.000956	0.000443
ASRI	0.00537	0.002654
BBCA	0.000548	0.000285
BBNI	0.002159	0.001144
BBRI	0.001758	0.001034
BBTN	0.009509	0.00668
BDMN	0.00081	0.000498
BMRI	0.00148	0.000874
BMTR	0.001605	0.00162
BSDE	0.001465	0.000897
CPIN	0.000414	0.000412
CTRA	0.001796	0.0004

EXCL	0.000343	0.000276
GGRM	0.000468	0.000404
HRUM	0.002639	0.002658
ICBP	0.000589	0.00039
INCO	0.00169	0.001402
INDF	0.00098	0.000706
INTP	0.001154	0.00111
ITMG	0.001069	0.000747
JSMR	0.001523	0.000814
KLBF	0.001111	0.002056
LPKR	0.004648	0.003457
LPPF	0.001395	0.002061
LSIP	0.003845	0.002727
MNCN	0.000269	0.000489
PGAS	0.000954	0.000621
PTBA	0.001546	0.001186
PTPP	0.005586	0.003416
PWON	0.001603	0.002041
SCMA	0.000538	0.00065
SMGR	0.001334	0.000873
SMRA	0.002772	0.001296
TAXI	0.012145	0.007339
TBIG	0.000662	0.000594
TLKM	0.000883	0.000703



UNTR	0.000676	0.000787
UNVR	0.000221	0.000131
WIKA	0.004884	0.004935
WSKT	0.010713	0.008996

Source : Constructed by researcher

Based on the average trading volume activity calculation result seen on the table that trading volume activity before and after fuel restriction are indicating positive values. However, most stocks are having decreasing values after fuel restriction event.

The decrease in the average trading volume activity after fuel restriction implementation occurred on 35 companies or 77.78% companies trading volume activity (TVA) decreased after fuel restriction event. Moreover, as many as 10 companies experienced an increase in trading volume activity after fuel restriction event or 22.22% companies trading volume activity (TVA) increased after fuel restriction event. The almost decreasing result of trading volume indicates that mostly market participants are losing faith or pessimistic that this event will bring a good impact for the future investment return.

### **4.3 Interpretation of Results**

The normality test results for all independent variables show that all data are having normal distribution. Thus, all independent variables proceeded to do t- test. This can be seen from the results of the testing that has been done as follows: Abnormal Return (X1) probability (2 tailed) value before and after the event , 0.997 and 1.000, Price Earning Ratio (X2) probability (2 tailed) value before and after the event , 0.992 and 0.986, Security Return Variability (X3) probability (2

tailed) value before and after the event , 0.560 and 0.785, Trading Volume Activity (X4) probability (2 tailed) value before and after the event , 0.999 and 0.756.

The four independent variables have been tested individually through t-test which are one sample t-test and paired sample t-test. There are 3 variables that have significant difference between its population mean and sample mean every day during event period which are Abnormal Return, Price Earning Ratio and Trading Volume Activity, whereas Security Return Variability has no significant difference between its population mean and sample mean every day during event period.

In Paired sample t-test ,all variables that have no significant difference after fuel restriction implementation which are Abnormal return, Price Earning Ratio and Trading Volume Activity and Security Return Variability . The result of paired sample t-test can be seen as follows :

1. Abnormal return (X1)

The abnormal return sig is 0.549 with the correlation (r) is 0.362, hence the  $r^2$  is 0.131 or 13.1%. It means 13.1% movement of abnormal return is caused by fuel restriction policy and the other 86.9% is caused by other factors.

2. Price Earning Ratio (X2)

The Price Earning Ratio sig is 0.178 with the correlation (r) is -0.711, hence the  $r^2$  is 0.505 or 50.5%. It means 50.5% movement of price earning ratio is caused by fuel restriction policy and the other 49.5% is caused by other factors.

3. Security Return Variability (X3)

The Security Return Variability sig is 0.314 with the correlation (r) is -0.572 , hence the  $r^2$  is 0.327 or 32.7 % . It means 32.7 % movement of security return

variability is caused by fuel restriction policy and the other 67.3% is caused by other factors.

#### 4. Trading Volume Activity (X4)

The Trading Volume Activity sig is 0.202 with the correlation (r) is -0.684 , hence the  $r^2$  is 0.467 or 46.7%. It means 46.7% movement of trading volume activity is caused by fuel restriction policy and the other 53.3 % is caused by other factors.

From the result above, it can be concluded that all variables have no significant difference after the implementation of fuel restriction event. The result of analysis using paired sample t-test in comparing the independent variables before and after the event is there is no significant difference between abnormal return, price earning ratio, security return variability and trading volume activity before and after implementing fuel restriction policy. Even there is increasing and declining amount of means in all variables, the number is not moving too much. This indicates that market participant (investor) may already get information or issues several days before the fuel restriction has been implemented so that the market participant may be able to anticipate first before the policy is announced .Thus , the market is not showing a shock level of this event. This is also because market has already get used to this kind of event as in Indonesia the event of increasing fuel price announcement since 2004 to 2014 had happened for 6 times and the fuel restriction has already been implemented in 2012 as well.

Moreover, the researcher is also comparing before and after value of all variables for 45 stocks listed in LQ45, an the result can be seen as follows:

##### 1. Abnormal Return (X1)

All stocks listed in LQ 45 index are facing an increasing value of abnormal return from before event and after event, except for AALI that decrease from 0.000476to 0.000277.

2. Price Earning Ratio (X2)

There are 18 companies in LQ 45 experienced a decreasing value after fuel restriction event and the other 27 companies experienced an increasing value. Those 18 companies are ADHI, ANTM, ASII, BBRI, BDMN, BMRI, BMTR, BSDE, CPIN, EXCL, ICBP, INTP, JSMR, KLBF, PGAS, SMGR, SMRA, and WIKA.

3. Security Return Variability (X3)

As many as 36 companies experienced an increasing value of security return variability after fuel restriction event and only 9 companies that experienced the decreasing value of security return variability after this event.

4. Trading Volume Activity (X4)

The decrease in the average trading volume activity after fuel restriction implementation occurred on 35 companies or 77.78% companies trading volume activity (TVA) decreased after fuel restriction event. Moreover, as many as 10 companies experienced an increase in trading volume activity after fuel restriction event or 22.22% companies trading volume activity (TVA) increased after fuel restriction event.

## **Chapter V**

# **CONCLUSION**

### **5.1 Conclusions**

In this final chapter of the research, the researcher draws the conclusion and recommendation developed from the wholly integrated quantitative analysis such as event study, classic assumption test and comparative analysis to test whether this event has an information content that makes market participant to react resulting the significant difference on independent variables before and after the event. The analysis is conducted to discover the specifically reaction of capital market on fuel restriction policy that has been implemented since August 1<sup>st</sup>, 2014.

Based on analysis result of capital market reaction by using abnormal return, price earning ratio, security return variability, and trading volume activity as independent variables, the further explanation about the result is stated below :

1. There is no significant difference of abnormal return before and after fuel restriction implementation event. However, Indonesia capital market (IDX) react on fuel restriction event during event period. This can be proved as there are significant result almost on every day during event period on abnormal return, price earning ratio, security return variability and trading volume activity on one sample t-test result. Thus, the event of fuel restriction has an information content that is quite meaningful for the market.
  
2. There is no significant difference of Price Earning Ratio before and after fuel restriction implementation event. The variable price earning ratio has increased from 25.71655 (before) to 25.84721 (after). Thus, it

indicates that mostly stocks are in expensive level during this event. This may affect to the investor's interest to invest in capital market during this event. Investor may think that this event has no added value for existing shareholder otherwise investor need to pay more with no increasing earning for shareholder as shown by the increasing of PER (Price Earning Ratio) .

3. There is no significant difference of Security Return Variability before and after fuel restriction implementation event. As there is no significant SRV, it indicates that the aggregate market do not assess the information of this event, or in other words, market is reacting normally as they do not consider this event may bring capital gain to their investment.
4. There is no significant difference of Trading Volume Activity before and after fuel restriction implementation event. Thus ,most of variables are facing an increasing amount of means except the variable trading volume activity. In other words, this event may give impact on decreasing the investors' interest to invest in capital market which resulting the declining trading volume activity. The fall in trading volume activity after fuel restriction event is also indicating that investor are pessimistic to listed companies performance during this event.

## **5.2 Recommendations**

Based on the conclusions obtained in this study, the recommendations proposed as a complement to the results of the study as follows:

### **5.2.1 For Market Participant**

The analysis of event surrounding and its impact towards stocks price and return should be monitored by market participant (investor) before allocating their capital. It is that in doing investment, information is considered also as

one of important factor in determining the earning or stocks position. Information can be gathered both from external and internal , hence investor should be aware of events surrounding and giving immediate response or action towards those events. It is important to giving both fast and wise reaction in investment activities to detect the future movement by giving immediate decision.It is also important to protect their investment (to avoid loss or to get higher earning or profit) by assessing information content of several events.

Based on the researcher analysis, during the fuel restriction event may not giving an extreme impact on stock price and its expensiveness level compare with impact caused if there is increasing fuel price event. However, this event may bring a good opportunity for investor to consider cut loss their investment before the stocks price decline as there is an issue of increasing fuel price in the next few months after implementing fuel restriction policy. Moreover, for the new investor who consider to invest during this event , the researcher may suggest that as the PER ratio shows an increasing amount thus, it may not be a good choice to start buying stocks during this event period.

Furthermore, based on the analysis of how information of fuel restriction event has impacted the capital market, it is better to do hold decision for the existing investment. It is that this event may only create the uncertainty only at the beginning of fuel restriction implementation and the normal situation will follow after certain days of adaptation. Moreover, by looking at the result of this research there is no sign of shock reaction from market participant in terms of trading volume activity means the shock effect of this event is not influencing the capital market. However, in the future it is still important for investor to analyse every event announced in the public to take first advantage from the event and at the same time to reduce the risk for certain event as well.

### **5.2.2 For Future Research**

The researcher recommendation for future research is to do both quantitative and qualitative research, not only interpreting data by using quantitative analysis but interviewing market participant (investor) as well to get better or clear explanation on how they usually react on this kind of event and determining whether the quantitative results are matching with the real situation stated by the market participant. Moreover, it can be more better if in the future research do analysis by interviewing several related parties in the first place to see whether the event of fuel restriction policy is implemented properly before testing the capital market reaction.

Moreover ,to get more valid result comparing fuel restriction or increasing fuel price event from time to time might be a good way to get a clear picture of how each events from different times effects on capital market reaction.



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**APPENDIX A**  
**LQ 45 STOCK LISTS**

**List of Stocks listed in LQ-45**

**(Period of August 2014 to January 2015)**

<b>No.</b>	<b>Code</b>	<b>Company Name</b>
1.	AALI	Astra Agro Lestari Tbk.
2.	ADHI	Adhi Karya (Persero) Tbk.
3.	ADRO	Adaro Energy Tbk.
4.	AKRA	AKR Corporindo Tbk.
5.	ANTM	Aneka Tambang (Persero) Tbk.
6.	ASII	Astra International Tbk.
7.	ASRI	Alam Sutera Realty Tbk.
8.	BBCA	Bank Central Asia Tbk.
9.	BBNI	Bank Negara Indonesia (Persero) Tbk.
10.	BBRI	Bank Rakyat Indonesia (Persero) Tbk.
11.	BBTN	Bank Tabungan Negara (Persero) Tbk.
12.	BDMN	Bank Danamon Indonesia Tbk.
13.	BMRI	Bank Mandiri (Persero) Tbk.
14.	BMTR	Global Mediacom Tbk.
15.	BSDE	Bumi Serpong Damai Tbk.
16.	CPIN	Charoen Pokphand Indonesia Tbk.
17.	CTRA	Ciputra Development Tbk.
18.	EXCL	XL Axiata Tbk.
19.	GGRM	Gudang Garam Tbk.
20.	HRUM	Harum Energy Tbk.
21.	ICBP	Indofood CBP Sukses Makmur Tbk.
22.	INCO	Vale Indonesia Tbk.
23.	INDF	Indofood Sukses Makmur Tbk.
24.	INTP	Indocement Tunggul Perkasa Tbk.
25.	ITMG	Indo Tambangraya Megah Tbk.

26.	JSMR	Jasa Marga (Persero) Tbk.
27.	KLBF	Kalbe Farma Tbk.
28.	LPKR	Lippo Karawaci Tbk.
29.	LPPF	Matahari Department Store Tbk.
30.	LSIP	PP London Sumatra Indonesia Tbk.
31.	MNCN	Media Nusantara Citra Tbk.
32.	PGAS	Perusahaan Gas Negara (Persero) Tbk.
33.	PTBA	Tambang Batubara Bukit Asam (Persero) Tbk.
34.	PTPP	PP (Persero) Tbk.
35.	PWON	Pakuwon Jati Tbk.
36.	SCMA	Surya Citra Media Tbk.
37.	SMGR	Semen Indonesia (Persero) Tbk.
38.	SMRA	Summarecon Agung Tbk.
39.	TAXI	Express Transindo Utama Tbk.
40.	TBIG	Tower Bersama Infrastructure Tbk.
41.	TLKM	Telekomunikasi Indonesia (Persero) Tbk.
42.	UNTR	United Tractors Tbk.
43.	UNVR	Unilever Indonesia Tbk.
44.	WIKA	Wijaya Karya (Persero) Tbk.
45.	WSKT	Waskita Karya (Persero) Tbk.

# **APPENDIX B**

## **ABNORMAL RETURN DATA**

	t-5	t-4	t-3	t-2	t-1	t01	t02	t03	t+1	t+2	t+3	t+4	t+5
AALI	0,00011108	0,000877165	0,000390367	0,00043	0,00057	0,0002	0,000572	0,000945	0,000399	0,000602	-7,1E-05	0,00030449	0,000153
ADHI	0,009144579	-0,016574134	-0,00023155	-0,0015622	-0,00626	0,006161	-0,00634	-0,01885	-0,00051	-0,00732	0,015241	0,00265133	0,007739
ADRO	0,020736027	-0,002863085	0,012132632	0,01091168	0,006603	0,017999	0,006524	-0,00495	0,011873	0,005625	0,02633	0,01477792	0,019446
AKRA	0,016893278	-0,012466403	0,006189785	0,0046708	-0,00069	0,013488	-0,00079	-0,01507	0,005867	-0,00191	0,023853	0,00948079	0,015288
ANTM	0,008352747	0,00350949	0,006587068	0,00633649	0,005452	0,007791	0,005436	0,003081	0,006534	0,005252	0,009501	0,00712996	0,008088
ASII	0,010716192	-0,01367383	0,001824459	0,00056259	-0,00389	0,007887	-0,00397	-0,01583	0,001556	-0,0049	0,016497	0,0045584	0,009383
ASRI	0,003080623	-0,000668006	0,001714006	0,00152006	0,000836	0,002646	0,000823	-0,001	0,001673	0,00068	0,003969	0,0021342	0,002876
BBCA	0,00224129	-0,001626428	0,000831258	0,00063115	-7,5E-05	0,001793	-8,8E-05	-0,00197	0,000789	-0,00024	0,003158	0,0012648	0,00203
BBNI	0,010645986	-0,014415222	0,001509563	0,00021297	-0,00436	0,007739	-0,00445	-0,01663	0,001234	-0,0054	0,016586	0,00431874	0,009276
BBRI	0,005604629	-0,018945214	-0,00334537	-0,0046155	-0,0091	0,002757	-0,00918	-0,02112	-0,00362	-0,01011	0,011424	-0,0005935	0,004263
BBTN	0,014893211	-0,01383587	0,004419612	0,00293325	-0,00231	0,011561	-0,00241	-0,01638	0,004104	-0,0035	0,021703	0,00763993	0,013323
BDMN	0,00278481	-0,009326606	-0,00163058	-0,0022572	-0,00447	0,00138	-0,00451	-0,0104	-0,00176	-0,00497	0,005656	-0,000273	0,002123
BMRI	0,008036314	-0,013856978	5,48001E-05	-0,0010779	-0,00508	0,005497	-0,00515	-0,0158	-0,00019	-0,00598	0,013226	0,00250888	0,00684
BMTR	0,002191869	-0,014923911	-0,00404793	-0,0049335	-0,00806	0,000206	-0,00812	-0,01644	-0,00424	-0,00877	0,006249	-0,0021294	0,001256
BSDE	0,007490107	-0,011331472	0,00062843	-0,0003453	-0,00378	0,005307	-0,00384	-0,013	0,000421	-0,00456	0,011951	0,00273819	0,006461
CPIN	0,010658186	-0,010709268	0,002868374	0,00176288	-0,00214	0,00818	-0,00221	-0,0126	0,002633	-0,00302	0,015723	0,00526351	0,00949
CTRA	0,0080233	-0,009583035	0,001604658	0,00069376	-0,00252	0,005981	-0,00258	-0,01114	0,001411	-0,00325	0,012197	0,0035782	0,007061
EXCL	0,024932568	-0,015675563	0,010128291	0,00802734	0,000613	0,020222	0,000478	-0,01927	0,009682	-0,00107	0,034558	0,01468017	0,022713
GGRM	0,006025954	-0,004858303	0,002057942	0,00149482	-0,00049	0,004763	-0,00053	-0,00582	0,001938	-0,00094	0,008606	0,00327799	0,005431
HRUM	0,009185536	-0,008174171	0,002856806	0,00195866	-0,00121	0,007172	-0,00127	-0,00971	0,002666	-0,00193	0,0133	0,0048027	0,008237
ICBP	0,007498291	-0,010429882	0,000962318	3,4765E-05	-0,00324	0,005419	-0,0033	-0,01202	0,000765	-0,00398	0,011748	0,00297194	0,006518
INCO	0,014761158	-0,005939583	0,007214406	0,00614341	0,002364	0,01236	0,002295	-0,00777	0,006987	0,001506	0,019668	0,00953481	0,01363
INDF	0,006076209	-0,007491651	0,001129851	0,00042789	-0,00205	0,004502	-0,00209	-0,00869	0,000981	-0,00261	0,009292	0,00265071	0,005335
INTP	0,000772985	-0,011408369	-0,0036679	-0,0042981	-0,00652	-0,00064	-0,00656	-0,01249	-0,0038	-0,00703	0,00366	-0,0023025	0,000107

ITMG	0,014362791	-0,005207141	0,007228291	0,0062158	0,002643	0,012093	0,002577	-0,00694	0,007013	0,001832	0,019002	0,00942194	0,013293
JSMR	0,00493315	-0,007090743	0,000549667	-7,242E-05	-0,00227	0,003538	-0,00231	-0,00816	0,000417	-0,00277	0,007783	0,00189746	0,004276
KLBF	0,000461296	-0,010513539	-0,00353974	-0,0041075	-0,00611	-0,00081	-0,00615	-0,01149	-0,00366	-0,00657	0,003063	-0,0023095	-0,00014
LPKR	0,012761372	-0,005360282	0,006154863	0,0052173	0,001909	0,010659	0,001848	-0,00696	0,005956	0,001158	0,017057	0,00818617	0,011771
LPPF	0,020620535	-0,01121235	0,0090154	0,00736846	0,001557	0,016928	0,00145	-0,01403	0,008665	0,000238	0,028166	0,01258363	0,01888
LSIP	0,001741132	-0,002546379	-0,0020347	-0,0020764	-0,00222	-0,00183	-0,00223	-0,00262	-0,00204	-0,00226	-0,00155	-0,0019444	-0,00179
MNCN	0,023920432	-0,012833771	0,01052116	0,0086196	0,001909	0,019657	0,001786	-0,01609	0,010117	0,000386	0,032632	0,01464104	0,021911
PGAS	0,015354289	-0,020462824	0,002296646	0,00044357	-0,0061	0,0112	-0,00622	-0,02363	0,001903	-0,00758	0,023844	0,00631148	0,013396
PTBA	0,023473284	0,0016064	0,015501397	0,01437007	0,010378	0,020937	0,010305	-0,00033	0,015261	0,009472	0,028656	0,01795252	0,022278
PTPP	0,018606287	-0,015940139	0,006011891	0,00422456	-0,00208	0,014599	-0,0022	-0,019	0,005632	-0,00351	0,026795	0,00988429	0,016718
PWON	0,019616329	-0,010880544	0,008498256	0,00692043	0,001353	0,016079	0,001251	-0,01358	0,008163	8,88E-05	0,026845	0,01191673	0,017949
SCMA	0,0192629	-0,013605538	0,007280239	0,00557972	-0,00042	0,01545	-0,00053	-0,01652	0,006919	-0,00178	0,027054	0,01096455	0,017466
SMGR	0,010881064	-0,015483229	0,001269583	-9,443E-05	-0,00491	0,007823	-0,005	-0,01782	0,00098	-0,006	0,01713	0,00422483	0,00944
SMRA	0,007799162	-0,007590566	0,002188616	0,00139239	-0,00142	0,006014	-0,00147	-0,00895	0,002019	-0,00206	0,011447	0,00391369	0,006958
TAXI	0,024878692	-0,002224127	0,01499797	0,01359575	0,008647	0,021735	0,008557	-0,00462	0,0147	0,007524	0,031303	0,018036	0,023397
TBIG	0,01546031	-0,011944519	0,005469486	0,00405164	-0,00095	0,012281	-0,00104	-0,01437	0,005168	-0,00209	0,021956	0,00854137	0,013962
TLKM	0,01252409	-0,010873973	0,00399399	0,00278344	-0,00149	0,00981	-0,00157	-0,01295	0,003737	-0,00246	0,01807	0,00661674	0,011245
UNTR	0,01489053	-0,007979551	0,006552913	0,00536968	0,001194	0,012238	0,001118	-0,01	0,006301	0,000247	0,020312	0,00911648	0,01364
UNVR	0,012465166	-0,011576551	0,003700413	0,00245656	-0,00193	0,009676	-0,00201	-0,01371	0,003436	-0,00293	0,018164	0,00639531	0,011151
WIKA	0,017871594	-0,015735216	0,005619749	0,00388103	-0,00225	0,013973	-0,00237	-0,01871	0,00525	-0,00365	0,025838	0,00938683	0,016035
WSKT	0,016796424	-0,010487654	0,006849622	0,00543802	0,000457	0,013631	0,000366	-0,0129	0,00655	-0,00067	0,023264	0,00990797	0,015305
<b>Mean</b>	<b>0,0114679</b>	<b>-0,00960739</b>	<b>0,0037846</b>	<b>0,00269422</b>	<b>-0,00115</b>	<b>0,009023</b>	<b>-0,00122</b>	<b>-0,01147</b>	<b>0,003553</b>	<b>-0,00203</b>	<b>0,016463</b>	<b>0,00614699</b>	<b>0,010316</b>
<b>ST. Dev</b>	<b>0,007178503</b>	<b>0,0055598</b>	<b>0,004660771</b>	<b>0,00442324</b>	<b>0,004008</b>	<b>0,006267</b>	<b>0,004008</b>	<b>0,006194</b>	<b>0,004607</b>	<b>0,004021</b>	<b>0,0092</b>	<b>0,00530705</b>	<b>0,00674</b>

# **APPENDIX C**

## **PRICE EARNING RATIO**

	t-5	t-4	t-3	t-2	t-1	t01	t02	t03	t+1	t+2	t+3	t+4	t+5
AALI	21,94889	21,73986	21,73986	22,22064	22,32516	21,94889	21,9698	22,28335	22,11612	21,92799	22,15793	21,94889461	21,969798
ADHI	60,27104	58,93367	56,70471	54,83238	55,45649	54,56491	55,99144	55,09986	54,92154	54,56491	55,81312	56,9721826	56,793866
ADRO	13,42681	13,01093	13,12975	13,72386	14,08032	14,67443	14,91207	14,91207	15,0903	14,91207	15,03089	15,03089354	15,268536
AKRA	30,43156	29,65731	29,85929	30,26325	29,62365	31,10483	31,10483	31,30681	31,00384	30,97017	31,57611	31,47512287	32,316704
ANTM	-19,699	-19,1917	-19,1917	-21,3899	-21,4745	-20,629	-20,7981	-20,7136	-21,3899	-21,0517	-20,9672	-21,1362868	-21,05174
ASII	21,57821	21,57821	21,50838	21,43855	21,57821	22,06704	21,78771	21,29888	21,43855	21,08939	21,36872	21,36871508	21,578212
ASRI	20,96836	20,58711	20,39649	20,01525	20,01525	19,63401	20,20587	20,58711	20,58711	20,39649	20,39649	20,39649257	20,777735
BBCA	23,53535	23,58586	23,48485	23,53535	23,43434	23,68687	23,73737	23,73737	23,43434	23,48485	23,63636	23,63636364	23,737374
BBNI	12,62255	12,21814	12,19363	12,2549	12,5	12,56127	12,62255	12,24265	12,43873	12,43873	12,5	12,56127451	12,622549
BBRI	15,89696	15,52331	15,48934	15,45537	15,2176	14,91189	14,70808	14,43634	14,67411	14,60618	14,84395	14,80998383	14,843952
BBTN	16,11111	14,79167	14,44444	14,58333	15	14,58333	15,13889	15,625	15,76389	15,34722	16,04167	16,38888889	16,388889
BDMN	17,72953	17,88884	17,9116	17,82057	17,54745	17,86608	17,70677	17,36538	17,2971	17,22882	17,52469	17,59297191	17,797806
BMRI	17,19295	16,91044	16,95079	16,87008	16,5472	16,58756	16,78936	16,58756	16,46649	16,46649	16,91044	16,95079427	16,950794
BMTR	39,1	39,7	39,6	39,4	38,4	37,3	37,4	36,3	35,8	35,1	35,8	36,3	36,5
BSDE	9,387157	9,302588	9,302588	9,077071	8,936122	8,879743	9,020691	8,851553	9,020691	9,020691	9,10526	9,133449851	9,1898292
CPIN	52,30263	51,64474	52,23684	52,5	51,97368	51,90789	52,17105	51,97368	50,98684	50,78947	52,17105	52,43421053	53,552632
CTRA	21,7354	21,47766	21,47766	20,44674	19,84536	19,84536	20,61856	20,70447	21,04811	20,79038	21,04811	20,96219931	21,219931
EXCL	-50,9346	-50,4673	-50,4673	-51,6355	-50,4673	-53,972	-53,271	-53,5047	-52,3364	-51,6355	-53,271	-53,9719626	-56,07477
GGRM	25,70205	25,70205	25,46406	25,29748	25,79724	25,89243	25,98762	25,84484	25,36887	25,20228	25,69015	25,89243218	26,201809
HRUM	24,71132	23,96074	23,903	24,3649	24,3649	25,28868	26,03926	25,80831	25,69284	25,17321	24,76905	24,94226328	25,115473
ICBP	29,57746	29,43662	29,64789	29,50704	29,43662	29,85915	29,71831	29,15493	29,50704	29,15493	29,22535	29,22535211	29,577465
INCO	23,83651	23,36419	23,55312	24,59223	25,34794	25,1905	24,37181	23,868	25,06455	24,81265	24,78116	25,41092008	25,820266
INDF	20,43478	20,28986	20,43478	20,50725	20,50725	20,7971	20,50725	20,43478	20,28986	20,21739	20,50725	20,57971014	20,652174
INTP	26,20057	26,00246	25,87864	25,35859	24,71472	24,12037	24,02132	24,02132	24,19467	23,97179	24,26896	24,34325224	24,368016
ITMG	16,12141	15,75931	15,901	16,64095	16,46777	17,66428	17,19198	17,56982	17,6328	17,28644	17,25495	17,25495135	17,254951
JSMR	38,20439	38,20439	38,05516	38,05516	38,35363	38,20439	37,90592	37,75669	37,01051	36,41356	36,71203	37,30897803	37,905922
KLBF	54,53125	54,375	55	54,6875	54,0625	51,71875	51,09375	49,84375	50,9375	50,9375	51,25	51,25	50,9375
LPKR	25,07566	24,85949	24,75141	23,77864	23,77864	23,88673	24,64332	24,21098	24,42715	24,96757	25,29183	26,04842196	26,372676



LPPF	39,42308	39,01099	39,6978	39,90385	39,83516	40,52198	41,20879	41,00275	40,93407	39,90385	41,07143	41,20879121	43,887363
LSIP	20,4902	19,60784	19,70588	20,34314	20,58824	20,73529	20,83333	21,02941	20,78431	20,83333	20,53922	20,04901961	20
MNCN	26,31313	25,90909	26,06061	26,26263	26,41414	28,08081	28,0303	27,52525	26,91919	27,77778	29,09091	29,29292929	29,292929
PGAS	19,88908	20,05414	20,13667	19,80656	19,47645	20,13667	19,80656	19,06381	18,89876	18,89876	19,31139	19,55897402	19,641501
PTBA	15,04121	14,62912	14,76648	15,28159	16,00275	17,17033	17,44505	17,17033	17,68544	17,78846	17,30769	17,03296703	17,445055
PTPP	39,83333	39,41667	39,41667	37,91667	37,66667	38,08333	38,75	38,16667	38	38,16667	39,16667	39,41666667	40,583333
PWON	15,59297	15,48316	15,77599	15,84919	15,19034	14,67789	14,7511	14,60469	14,38507	15,11713	15,959	16,28843338	16,398243
SCMA	48,80307	47,61275	48,93533	50,2579	50,2579	52,63854	52,50628	50,32403	50,58855	51,84499	51,84499	51,71273641	52,109509
SMGR	24,63716	24,12917	24,49202	24,16546	24,0566	24,27431	23,94775	23,80261	23,73004	23,58491	24,0566	24,16545718	24,274311
SMRA	22,28571	22,53061	22,36735	21,79592	22,04082	21,71429	21,46939	21,14286	21,22449	21,38776	21,79592	21,71428571	22,040816
TAXI	24,80392	24,70588	26,66667	26,66667	26,76471	28,23529	28,43137	28,03922	28,23529	27,45098	26,66667	27,84313725	27,843137
TBIG	56,73683	57,63173	58,88459	59,24255	59,42153	63,71707	62,4642	60,13746	57,98969	58,52663	59,60052	60,13745704	60,316438
TLKM	22,96353	22,5801	22,23926	22,49489	22,5801	22,92093	23,09134	22,6227	22,92093	23,00613	23,43217	23,68779823	23,730402
UNTR	17,96875	17,83203	17,73438	17,89063	17,89063	18,67188	18,76953	18,59375	18,73047	18,73047	18,88672	18,49609375	19,0625
UNVR	58,56874	58,75706	58,80414	58,6629	57,9096	59,27495	58,19209	57,9096	57,95669	57,43879	58,85122	59,03954802	60,263653
WIKA	42,89216	42,356	41,51348	40,90074	40,59436	40,05821	41,20711	40,51777	40,59436	39,98162	40,82414	42,3560049	42,738971
WSKT	63,62275	62,87425	62,5	61,00299	60,62874	59,88024	62,5	61,7515	61,7515	61,37725	63,2485	65,49401198	65,494012
<b>Mean</b>	<b>25,95258</b>	<b>25,68813</b>	<b>25,75683</b>	<b>25,61435</b>	<b>25,57087</b>	<b>25,79861</b>	<b>25,92668</b>	<b>25,57804</b>	<b>25,55147</b>	<b>25,47554</b>	<b>25,84647</b>	<b>26,05788404</b>	<b>26,304678</b>
<b>St. Dev</b>	<b>19,77469</b>	<b>19,64913</b>	<b>19,66353</b>	<b>19,75014</b>	<b>19,57574</b>	<b>19,98264</b>	<b>19,99586</b>	<b>19,71936</b>	<b>19,53593</b>	<b>19,42118</b>	<b>19,85907</b>	<b>20,14662713</b>	<b>20,480767</b>

**APPENDIX D**

**SECURITY RETURN**

**VARIABILITY**

	t-5	t-4	t-3	t-2	t-1	t01	t02	t03	t+1	t+2	t+3	t+4	t+5
AALI	0,14322 4	8,93122 2	1,76886 4	2,14629 6	3,76962 6	0,46405 4	3,80355 5	10,3658 5	1,84604 3	4,20131 3	0,05770 9	1,07623 5	0,2715712 4
ADHI	0,86125 5	2,82921 5	0,00055 2	0,02513 4	0,40330 7	0,39096 7	0,41445 6	3,66001 3	0,00272 5	0,55238 5	2,39232 5	0,07239 9	0,6167952
ADRO	5,25971 8	0,10027 2	1,80061 7	1,45644 7	0,53334 5	3,96265 8	0,52068 8	0,30002 6	1,72440 4	0,38706 7	8,48023 2	2,67139 4	4,6256503 2
AKRA	2,25542 2	1,22823 7	0,30279 7	0,17241 8	0,00375 7	1,4377 2	0,00490 2	1,79385 2	0,27203 5	0,02871 5	4,49644 7	0,71037 7	1,847238
ANTM	20,2621 8	3,57697 3	12,6012	11,6607 2	8,63331 9	17,6281 5	8,58216 5	2,75626 3	12,3982 3	8,00942 7	26,2147 1	14,7639 3	18,998079 6
ASII	1,31510 1	2,14120 7	0,03811 9	0,00362 5	0,17332 6	0,71235 9	0,18066 1	2,87090 8	0,02773 5	0,27508 1	3,11683 1	0,23796	1,0082242 2
ASRI	4,60081 5	0,21633 1	1,42423 8	1,12016 2	0,33854 7	3,39364 9	0,32847 9	0,48469 9	1,35654 7	0,22438 3	7,63763 5	2,20814 7	4,0091089 4
BBCA	2,28764 8	1,20465 5	0,31467 7	0,18141 1	0,00256 1	1,46345 3	0,00351 9	1,76532 8	0,28329 6	0,02520 6	4,54190 1	0,72851 3	1,8764133 6
BBNI	1,22933 5	2,25393 5	0,02471 7	0,00049 2	0,20643 3	0,64961 8	0,21443 1	3,00121	0,01651 5	0,31641 4	2,98401 5	0,20230 8	0,9333086 7
BBRI	0,35505 8	4,05699 3	0,12650 1	0,24079 3	0,93554 4	0,08590 9	0,95248 5	5,04131 3	0,14774 4	1,15647 1	1,47511 6	0,00398 2	0,2053831 6
BBTN	1,83077 9	1,58005 5	0,16122 3	0,07101 6	0,04411 7	1,10312 5	0,04785 5	2,21441 6	0,13899 5	0,10125	3,88775 5	0,48176 8	1,4650384 3
BDMN	0,36016 7	4,03980 2	0,12348	0,23661 9	0,92729 9	0,08843 1	0,94416 5	5,02214 8	0,14447 8	1,14730 1	1,48551 1	0,00346 1	0,2092734 2
BMRI	0,91789 8	2,72908 8	4,27E-05	0,01651 3	0,36606 5	0,42942 4	0,37669	3,54600 6	0,00049 2	0,50864 1	2,48612 8	0,08946 2	0,6648686 9
BMTR	0,11172 2	5,17934 2	0,38104 5	0,56599 4	1,51008 3	0,00099 1	1,53158 5	6,28457 6	0,41730 8	1,78760 2	0,90806 5	0,10544 3	0,0367003 2
BSDE	1,07886 4	2,46924	0,00759 5	0,00229 3	0,27501 5	0,54157 6	0,28423 5	3,24889 9	0,00341 5	0,40015 3	2,74684 2	0,14418 4	0,8028314 9
CPIN	1,69497	1,71126	0,12276	0,04637	0,06822	0,99829	0,07285	2,36926	0,10347	0,13641	3,68866	0,41337	1,3438320

	7	3	3	1		6		4	2	8	2	9	3
CTRA	1,41472 1	2,01823 1	0,05658 9	0,01057 7	0,13963 8	0,78615 8	0,14623	2,72822 4	0,04375 6	0,23217	3,26921 4	0,28138	1,0956760 8
EXCL	2,56809 3	1,01513 3	0,42378 8	0,26620 7	0,00155 4	1,68938 1	0,00094 3	1,53419 7	0,38723 9	0,00472 4	4,93374 4	0,89030 5	2,1311676 9
GGRM	2,08812 6	1,35729 5	0,24354 1	0,12849 4	0,01394	1,30478 1	0,01607 5	1,94914 8	0,21603 3	0,05117 8	4,25890 4	0,61790 2	1,6961415 4
HRUM	1,90733 5	1,51044 6	0,18449 3	0,08672 4	0,03313 8	1,16272 6	0,03638 8	2,13186 6	0,16065 7	0,08421 5	3,99895 7	0,52142 2	1,5336044 7
ICBP	1,19166 8	2,30562 9	0,01962 8	2,56E- 05	0,22228 1	0,62231 6	0,23057 8	3,06081 6	0,01240 8	0,33596 5	2,92516 6	0,18720 1	0,9005256 4
INCO	3,46395 1	0,56084 5	0,82743 1	0,59999 8	0,08884 4	2,42862 4	0,08372 3	0,96037	0,77603 3	0,03606 5	6,14963 4	1,44528 9	2,9532224
INDF	1,36629 8	2,07699 3	0,04724 1	0,00677 5	0,15540 6	0,75016 8	0,16235 5	2,79647 6	0,03558 7	0,25237 9	3,19538 4	0,26001 8	1,0531119 2
INTP	0,02743 2	5,97528 6	0,61765 7	0,84814 7	1,95294 3	0,01880 7	1,97738 5	7,15845 4	0,6636	2,26693 7	0,61512 9	0,24338 6	0,0005267 1
ITMG	3,66945 6	0,48230 6	0,92938 4	0,68725 5	0,12424 2	2,60118	0,11817 2	0,85668 3	0,87486 2	0,05969 3	6,42246 7	1,57908 1	3,1432009
JSMR	1,14673	2,36916 9	0,01423 7	0,00024 7	0,24230 8	0,58996 2	0,25096 7	3,13396	0,00821 1	0,36048 7	2,85451 5	0,16965 1	0,8615175 7
KLBF	0,01203 6	6,25179 2	0,70867 8	0,95427	2,11236	0,03727 1	2,13777 7	7,46080 4	0,75783 1	2,43845	0,53054 2	0,30168 7	0,0010869 1
LPKR	3,37832 7	0,59605	0,78585 7	0,56467 5	0,07558 1	2,35701 6	0,07086 4	1,00627 3	0,73578 8	0,02781	6,03537	1,39017 1	2,8742035 9
LPPF	2,85858 1	0,84517	0,54641 3	0,36500 9	0,01629	1,92645 8	0,01414	1,32346 6	0,50479 9	0,00037 9	5,33337 6	1,06454 2	2,3964864 7
LSIP	31,8498 9	68,1225	43,4954 4	45,2948 5	51,9361 4	35,3589 1	52,0618 7	71,9905 6	43,8748 9	53,5067 6	25,2495 6	39,7219 9	33,480640 4
MNCN	2,88553 7	0,83061	0,55823 4	0,37468 2	0,01838 3	1,94859 8	0,01609 5	1,30523 1	0,51616 3	0,00075 2	5,37017 2	1,08101 7	2,4211731 6
PGAS	1,25193	2,22357	0,02801	0,00104	0,19731	0,66607	0,20513	2,96616	0,01922	0,30510	3,01916	0,21153	0,9530112

	3	9		5	8	3	9	6	6	4	4	6	
PTBA	7,85012 5	0,03676 5	3,42350 2	2,94202 5	1,53439 3	6,24521 3	1,51286 8	0,00154 8	3,31810 1	1,27813 6	11,6997 1	4,59176 3	7,0709852 5
PTPP	1,97613 2	1,45037 6	0,20630 9	0,10187 3	0,02476 5	1,21657 5	0,02758 6	2,06038 6	0,18105 7	0,07049 6	4,0983 3	0,55768 3	1,5953570 2
PWON	2,81856 2	0,86714 8	0,52899 5	0,35079 9	0,01339 9	1,89363 7	0,01145 7	1,35093 4	0,48806 3	5,77E- 05	5,27866 5	1,04017 5	2,3598558 1
SCMA	2,33984 9	1,16728 3	0,33422 3	0,19632 2	0,00111 9	1,50526 3	0,00177 8	1,72002 6	0,30185 7	0,02005 2	4,61533 4	0,7581 2	1,9237178 2
SMGR	1,16041 4	2,34959 8	0,01579 8	8,74E- 05	0,23607 7	0,59978 9	0,24462 4	3,11144 4	0,00940 6	0,35287 8	2,87608 2	0,17494 6	0,8733843 6
SMRA	1,74959 1	1,65725 4	0,13777 8	0,05576 5	0,05778 3	1,04031 1	0,06205 8	2,30563 8	0,11729 2	0,12148 4	3,76902 4	0,44056 9	1,3925090 8
TAXI	5,74022 4	0,04587 7	2,08611 7	1,71427 3	0,69351 2	4,38111 6	0,67906 8	0,19827 2	2,00402 1	0,52506 8	9,08752 8	3,01685 3	5,0769166 2
TBIG	2,16812 8	1,29415 4	0,27135 7	0,14890 5	0,00821 7	1,36817 8	0,00987 3	1,87333 3	0,24227 5	0,03952 3	4,37283 6	0,66176 4	1,7683184 5
TLKM	1,9518	1,47136 1	0,19849 8	0,09640 7	0,02756 7	1,1975	0,03053 8	2,08538 4	0,17374 4	0,07518 1	4,06322 6	0,54479 3	1,5735023 6
UNTR	2,88793 6	0,82932 4	0,55928 9	0,37554 7	0,01857 5	1,95056 9	0,01627 5	1,30361 9	0,51717 8	0,00079 1	5,37344 4	1,08248 5	2,4233703 9
UNVR	1,83133 5	1,57953 8	0,16138 8	0,07112 6	0,04403 7	1,10355 7	0,04776 5	2,21380 4	0,13914 9	0,10111 9	3,88856 6	0,48205 4	1,4655361 7
WIKA	1,92652 5	1,49346	0,19049 4	0,09085 3	0,03066 3	1,17772	0,03379 2	2,11167 6	0,16626 1	0,08024 2	4,02672 2	0,53147 9	1,5508173 4
WSKT	2,58177 1	1,00656 3	0,42935 6	0,27062 4	0,00190 9	1,70047 9	0,00122 3	1,52365 7	0,39256 1	0,00415 7	4,95269 6	0,89836 6	2,1436300 9
<b>Mean</b>	<b>3,16948 2</b>	<b>3,51194 6</b>	<b>1,71618 1</b>	<b>1,65666 4</b>	<b>1,73806 5</b>	<b>2,51063 8</b>	<b>1,74378 5</b>	<b>4,19882 6</b>	<b>1,70047 7</b>	<b>1,81977 9</b>	<b>5,08585 1</b>	<b>1,97023 4</b>	<b>2,8361669 9</b>
<b>St. Dev</b>	<b>5,36741 3</b>	<b>10,0076 6</b>	<b>6,65386 7</b>	<b>6,88832 6</b>	<b>7,78464 5</b>	<b>5,69362 4</b>	<b>7,80189 5</b>	<b>10,5288 6</b>	<b>6,70287 2</b>	<b>8,00051 8</b>	<b>5,02444 4</b>	<b>6,18310 5</b>	<b>5,5097050 2</b>

**APPENDIX E**  
**TRADING VOLUME**  
**ACTIVITY**



	t-5	t-4	t-3	t-2	t-1	t01	t02	t03	t+1	t+2	t+3	t+4	t+5
AALI	0,00071 8	0,00149 5	0,00085 7	0,00108 6	0,00096 1	0,00218 6	0,00088 3	0,00117 6	0,00061 8	0,00091	0,00042 5	0,00073 8	0,00074 7
ADHI	0,03314 1	0,03718 3	0,03788 2	0,01999 3	0,01100 9	0,00755 5	0,01127 2	0,00817 3	0,00712 9	0,00444 2	0,00760 1	0,02166 5	0,01013 3
ADRO	0,00188 1	0,00165 1	0,00081 8	0,00227 4	0,00357 9	0,00545 3	0,00320 3	0,00123 7	0,00231 5	0,00099 8	0,00101 9	0,00081 4	0,00085 9
AKRA	0,00169 2	0,00289 8	0,00132 8	0,00295 6	0,00161 9	0,00199 1	0,00207	0,00152	0,00147 5	0,00146 4	0,00165 3	0,00165 5	0,00221 7
ANTM	0,00139 6	0,00233 9	0,00104	0,01559 8	0,00502 9	0,00279 3	0,00358	0,00103 9	0,00676 3	0,00168 6	0,00083 3	0,00177 6	0,00075 8
ASII	0,00061	0,00188 4	0,00084 3	0,00064 3	0,0008	0,00159 8	0,0005	0,00125 5	0,00071 8	0,00030 7	0,00046 9	0,00025 8	0,00046 3
ASRI	0,00892 5	0,00849 8	0,00533 3	0,00226 9	0,00182 4	0,00178 4	0,00393 2	0,00494 3	0,00319 5	0,00139	0,00301 2	0,00236 6	0,00330 6
BBCA	0,00050 7	0,00077 3	0,00029 7	0,00058 2	0,00058	0,00098 5	0,00032 2	0,00031 8	0,00033 2	0,00022 9	0,00022 8	0,00021 7	0,00042 2
BBNI	0,00097 9	0,00315 6	0,00317 2	0,00119 6	0,00229 4	0,00244 1	0,00128 5	0,00090 5	0,00147 8	0,00067 8	0,00106 3	0,00109 5	0,00140 7
BBRI	0,00143 6	0,00250 8	0,00168 9	0,00183 2	0,00132 8	0,00329 6	0,00182 3	0,00181 1	0,00131 8	0,00090 3	0,00116 9	0,00070 9	0,00107 1
BBTN	0,00777 9	0,02074 1	0,00939 3	0,00421 3	0,00542 1	0,00473 6	0,01234 7	0,01437 9	0,00637	0,00449 7	0,00910 5	0,00790 3	0,00552 6
BDMN	0,00148 3	0,00111 2	0,00059 1	0,00048 7	0,00037 5	0,00035 7	0,00041 2	0,00043 6	0,00069 3	0,00030 3	0,00041	0,00043 9	0,00064 3
BMRI	0,00138 4	0,00251 2	0,00061	0,00120 9	0,00168 3	0,00167 2	0,00079 8	0,00095 4	0,00102 1	0,00064 9	0,00073 5	0,00140 3	0,00056 3
BMTR	0,00213 1	0,00193 6	0,00093 5	0,00149	0,00153 1	0,00137 5	0,00078 5	0,00217 7	0,00163 6	0,00197	0,00149 4	0,00193 3	0,00106 7
BSDE	0,00204	0,00193 4	0,00123 1	0,00105 2	0,00106 8	0,00157 6	0,00123 5	0,00151 3	0,00157 2	0,00055 8	0,00069 6	0,00100 4	0,00065 6
CPIN	0,00038	0,00055	0,00039	0,00027	0,00046	0,00050	0,00021	0,00021	0,00043	0,00025	0,00036	0,00030	0,00070



	4	3		4	8	4	9	9	6	2	4	9	1
CTRA	0,00198 3	0,00213 2	0,00190 3	0,00107 3	0,00189	0,00036 1	0,00107 6	0,00052	0,00059 1	0,00041 8	0,00025 9	0,00048 1	0,00025 1
EXCL	0,00014 4	0,00072 1	5,83E-05	0,00051 9	0,00027 1	0,00054 8	0,00029 4	0,00023 4	0,00026 6	0,00018 1	0,00038 9	0,00025 8	0,00028 6
GGRM	0,00023 2	0,00040 4	0,00049 6	0,00024 1	0,00096 5	0,00071 1	0,00045 5	0,00037 9	0,00038 2	0,00024 1	0,00018 5	0,00046 7	0,00074 5
HRUM	0,00233	0,00336 8	0,00172	0,00341 2	0,00236 2	0,00626 5	0,01051 4	0,00377 6	0,00381 2	0,00222	0,00320 5	0,00201 2	0,00204 1
ICBP	0,00128 4	0,00084 9	0,00046 5	0,00013 7	0,00020 9	0,00126 8	0,00094	0,00027 5	0,00023	0,00030 2	0,00043	0,00032 2	0,00066 6
INCO	0,00078 5	0,00095 4	0,00068 3	0,00273 2	0,00329 5	0,00128 8	0,00277	0,00138 1	0,00281 3	0,00090 2	0,00054 9	0,00128 9	0,00145 8
INDF	0,00075 5	0,00173 3	0,00085 4	0,00074 8	0,00081 2	0,00112 9	0,00083 3	0,00081 4	0,00100 6	0,00052 3	0,00064 1	0,00058 7	0,00077 1
INTP	0,00127 1	0,00150 8	0,00147	0,00052 7	0,00099 2	0,00162 5	0,00065 9	0,00080 5	0,00123 7	0,00042 5	0,00171 9	0,00113 1	0,00103 7
ITMG	0,00087 2	0,00108 7	0,0007	0,00164 8	0,00103 9	0,00268 3	0,00110 5	0,00079 4	0,00140 8	0,00032	0,00043 8	0,00029 4	0,00127 5
JSMR	0,00203 4	0,00148 6	0,00137 3	0,00077 8	0,00194 2	0,00167 3	0,00054 5	0,00036 9	0,00070 9	0,00072 1	0,00097 8	0,00118 7	0,00047 5
KLBF	0,00116 9	0,00127 7	0,00081 6	0,00077 3	0,00152 2	0,00478 5	0,00338 6	0,00444 3	0,00358	0,00225 1	0,00149 3	0,00136 7	0,00159 2
LPKR	0,00469 9	0,00568 2	0,00485 8	0,00434 7	0,00365 2	0,00517 4	0,00632 1	0,00180 4	0,00177 7	0,00309 8	0,00331 4	0,00644 3	0,00265 4
LPPF	0,00086 4	0,00160 1	0,00123 3	0,00132 7	0,00194 9	0,00261 9	0,00205 2	0,00430 3	0,00275 4	0,00203 8	0,00157 9	0,00106 3	0,00287 3
LSIP	0,00197 5	0,00457 3	0,00426 7	0,00430 7	0,00410 2	0,00355 8	0,00246 2	0,00305 2	0,00161 7	0,00117 1	0,00237 1	0,00548 5	0,00299
MNCN	0,00027 9	0,00034 8	0,00011 5	0,00015 9	0,00044 4	0,00099	0,00042 1	0,00063 1	0,00019 6	0,00058 1	0,00074 3	0,00058 1	0,00034 4
PGAS	0,00053	0,00120	0,00071	0,00117	0,00113	0,00096	0,00059	0,00092	0,00083	0,00066	0,00079	0,00040	0,00040

	3	3	8	9	9	3	4	4	7	3	4	4	9
PTBA	0,00160 9	0,00131 9	0,00047 5	0,00103 4	0,00329 2	0,00401 5	0,00212 6	0,00062 6	0,00180 3	0,00123 3	0,00095 6	0,00095 4	0,00098 4
PTPP	0,00659 7	0,00757 2	0,00460 1	0,00554 9	0,00361 2	0,00136	0,00233 5	0,00114 3	0,00219 2	0,00154 4	0,00232 8	0,00443 5	0,00658 3
PWON	0,00251 8	0,00082 4	0,00134 6	0,00078 7	0,00254	0,00066 4	0,00188 7	0,00041	0,00230 9	0,00232 6	0,00178	0,00245 3	0,00133 6
SCMA	0,00032 1	0,00068 4	0,00043	0,00058 1	0,00067 3	0,00096 5	0,00029 5	0,00144 8	0,00085 5	0,00064 3	0,00037 1	0,00064 5	0,00073 5
SMGR	0,00173	0,00155 9	0,00114 8	0,00104	0,00119 1	0,00242 3	0,00084	0,00073 2	0,00097 6	0,00093 7	0,00103 9	0,00089 3	0,00052
SMRA	0,00419 7	0,00366 8	0,00331 7	0,00144 9	0,00122 7	0,00132 9	0,00267 4	0,00086 7	0,00323 4	0,00085 6	0,00093 4	0,00069 1	0,00076 4
TAXI	0,01507 3	0,01287 4	0,01798 4	0,00928	0,00551 4	0,01139 2	0,00789 9	0,00853 3	0,00718 6	0,00414 7	0,00587 9	0,01248 5	0,00699 6
TBIG	0,00053 3	0,00075	0,00088 7	0,00041 8	0,00072	0,00137	0,00082 5	0,00063 5	0,00068 2	0,00062	0,00064 3	0,00056 7	0,00045 9
TLKM	0,00057 4	0,00138 5	0,00092 5	0,00073 9	0,00079 3	0,00210 5	0,00097 2	0,00082 5	0,00079 6	0,00056 8	0,00089 8	0,0006	0,00065 4
UNTR	0,00059 9	0,00087 8	0,00047 3	0,00041 9	0,00101	0,00192 8	0,0009	0,00096 5	0,00095 4	0,00050 6	0,00076 1	0,00079 2	0,00092 4
UNVR	0,00026 2	0,00026 4	0,00016 3	0,00012	0,00029 7	0,00026 8	0,00017 9	0,00013 7	0,00017 1	6,45E-05	9,44E-05	0,00010 9	0,00021 6
WIKA	0,00855 9	0,00767 4	0,00391 7	0,00216 1	0,00211 1	0,00333 4	0,00360 2	0,00276 3	0,00197 5	0,00399 1	0,00331 2	0,00993 3	0,00546 2
WSKT	0,01420 7	0,02358 7	0,00812 2	0,00474 2	0,00290 4	0,00521 2	0,00726 6	0,00346 7	0,00250 8	0,00322 1	0,00962 4	0,02031	0,00931 6
<b>Mean</b>	<b>0,00321 1</b>	<b>0,00407</b>	<b>0,00293 2</b>	<b>0,00243 1</b>	<b>0,00204 5</b>	<b>0,00249 6</b>	<b>0,00246 4</b>	<b>0,00198</b>	<b>0,00190 9</b>	<b>0,00128 8</b>	<b>0,00173 3</b>	<b>0,00272 3</b>	<b>0,00189 7</b>
<b>St. Dev</b>	<b>0,00568 9</b>	<b>0,00697 5</b>	<b>0,00619</b>	<b>0,00382</b>	<b>0,00194 6</b>	<b>0,00218 6</b>	<b>0,00299 9</b>	<b>0,00266 5</b>	<b>0,00182 8</b>	<b>0,00120 8</b>	<b>0,00221 1</b>	<b>0,00477</b>	<b>0,00237 4</b>

# **APPENDIX F**

## **CLOSING PRICE**

Date	AALI	ADHI	ADRO	AKRA	ANTM	ASII	ASRI	BBCA	BBNI	BBRI	BBTN	BDMN
21 July 2014	26.250	3.380	1.130	4.520	1.165	7.725	550	11.650	5.150	11.700	1.160	3.895
22 July 2014	26.000	3.305	1.095	4.405	1.135	7.725	540	11.675	4.985	11.425	1.065	3.930
23 July 2014	26.000	3.180	1.105	4.435	1.135	7.700	535	11.625	4.975	11.400	1.040	3.935
24 July 2014	26.575	3.075	1.155	4.495	1.265	7.675	525	11.650	5.000	11.375	1.050	3.915
25 July 2014	26.700	3.110	1.185	4.400	1.270	7.725	525	11.600	5.100	11.200	1.080	3.855
4 August 2014	26.250	3.060	1.235	4.620	1.220	7.900	515	11.725	5.125	10.975	1.050	3.925
5 August 2014	26.275	3.140	1.255	4.620	1.230	7.800	530	11.750	5.150	10.825	1.090	3.890
6 August 2014	26.650	3.090	1.255	4.650	1.225	7.625	540	11.750	4.995	10.625	1.125	3.815
7 August 2014	26.450	3.080	1.270	4.605	1.265	7.675	540	11.600	5.075	10.800	1.135	3.800
8 August 2014	26.225	3.060	1.255	4.600	1.245	7.550	535	11.625	5.075	10.750	1.105	3.785
11 August 2014	26.500	3.130	1.265	4.690	1.240	7.650	535	11.700	5.100	10.925	1.155	3.850
12 August 2014	26.250	3.195	1.265	4.675	1.250	7.650	535	11.700	5.125	10.900	1.180	3.865
13 August 2014	26.275	3.185	1.285	4.800	1.245	7.725	545	11.750	5.150	10.925	1.180	3.910

Date	BMRI	BMTR	BSDE	CPIN	CTRA	EXCL	GGRM	HRUM	ICBP	INCO	INDF	INTP
21 July 2014	10.650	1.955	1.665	3.975	1.265	5.450	54.000	2.140	10.500	3.785	7.050	26.450
22 July 2014	10.475	1.985	1.650	3.925	1.250	5.400	54.000	2.075	10.450	3.710	7.000	26.250
23 July 2014	10.500	1.980	1.650	3.970	1.250	5.400	53.500	2.070	10.525	3.740	7.050	26.125
24 July 2014	10.450	1.970	1.610	3.990	1.190	5.525	53.150	2.110	10.475	3.905	7.075	25.600
25 July 2014	10.250	1.920	1.585	3.950	1.155	5.400	54.200	2.110	10.450	4.025	7.075	24.950
4 August 2014	10.275	1.865	1.575	3.945	1.155	5.775	54.400	2.190	10.600	4.000	7.175	24.350
5 August 2014	10.400	1.870	1.600	3.965	1.200	5.700	54.600	2.255	10.550	3.870	7.075	24.250
6 August 2014	10.275	1.815	1.570	3.950	1.205	5.725	54.300	2.235	10.350	3.790	7.050	24.250
7 August 2014	10.200	1.790	1.600	3.875	1.225	5.600	53.300	2.225	10.475	3.980	7.000	24.425
8 August 2014	10.200	1.755	1.600	3.860	1.210	5.525	52.950	2.180	10.350	3.940	6.975	24.200
11 August 2014	10.475	1.790	1.615	3.965	1.225	5.700	53.975	2.145	10.375	3.935	7.075	24.500
12 August 2014	10.500	1.815	1.620	3.985	1.220	5.775	54.400	2.160	10.375	4.035	7.100	24.575
13 August 2014	10.500	1.825	1.630	4.070	1.235	6.000	55.050	2.175	10.500	4.100	7.125	24.600

Date	ITMG	JSMR	KLBF	LPKR	LPPF	LSIP	MNCN	PGAS	PTBA	PTPP	PWON	SCMA
21 July 2014	25.600	6.400	1.745	1.160	14.350	2.090	2.605	6.025	10.950	2.390	426	3.690
22 July 2014	25.025	6.400	1.740	1.150	14.200	2.000	2.565	6.075	10.650	2.365	423	3.600
23 July 2014	25.250	6.375	1.760	1.145	14.450	2.010	2.580	6.100	10.750	2.365	431	3.700
24 July 2014	26.425	6.375	1.750	1.100	14.525	2.075	2.600	6.000	11.125	2.275	433	3.800
25 July 2014	26.150	6.425	1.730	1.100	14.500	2.100	2.615	5.900	11.650	2.260	415	3.800
4 August 2014	28.050	6.400	1.655	1.105	14.750	2.115	2.780	6.100	12.500	2.285	401	3.980
5 August 2014	27.300	6.350	1.635	1.140	15.000	2.125	2.775	6.000	12.700	2.325	403	3.970
6 August 2014	27.900	6.325	1.595	1.120	14.925	2.145	2.725	5.775	12.500	2.290	399	3.805
7 August 2014	28.000	6.200	1.630	1.130	14.900	2.120	2.665	5.725	12.875	2.280	393	3.825
8 August 2014	27.450	6.100	1.630	1.155	14.525	2.125	2.750	5.725	12.950	2.290	413	3.920
11 August 2014	27.400	6.150	1.640	1.170	14.950	2.095	2.880	5.850	12.600	2.350	436	3.920
12 August 2014	27.400	6.250	1.640	1.205	15.000	2.045	2.900	5.925	12.400	2.365	445	3.910
13 August 2014	27.400	6.350	1.630	1.220	15.975	2.040	2.900	5.950	12.700	2.435	448	3.940
Date	SMGR	SMRA	TAXI	TBIG	TLKM	UNTR	UNVR	WIKA	WSKT			
21 July 2014	16.975	1.365	1.265	7.925	2.695	23.000	31.100	2.800	850			
22 July 2014	16.625	1.380	1.260	8.050	2.650	22.825	31.200	2.765	840			
23 July 2014	16.875	1.370	1.360	8.225	2.610	22.700	31.225	2.710	835			
24 July 2014	16.650	1.335	1.360	8.275	2.640	22.900	31.150	2.670	815			
25 July 2014	16.575	1.350	1.365	8.300	2.650	22.900	30.750	2.650	810			
4 August 2014	16.725	1.330	1.440	8.900	2.690	23.900	31.475	2.615	800			
5 August 2014	16.500	1.315	1.450	8.725	2.710	24.025	30.900	2.690	835			
6 August 2014	16.400	1.295	1.430	8.400	2.655	23.800	30.750	2.645	825			
7 August 2014	16.350	1.300	1.440	8.100	2.690	23.975	30.775	2.650	825			
8 August 2014	16.250	1.310	1.400	8.175	2.700	23.975	30.500	2.610	820			
11 August 2014	16.575	1.335	1.360	8.325	2.750	24.175	31.250	2.665	845			
12 August 2014	16.650	1.330	1.420	8.400	2.780	23.675	31.350	2.765	875			
13 August 2014	16.725	1.350	1.420	8.425	2.785	24.400	32.000	2.790	875			

