

**ANALYSIS OF STOCK SPLIT EVENT TOWARD THE ABNORMAL
RETURN AND LIQUIDITY SHARE CHANGES
(Study Case in Companies Listed in Indonesia Stock Exchange from 2010
to 2012)**

A THESIS

Presented as Partial Fulfillment of the Requirement to Obtain
The Bachelor Degree in Accounting Department



By

DEWI ROSYIDAH RAHMAWATI

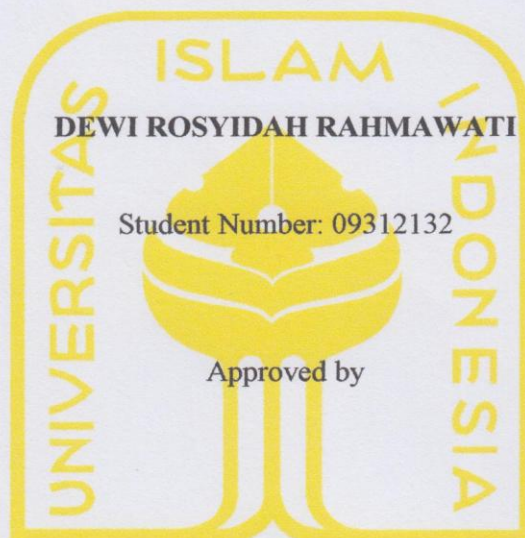
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**DEPARTMENT OF ACCOUNTING
INTERNATIONAL PROGRAM
FACULTY OF ECONOMICS
UNIVERSITAS ISLAM INDONESIA
YOGYAKARTA**

2013

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2010 to 2012)**

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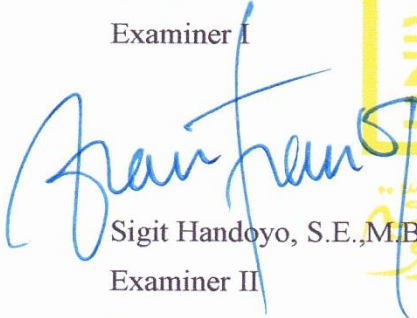
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DECLARATION OF AUTHENTICITY

Herein I declare the originality of the thesis; I have not presented anyone else's work to obtain my university degree, nor have I presented anyone else's words, ideas or expression without acknowledgment. All quotations are cited and listed in the bibliography of the thesis.

If in the future this statement is proven to be false, I am willing to accept any sanction complying with the determined regulation or its consequence.

Yogyakarta, September 12th, 2013



Dewi Rosyidah Rahmawati

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ABSTRACT

Stock split is always appear to be an interesting event to discuss. Due to their inception, stock split has been somewhat of an anomaly in the world of finance. While stock split do not affect a firm's fundamental such as cash flow, the market tends to react them positively. The objective of this research is to examine the influence of stock split event toward abnormal return and liquidity share changes which represented by trading volume activity (TVA). The samples are 18 companies who did stock split and listed in Indonesia Stock Exchange (IDX) in 2010-2012. Then, data analysis is performed by Computer Statistic Program *SPSS for Window Release 16.0*. To measure the relation between the security and return, this research was using event study (observation period) for 21 days (10 days before and 10 days after stock split announcement). The results show that stock split event has no positive influence toward abnormal return and there is no significant difference of abnormal return before and after stock split announcement. Furthermore, this research also found out that stock split event has positive influence toward trading volume activity and there is also significant different of trading volume activity before and after stock split announcement. This finding also indicates that trading theory which is suggest that stock split realign share price to a preferred price range is the main motive for the company to do stock split announcement.

Keyword: *Stock Split, Abnormal Return, Liquidity Share Changes, Trading Volume Activity, Event Study, Window Event*

ABSTRAK

Stock split selalu muncul sebagai suatu peristiwa yang menarik untuk diperbincangkan. Dimulai sejak keberadaannya, stock split sudah menjadi sebuah anomaly di dunia keuangan. Meskipun stock split dianggap tidak mempengaruhi fundamental perusahaan seperti arus kas, tetapi pasar cenderung memberikan reaksi yang positif terhadap peristiwa ini. Tujuan dari penelitian ini adalah untuk menguji pengaruh peristiwa stock split terhadap abnormal return dan perubahan likuiditas saham yang diwakili oleh volume aktivitas perdagangan (TVA). Sample pada penelitian ini adalah 18 perusahaan yang melakukan stock split dan terdaftar di Bursa Efek Indonesia (IDX) pada tahun 2010-2012. Analisis data dilakukan dengan Program Komputer SPSS Statistik for *Window Release 16.0*. Untuk mengukur hubungan antara saham dan *return*, penelitian ini menggunakan periode pengamatan event study selama 21 hari (10 hari sebelum dan 10 hari setelah pengumuman stock split). Hasil menunjukkan bahwa peristiwa stock split tidak memiliki pengaruh yang positif terhadap abnormal return dan juga tidak ada perbedaan yang signifikan terhadap abnormal return sebelum dan sesudah pengumuman stock split. Selanjutnya, penelitian ini juga menemukan bahwa peristiwa stock split memiliki pengaruh yang positif terhadap volume aktivitas perdagangan saham, dan juga terdapat perbedaan yang signifikan terhadap volume aktivitas perdagangan sebelum dan sesudah pengumuman stock split. Temuan ini juga menunjukkan bahwa teori perdagangan (*trading theory*) yang menunjukkan bahwa harga saham kembali pada kisaran harga yang disukai merupakan motif utama perusahaan dalam melakukan pengumuman stock split.

Kata Kunci: *Stock Split, Abnormal Return, Liquidity Shares, Trading Volume Activity, Event Study, Window Event*

CHAPTER I

INTRODUCTION

1.1 Background of the Study

Fund is a common thing that always needed by the companies in their operation. Fund can be obtained from several sources such as the owner's equity, retained earnings, or the other sources which are come from external parties. Furthermore, for some companies which are listed in stock market (go public company) they can get additional funds by issuing stock or shares.

Stock is issued by companies in order to get additional capital, while the investors who are buying the stock usually called as shareholders. For the investor, the required information relating to the stock price is very important. That information could be used to reduce the uncertainties that may occur in achieving the objectives of conducting investment. One of the information that appears in the stock market is the announcement of company's stock splits.

Stock Split always appears to be an interesting event to discuss. Due to their inception, stock splits have been somewhat of an anomaly in the world of finance. While stock splits do not affect a firm's fundamental such as cash flow, the market tends to react to them positively. Theoretically, stock splits usually called as a cosmetic corporate event because it does not change the amount of capital share and reserve. It only causes change on pair value shares. In other word, it will increase the number of outstanding shares without increasing any claims on assets by the shareholders.

Stock split is an activity which is done by go public companies to increase the number of outstanding shares in the market (Brigham and Gapenski, 1999) whereas it is usually done when the stock price considered over-valued or has high price that will decrease the number of investor to buy it and affect to the liquidity shares of company. That statement is similar with Grinbaltt *et al* (1984) who stated that stock split was widely believed to be purely cosmetic event since corporation's cash flow was unaffected directly. Theoretically, stock split were thought to be cosmetic corporate event as they merely involved the breakup of one share into a certain number of shares and a reduction of a higher to a lower share trading price without changing shareholder's wealth and relative shareholdings.

However, although early empirical studies found that there is no abnormal performance after stock split; Fama *et al* (1969) found a positive significant market reaction to stock split announcements. Based on Fama's empirical study, stock split is no longer to be considered as cosmetic event in the capital market. The announcement of stock split is considered to be important information by the investor in the decision making process, because stock split will lower the stock price and make it more affordable to the small investors. Furthermore, stock split will increase the bid of shares that will make the shares become more liquid.

Wooldridge and Chamber (1983) noted that when a the stock split occurred, the balance sheet items remained the same, except the total number of company's outstanding shares increase proportionately to the ratio of split. They also noted that the

stock split usually done by companies that had seen their share price increase to levels that too high or beyond the price levels of similar companies in their sector. The primary motive was then to make shares more affordable to small investor, even though the underlying value of the company had not changed.

While the popular stories behind a split decision imply a positive market reaction to split announcement, they also imply an increase in trading liquidity. However, the impact of split on stock liquidity may occur when the announcement is made. If stock split is made to draw investor's attention or to give signal, then, we should expect an increase in demand for the stock when the announcement is made. Fama *et al* (1969) mentioned that in the efficient market, the effect of stock split on the stock price is caused by information about the possible changes in dividends. The dividends changes might signal that management has confidence of earning in the future. Furthermore, the result of Fama's research showed that stock price increased in the period before the stock is announced.

The impact of the split to the investor is explained by Grinbalt, Masulis and Titman (1984) who stated around the split announcement there will be abnormal behavior in the stock market. They also believed that the increasing of the stock price is not caused by the announcement of dividend as proposed by Fama *et al* (1969). The liquidity increases after stock split event is caused by the increasing of the transaction number of shares. The volatility of the stock prices which become wider will attract the investors to increase the number of their shares that would make the increasing of liquidity. It was similar with the statement of Sutrisno *et al.* (2000) who stated that the

increasing of liquidity is caused by the number of investors who buy and sell their stock in the stock market.

Considering stock split as a common event that usually did by the management of company, the researcher would like to investigate and analyze the influence of stock split event on the abnormal return and liquidity changes. Does the stock split event can influence the abnormal return and increase liquidity shares of the company? Therefore this research has title **Analysis of Stock Split Event toward the Abnormal Return and Liquidity Changes (Case Study in Companies Listed in Indonesia Stock Exchange from 2010 to 2012).**

This research is a replication from previous research which is made by Zainal Abidin Zein, Novita Indrawati, and Eka Hariyani (2009). The difference between this research and previous research lies on the data year of research and the dependent variable. The previous research used the data that retrieved from Indonesia stock exchange during 2002-2005, meanwhile, this research will use the data that retrieved from Indonesia stock exchange during 2010-2012, and use the abnormal return as the dependent variable instead of the stock price.

1.2 Problem Identification

The results of previous researches indicate that stock split has no significant influence on the investigated dependent variables. The researcher who support the conduct of stock split believe that affordable stock price after the announcement would give effect to the increasing number of shareholder, also increase the volatility of the

stock returns, and increase the stock price of the company that did split thus will make the market more liquid. Jones, Kaul, and Lipson (1994) find that volatility is primarily and positively related to the number of trades. Furthermore, they found out that the volatility of the stock increases after the split, and sure that there is a significant relation between the change in the number of trades and change in the permanent volatility.

In other side, some researchers believe that the decrease on stock price as the effect of the stock split announcement will cause the companies to be considered as un-trusted companies by investors due to their low stock price.

The results of previous researches have different results and basically they can be divided into two groups. First is a group whereas stock split declared as purely “cosmetic” event because stock split has no effect on the cash flow and the proportion of investor’s holding. Meanwhile the second is a group whereas the stock split declared has the real effect toward the shares. Then, those disagreements often lead to controversy about the influence of stock split announcement phenomenon. That is why further research about stock split event is needed.

In this research, the researcher tries to analyze the influence of the stock split event on abnormal return and liquidity changes in the companies that are listed in Indonesia Stock Exchange starting from 2010-2012.

1.3 Problem Formulation

Based on the study background explained above, this research attempts to answer the following question:

1. Does the stock split event have positive influence toward abnormal return?
2. Does the stock split event have positive influence toward liquidity shares changes?
3. Whether there is significant difference between abnormal returns before and after stock split announcement?
4. Whether there is significant difference between liquidity shares before and after stock split announcement.

1.4 Research Objectives

The objective of this research is to give explanation about whether the stock split event that is conducted by the companies' management could influence the abnormal return and liquidity shares changes of company. This research also intends to analyze whether there are differences between the abnormal return before and after stock split announcement.

This research also aimed to test the liquidity shares changes after the announcement among companies that are listed in Indonesia stock exchange through identifying the trading volume activity. Therefore, findings to this research will indicate one of the management's motives to do split in their company.

1.5 Research Contribution

This research is conducted with expectations that it can give additional scientific benefits and input as well as a new reference for the next research. The result of this research is expected to give benefit for these following parties:

a. Companies

Hopefully, this research can be point of consideration for companies in decision-making process especially when they are conducting dealing with stock split event.

b. Investors

This research is expected to be useful for investors as additional knowledge in investment activity.

c. Students and academicians

The information in this research hopefully can be used as the additional knowledge, for the reference material for the next research, and to improve their ability in analyzing how stock split event can influence the stock price and liquidity shares of company.

d. For researcher

- This research is one of the requirements to finish her study in Islamic University of Indonesia, International Program Faculty, Economic & Business Department (Accounting).

- This research is expected to help the researcher in earning additional knowledge and information that will be useful for the researcher in the future.

1.6 Thesis Organization

The objective of the thesis organization is to provide a complete description of the matters that will be discussed in this thesis. This thesis consists of five chapters, with the following details:

CHAPTER I: INTRODUCTION

This chapter describes the background of the study, problem identification, problem formulation, research objectives, research contributions, and thesis organization.

CHAPTER II: REVIEW OF RELATED LITERATURE

This chapter contains theoretical review that is used to discuss the issues raised in this study, including theories and concepts that are relevant and supportive to the analysis of problem solving in this study. It also contains the review of previous study, and hypothesis formulation.

CHAPTER III: RESEARCH METHOD

This chapter contains research method, research subject, research instrument, research variables, research model, research procedures, and technique of data analysis. This chapter is the basis for analyzing the data.

CHAPTER IV: RESEARCH FINDINGS AND DISCUSSION

This chapter contains research description and research findings. This chapter gives general image from the research object in this thesis by describing the existing research findings systematically, and then discussion is made based on the results.

CHAPTER V: CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

This chapter describes the conclusions and implications from the results of the analysis have been done, and the recommendations that may be proposed and implemented for further research.

CHAPTER II

REVIEW OF RELATED LITERATURE

2.1. Introduction

This chapter will present related literatures that explain about stock split event, abnormal return, stock liquidity and other explanations related to the topic of this study. Hence, literature review will help the researcher to understand the theories that will be discussed in this research later on.

The researcher will explain each definition of theories related to stock split event that may influence the abnormal return and stock liquidity changes. Any existing prior studies as well as the hypothesis formulation are also included in this chapter.

2.2. Theoretical Review

2.2.1. Stock Split

2.2.1.1 Understanding Stock Split Event

A stock split is a decision made by the company to increase the number of outstanding share by issuing more shares to current shareholders. According to Agusta (2005) Stock split is splitting the value of stock to get more numbers of shares by proportionally decreasing the nominal value per share. For example, in a 2-for-1 stock split, every shareholder with one stock is given an additional share. So, if company had 10 million outstanding shares before the split, it will have 20 million outstanding shares after a 2-for-1 split. After the split, the stock

price will be reduced since the number of shares outstanding has increased. In the example of a 2-for-1 split, the share price will be halved. Thus, although the number of outstanding shares and the stock price change, the market capitalization remains constant.

2.2.1.2 Type of Stock Split

There are two kinds of stock split, they are split up and split down.

- **Split Up** is splitting the shares to the lower value in accordance to the split factor. According to (Suryandari, 2006) the value is determined by $n_1:n_0$, in which n_1 is the number of split after splitting and n_0 is the number of shares before splitting. For example, stock split 2:1 means that one sheet of share must be split into two sheets of shares, or it could be determined that the par value of the shares is split into half of previous par value. Hence, the total number of shares will be twice larger than the previous number.

- **Split Down** is splitting the shares to the higher value in accordance to split factors. The value is also determined by $n_1:n_0$, in which n_1 is the number after splitting and n_0 is the number of shares before splitting. For example, stock split 1:2 means that two sheets of share split into one sheet of share, or it could be determined that the par value of the share will be twice of previous par value, but the total number of shares will be half smaller than the previous number.

2.2.1.3 Theories Related with Stock Split Motive

There are 3 theories related to the stock split event motives. They are:

- a. **Signaling theory.** It suggests that the announcement of stock split provides signals about the optimistic future of company. The signaling model assumes that the managers as company insiders, usually have better estimation about the future prospects of their company than current and prospective shareholders (Baker et al., 1995).
- b. **Trading theory.** It suggests that stock splits realign share prices to a preferred price range (Lakonishok and Lev, 1987). According to this theory, split makes the shares more affordable to small investors thus, enabling them to trade in the shares. Eventually this leads to an increase in the base of traders in the firm. In turn, it will increase the volume of trade. Baker and Gallagher (1980) did survey to top executives and found that the executives belief that split keep stock prices within an optimal trading range that easier the small investors to buy rounds lots that finally will give result to the increasing number of shareholders.
- c. **Tick Size Theory.** According to Angel (1997) in Goyenko, Holden and Ukhov (2006), the idea is a split causes an increase in percent spread. This eventually causes some traders will switch from using market orders to using limit order (which now sees more profitable). Still according to Angel (1997), the increase in limit orders will eventually cause the percent spread to cross-over and drop the stock price below where it would be.

2.2.1.4 Advantages of Stock Split Event

The questions of whether stock split are conducted purely as cosmetic corporate event or not, have been analyzed by various researchers across several countries. Many factors and motives could influence the management to do the stock split. Management survey has been conducted by some researchers to gain insight about stock split and manager's motive for issuing them. Dolley (1933) surveyed managers of eighty-eight companies issuing stock splits. The findings of the survey was that the main motives for issuing stock split are as follows:

- a. To widen the distribution base among the shareholders. This leads to increased marketability of the shares and enhanced advertising value of the company. Corporate manager believes that a wider distribution of shares leads to a steadier volume of trading.
- b. To receive higher effective dividend rates to facilitate the sale of stocks.
- c. To permit listing of the stocks and to create goodwill in the stock market.

Another similar research that was conducted by Chhavi, Yadav, Surendra, Jain (2011) classified the management's motives to do stock split into these following five statements:

- a. A stock split makes the shares more attractive to individual investors by lowering the share prices.
- b. A stock split enables small investors to buy shares, thereby improving marketability of shares.
- c. A stock split increases the number of shareholders in a firm.

- d. A stock split brings the share price into a popular trading range
- e. A stock split give effect to the increasing number of shares traded after a stock split issue announced (at a proportion greater than the size of stock split), thereby increasing liquidity.

Other explanation came from McGough (1993) which is stated in Suryandari (2006). McGough (1993) explained the advantages of the investors during stock split event as follows:

- a. The occurrence of stock split will increase the number of shares appropriately through the split factor. Thus it is possible that the shares will be easily traded that will causes the shares more liquid.
- b. Stock split also has consequences in increasing the right to vote although the escalation is proportional with the previous right to vote.
- d. There is no tax levied because no sales transaction is happened, because in this case there will be no value added or asset distribution.

2.2.1.5 Disadvantages of Stock Split Event

Besides having many advantages, stock split event also has disadvantages. McGough (1993) discussed about the cost that will exist in the stock split process, it includes the transfer agent price for the certification process. For the investors, there will be no disadvantage of stock split.

Similar with McGough's statement, Hasan Zein (1997) stated in Suryandari (2006) that the consequence of the stock split is also about the cost. The cost of

shares will increase because the ownership of the shares that is represented only by a sheet of share should be changed into two sheets of shares. Back office cost in Stock Exchange Company, clearance cost, and custodian cost is influenced by the physical number of shares. There will be a higher cost of broker after split.

2.2.1.6 Accounting Consideration

There is no rule of stock split which is stated in the Standar Akuntansi Keuangan. The regulation is only concerned with the stock dividend that given by the company. It is stated at PSAK No 21 section 3 about stock dividend.

Baridwan, Zaki (1992) explained that the change on stock split only in the number of shares. Hence, for the company that doing stock split, the activity could be recorded in memorandum or by providing journal to replace the previous capital account with the new capital account.

In line with Zaki's statement, Kieso, Weygandt, Warfield stated in Intermediate Accounting (IFRS edition) that related with the stock split event, the company only need to enters a memorandum note to indicate the changes of share's par value and the increased number of shares.

Conroy and Haris (1999) in Suryandari (2006) explained about the accounting consideration of stock split in different way. During the analysis phase of stock split, management must also review the effects on the balance sheet and income statement. It caused by the additional expense that incurred as the result of stock split event, it is usually stock exchange company listing fee,

transfer agent fees for certificate processing and postage expense, and other expenses that specifically identified as employee costs. Furthermore, Conroy and Haris (1999) stated that those expenses can be expensed to the income statement in the year of the stock split.

2.2.2 Event Study

Event study is an observation on the volatility (movement) of the stock price to determine whether there are abnormal return that will obtained by the shareholder as the result of a particular event (Peterson, 1989).

While according to Kritzman (1994), event study's objective is to measure the relation between an event that influence the security and return from that security itself. According to Jogiyanto (2000), event study is study that take up the market reaction to an event which the information is published as an announcement. If the announcement consists of information content, thus the market expected will react in time of announcement.

From the explanation above, we could say that event study is used to see the capital market's reaction (through volatility of stock price) to a particular event. In line with that purpose, event study also can used to test the efficient market hypothesis in semi-strong form, similar with what did by Fama et al (1969), which is then followed by various researchers in the capital market. The other event which is referred in this research is the stock split event that did by companies that listed in Indonesia Stock Exchange. In event study, there will be event window term or

event date and estimation period. The period also known as an observation period or event window that has various long times. Time periode that usually used in the window event around 3 days-121 days for daily data and 3 months-121 months for monthly date. While the common estimation period that usually used around 100 days-300 days for daily data and around 24-60 months for monthly data (Jogiyanto, 1998).

2.2.3 Liquidity Shares

Stock liquidity shows how quick the security can be converted into cash. The sooner those securities changed into cash, the more liquid the company trading is. Liquid security is the security that is rapidly sold in the capital market. If a security is not liquid, the management of company will lower the price to attract the investor to trade in the capital market. In another hand, some investors believe that if the stock price of company is drop then it will bring loss toward them, because they assume that price reduction will give impact to the return reduction.

While some of investors believe that price reduction will bring loss toward them, some market participants assume that stock split event will give great benefit to the company. The benefit that will be obtained from the announcement is the lower stock price that will attract the investor to own the shares. Thus, it will make the share become more liquid to be traded and at last it will changes the odd lot investor become the round lot. Odd lot is the condition whereas the investor has the

shares under 100 shares (1 lot). Meanwhile round lot investor is the investor that has minimum 500 shares (1 lot) (Mc Gough, 1993 in Sukardi, 2003).

Copeland (1979) mentioned that stock liquidity is one of the indicators from the market reaction to the announcement in the capital. Liquidity can also be generally described as the ability to trade large quantities quickly at low cost with less price impact (Liu. 2006, p. 631).

Lakanishok and Lev (1987) and also Lamoureux and Ponn (1987) stated that whereas the stock liquidity can be measured by Trading Volume Activity. Further, Foster (1990) in Suntoro and Subekti (2003), similar with Suryawijaya (1998:42) stated that trading volume activity is an instrument that can be used to see the capital market reaction toward the information that provided through parameter of trading volume activity of company in capital market.

Trading volume activity is a sale of each transaction in the stock exchange at the certain time and certain stocks, and it is also as one of factors that affect to the stock price movement. Volume transaction is a key in making predictions on the stock price movements.

2.2.4 Share Return and Abnormal Return

The main motivation of the investors to invest their money in one of kind investment is to get the optimal return of investment. Return is a rates of profit that given to the investor on the investment that they did. The share return that would be received by the investor greatly influenced by the type of investment that chosen.

To measure the amount of return that would be received by the investor related with the stock split event, it can be measured through the abnormal return that received by the investor.

Abnormal return is the difference between the actual return and expected return (Ang, 1997). The actual profit rate is the comparison of difference between current stock price period and previous period.

The positive abnormal return indicates the greater profit rate. Related with the stock split event, if there is positive abnormal return after the stock split announcement, then it will give greater return to the investor than the normal condition, and vice versa. Efficiency test in the capital market is through analyzing the return that happened.

Abnormal return is the excess of return that really happened to the normal return. The study is about the abnormal return from the security which may occur around the announcement date. Thus, the abnormal return is difference between the actual return that occurred and expectation return (Jogiyanto, 2000), as follow:

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

AR_{it} = abnormal return of share i in the event period t

R_{it} = actual return which occurred to i share in the even period t

$E(R_{it})$ = expected share return i to period t

Actual return is the return that could be received through the share investment in certain period, and could be formulated into:

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

R_{it} = share return i in the day-t

P_{it} = stock price i in the day-t

P_{it-1} = stock price I in the day t-1

While expected return should be estimated (Brown & Warner, 1985), according to Jogiyanto (2000) we could estimate the return by using some of estimation models, such as:

1. *Mean Adjusted Model*

This model assumes that the expectation return has same constant value with:

$$E(R_{it}) = \frac{\sum_{j=t}^t R_{ij}}{T}$$

Where:

$E(R_{it})$ = expectation return of security i in the t-period

R_{ij} = realization return of security i in the t-period

T = the length of estimation period t_2-t_1

2. *Market Model*

The calculation of return expectation by using this model can be done through 2 steps:

First one is by using the expectation return i in estimation period. The second one is using the model that can be established using regression technique OLS (Ordinary Least Square) with the equation as follow:

$$R_{ij} = \alpha_i + \beta_i RM_j + E_{ij}$$

Where:

R_{ij} = realization return of security i in the estimation period t

α_i = intercept for the shares i

β_i = slope coefficient which is security beta i

RM_j = market index return in the estimation period j

E_{ij} = residual error i in the estimation period j

3. Market Adjusted Model

This model assumes that the best tool to estimate the return of security is by using the return of index market at that time. By using this model, we do not need to use estimation period to create an estimation model, because the return of security that will estimated is similar with the return in the market.

$$E(R_{it}) = R_{mt}$$

$E(R_{it})$ = expectation return of security i in the event period t

R_{mt} = security return at time t

2.2.5 The Influence of Stock Split toward Trading Volume Activity

Trading volume activity is one of the indicators that used to see the market's reaction toward the event or information which is related with the shares. The liquidity shares are usually measured by trading volume activity. Trading Volume Activity that usually called as TVA is the ratio comparison between the

number of shares that traded at certain time and the number of company's shares during the period.

Stock split that did by the company when the stock price in high position will influence the investor's ability to buy it, then it will only have value if there is a change in the trading volume. The impact of the stock split event could be seen from the size of the number shares that traded (Weston and Copeland, 1992).

Related with the stock split announcement, it will make the stock price will be lower, and attract the investor to having and adding the number of shares that traded. According Copeland (1979), the more investors does transaction toward the shares will make the trading volume activity increase, and then will also give impact to the liquidity shares of company.

Calculation of trading volume activity can be conducted with comparing the number of traded shares in certain period by the total number of outstanding shares of the company in the same period. Formulation that will be used is (Husnan, 2001) :

$$TVA = \frac{\sum Traded\ i\ shares\ that\ at\ time\ t}{\sum Outstanding\ i\ shares\ at\ time\ t}$$

2.3. Review of Previous Study

There are many researches related with stock split event that has been developed by previous researchers. Those that has done the research related with the stock split announcement is Asquith *et al.* (1989), Sukardi (2003), Copeland (1979), Wang Sutrisno (2000) , Fatmawati (1999), Muazaroh and Rr. Iramani (2006), and many more.

Asquith et al (1989) aimed to test whether stock split event bring stock information related to the company profit by using data in the New York Stock Exchange during 1970-1980. The result showed:

1. Existence of positive and significant abnormal return in the period before the stock split event (t-240 until t-2).
2. The existence of positive cumulative abnormal return in the prior period (t-240 until t-2) which is reached 66.4%. This is showed a large change in the stock price in the prior period of stock split event.
3. There is a change in earnings in the period of 4 years in row before the stock split for 1.05% , 0.66%, 1.24%, and 2.55%. It is showed an increase in the company profits in the prior period and during period of the stock split. After the period of stock split, there is also occurred increasing in the company profit for 4 years, but only the first year that showing a significant increasing.
4. The existence of a positive and significant correlation between stock returns during the stock split and the increasing of earnings during the 2 years before stock split did.

Sukardi (2003) conducted research using 15 companies as the samples with event study 5 weeks before and 5 weeks after the stock split in 1995-1996, as follows:

1. There was no significant difference between the abnormal return before and after the stock split period which is followed by the increasing of earning. It means that the announcement of stock split which is followed by rising of earnings will not affect the market positively in the first week of announcement.

2. There was no significant difference between the liquidity shares before and after the stock split event. It can be caused due to investor's preference toward the company policy related with the announcement of stock split still good before and after the stock split event.

In other hand, Copeland (1979) has different perspective related with the stock split and its influence toward the liquidity changes. Copeland (1979) examined about the relation between the stock split and stock liquidity changes. Management might have this preference because when the stock prices are too high, many small or uninformed investors cannot afford to trade in round lots, thereby affecting the liquidity of the shares (stocks). According to Copeland, splitting shares would improve the liquidity by enlarging clientele and hence reduce the trading cost of the stock.

Similar with Copeland, Wang Sutrisno (2000) did the research about the stock split's influence toward the liquidity share and share return in Jakarta Stock Exchange. This research taken sample from the companies that had decision related with the stock split event during 1996-1997, and using 15 companies as the sample. From that research, the researcher found that the stock split has significant influence toward the stock price, spread percentage, and trading volume activity. In other hand, stock split has no significant influence toward the both share variants and abnormal return that reviewed individually or as a portfolio, so it can be concluded that the stock split event has no significant effect on the stock return.

The research that did by Fatmawati (1999) through taken 30 companies as the sample that did stock split on the period of July 1995- June 1997 by see the influence of

stock split event toward the liquidity shares that measured by the size of bid ask spread. Through this research, the researcher can conclude that generally stock split announcement influence toward the stock price, trading volume activity, and spread percentage. There is spread difference between the period before and after the split announcement. The spread difference between the period before and after the split announcement significantly influence by the variables of stock price, trading volume activity, and the variants of shares.

Muazaroh and Iramani (2006) did research toward the property and real estate industries. This research analyzes the financial performance, the overpriced shares, and the liquidity of companies that did split. From that research, the researcher found out that there is significant difference between the abnormal return before and after the split announcement, earning per share, and price by volume, and there is also no significant difference between the trading volume activity before and after the split announcement.

2.4. Hypothesis Formulation

2.4.1 Stock Split and Abnormal Return

Abnormal return usually becomes the main focus in the study that observes the reaction rates or market efficiency. Abnormal return is the difference between the actual return minus by expectation return (Jogiyanto, 2000) in Wiriastari (2010). Wulff (2002) stated that there is positive and significant abnormal return around stock split announcement.

Based on the explanation above, the hypothesis formulated is as follows:

Hypothesis 1: Stock split announcement has positive influence toward the abnormal return.

2.4.2 Stock Split and Trading Volume Activity

Kurniawati (2003) and Suntoro and Subekti (2003) found the fact that the stock split announcement was responded positively by the investors. The finding is also consistent with another researcher Fatmawati (1999) who also found that generally stock split announcement influence toward the stock price, trading volume activity, and spread percentage.

Based on the explanation above, the hypothesis formulated is as follows:

Hypothesis 2 : Stock split announcement has positive influence toward the trading volume of activity.

2.4.3 Stock Split and Abnormal Return before and after Stock Split Announcement

The influence of stock split toward the average of abnormal return before and after the announcement has become debatable issue. Rahardjo (1998) in Rahayu (2006) research found out that there was no significant difference between the abnormal return before and after announcement. While Mahirun (2004) did research and found out that there is a significant difference between the abnormal return before and after the stock split announcement.

Based on the explanation above, the hypothesis formulated is as follows:

Hypothesis₃ : There is significant difference between abnormal return before and after the stock split announcement.

2.4.4 Stock Split and Trading Volume Activity before and after Stock Split Announcement

Harsono (2004) did analyzing related with the stock split event, the impact toward the trading liquidity and income share. From this analysis the researcher conclude that there is significant difference toward the stock price and trading volume activity.

Based on the explanation above, the hypothesis formulated is as follows:

Hypothesis₄ : There is significant difference between trading volume activity before and after the stock split announcement.

CHAPTER III

RESEARCH METHOD

3.1 Introduction

This chapter will present about how this research will be conducted and elaborate further about the method that will be used. This chapter will explain more about research method, research subject, research instrument, research variables, research model, research procedures, and data analysis techniques.

3.2 Population and Sample

3.2.1. Population

All individual or groups that become research object are called population. According to Sekaran (2003), population refers to the entire group of people, events, or things of interest that the researcher wishes to investigate. The population in this research is all companies that are listed in Indonesian Stock Exchange for the year of 2010-2012 and already had conducted stock splits event during those years.

3.2.2. Sample

Sekaran (2003) defined sample as subset or subgroup of the population. This research uses purposive sampling as the technique of the data collection. The criteria that are used by the researcher are as follows:

- i. The companies that listed in Indonesia Stock Exchange data from the period of 2010-2012 and also have conducted stock splits up event during those years.
- ii. The companies which did not make these following decisions: distribution of stock dividend, right issue, shares bonus, and any other corporate event during 21 (twenty one) days of window period.
- iii. The companies should have complete data about the daily stock price, which cover from the estimation period of 100 days and on the event period or period of observation or usually called as window event which is consist of 21 days (10 days before the announcement, one day on the date of announcement, and 10 days after the announcement of stock split). It is required in order to help the researcher to get the actual data from the companies.
- iv. Any firm with missing data during the study period is excluded.

From the criteria above, the researcher found 19 companies that can be used as research sample, but unfortunately there is one company, Indosiar Karya Media Tbk (IDKM) which the data does not exist in the Indonesia Stock Exchange corner, Universitas Islam Indonesia. Therefore, it cannot be included as the sample. Those 18 companies are as follow:

Table 3.1**List Of Emitens Which Are Fulfill The Requirement**

No	Emiten's Code	Company's Name	Date of Split Event
1.	CPIN	PT. Charoen Pokphand Indonesia Tbk.	Dec 08, 2010
2.	CTRA	PT. Ciputra Development Tbk.	Jun 15, 2010
3.	DVLA	PT. Darya - Varia Laboratoria Tbk.	Nov 12, 2010
4.	KKGI	PT. Resource Alam Indonesia Tbk.	Mar 18, 2010
5.	TURI	PT. Tunas Ridean Tbk.	June 17, 2010
6.	AUTO	PT. Astra Otoparts Tbk.	June 24, 2011
7.	BBRI	Bank Rakyat Indonesia (Persero) Tbk.	Jan 11, 2011
8.	BTPN	PT. Bank Tabungan Pensiunan Tbk.	Mar 28, 2011
9.	INTA	PT. Intraco Penta Tbk.	Jun 06, 2011
10.	JTPE	PT. Jasuindo Tiga Perkasa Tbk.	Jul 26, 2011

11.	LSIP	PT. PP London Sumatera Tbk.	Feb 25, 2011
12.	MTFN	PT.Capitalinc Investment Tbk	Jul 11, 2011
13.	MTSM	PT. Metro Reality Tbk.	Oct 18, 2011
14.	SSIA	PT. Surya Semesta Internusa Tbk.	Jul 07, 2011
15.	ACES	PT. Ace Hardware Indonesia Tbk.	Oct 29, 2012
16.	BRNA	PT. Berlina Tbk	Nov 01, 2012
17.	KLBF	PT. Kalbe Farma Tbk.	Oct 05, 2012
18.	SCMA	PT. Surya Citra Media Tbk.	Oct 22, 2012

Source: Indonesia Stock Exchange (2010-2012)

3.3 Sources and Data Collection Method

This research uses secondary data that retrieved from Indonesia Stock Exchange corner in the Faculty of Economic, Universitas Islam Indonesia. Besides, the researcher also uses literature studies which obtained through journals from previous researchers and quotes properly any related sources which were published to get the information of

the related problem. The data which are adapted from Indonesia Stock Exchange consist of:

- 1) The date of stock split announcement
- 2) Daily stock price during the estimation period and window period.
- 3) Daily trading volume activity during the estimation period and window period.
- 4) The amount of outstanding shares in the t-period
- 5) The data of IHSG (Index Harga Saham Gabungan)

3.4 Research Variables

3.4.1 Dependent Variable

The dependent variable is variable that become the core of the research (Sekaran: 2003). In this study, the dependent variables that are used are as follows:

a. The abnormal return

Abnormal Return is the difference between the actual return and expected return (Ang, 1997). The actual profit rate is the comparison of difference between current stock price period and previous period.

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

AR_{it} = abnormal return of share i in the event period t

R_{it} = actual return which occurred to i share in the even period t

$E(R_{it})$ = expected share return i to period t

b. Trading Volume Activity

Trading volume activity is the number of shares that are traded in the particular period. Trading volume activity is measured by comparing the number of company's shares that are available during the particular period in the capital market. Then, calculate the average of each trades volume activity before and after the split announcement. To get the result whether it is significant or not, the researcher will use t-test before and after the stock split announcement.

The formula used to conduct the test is based on the research of Husnan (2001). The formula is as follows:

$$TVA = \frac{\sum \text{Traded } i \text{ shares that at time } t}{\sum \text{Outstanding } i \text{ shares at time } t}$$

3.4.2 Independent Variable

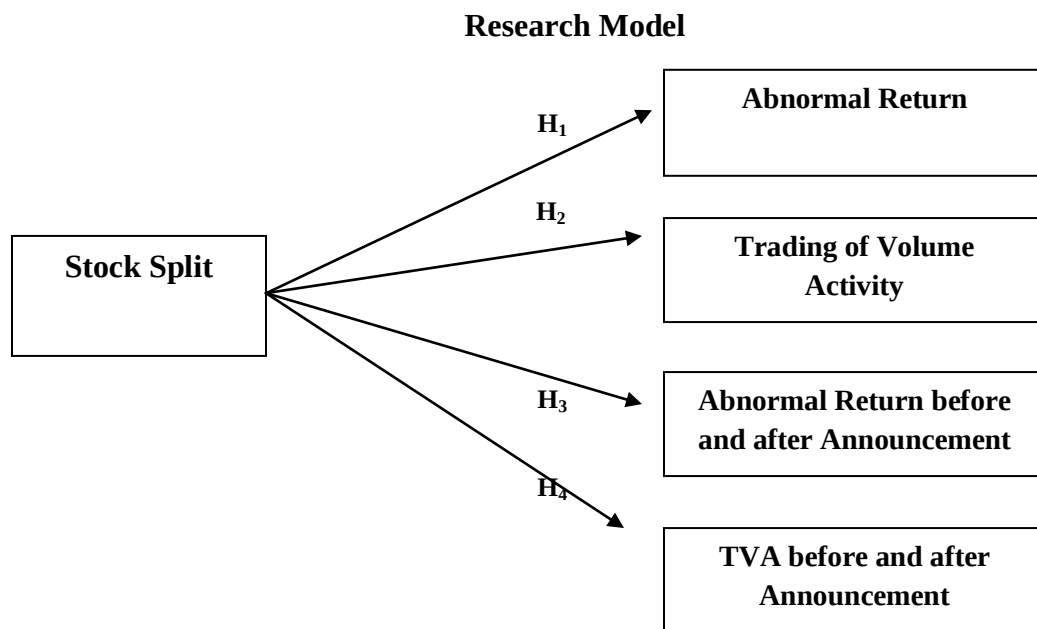
Independent variable is a variable that become the primary interest to the researcher, which is expected to influence dependent variable or criterion variable in either a positive or negative direction (Sekaran. 2003). In this research, the independent variable that is used is stock split event. To see the influence of this event on abnormal return and liquidity share changes, the researcher will use event study methodology. Event study is a study that can

be used to know the market reaction regarding information that is published or announced, such as stock split announcement. It also can be used to test the information content of the share price movement related with it.

3.5 Research Model

The explanation of the ideas above can be described by the influence of stock split announcement toward the abnormal return and liquidity changes which will be schematically illustrated in the figure below:

Figure 2.1



—————→ Independent variables affect dependent variable

3.6 Research Procedures

There are several steps that have been conducted in this research. Every phase is required to be realized critically, accurately, precisely, and systematically. These followings are procedures which had been implemented:

1. Data Collection

The research data were taken from Indonesia Stock Exchange corner Economic Faculty, Universitas Islam Indonesia

2. Data Reclassification

After the data are collected, the researcher input the data into the formula for each variable which will be used to measure the dependent variables (abnormal return and trading volume activity) and identify the independent variable (stock split event). The steps to reclassification the data are as follows:

- a. Identify the date of stock split announcement. The event date is the date of listing in the Indonesia Stock Exchange when shares are tradable. To ease the process, the listing date is identified as day 0.
- b. Measure the event window or the period whereas the company's liquidity reaction as the effect of stock split announcement took place. The event window that will be used in this research is 10 days before the announcement, and 10 days after the announcement ($t-10$ until $t+10$). The measurement of event window is done to avoid the

influence from other information that can influence the trading volume activity and the company's stock price.

- c. Make a statistic comparison of the liquidity share's average by using the size or number, abnormal return, the stock price, and trading volume activity in the event date to see whether there is significant difference between those two period (before and after announcement) compared with the day of 0 or event date.

The calculation and comparison procedure is as follows:

- i. Calculate the changes of trading volume activity for each shares of the company for the period of 10 days before and 10 days after the announcement. The formulation is as follows:

$$TVA = \frac{\sum \text{Shares } i \text{ that traded at time } t}{\sum \text{shares } i \text{ that provided at time } t}$$

- ii. After we got the information about the each TVA, then the next step is calculate the average of trading volume activity for every sample by using the formula:

$$\bar{x} TVA = \frac{\sum_{i=t}^n TVA_i}{n}$$

$\bar{x}$ = the average of trading volume activity

n = sample

TVA_i = Trading Volume Activity

- iii. Calculate the Actual Return to get the number of comparison between the stock price today and the previous stock price, as follows:

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

R_{it} = share return i in the day-t

P_{it} = stock price i in the day-t

P_{it-1} = stock price I in the day t-1

- iv. Calculate the daily Market Return

$$R_{mt} = \frac{IHSG_t - IHSG_{t-1}}{IHSG_{t-1}}$$

R_{mt} = market return at the time t

$IHSG_t$ = the joint stock index in the day t

$IHSG_{t-1}$ = the joint stock index in the day t-1

- v. Make regression for the individual share with the daily return market to find alpha and beta.

$$\beta = \frac{n (\sum XY) - (\sum X) (\sum Y)}{n (\sum X^2) - (\sum X)^2}$$

$$\alpha = \frac{\sum Y \beta (\sum X)}{n}$$

Whereas:

Y = the actual individual share return or $E(R_{it})$

X = market return (R_{mt})

n = observation period

- vi. Calculate the Expected Return to find the return rates that expected, as follows:

$$E(R_{it}) = \alpha + \beta R_{mt}$$

Whereas:

$E(R_{it})$ = expected Return

R_{mt} = daily market return

- vii. Calculation of each abnormal return to 10 days before and 10 days after the announcement of stock split period, the formulation as follows:

$$AR_{it} = R_{it} - E_{Rt}$$

Whereas:

AR_{it} = abnormal Return

R_{it} = actual Return

E_{Rt} = expected Return

- viii. After we get each of abnormal return, then we can calculate the average of abnormal return, and it is as follows:

$$\overline{AR}_{it} = \frac{\sum_{i=1}^n AR_{it}}{n}$$

AR_{it} = abnormal return

n = sample

$\overline{AR}_{it}$ = the average of abnormal return

All of the raw data and the result can be seen in the appendix start from page 72 until 9

3. Data Analysis

This research presents an empirical study that shows the influence of stock split event toward abnormal return and trading volume activity. The examination of hypothesis in this research is using normality data test (*Kolmogorov-Smirnov*), *One Sample t-Test* and *Paired Sample t-Test* that will be completed by conducting *Wilcoxon Signed Rank Test* if the result of normality data test verified result that the data are not distributed normally. Those tests can be conducted by applying Computer Statistic Program *SPSS for Window Release 16.00*.

3.7 Technique of Data Analysis

In analyzing the data, the first step is to divide the data by following the required criteria. Then the researcher will collect the data of research variables. Most of the collected data are raw material whereas the researcher will input the raw data material into the formula to calculate each variable before they are ready to be analyzed.

For the independent variable, the calculation needs information about the stock split announcement date for each company. Through getting the information the researcher can consider the $t-10$ and $t+10$ for the event window. For the dependent variable, firstly, abnormal return of companies which did stock split, the researcher calculate the actual return to get the number of comparison between the stock price in the stock split announcement day (t -day) and stock price in the previous day. Furthermore the researcher should calculate the daily market return then continued by calculating the expected return and make the regression for the individual share with the daily return market to find alpha and beta. The next step is to calculate each of the abnormal return to 10 days before and 10 days after the announcement of stock split and the average of abnormal return. Those steps will be completed by calculating the standard error of estimate toward the abnormal return. The second is trading volume activity of companies who did stock split during 2010-2012. To get information about the TVA, the researcher should calculate the changes of TVA for each company's shares for the period of 10 days before and 10 days after the announcement. Then, the researcher can calculate the average of TVA for every sample.

After obtaining the result, the researcher will conduct a statistical analysis method in order to analyze the data. The data will be processed by SPSS and then the data will be analyzed by using normality test to make sure that the data are distributed normally. If the data are proved to be distributed normally then, they will be tested by using the one sample t-test and paired sample t-test but, if the data are proved not to be distributed

normally, the researcher will conduct the non-parametric test by using wilcoxon signed rank test. Those four-analysis methods will be explained as follows:

3.7.1 Normality Test

Normality test is aimed to know whether the data have normal distribution or not. The normality test is performed on each variable. In order to prove whether the data distribution is normal, the researcher is using Kolmogorov-Smirnov test and declared that the data is normally distributed if it has significance level that is greater than 0.05 (Santoso, 2004:212).

3.7.2 One Sample Test

One sample t-test is a statistical procedure that is often performed for testing the mean value of a distribution. It can be used under the assumption that samples are normally distributed. The level of significance (α) used in this research is 5%.

3.7.3 Paired Sample Test

The paired sample t-test is a procedure that compares the means of two variables for a single group. The procedure computes the differences between the values of two variables for each case, before and after the treatment. The significance level in this test is 5%.

3.7.4 Wilcoxon Signed Rank Test

If the data are not normally distributed then, the test that will be used to test between two paired samples are Wilcoxon Signed Rank Test or usually only called as Wilcoxon test which is included in non-parametric test (Santoso, 2004:148).

3.8 Hypothesis Testing

To prove whether the independent variable affect on the dependent variable, hypothesis testing is conducted. The hypothesis testing can be done by using three statistical tests which are one sample t-test, paired sample t-test and wilcoxon test. The hypothesis are mentioned as follow:

- H_{01} : Stock split has no positive influence toward abnormal return.
- H_{a1} : Stock split has positive influence toward abnormal return.
- H_{02} : Stock split has no positive influence toward trading volume activity.
- H_{a2} : Stock split has positive influence toward trading volume activity.
- H_{03} : There is no significant difference between abnormal return before and after stock split announcement.
- H_{a3} : There is significant difference between abnormal return before and after stock split announcement.
- H_{04} : There is no significant difference between trading volume activity before and after stock split announcement.

H_{a4} : There is significant difference between trading volume activity before and after stock split announcement.

Criteria for testing the hypothesis by using probability test:

- If probability value (ρ) is less than α (0.05), H_0 is rejected, and H_a is accepted.
- If probability value (ρ) is more than α (0.05), so H_0 is accepted, then H_a is rejected.

CHAPTER IV

RESEARCH FINDINGS AND DISCUSSION

4.1. Introduction

This chapter will discuss the data selection, data analysis, variables measurement, and interpretation of hypothesis testing after the secondary data are obtained from Indonesia Stock Exchange corner in the Faculty of Economic, Universitas Islam Indonesia. The purpose of data analysis is to test whether the hypotheses can be accepted or rejected. It is conducted by using Computer Statistic Program *SPSS for Window Release version 16* as the analysis tool.

4.2. Research Description

4.2.1 Data Identification and Variable Measurement

Data used in this research were collected from Indonesia Stock Exchange corner in the Faculty of Economic, Universitas Islam Indonesia. The researcher used the information related to the date of stock split event announcement, closing stock price in the daily stock during the estimation and window period, the number of outstanding shares, daily traded shares, and the data of IHSG (Index Harga Saham Gabungan). The data was taken from the year 2010-2012.

4.2.2 Research Process

The data needed for this research are quantitative data. The data were collected by considering the t-10 and t+10 for the event window. After the data were collected, the researcher input all the data into a formula of abnormal return and trading volume activity by using Microsoft Excel . Furthermore, after all data were calculated, the researcher used SPSS version 16 for statistical data processing.

4.3. Research Findings

4.3.1. Finding the Even Study

4.3.1.1 Abnormal Return

Abnormal return or excess return is the difference between the actual return and expected return. Testing for abnormal return was performed for each security. The result of the daily average abnormal returns securities as follows:

Table 4.1

The Average of Abnormal Return

Before		After	
t-days	Value	t-days	Value
t-10	-0.000493	t+1	-0.005596
t-9	0.003425	t+2	0.002607
t-8	-0.003684	t+3	-0.011824

t-7	0.001903	t+4	0.003359
t-6	-0.003837	t+5	-0.044710
t-5	-0.003580	t+6	0.000580
t-4	0.009819	t+7	0.007916
t-3	0.002580	t+8	-0.004969
t-2	0.006298	t+9	0.006422
t-1	0.007089	t+10	0.008855

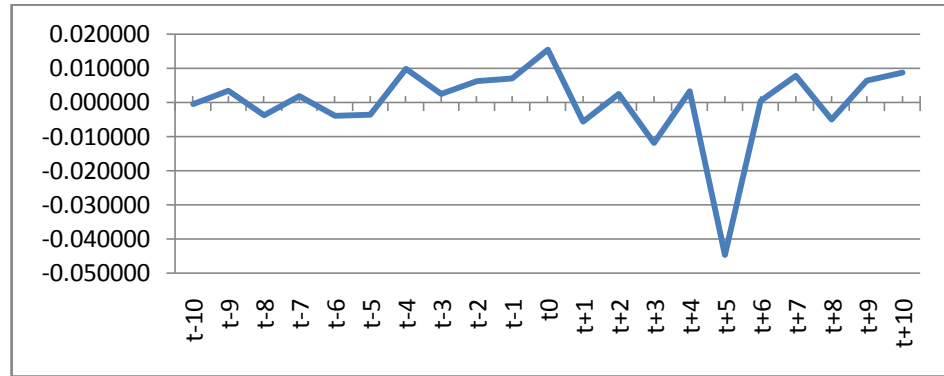
**Source: Abnormal Return Summary, 2013*

According to the result above, during 10 days before stock split announcement there are some negative abnormal return in t-5, t-6, t-8, and t-10. Furthermore, we can see also the highest number of abnormal return that is 0.009819, meanwhile the lowest number is -0.003837.

For the next 10 days after stock split announcement, from the table above we can see that there are some negative abnormal return in t+1, t+3, t+5, and t+8. The lowest number of abnormal return is -0.044710 meanwhile the highest number of abnormal return was 0.008855 in the t+10.

Figure 4.1

The graph of Average Abnormal Return



**Source: Abnormal Return Graph Proceed, 2013*

According to the figure 4.1 above, the graph shows that from the total 21 days of estimation period, the number of abnormal return in 10 days before stock split announcement is in better position than the number of abnormal return in the next 10 days after the announcement. From the figure 4.1 we can also see that in the next morning after the stock split is announced, the numbers of abnormal return decrease to point -0.005596. Furthermore in t+5 it experienced extreme decrease.

4.3.1.2 Trading Volume Activity

Trading volume activity which usually abbreviated as TVA is one of the instruments that is used to see the market reaction toward the information that could be influenced by the stock price and volatility in the capital market. TVA is usually sees as a tool to measure the strength and weaknesses of capital

market. The results of trading volume activity during the event study for 20 days are as follows:

Table 4.2

The Average of Trading Volume Activity

Before		After	
t-days	Value	t-days	Value
t-10	0.0000180860	t+1	0.0000037795
t-9	0.0000144479	t+2	0.0000056127
t-8	0.0000207793	t+3	0.0000055768
t-7	0.0000205470	t+4	0.0000080891
t-6	0.0000359054	t+5	0.0000046529
t-5	0.0000394953	t+6	0.0000058618
t-4	0.0000296185	t+7	0.0000057739
t-3	0.0000278916	t+8	0.0000048110
t-2	0.0000201355	t+9	0.0000080732
t-1	0.0000204851	t+10	0.0000072744

**Source: TVA Summary, 2013*

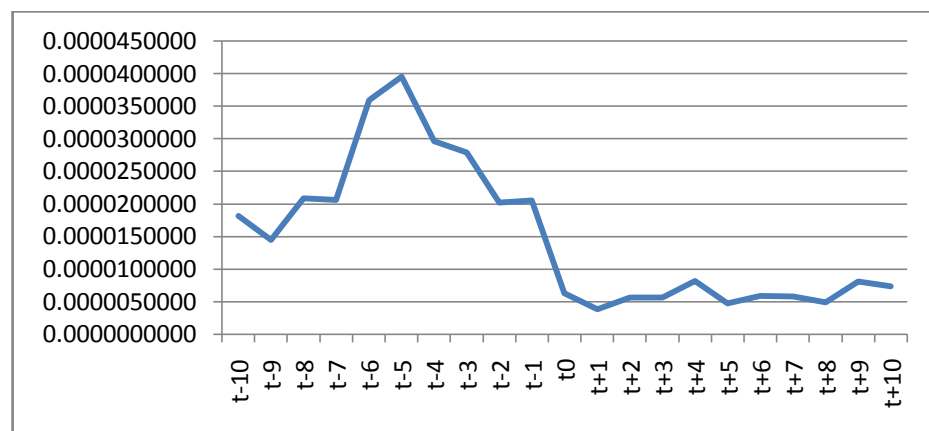
The table 4.2 above is the result of 20 days of observation period. The observation period covers 10 days before stock split announcement and 10 days after stock split announcement. That result shows that all of the values are

in positive number. For the 10 days before the stock split event, the highest position is on t-5 and is as much as 0.0000394953, while the lowest position is on t-9 before the announcement and is as much as 0.0000144479.

The average number of trading volume activity was decreased to the lowest position in 0.0000037795 on the first day just after the stock split is announced. Though it was decreased, it began to increase slowly and reached the highest position on t+4 in 0.0000080891 and keep the good movement until the last day t+10.

Figure 4.2

The graph of Average Trading Volume Activity



**Source: TVA Graph Proceed, 2013*

From figure 4.2, it is shown the fluctuating movement during 21 days observation period. As the writer mentioned before, the highest position was reached on t-5 then it was continued decrease and got the lowest position in the next day just after stock split was announced.

4.3.2 Finding on The Data Testing

4.3.2.1 Normality Test

Normality test was conducted to know whether the data have normal distribution or not. Testing is done first by transforming data into logarithmic form through Window Excel. Furthermore, the normality test in this research uses one sample Kolmogorov-Smirnov with significant value of $\alpha=0.05$ to declare the data was distributed normally. The result of normality test is as follows:

Table 4.3

The Result of Normality Test

Variable	Asymptotic Significant	
	Before	After
Abnormal Return	0.926	0.543
TVA	0.905	0.710

**Source: Normality Summary, 2013*

As shown in the table above, the result of *asymptotic significance* is greater than 0.05 in all of those variables. Thus, we can conclude that the data was distributed normally. When the data was proven to be distributed normally, it means that the researcher can conduct the next test by using parametric test.

4.3.2.2 Hypothesis Testing

The quantitative analysis in this research is using one sample and paired sample test to see whether stock split announcement has positive influence toward abnormal return and liquidity share changes. The liquidity share changes is represented by TVA, and also give significant difference toward the abnormal return and TVA. Furthermore, the tests are also used to see whether there is significant difference toward abnormal return and TVA before and after stock split announcement.

a. Stock Split has Positive Influence toward Abnormal Return

This hypothesis testing is aimed to know whether the stock split event has positive influence toward the abnormal return or not. The result of this hypothesis testing with significance level of 0.05 is presented in table 4.4 below:

Table 4.4

Result of One Sample Test Toward Abnormal Return

t-days	t	Probability	Explanation
t-10	-0.101	0.921	Insignificant
t-9	1.117	0.280	Insignificant
t-8	-0.666	0.514	Insignificant
t-7	0.361	0.722	Insignificant

t-6	-0.739	0.470	Insignificant
t-5	-0.628	0.538	Insignificant
t-4	1.213	0.242	Insignificant
t-3	0.438	0.667	Insignificant
t-2	1.001	0.331	Insignificant
t-1	1.243	0.231	Insignificant
t0	1.742	0.331	Insignificant
t+1	-1.028	0.319	Insignificant
t+2	0.246	0.808	Insignificant
t+3	-2.123	0.049	Significant
t+4	0.423	0.677	Insignificant
t+5	-1.154	0.264	Insignificant
t+6	0.038	0.970	Insignificant
t+7	0.485	0.634	Insignificant
t+8	-1.152	0.265	Insignificant
t+9	0.975	0.343	Insignificant
t+10	1.328	0.202	Insignificant

**Source: Data Proceed, 2013*

As shown in table 4.4 during those 21 days of observation period, the probability values are mostly more than 0.05 which has meaning that the result is insignificant. The significant result was only found in the t+3 after stock split

announcement. From the table 4.4, the researcher can conclude that H_{01} is accepted while H_{a1} is rejected. So, stock split announcement has no positive influence toward abnormal return.

b. Stock Split has Positive Influence toward Trading Volume Activity

The testing in this hypothesis is aimed to prove whether stock split has positive influence toward liquidity shares which is presented by trading volume activity. The result of this hypothesis with significance level of 0.05 is presented in table 4.5 below:

Table 4.5

Result of One Sample Test toward TVA

t-days	t	Probability	Explanation
t-10	2.266	0.037	Significant
t-9	2.783	0.013	Significant
t-8	2.716	0.015	Significant
t-7	2.212	0.041	Significant
t-6	1.698	0.108	Insignificant
t-5	2.426	0.027	Significant
t-4	1.982	0.064	Insignificant
t-3	2.234	0.039	Significant
t-2	2.609	0.018	Significant

t-1	3.408	0.003	Significant
t0	2.928	0.009	Significant
t+1	3.518	0.003	Significant
t+2	3.482	0.003	Significant
t+3	3.309	0.004	Significant
t+4	1.867	0.079	Insignificant
t+5	3.071	0.007	Significant
t+6	2.515	0.022	Significant
t+7	3.560	0.002	Significant
t+8	4.104	0.001	Significant
t+9	1.926	0.071	Insignificant
t+10	2.484	0.024	Significant

**Source: Data Proceed, 2013*

According to the table 4.5 above, during 21 days of observation period, there were 4 data that had probability value more than 0.05 which has meaning that those 4 data are insignificant. Those data are found in t-6, t-4, t+4, t+9. Though those data are declared to have insignificant result, but since the rest (16 data) are declared to have significant result (the probability values is less than 0.05) it means that H_{02} is rejected while H_{a2} is accepted. Furthermore, the researcher can conclude that those data in table 4.5 have significant result. Besides, by seeing from the 21 days of observation days, the researcher also

used the average of trading of volume activity to make sure that those data have significant result. The result of one sample test toward TVA is as follows:

Table 4.6
One-Sample Statistics of TVA Before Announcement

	N	Mean	Std. Deviation	Std. Error Mean
TVAbefore	10	.00002473 9160	.0000081574397	.0000025796089

One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
TVAbefore	9.590	9	.000	.0000247391600	.000018903679	.000030574641

**Source: One Sample Test, 2013*

Table 4.7
One-Sample Statistics of TVA After Announcement

	N	Mean	Std. Deviation	Std. Error Mean
TVAafter	10	.000005950530	.0000014460851	.0000004572923

One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
TVAafter	13.013	9	.000	.0000059505300	.000004916063	.000006984997

**Source: One Sample Test, 2013*

As shown in the table 4.6 and 4.7 as the result of one sample test for the average of TVA before and after stock split announcement was 0.000. It means that the probability value is proved less than 0.05 which has meaning that H_{02} is rejected while H_{a2} is accepted. Then the result of the test is significant. Thus, the researcher can proof that stock split announcement has positive influence toward the trading volume activity.

c. There is Significant Different between Abnormal Return Before and After Stock Split Announcement

The aim of this hypothesis testing is to prove whether there is significant difference between abnormal return before and after stock split announcement. Then the result of this test is as follows:

Table 4.8

Result of Paired Sample Test of Abnormal Return

AR	t	Probability	Explanation
	1.383	0.200	Insignificant

**Source: Data proceed, 2013*

The result in table 4.8 above is the average of abnormal return for 10 days before stock split announcement and 10 days after stock split announcement. According to table 4.8 the researcher found out that p-value is more than 0.05, it means that H_{03} accepted while H_{a3} is rejected whereas it shows the insignificant result and that the hypothesis cannot be proved. It means that there is no significant difference between before and after abnormal return.

d. There is Significant Difference between Trading Volume Activity Before and After Stock Split Announcement

The purpose of this hypothesis testing is to test whether there is significant difference between TVA before and after stock split announcement. Then the result of this test as follows:

Table 4.9

Result of Paired Sample Test of TVA

TVA	t	Probability	Explanation
	6.896	0.000	Significant

**Source: Data proceed, 2013*

Table 4.9 shows the result of the average of trading volume activity during 20 days in the estimation period, 10 days before stock split announcement and 10 days after the announcement. According to the table 4.9 above, the researcher found that the p-value is less than 0.05 whereas H_{04} is rejected and H_{a4} is accepted. It means that the data in table 4.9 has significant result. Furthermore, researcher can conclude that the hypothesis is proved and there is significant difference between TVA before and after stock split announcement.

After conducting the entire hypothesis testing, the researcher can summarize the result as follows:

Table 4.10

Hypothesis Testing Result

Hypotheses	Notes
<i>H₁: Stock Split has positive influence toward Abnormal Return</i>	Not Proven
<i>H₂: Stock Split has positive influence toward Trading Volume Activity</i>	Proven

<i>H₃: There is significant difference between Abnormal Return before and after stock split announcement</i>	Not Proven
<i>H₄: There is significant difference between Trading Volume Activity</i>	Proven

4.4 Discussion and Analysis

Even there were two hypotheses which are not proved, generally, this research can show that stock split event which is done by the companies are considered to be relevant information by the investor to help them in buying and selling stock in the capital market. From the results above the researcher analyze that hypothesis 1 and 3 are related each other, similar with hypothesis 2 and 4 that also related each other.

The result of testing the first hypothesis during the estimation period stated that stock split has no positive influence toward the abnormal return. This finding does not support Wulff, C. (2002) who stated that there is positive and significant abnormal return around stock split announcement. Though this hypothesis is not proven, this finding is similar to the result of Asquith et al's research (1989) who stated that there is positive and significant abnormal return in the period before the stock split. Asquith et al's statement is similar to the result shown in figure 4.1 of abnormal return movement for 21 days of estimation period. As shown in the table 4.1, in the first day just after the stock split is announced, the abnormal return position decrease from 0.007089 to -0.005596 but, the extreme decreasing was happened in t+5 when the abnormal return fell down into the lowest position in -0.44710. According to that graph, the researcher

concludes that the decreasing after stock split announcement is caused by the investors who were trying to apply “wait and see” strategy. The investors are worrying that the decreasing stock price after stock split announcement will affect toward their return. Then, they choose to wait and see the capital market condition in the next days before they start to buy or sell the stocks. This strategy is used to measure the prospect of the company which announces stock split event.

For the second hypothesis, it is proven that stock split has positive influence toward trading volume activity. It means that stock split event has information that is needed by the investors in their investment activity and it could influence the trading volume activity in capital market. This finding supports the previous research that conducted by Kurniawati (2003), Suntoro and Subekti (2003) and Fatmawati (1999) who found that the stock split announcement was responded positively by the investors. Furthermore, according to the figure 4.2, the graph showed decreasing since the first day just after stock split announcement. It is because the investors gave very carefully response toward stock split announcement. Though the TVA decreased but, it could go up again in $t+2$ and reach the highest position in $t+4$. Furthermore, there were decreasing again in $t+5$ but, the decreasing number does not affect the TVA significantly that it might drop until it reach the negative number. Then we can conclude that the stock split announcement has positive influence toward TVA in reducing the high price of share. Stock split will increase the number of small investors that will affect to the liquidity shares.

According to the paired sample test, the third hypothesis cannot be proved. It means that there is no significant difference between abnormal return before and after stock split announcement. It is caused by the behavior of market that directly absorbs the information about the stock split announcement. Return is a tool to measure the investor gain toward an investment. There is no significant difference between abnormal return before and after stock split announcement means that stock split does not bring differences toward the number of return. Even though in the beginning the investors are worry about their return, but in the end they are believe that the company is still in stable condition. Thus even the stock price and the number of share is splitted, it would not decrease investors' wealth. Furthermore, this finding does not support Mahirun's (2004) research result which stated that there is significant difference between abnormal return in before and after stock split announcement but, it was similar to Rahardjo (1998) in Rahayu (2006) research which found that there was no significant difference between the abnormal return before and after announcement.

The fourth hypothesis was proven to have significant result and declared that there is significant difference between trading volume activity before and after stock split announcement. This finding support Harsono (2004) research who found that there is significant difference between trading volume activity. This finding supports the trading theory which suggests that stock splits realign share prices to a preferred price range (Lakonishok and Lev, 1987). According to this theory, split makes the shares more affordable to small investors thus, enabling them to trade in the shares. Though the TVA was going down in the first day after stock split announcement, but it keeps increasing

for the next days. It indicates that the investors are trying to apply the “wait and see” strategy again to decide their action in the capital market.

CHAPTER V

CONCLUSION, IMPLICATION, AND RECOMMENDATION

5.1 Introduction

In this chapter, the researcher will summarize the conclusion of the research. This chapter will also discuss the limitation of the research, as well as some recommendations suggested for any related future research.

5.2 Conclusion

Based on the research result that was analyzed by using normality test, one sample test, and paired sample test in 18 companies for the period of 2010-2012, there are some conclusions that can be drawn from this research are following:

1. Stock split has no positive influence toward abnormal return. It means that the investors and market react to the stock split announcement. The investors worry about the stock price that will decrease because of companies' decision in making stock split announcement will effect to the abnormal return, but in the end stock split does not give any influence toward the abnormal return.
2. Stock split has positive influence toward trading volume activity. It means that stock split has positive information that increases the number of small investors. Furthermore, stock split announcement has positive influence toward the TVA to reduce the high price of share and raise the small investors that will affect to the liquidity shares.

3. There is no significant difference between abnormal return before and after stock split announcement. It means that the investors believe that the company is still in stable condition. It implies that even the stock price and number of share is splitted, but it will not decrease the investors' wealth.
4. There is significant difference between TVA before and after stock split announcement. It means that split makes the shares more affordable to small investors thus, enabling them to trade in the shares which in the end related with the liquidity shares changes.

5.3 Limitation

This research has some limitation, such as:

1. The time length is short because it only examines the data for three years (2010-2012) and only consisted of 18 companies, so that the research results do not really reflect the real phenomenon.
2. The companies that become sample only did split up announcement which will give effect to the increasing number of its shares in the capital market.
3. The event study or observation period is also relatively short because it only examines the data of stock split announcement for 21 days (10 days before and 10 days after stock split announcement).

5.4 Recommendations

Some suggestion for the future research on this topic based on the limitation that researcher found are mentioned as follows:

1. For the next researcher, it will be better to collect more samples which is not limited only to 3 years of time length and also using the longer event period with estimation period for 41 days.
2. For the next researcher, it will be better to include all of companies which do both split up and split down.
3. For the investors, it is suggested that the new information or other issues such as stock split, warrant, dividend share, and other corporate actions are not being used as the main consideration in making investment decision especially in selling large amount of shares.

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APPENDICES

Appendix 1

Data of IHSG

t- days	EMITEN																	
	CPIN		CTRA		DVLA		KKGJ		TURI		AUTO		BBRI		BTPN		INTA	
	IHSG t-day	IHSG t-1	IHSG t-day	IHSG t-1	IHSG t-day	IHSG t-1	IHSG t-day	IHSG t-1	IHSG t-day	IHSG t-1	IHSG t-day	IHSG t-1	IHSG t-day	IHSG t-1	IHSG t-day	IHSG t-1	IHSG t-day	IHSG t-1
t+10	3,620.684	3,637.446	2,893.371	2,955.732	3,630.636	3,642.500	2829.996	2777.301	2941.903	2929.589	3,995.587	4,003.691	3,433.906	3,346.061	3,745.838	3,741.811	3,729.122	3,722.303
t+9	3,637.446	3,568.810	2,955.732	2,947.023	3,642.500	3,702.013	2777.301	2798.268	2929.589	2891.098	4,003.691	3,939.473	3,346.061	3,379.543	3,741.811	3,730.583	3,722.303	3,740.471
t+8	3,568.810	3,581.565	2,947.023	2,914.095	3,702.013	3,658.777	2798.268	2794.771	2891.098	2858.659	3,939.473	3,908.956	3,379.543	3,454.118	3,730.583	3,727.798	3,740.471	3,794.251
t+7	3,581.565	3,571.738	2,914.095	2,924.790	3,658.777	3,678.194	2794.771	2813.082	2858.659	2830.173	3,908.956	3,924.127	3,454.118	3,534.284	3,727.798	3,685.936	3,794.251	3,773.273
t+6	3,571.738	3,658.314	2,924.790	2,934.589	3,678.194	3,741.229	2813.082	2799.149	2830.173	2826.837	3,924.127	3,953.517	3,534.284	3,548.649	3,685.936	3,700.047	3,773.273	3,748.758
t+5	3,658.314	3,689.666	2,934.589	2,941.903	3,741.229	3,725.048	2799.149	2774.85	2826.837	2801.899	3,953.517	3,927.098	3,548.649	3,535.731	3,700.047	3,707.487	3,748.758	3,787.648
t+4	3,689.666	3,692.232	2,941.903	2,929.589	3,725.048	3,677.904	2774.85	2720.862	2801.899	2770.787	3,927.098	3,888.569	3,535.731	3,569.144	3,707.487	3,678.674	3,787.648	3,806.187
t+3	3,692.232	3,747.714	2,929.589	2,891.098	3,677.904	3,674.027	2720.862	2702.401	2770.787	2785.793	3,888.569	3,830.273	3,569.144	3,564.937	3,678.674	3,640.978	3,806.187	3,825.821
t+2	3,747.714	3,786.097	2,891.098	2,858.659	3,674.027	3,656.462	2702.401	2742.974	2785.793	2779.983	3,830.273	3,813.425	3,564.937	3,554.766	3,640.978	3,591.515	3,825.821	3,842.953
t+1	3,786.097	3,769.993	2,858.659	2,830.173	3,656.462	3,665.846	2742.974	2737.242	2779.983	2750.233	3,813.425	3,848.558	3,554.766	3,455.127	3,591.515	3,602.859	3,842.953	3,834.201
10	3,769.993	3,722.347	2,830.173	2,826.837	3,665.846	3,744.618	2737.242	2756.262	2750.233	2823.251	3,848.558	3,823.650	3,455.127	3,478.549	3,602.859	3,607.113	3,834.201	3,844.020
t-1	3,722.347	3,696.260	2,826.837	2,801.899	3,744.618	3,756.967	2756.262	2669.608	2823.251	2810.977	3,823.650	3,821.832	3,478.549	3,631.453	3,607.113	3,611.641	3,844.020	3,837.761
t-2	3,696.260	3,694.580	2,801.899	2,770.787	3,756.967	3,737.484	2669.608	2666.511	2810.977	2733.678	3,821.832	3,794.939	3,631.453	3,736.257	3,611.641	3,556.231	3,837.761	3,836.967
t-3	3,694.580	3,619.094	2,770.787	2,785.793	3,737.484	3,699.263	2666.511	2676.522	2733.678	2724.615	3,794.939	3,729.122	3,736.257	3,783.709	3,556.231	3,517.721	3,836.967	3,826.137
t-4	3,619.094	3,531.211	2,785.793	2,779.983	3,699.263	3,655.305	2676.522	2670.219	2724.615	2796.957	3,729.122	3,722.303	3,783.709	3,760.061	3,517.721	3,518.846	3,826.137	3,832.378
t-5	3,531.211	3,630.636	2,779.983	2,750.233	3,655.305	3,629.046	2670.219	2657.167	2796.957	2713.923	3,722.303	3,740.471	3,760.061	3,727.517	3,518.846	3,494.070	3,832.378	3,814.816
t-6	3,630.636	3,642.500	2,750.233	2,823.251	3,629.046	3,605.673	2657.167	2626.451	2713.923	2696.78	3,740.471	3,794.251	3,727.517	3,703.512	3,494.070	3,484.210	3,814.816	3,780.162
t-7	3,642.500	3,702.013	2,823.251	2,810.977	3,605.673	3,625.488	2626.451	2578.772	2696.78	2514.119	3,794.251	3,773.273	3,703.512	3,699.217	3,484.210	3,531.477	3,780.162	3,785.943
t-8	3,702.013	3,658.777	2,810.977	2,733.678	3,625.488	3,645.147	2578.772	2565.645	2514.119	2609.61	3,773.273	3,748.758	3,699.217	3,659.993	3,531.477	3,524.483	3,785.943	3,778.454
t-9	3,658.777	3,678.194	2,733.678	2,724.615	3,645.147	3,635.324	2565.645	2567.089	2609.61	2623.221	3,748.758	3,787.648	3,659.993	3,625.266	3,524.483	3,569.839	3,778.454	3,872.953
t-10	3,678.194	3,741.229	2,724.615	2,796.957	3,635.324	3,638.826	2567.089	2576.591	2623.221	2694.249	3,787.648	3,806.187	3,625.266	3,611.531	3,569.839	3,542.228	3,872.953	3,859.810

t- days	Emiten																	
	JTPE		LSIP		MTFN		MTSM		SSIA		ACES		BRNA		KLBF		SCMA	
	IHSG t-day	IHSG t-1	IHSG t-day	IHSG t-1	IHSG t-day	IHSG t-1	IHSG t-day	IHSG t-1	IHSG t-day	IHSG t-1	IHSG t-day	IHSG t-1	IHSG t-day	IHSG t-1	IHSG t-day	IHSG t-1	IHSG t-day	IHSG t-1
t+10	3,735.119	3,850.266	3,542.228	3,587.648	4,087.094	4,106.822	3,685.012	3,790.847	4,068.073	4,050.632	4,318.591	4,333.640	4,313.439	4,351.284	4,331.254	4,356.966	4,314.265	4,302.939
t+9	3,850.266	3,921.643	3,587.648	3,598.675	4,106.822	4,068.073	3,790.847	3,829.960	4,050.632	4,023.417	4,333.640	4,327.868	4,351.284	4,332.084	4,356.966	4,337.526	4,302.939	4,338.892
t+8	3,921.643	4,122.086	3,598.675	3,580.314	4,068.073	4,050.632	3,829.960	3,813.004	4,023.417	4,032.974	4,327.868	4,350.424	4,332.084	4,318.591	4,337.526	4,329.076	4,338.892	4,335.362
t+7	4,122.086	4,136.507	3,580.314	3,561.717	4,050.632	4,023.417	3,813.004	3,738.607	4,032.974	4,023.202	4,350.424	4,314.265	4,318.591	4,333.640	4,329.076	4,313.522	4,335.362	4,350.291
t+6	4,136.507	4,177.846	3,561.717	3,542.903	4,023.417	4,032.974	3,738.607	3,710.478	4,023.202	3,997.635	4,314.265	4,302.939	4,333.640	4,327.868	4,313.522	4,311.391	4,350.291	4,364.598
t+5	4,177.846	4,193.441	3,542.903	3,494.539	4,032.974	4,023.202	3,710.478	3,706.782	3,997.635	3,980.845	4,302.939	4,338.892	4,327.868	4,350.424	4,311.391	4,284.967	4,364.598	4,331.365
t+4	4,193.441	4,130.800	3,494.539	3,486.197	4,023.202	3,997.635	3,706.782	3,620.664	3,980.845	3,938.015	4,338.892	4,335.362	4,350.424	4,314.265	4,284.967	4,280.010	4,331.365	4,339.153
t+3	4,130.800	4,145.827	3,486.197	3,512.617	3,997.635	3,980.845	3,620.664	3,622.776	3,938.015	3,995.587	4,335.362	4,350.291	4,314.265	4,302.939	4,280.010	4,280.250	4,339.153	4,335.375
t+2	4,145.827	4,174.112	3,512.617	3,470.348	3,980.845	3,938.015	3,622.776	3,685.306	3,995.587	4,003.691	4,350.291	4,364.598	4,302.939	4,338.892	4,280.250	4,268.235	4,335.375	4,330.145
t+1	4,174.112	4,132.777	3,470.348	3,443.530	3,938.015	3,995.587	3,685.306	3,622.027	4,003.691	3,939.473	4,364.598	4,331.365	4,338.892	4,335.362	4,268.235	4,311.314	4,330.145	4,341.377
10	4,132.777	4,087.094	3,443.530	3,439.132	3,995.587	4,003.691	3,622.027	3,729.027	3,939.473	3,908.956	4,331.365	4,339.153	4,335.362	4,350.291	4,311.314	4,271.461	4,341.377	4,331.254
t-1	4,087.094	4,106.822	3,439.132	3,474.123	4,003.691	3,939.473	3,729.027	3,664.680	3,908.956	3,924.127	4,339.153	4,335.375	4,350.291	4,364.598	4,271.461	4,251.511	4,331.254	4,356.966
t-2	4,106.822	4,068.073	3,474.123	3,451.100	3,939.473	3,908.956	3,664.680	3,675.384	3,924.127	3,953.517	4,335.375	4,330.145	4,364.598	4,331.365	4,251.511	4,256.839	4,356.966	4,337.526
t-3	4,068.073	4,050.632	3,451.100	3,497.643	3,908.956	3,924.127	3,675.384	3,635.931	3,953.517	3,927.098	4,330.145	4,341.377	4,331.365	4,339.153	4,256.839	4,236.293	4,337.526	4,329.076
t-4	4,050.632	4,023.417	3,497.643	3,501.497	3,924.127	3,953.517	3,635.931	3,531.753	3,927.098	3,888.569	4,341.377	4,331.254	4,339.153	4,335.375	4,236.293	4,262.561	4,329.076	4,313.522
t-5	4,023.417	4,032.974	3,501.497	3,434.380	3,953.517	3,927.098	3,531.753	3,451.084	3,888.569	3,830.273	4,331.254	4,356.966	4,335.375	4,330.145	4,262.561	4,225.024	4,313.522	4,311.391
t-6	4,032.974	4,023.202	3,434.380	3,416.785	3,927.098	3,888.569	3,451.084	3,425.684	3,830.273	3,813.425	4,356.966	4,337.526	4,330.145	4,341.377	4,225.024	4,180.163	4,311.391	4,284.967
t-7	4,023.202	3,997.635	3,416.785	3,416.767	3,888.569	3,830.273	3,425.684	3,443.106	3,813.425	3,848.558	4,337.526	4,329.076	4,341.377	4,331.254	4,180.163	4,226.886	4,284.967	4,280.010
t-8	3,997.635	3,980.845	3,416.767	3,391.766	3,830.273	3,813.425	3,443.106	3,293.239	3,848.558	3,823.650	4,329.076	4,313.522	4,331.254	4,356.966	4,226.886	4,200.914	4,280.010	4,280.250
t-9	3,980.845	3,938.015	3,391.766	3,373.644	3,813.425	3,848.558	3,293.239	3,269.451	3,823.650	3,821.832	4,313.522	4,311.391	4,356.966	4,337.526	4,200.914	4,244.621	4,280.250	4,268.235
t-10	3,938.015	3,995.587	3,373.644	3,417.471	3,848.558	3,823.558	3,269.451	3,348.708	3,821.832	3,794.939	4,311.391	4,284.967	4,337.526	4,329.076	4,244.621	4,217.516	4,268.235	4,311.314

Appendix 2

Market Return

t-days	EMITEN																	
	CPIN	CTRA	DVLA	KKGI	TURI	AUTO	BBRI	BTPN	INTA	JTPE	LSIP	MTFN	MTSM	SSIA	ACES	BRNA	KLBF	SCMA
t+10	-0.004608	-0.021098	-0.003257	0.018973	0.004203	-0.002024	0.026253	0.001076	0.001832	-0.029906	-0.012660	-0.004804	-0.027919	0.004306	-0.003473	-0.008697	-0.005901	0.002632
t+9	0.019232	0.002955	-0.016076	-0.007493	0.013314	0.016301	-0.009907	0.003010	-0.004857	-0.018201	-0.003064	0.009525	-0.010212	0.006764	0.001334	0.004432	0.004482	-0.008286
t+8	-0.003561	0.011300	0.011817	0.001251	0.011348	0.007807	-0.021590	0.000747	-0.014174	-0.048627	0.005128	0.004306	0.004447	-0.002370	-0.005185	0.003124	0.001952	0.000814
t+7	0.002751	-0.003657	-0.005279	-0.006509	0.010065	-0.003866	-0.022682	0.011357	0.005560	-0.003486	0.005221	0.006764	0.019900	0.002429	0.008381	-0.003473	0.003606	-0.003432
t+6	-0.023666	-0.003339	-0.016849	0.004978	0.001180	-0.007434	-0.004048	-0.003814	0.006539	-0.009895	0.005310	-0.002370	0.007581	0.006396	0.002632	0.001334	0.000494	-0.003278
t+5	-0.008497	-0.002486	0.004344	0.008757	0.008900	0.006727	0.003654	-0.002007	-0.010268	-0.003719	0.013840	0.002429	0.000997	0.004218	-0.008286	-0.005185	0.006167	0.007673
t+4	-0.000695	0.004203	0.012818	0.019842	0.011229	0.009908	-0.009362	0.007832	-0.004871	0.015164	0.002393	0.006396	0.023785	0.010876	0.000814	0.008381	0.001158	-0.001795
t+3	-0.014804	0.013314	0.001055	0.006831	-0.005387	0.015220	0.001180	0.010353	-0.005132	-0.003625	-0.007521	0.004218	-0.000583	-0.014409	-0.003432	0.002632	-0.000056	0.000871
t+2	-0.010138	0.011348	0.004804	-0.014792	0.002090	0.004418	0.002861	0.013772	-0.004458	-0.006776	0.012180	0.010876	-0.016967	-0.002024	-0.003278	-0.008286	0.002815	0.001208
t+1	0.004272	0.010065	-0.002560	0.002094	0.010817	-0.009129	0.028838	-0.003149	0.002283	0.010002	0.007788	-0.014409	0.017471	0.016301	0.007673	0.000814	-0.009992	-0.002587
After	-0.039714	0.022604	-0.009182	0.033933	0.067759	0.037929	-0.004803	0.039179	-0.027546	-0.099068	0.028615	0.022931	0.018499	0.032486	-0.002819	-0.004923	0.004724	-0.006180
t0	0.012800	0.001180	-0.021036	-0.006901	-0.025863	0.006514	-0.006733	-0.001179	-0.002554	0.011177	0.001279	-0.002024	-0.028694	0.007807	-0.001795	-0.003432	0.009330	0.002337
t-1	0.007058	0.008900	-0.003287	0.032459	0.004366	0.000476	-0.042105	-0.001254	0.001631	-0.004804	-0.010072	0.016301	0.017559	-0.003866	0.000871	-0.003278	0.004692	-0.005901
t-2	0.000455	0.011229	0.005213	0.001161	0.028277	0.007087	-0.028051	0.015581	0.000207	0.009525	0.006671	0.007807	-0.002912	-0.007434	0.001208	0.007673	-0.001252	0.004482
t-3	0.020858	-0.005387	0.010332	-0.003740	0.003326	0.017649	-0.012541	0.010947	0.002831	0.004306	-0.013307	-0.003866	0.010851	0.006727	-0.002587	-0.001795	0.004850	0.001952
t-4	0.024887	0.002090	0.012026	0.002360	-0.025865	0.001832	0.006289	-0.000320	-0.001628	0.006764	-0.001101	-0.007434	0.029498	0.009908	0.002337	0.000871	-0.006162	0.003606
t-5	-0.027385	0.010817	0.007236	0.004912	0.030596	-0.004857	0.008731	0.007091	0.004604	-0.002370	0.019543	0.006727	0.023375	0.015220	-0.005901	0.001208	0.008884	0.000494
t-6	-0.003257	-0.025863	0.006482	0.011695	0.006357	-0.014174	0.006482	0.002830	0.009167	0.002429	0.005150	0.009908	0.007415	0.004418	0.004482	-0.002587	0.010732	0.006167
t-7	-0.016076	0.004366	-0.005465	0.018489	0.072654	0.005560	0.001161	-0.013384	-0.001527	0.006396	0.000005	0.015220	-0.005060	-0.009129	0.001952	0.002337	-0.011054	0.001158
t-8	0.011817	0.028277	-0.005393	0.005116	-0.036592	0.006539	0.010717	0.001984	0.001982	0.004218	0.007371	0.004418	0.045507	0.006514	0.003606	-0.005901	0.006182	-0.000056
t-9	-0.005279	0.003326	0.002702	-0.000563	-0.005189	-0.010268	0.009579	-0.012705	-0.024400	0.010876	0.005372	-0.009129	0.007276	0.000476	0.000494	0.004482	-0.010297	0.002815
t-10	-0.016849	-0.025865	-0.000962	-0.003688	-0.026363	-0.004871	0.003803	0.007795	0.003405	-0.014409	-0.012824	0.006538	-0.023668	0.007087	0.006167	0.001952	0.006427	-0.009992
Before	-0.003771	0.011891	0.028883	0.068203	0.051568	0.004973	-0.035935	0.018565	-0.003729	0.022931	0.006808	0.046491	0.109840	0.029921	0.012628	0.004961	0.013003	0.004724

Appendix 3

Data of Companies' Stock Price

t- days	EMITEN																	
	CPIN		CTRA		DVLA		KKGJ		TURI		AUTO		BBRI		BTPN		INTA	
SP	SP t-day	SP t-1	SP t-day	SP t-1	SP t-day	SP t-1	SP t-day	SP t-1	SP t-day	SP t-1	SP t-day	SP t-1	SP t-day	SP t-1	SP t-day	SP t-1	SP t-day	SP t-1
t+10	1,680	1,730	330	335	1,230	1,210	1,000	1,000	580	600	4,075	3,825	5,150	4,875	2,450	2,425	700	700
t+9	1,730	1,670	335	340	1,210	1,230	1,000	1,000	600	590	3,825	3,700	4,875	4,700	2,425	2,425	700	700
t+8	1,670	1,770	340	345	1,230	1,210	1,000	1,000	590	590	3,700	3,650	4,700	4,775	2,425	2,425	700	700
t+7	1,770	1,900	345	370	1,210	1,150	1,000	800	590	550	3,650	3,650	4,775	4,800	2,425	2,450	700	700
t+6	1,900	1,980	370	375	1,150	1,160	800	650	550	570	3,650	3,750	4,800	5,000	2,450	2,500	700	710
t+5	1,980	2,025	375	370	1,160	1,160	650	2,300	570	570	3,750	3,650	5,000	5,050	2,500	2,450	710	730
t+4	2,025	2,000	370	370	1,160	1,160	2,300	2,300	570	570	3,650	3,250	5,050	5,150	2,450	2,500	730	740
t+3	2,000	2,025	370	380	1,160	1,180	2,300	2,300	570	570	3,250	3,225	5,150	5,100	2,500	2,525	740	760
t+2	2,025	2,050	380	390	1,180	1,210	2,300	2,300	570	550	3,225	3,250	5,100	5,000	2,525	2,550	760	770
t+1	2,050	2,000	390	395	1,210	1,240	2,300	2,300	550	540	3,250	3,300	5,000	4,800	2,550	2,500	770	770
t0	2,000	1,910	395	410	1,240	1,110	2,300	2,300	540	560	3,300	3,300	4,800	4,650	2,500	2,325	770	770
t-1	1,910	1,890	410	405	1,110	1,060	2,300	2,300	560	560	3,300	3,250	4,650	4,900	2,325	2,350	770	770
t-2	1,890	1,860	405	380	1,060	1,020	2,300	2,300	560	550	3,250	3,175	4,900	5,150	2,350	2,175	770	770
t-3	1,860	1,860	380	365	1,020	1,060	2,300	2,200	550	550	3,175	3,100	5,150	5,300	2,175	2,150	770	770
t-4	1,860	1,920	365	355	1,060	950	2,200	2,200	550	560	3,100	3,100	5,300	5,150	2,150	2,150	770	760
t-5	1,920	1,910	355	355	950	950	2,200	2,200	560	550	3,100	3,150	5,150	5,150	2,150	2,200	760	760
t-6	1,910	1,920	355	365	950	920	2,200	2,200	550	540	3,150	3,200	5,150	5,250	2,200	2,200	760	720
t-7	1,920	1,920	365	375	920	920	2,200	2,200	540	520	3,200	3,200	5,250	5,300	2,200	2,200	720	720
t-8	1,920	1,900	375	360	920	910	2,200	2,200	520	530	3,200	3,150	5,300	5,300	2,200	2,200	720	720
t-9	1,900	1,890	360	360	910	890	2,200	2,200	530	540	3,150	3,150	5,300	5,100	2,200	2,250	720	730
t-10	1,890	1,860	360	370	890	900	2,200	2,200	540	540	3,150	3,200	5,100	5,150	2,250	2,225	730	730

t-days	Emiten																	
	JTPE		LSIP		MTFN		MTSM		SSIA		ACES		BRNA		KLBF		SCMA	
SP	SP t-day	SP t-1	SP t-day	SP t-1	SP t-day	SP t-1	SP t-day	SP t-1	SP t-day	SP t-1	SP t-day	SP t-1	SP t-day	SP t-1	SP t-day	SP t-1	SP t-day	SP t-1
t+10	200	220	2,275	2,375	255	250	690	690	370	365	700	710	740	680	1,000	980	2,125	2,100
t+9	220	235	2,375	2,350	250	235	690	690	365	345	710	710	680	670	980	990	2,100	2,150
t+8	235	270	2,350	2,400	235	230	690	710	345	345	710	720	670	660	990	970	2,150	2,125
t+7	270	275	2,400	2,375	230	240	710	710	345	350	720	760	660	660	970	980	2,125	1,950
t+6	275	285	2,375	2,350	240	240	710	710	350	345	760	740	660	640	980	970	1,950	2,075
t+5	285	280	2,350	2,275	240	245	710	710	345	350	740	740	640	660	970	980	2,075	2,050
t+4	280	280	2,275	2,250	245	250	710	710	350	330	740	720	660	680	980	980	2,050	2,100
t+3	280	295	2,250	2,225	250	260	710	750	330	330	720	700	680	690	980	960	2,100	2,100
t+2	295	300	2,225	2,150	260	220	750	750	330	335	700	690	690	690	960	950	2,100	2,075
t+1	300	305	2,150	2,150	220	240	750	750	335	330	690	690	690	690	950	960	2,075	2,050
t0	305	290	2,150	2,100	240	235	750	750	330	335	690	700	690	680	960	940	2,050	2,050
t-1	290	295	2,100	2,150	235	240	750	750	335	335	700	690	680	690	940	910	2,050	2,050
t-2	295	295	2,150	2,175	240	245	750	750	335	340	690	670	690	680	910	910	2,050	2,050
t-3	295	295	2,175	2,200	245	235	750	750	340	335	670	660	680	690	910	910	2,050	2,100
t-4	295	295	2,200	2,175	235	220	750	750	335	340	660	670	690	700	910	940	2,100	2,125
t-5	295	300	2,175	2,100	220	220	750	750	340	335	670	660	700	650	940	860	2,125	2,125
t-6	300	310	2,100	2,175	220	220	750	750	335	335	660	660	650	640	860	850	2,125	2,125
t-7	310	290	2,175	2,200	220	210	750	750	335	335	660	660	640	600	850	850	2,125	2,100
t-8	290	280	2,200	2,175	210	225	750	750	335	335	660	660	600	580	850	850	2,100	2,125
t-9	280	270	2,175	2,175	225	225	750	750	335	325	660	650	580	580	850	860	2,125	2,150
t-10	270	280	2,175	2,225	225	225	750	750	325	325	650	630	580	580	860	870	2,150	2,200

Appendix 4

Actual Return

t-days	EMITEN																	
	CPIN	CTRA	DVLA	KKGI	TURI	AUTO	BBRI	BTPN	INTA	JTPE	LSIP	MTFN	MTSM	SSIA	ACES	BRNA	KLBF	SCMA
t+10	-0.028902	-0.014925	0.016529	0.000000	-0.033333	0.065359	0.056410	0.010309	0.000000	-0.090909	-0.042105	0.020000	0.000000	0.013699	-0.014085	0.088235	0.020408	0.011905
t+9	0.035928	-0.014706	-0.016260	0.000000	0.016949	0.033784	0.037234	0.000000	0.000000	-0.063830	0.010638	0.063830	0.000000	0.057971	0.000000	0.014925	-0.010101	-0.023256
t+8	-0.056497	-0.014493	0.016529	0.000000	0.000000	0.013699	-0.015707	0.000000	0.000000	-0.129630	-0.020833	0.021739	-0.028169	0.000000	-0.013889	0.015152	0.020619	0.011765
t+7	-0.068421	-0.067568	0.052174	0.250000	0.072727	0.000000	-0.005208	-0.010204	0.000000	-0.018182	0.010526	-0.041667	0.000000	-0.014286	-0.052632	0.000000	-0.010204	0.089744
t+6	-0.040404	-0.013333	-0.008621	0.230769	-0.035088	-0.026667	-0.040000	-0.020000	-0.014085	-0.035088	0.010638	0.000000	0.000000	0.014493	0.027027	0.031250	0.010309	-0.060241
t+5	-0.022222	0.013514	0.000000	-0.717391	0.000000	0.027397	-0.009901	0.020408	-0.027397	0.017857	0.032967	-0.020408	0.000000	-0.014286	0.000000	-0.030303	-0.010204	0.012195
t+4	0.012500	0.000000	0.000000	0.000000	0.000000	0.123077	-0.019417	-0.020000	-0.013514	0.000000	0.011111	-0.020000	0.000000	0.060606	0.027778	-0.029412	0.000000	-0.023810
t+3	-0.012346	-0.026316	-0.016949	0.000000	0.000000	0.007752	0.009804	-0.009901	-0.026316	-0.050847	0.011236	-0.038462	-0.053333	0.000000	0.028571	-0.014493	0.020833	0.000000
t+2	-0.012195	-0.025641	-0.024793	0.000000	0.036364	-0.007692	0.020000	-0.009804	-0.012987	-0.016667	0.034884	0.181818	0.000000	-0.014925	0.014493	0.000000	0.010526	0.012048
t+1	0.025000	-0.012658	-0.024194	0.000000	0.018519	-0.015152	0.041667	0.020000	0.000000	-0.016393	0.000000	-0.083333	0.000000	0.015152	0.000000	0.000000	-0.010417	0.012195
After	-0.167559	-0.176126	-0.005585	-0.236622	0.076138	0.221558	0.074881	-0.019192	-0.094298	-0.403688	0.059062	0.083517	-0.081502	0.118423	0.017264	0.075355	0.041770	0.042545
t0	0.047120	-0.036585	0.117117	0.000000	-0.035714	0.000000	0.032258	0.075269	0.000000	0.051724	0.023810	0.021277	0.000000	-0.014925	-0.014286	0.014706	0.021277	0.000000
t-1	0.010582	0.012346	0.047170	0.000000	0.000000	0.015385	-0.051020	-0.010638	0.000000	-0.016949	-0.023256	-0.020833	0.000000	0.000000	0.014493	-0.014493	0.032967	0.000000
t-2	0.016129	0.065789	0.039216	0.000000	0.018182	0.023622	-0.048544	0.080460	0.000000	0.000000	-0.011494	-0.020408	0.000000	-0.014706	0.029851	0.014706	0.000000	0.000000
t-3	0.000000	0.041096	-0.037736	0.045455	0.000000	0.024194	-0.028302	0.011628	0.000000	0.000000	-0.011364	0.042553	0.000000	0.014925	0.015152	-0.014493	0.000000	-0.023810
t-4	-0.031250	0.028169	0.115789	0.000000	-0.017857	0.000000	0.029126	0.000000	0.013158	0.000000	0.011494	0.068182	0.000000	-0.014706	-0.014925	-0.014286	-0.031915	-0.011765
t-5	0.005236	0.000000	0.000000	0.000000	0.018182	-0.015873	0.000000	-0.022727	0.000000	-0.016667	0.035714	0.000000	0.000000	0.014925	0.015152	0.076923	0.093023	0.000000
t-6	-0.005208	-0.027397	0.032609	0.000000	0.018519	-0.015625	-0.019048	0.000000	0.055556	-0.032258	-0.034483	0.000000	0.000000	0.000000	0.000000	0.015625	0.011765	0.000000
t-7	0.000000	-0.026667	0.000000	0.000000	0.038462	0.000000	-0.009434	0.000000	0.000000	0.068966	-0.011364	0.047619	0.000000	0.000000	0.000000	0.066667	0.000000	0.011905
t-8	0.010526	0.041667	0.010989	0.000000	-0.018868	0.015873	0.000000	0.000000	0.000000	0.035714	0.011494	-0.066667	0.000000	0.000000	0.000000	0.034483	0.000000	-0.011765
t-9	0.005291	0.000000	0.022472	0.000000	-0.018519	0.000000	0.039216	-0.022222	-0.013699	0.037037	0.000000	0.000000	0.000000	0.030769	0.015385	0.000000	-0.011628	-0.011628
t-10	0.016129	-0.027027	-0.011111	0.000000	0.000000	-0.015625	-0.009709	0.011236	0.000000	-0.035714	-0.022472	0.000000	0.000000	0.000000	0.031746	0.000000	-0.011494	-0.022727
Before	0.027435	0.107976	0.219398	0.045455	0.038100	0.031950	-0.097714	0.047736	0.055015	0.040129	-0.055729	0.050446	0.000000	0.031208	0.106852	0.165132	0.082718	-0.069789

Appendix 5

Alpha and Beta

PERHITUNGAN ALPHA DAN BETA			
No	EMITEN	BETA	ALPHA
1	CPIN	-1.03771495	-0.005945
2	CTRA	0.824602621	-0.006388
3	DVLA	-0.530452921	0.015725
4	KKGI	-2.466790434	0.002084
5	TURI	0.632049706	0.000926
6	AUTO	1.773413365	0.007899
7	BBRI	1.250242034	0.003275
8	BTPN	0.588392803	0.003359
9	INTA	1.035054332	-0.000203
10	JTPE	2.570253215	-0.006899
11	LSIP	1.532179977	-0.001385
12	MTFN	1.46987246	0.002675
13	MTSM	0.039094407	-0.004067
14	SSIA	0.938757418	0.003276
15	ACES	-0.762355448	0.005521
16	BRNA	-1.268983706	0.011947
17	KLBF	1.483424699	0.005030
18	SCMA	0.921783986	-0.001336

Appendix 6

Expected Return

EXPECTED RETURN OF EMITEN DURING 2010-2012																		
t- days	COMPANIES																	
	CPIN	CTRA	DVLA	KKGI	TURI	AUTO	BBRI	BTPN	INTA	JTPE	LSIP	MTFN	MTSM	SSIA	ACES	BRNA	KLBF	SCMA
t+10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
t+10	0.001163	0.023786	0.017453	0.044720	0.003583	0.004309	0.036098	0.003992	0.001693	0.083765	0.020783	0.004386	0.005158	0.007318	0.008168	0.022984	0.003724	0.001090
t+9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
t+9	0.025903	0.003951	0.024252	0.020567	0.009341	0.036807	0.009111	0.005129	0.005231	0.053679	0.006080	0.016676	0.004466	0.009626	0.004504	0.006323	0.011678	0.008974
t+8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
t+8	0.002249	0.002929	0.009456	0.001003	0.008098	0.021744	0.023718	0.003798	0.014874	0.131881	0.006472	0.009004	0.003893	0.001051	0.009474	0.007982	0.007925	0.000585
t+7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
t+7	0.008800	0.009404	0.018525	0.018141	0.007288	0.001043	0.025083	0.010041	0.005551	0.015859	0.006615	0.012617	0.003289	0.005556	0.000869	0.016354	0.010379	0.004499
t+6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
t+6	0.018613	0.009142	0.024662	0.010195	0.001672	0.005285	0.001786	0.001115	0.006565	0.032331	0.006751	0.000808	0.003770	0.009280	0.003514	0.010255	0.005763	0.004358
t+5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
t+5	0.002873	0.008438	0.013421	0.019518	0.006552	0.019829	0.007843	0.002178	0.010831	0.016457	0.019820	0.006245	0.004028	0.007235	0.011838	0.018526	0.014178	0.005736
t+4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
t+4	0.005224	0.002922	0.008925	0.046863	0.008023	0.025470	0.008429	0.007967	0.005245	0.032078	0.002281	0.012076	0.003137	0.013486	0.004900	0.001311	0.006748	0.002990
t+3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
t+3	0.009418	0.004590	0.015165	0.014768	0.002478	0.034890	0.004750	0.009450	0.005515	0.016215	0.012909	0.008874	0.004089	0.010251	0.008137	0.008607	0.004947	0.000533
t+2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
t+2	0.004575	0.002969	0.013177	0.038572	0.002247	0.015734	0.006852	0.011462	0.004818	0.024315	0.017277	0.018661	0.004730	0.001376	0.008020	0.022462	0.009206	0.000223
t+1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
t+1	0.010378	0.001911	0.017083	0.003082	0.007763	0.008291	0.039330	0.001506	0.002159	0.018808	0.010547	0.018504	0.003384	0.018579	0.000328	0.010914	0.009793	0.003721
t0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
t0	0.019228	0.005415	0.026883	0.019106	0.015421	0.019451	0.005143	0.002665	0.002847	0.021830	0.000574	0.000300	0.005188	0.010605	0.006889	0.016302	0.018870	0.000818
t-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
t-1	0.013269	0.000951	0.017468	0.077987	0.003686	0.008742	0.049367	0.002621	0.001485	0.019245	0.016817	0.026636	0.003380	0.000354	0.004857	0.016107	0.011991	0.006776
t-2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
t-2	0.006417	0.002871	0.012960	0.000781	0.018798	0.020466	0.031795	0.012526	0.000011	0.017583	0.008836	0.014150	0.004180	0.003703	0.004600	0.002211	0.003173	0.002795
t-3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
t-3	0.027589	0.010830	0.010244	0.011310	0.003029	0.039198	0.012404	0.009800	0.002726	0.004168	0.021774	0.003008	0.003642	0.009591	0.007493	0.014225	0.012224	0.000463
t-4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
t-4	0.031771	0.004665	0.009346	0.003739	0.015422	0.011147	0.011138	0.003170	0.001889	0.010487	0.003072	0.008252	0.002913	0.012577	0.003739	0.010841	0.004112	0.001988
t-5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
t-5	0.022473	0.002532	0.011887	0.010033	0.020264	0.000715	0.014191	0.007531	0.004562	0.012989	0.028558	0.012563	0.003153	0.017563	0.010020	0.010414	0.018209	0.000880
t-6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
t-6	0.002565	0.027715	0.012286	0.026765	0.004944	0.017238	0.011379	0.005024	0.009285	0.000656	0.006505	0.017239	0.003777	0.007423	0.002104	0.015230	0.020950	0.004348
t-7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
t-7	0.010737	0.002788	0.018624	0.043525	0.046847	0.017758	0.004727	0.004517	0.001784	0.009539	0.001377	0.025046	0.004264	0.005294	0.004033	0.008981	0.011368	0.000268
t-8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
t-8	0.018208	0.016929	0.018586	0.010537	0.022202	0.019496	0.016674	0.004526	0.001848	0.003942	0.009909	0.009169	0.002287	0.009391	0.002772	0.019436	0.014201	0.001388
t-9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
t-9	0.000467	0.003645	0.014291	0.003471	0.002353	0.010310	0.015251	0.004117	0.025458	0.021056	0.006845	0.010743	0.003782	0.003722	0.005144	0.006260	0.010245	0.001259
t-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
t-10	0.011539	0.027716	0.016235	0.011181	0.015736	0.000739	0.008030	0.007945	0.003321	0.043933	0.021035	0.012286	0.004992	0.009928	0.000820	0.009470	0.014563	0.010547

Appendix 7

Abnormal Return

ABNORMAL RETURN																		
t- days	Companies Name (EMITEN)																	
	CPIN	CTRA	DVLA	KKGI	TURI	AUTO	BBRI	BTPN	INTA	JTPE	LSIP	MTFN	MTSM	SSIA	ACES	BRNA	KLBF	SCMA
t+10	-0.027739	0.008861	-0.000924	0.044720	-0.036916	0.061050	0.020312	0.006317	-0.001693	-0.007144	-0.021322	0.024386	0.005158	0.006381	-0.022253	0.065251	0.024133	0.010815
t+9	0.061831	-0.010754	-0.040512	-0.020567	0.007608	-0.003024	0.046345	-0.005129	0.005231	-0.010150	0.016718	0.047154	0.004466	0.048345	-0.004504	0.008603	-0.021779	-0.014282
t+8	-0.054248	-0.017422	0.007073	0.001003	-0.008098	-0.008045	0.008011	-0.003798	0.014874	0.002252	-0.027306	0.012735	-0.024276	-0.001051	-0.023362	0.007169	0.012693	0.012350
t+7	-0.059621	-0.058164	0.033649	0.231859	0.065439	-0.001043	0.019875	-0.020245	-0.005551	-0.002323	0.003912	-0.054284	0.003289	-0.019842	-0.051763	-0.016354	-0.020583	0.094243
t+6	-0.059017	-0.004192	-0.033283	0.240964	-0.036760	-0.021382	-0.038214	-0.021115	-0.020650	-0.002757	0.003887	0.000808	0.003770	0.005213	0.023513	0.020995	0.004546	-0.055883
t+5	-0.025095	0.021952	-0.013421	-0.697874	-0.006552	0.007568	-0.017744	0.018230	-0.016566	0.034314	0.013147	-0.026653	0.004028	-0.021521	-0.011838	-0.048829	-0.024382	0.006459
t+4	0.017724	0.002922	-0.008925	0.046863	-0.008023	0.097607	-0.010988	-0.027967	-0.008269	-0.032078	0.008830	-0.032076	0.003137	0.047120	0.022878	-0.030723	-0.006748	-0.020819
t+3	-0.021763	-0.030906	-0.032114	0.014768	0.002478	-0.027138	0.005053	-0.019351	-0.020801	-0.034633	0.024145	-0.047336	-0.049244	0.010251	0.020434	-0.023100	0.015887	0.000533
t+2	-0.016770	-0.028610	-0.037970	-0.038572	0.034117	-0.023426	0.013148	-0.021266	-0.008169	0.007649	0.017607	0.163157	0.004730	-0.016301	0.006473	-0.022462	0.001321	0.012271
t+1	0.035378	-0.014570	-0.041276	0.003082	0.010755	-0.006861	0.002337	0.018494	-0.002159	-0.035202	-0.010547	-0.064829	0.003384	-0.003427	0.000328	-0.010914	-0.000624	0.015916
t0	0.066348	-0.031170	0.090234	-0.019106	-0.020294	-0.019451	0.037401	0.072604	0.002847	0.029894	0.023235	0.021577	0.005188	-0.025530	-0.021175	0.065251	0.002406	-0.000818
t-1	0.023851	0.011395	0.029701	0.077987	-0.003686	0.006642	-0.001653	-0.013259	-0.001485	0.002296	-0.006439	-0.047469	0.003380	0.000354	0.009636	0.008603	0.020976	0.006776
t-2	0.022546	0.062919	0.026256	0.000781	-0.000617	0.003156	-0.016749	0.067933	-0.000011	-0.017583	-0.020330	-0.034558	0.004180	-0.011003	0.025251	0.007169	-0.003173	-0.002795
t-3	0.027589	0.051926	-0.047980	0.034144	-0.003029	-0.015005	-0.015897	0.001828	-0.002726	-0.004168	0.010410	0.045561	0.003642	0.005334	0.007658	-0.016354	-0.012224	-0.024273
t-4	0.000521	0.032834	0.106444	0.003739	-0.002436	-0.011147	0.017988	-0.003170	0.015047	-0.010487	0.014566	0.076434	0.002913	-0.027283	-0.018665	0.020995	-0.027803	-0.013752
t-5	-0.017237	-0.002532	-0.011887	0.010033	-0.002082	-0.015158	-0.014191	-0.030258	-0.004562	-0.003677	0.007157	-0.012563	0.003153	-0.002638	0.005132	-0.048829	0.074814	0.000880
t-6	-0.002643	0.000318	0.020322	0.026765	0.013575	0.001613	-0.030426	-0.005024	0.046270	-0.031602	-0.040988	-0.017239	0.003777	-0.007423	-0.002104	-0.030723	-0.009185	-0.004348
t-7	-0.010737	-0.023879	-0.018624	0.043525	-0.008386	-0.017758	-0.014161	0.004517	0.001784	0.059426	-0.009986	0.022573	0.004264	0.005294	-0.004033	-0.023100	0.011368	0.012173
t-8	0.028734	0.024738	-0.007597	0.010537	0.003334	-0.003623	-0.016674	-0.004526	-0.001848	0.031772	0.001586	-0.075836	0.002287	-0.009391	-0.002772	-0.022462	-0.014201	-0.010377
t-9	0.005758	0.003645	0.008180	-0.003471	-0.016165	0.010310	0.023964	-0.018105	0.011760	0.015982	-0.006845	0.010743	0.003782	0.027047	0.010240	-0.010914	-0.001383	-0.012887
t-10	0.004590	0.000689	-0.027346	-0.011181	0.015736	-0.014886	-0.017739	0.003291	-0.003321	0.008219	-0.001437	-0.012286	0.004992	-0.009928	0.030926	0.059053	-0.026058	-0.012181

Appendix 8

Data of Traded and Outstanding Shares

t- days	EMITEN																	
	CPIN		CTRA		DVLA		KKGI		TURI		AUTO		BBRI		BTPN		INTA	
	TS	OS	TS	OS	TS	OS	TS	OS	TS	OS	TS	OS	TS	OS	TS	OS	TS	OS
t+10	69,445	3,284,561,408	5,852	7,582,907,995	60	560,000,000	0	250,000,000	6,058	1,395,000,000	180	771,355,280	18,366	14,129,302,450	240	1,156,376,694	60,865	432,005,844
t+9	69,670	3,284,561,408	2,778	7,582,907,995	370	560,000,000	0	250,000,000	10,667	1,395,000,000	555	771,355,280	33,572	14,129,302,450	20	1,156,376,694	24,055	432,005,844
t+8	99,335	3,284,561,408	4,772	7,582,907,995	76	560,000,000	0	250,000,000	2,924	1,395,000,000	210	771,355,280	41,226	14,129,302,450	50	1,156,376,694	24,075	432,005,844
t+7	80,870	3,284,561,408	10,478	7,582,907,995	160	560,000,000	0	250,000,000	3,633	1,395,000,000	625	771,355,280	45,972	14,129,302,450	20	1,156,376,694	11,320	432,005,844
t+6	35,180	3,284,561,408	33,520	7,582,907,995	20	560,000,000	0	250,000,000	11,372	1,395,000,000	110	771,355,280	50,662	14,129,302,450	5	1,156,376,694	162,090	432,005,844
t+5	586,110	3,284,561,408	9,700	7,582,907,995	106	560,000,000	0	250,000,000	7,548	1,395,000,000	95	771,355,280	111,394	14,129,302,450	5	1,156,376,694	103,880	432,005,844
t+4	40,125	3,284,561,408	17,038	7,582,907,995	1,486	560,000,000	0	250,000,000	5,162	1,395,000,000	190	771,355,280	95,196	14,129,302,450	355	1,156,376,694	112,990	432,005,844
t+3	61,040	3,284,561,408	45,972	7,582,907,995	272	560,000,000	61	250,000,000	22,456	1,395,000,000	210	771,355,280	86,618	14,129,302,450	430	1,156,376,694	91,495	432,005,844
t+2	45,225	3,284,561,408	43,100	7,582,907,995	86	560,000,000	0	250,000,000	22,707	1,395,000,000	1,245	771,355,280	241,828	14,129,302,450	2,380	1,156,376,694	54,595	432,005,844
t+1	40,335	3,284,561,408	37,650	7,582,907,995	618	560,000,000	0	250,000,000	24,101	1,395,000,000	2,180	771,355,280	363,578	14,129,302,450	1,265	1,156,376,694	34,675	432,005,844
t0	69,445	16,422,807,040	24,949	15,165,815,994	1,032	1,120,000,000	0	1,000,000,000	21,919	5,580,000,000	1,103	3,855,984,400	187,037	26,340,537,640	6,145	5,641,961,470	44,918	2,160,029,220
t-1	37,637	16,422,807,040	9,141	15,165,815,994	105	1,120,000,000	0	1,000,000,000	37,727	5,580,000,000	432	3,855,984,400	106,289	26,340,537,640	5,207	5,641,961,470	30,694	2,160,029,220
t-2	70,087	16,422,807,040	37,257	15,165,815,994	51	1,120,000,000	0	1,000,000,000	44,005	5,580,000,000	615	3,855,984,400	124,688	26,340,537,640	3,452	5,641,961,470	44,320	2,160,029,220
t-3	26,661	16,422,807,040	113,069	15,165,815,994	65	1,120,000,000	0	1,000,000,000	48,123	5,580,000,000	431	3,855,984,400	76,335	26,340,537,640	1,465	5,641,961,470	49,918	2,160,029,220
t-4	35,445	16,422,807,040	41,542	15,165,815,994	45	1,120,000,000	0	1,000,000,000	22,783	5,580,000,000	19,368	3,855,984,400	91,476	26,340,537,640	1,307	5,641,961,470	27,170	2,160,029,220
t-5	51,063	16,422,807,040	40,374	15,165,815,994	120	1,120,000,000	163	1,000,000,000	16,932	5,580,000,000	9,722	3,855,984,400	50,530	26,340,537,640	660	5,641,961,470	35,355	2,160,029,220
t-6	58,236	16,422,807,040	26,468	15,165,815,994	8	1,120,000,000	112	1,000,000,000	18,155	5,580,000,000	2,213	3,855,984,400	113,441	26,340,537,640	706	5,641,961,470	83,664	2,160,029,220
t-7	116,988	16,422,807,040	110,735	15,165,815,994	1,882	1,120,000,000	248	1,000,000,000	37,688	5,580,000,000	1,615	3,855,984,400	51,503	26,340,537,640	580	5,641,961,470	57,373	2,160,029,220
t-8	55,803	16,422,807,040	48,863	15,165,815,994	552	1,120,000,000	11	1,000,000,000	33,277	5,580,000,000	2,893	3,855,984,400	133,375	26,340,537,640	1,273	5,641,961,470	25,395	2,160,029,220
t-9	67,982	16,422,807,040	43,521	15,165,815,994	280	1,120,000,000	0	1,000,000,000	18,322	5,580,000,000	12,726	3,855,984,400	89,350	26,340,537,640	825	5,641,961,470	20,777	2,160,029,220
t-10	24,937	16,422,807,040	26,287	15,165,815,994	231	1,120,000,000	143	1,000,000,000	14,963	5,580,000,000	20,891	3,855,984,400	166,498	26,340,537,640	2,619	5,641,961,470	30,717	2,160,029,220

t- days	Emiten																	
	JTPE		LSIP		MTFN		MTSM		SSIA		ACES		BRNA		KLBF		SCMA	
	TS	OS	TS	OS	TS	OS	TS	OS	TS	OS	TS	OS	TS	OS	TS	OS	TS	OS
t+10	18,570	353,936,000	30,925	1,035,053,293	50	801,618,869	0	58,212,000	44,252	1,764,468,540	28,530	1,715,000,000	2,660	138,000,000	1E+05	10,156,014,422	2155	1,948,445,345
t+9	11,355	353,936,000	30,540	1,035,053,293	0	801,618,869	0	58,212,000	138,412	1,764,468,540	15,150	1,715,000,000	2,055	138,000,000	58330	10,156,014,422	3665	1,948,445,345
t+8	37,505	353,936,000	40,495	1,035,053,293	160	801,618,869	3	58,212,000	47,752	1,764,468,540	15,930	1,715,000,000	12,345	138,000,000	77815	10,156,014,422	6140	1,948,445,345
t+7	50,765	353,936,000	32,150	1,035,053,293	10	801,618,869	0	58,212,000	35,484	1,764,468,540	7,010	1,715,000,000	14,240	138,000,000	88945	10,156,014,422	40	1,948,445,345
t+6	43,370	353,936,000	41,655	1,035,053,293	0	801,618,869	0	58,212,000	49,332	1,764,468,540	10,280	1,715,000,000	5,215	138,000,000	96685	10,156,014,422	0	1,948,445,345
t+5	23,535	353,936,000	70,915	1,035,053,293	55	801,618,869	0	58,212,000	47,536	1,764,468,540	6,040	1,715,000,000	13,350	138,000,000	2E+05	10,156,014,422	35	1,948,445,345
t+4	36,825	353,936,000	41,765	1,035,053,293	440	801,618,869	0	58,212,000	52,852	1,764,468,540	9,330	1,715,000,000	5,645	138,000,000	2E+05	10,156,014,422	1960	1,948,445,345
t+3	33,085	353,936,000	41,730	1,035,053,293	3,655	801,618,869	4	58,212,000	27,096	1,764,468,540	2,440	1,715,000,000	10,185	138,000,000	1E+05	10,156,014,422	5385	1,948,445,345
t+2	12,700	353,936,000	76,410	1,035,053,293	420	801,618,869	0	58,212,000	26,880	1,764,468,540	10,800	1,715,000,000	5,735	138,000,000	61655	10,156,014,422	5	1,948,445,345
t+1	20,975	353,936,000	61,155	1,035,053,293	2,030	801,618,869	0	58,212,000	59,760	1,764,468,540	9,110	1,715,000,000	7,220	138,000,000	1E+05	10,156,014,422	1685	1,948,445,345
10	49,442	1,769,680,000	15,362	6,493,344,465	30	4,008,094,345	3	232,848,000	90,225	3,528,937,080	4,800	3,430,000,000	2,620	276,000,000	96085	20,312,028,844	1560	3,896,890,690
t-1	20,448	1,769,680,000	15,158	6,493,344,465	186	4,008,094,345	0	232,848,000	37,881	3,528,937,080	8,540	3,430,000,000	2,235	276,000,000	75589	20,312,028,844	85	3,896,890,690
t-2	12,499	1,769,680,000	28,798	6,493,344,465	5,738	4,008,094,345	0	232,848,000	52,410	3,528,937,080	24,720	3,430,000,000	6,030	276,000,000	65720	20,312,028,844	1080	3,896,890,690
t-3	31,478	1,769,680,000	26,285	6,493,344,465	898	4,008,094,345	0	232,848,000	62,394	3,528,937,080	7,028	3,430,000,000	2,221	276,000,000	1E+05	20,312,028,844	425	3,896,890,690
t-4	10,824	1,769,680,000	57,583	6,493,344,465	465	4,008,094,345	0	232,848,000	283,304	3,528,937,080	25,439	3,430,000,000	2,355	276,000,000	56954	20,312,028,844	4453	3,896,890,690
t-5	9,636	1,769,680,000	49,497	6,493,344,465	713	4,008,094,345	0	232,848,000	83,336	3,528,937,080	8,011	3,430,000,000	3,161	276,000,000	48560	20,312,028,844	2773	3,896,890,690
t-6	11,306	1,769,680,000	30,266	6,493,344,465	68	4,008,094,345	0	232,848,000	62,033	3,528,937,080	9,682	3,430,000,000	5,170	276,000,000	40165	20,312,028,844	3636	3,896,890,690
t-7	7,728	1,769,680,000	67,923	6,493,344,465	293	4,008,094,345	0	232,848,000	32,739	3,528,937,080	38,853	3,430,000,000	3,873	276,000,000	33590	20,312,028,844	2309	3,896,890,690
t-8	26,959	1,769,680,000	40,290	6,493,344,465	264	4,008,094,345	0	232,848,000	43,440	3,528,937,080	25,508	3,430,000,000	3,156	276,000,000	52203	20,312,028,844	1786	3,896,890,690
t-9	47,880	1,769,680,000	26,452	6,493,344,465	716	4,008,094,345	0	232,848,000	264,232	3,528,937,080	16,211	3,430,000,000	868	276,000,000	48494	20,312,028,844	7303	3,896,890,690
t-10	17,899	1,769,680,000	50,733	6,493,344,465	849	4,008,094,345	0	232,848,000	180,344	3,528,937,080	11,389	3,430,000,000	6,167	276,000,000	50523	20,312,028,844	3262	3,896,890,690

Appendix 9

Trading Volume Activity

t-Days	Companies Name (EMITEN)																	
	CPIN	CTRA	DVLA	KKGI	TURI	AUTO	BBRI	BTPN	INTA	JTPE	LSIP	MTFN	MTSM	SSIA	ACE	BRNA	KLBF	SCMA
t-10	0.000021143	0.000000772	0.000000107	0.000000000	0.000004343	0.000000233	0.000001300	0.000000208	0.000140889	0.000052467	0.000029878	0.000000062	0.000000000	0.000025080	0.000016636	0.000019275	0.000012050	0.000001106
t-9	0.000021211	0.000000366	0.000000661	0.000000000	0.000007647	0.000000720	0.000002376	0.000000017	0.000055682	0.000032082	0.000029506	0.000000000	0.000000000	0.000078444	0.000008834	0.000014891	0.000005743	0.000001881
t-8	0.000030243	0.000000629	0.000000136	0.000000000	0.000002096	0.000000272	0.000002918	0.000000043	0.000055728	0.000105965	0.000039124	0.000000200	0.000000052	0.000027063	0.000009289	0.000089457	0.000007662	0.000003151
t-7	0.000024621	0.000001382	0.000000286	0.000000000	0.000002604	0.000000810	0.000003254	0.000000017	0.000026203	0.000143430	0.000031061	0.000000012	0.000000000	0.000020110	0.000004087	0.000103188	0.000008758	0.000000021
t-6	0.000010711	0.000004420	0.000000036	0.000000000	0.000008152	0.000000143	0.000003586	0.000000004	0.000375203	0.000122536	0.000040244	0.000000000	0.000000000	0.000027959	0.000005994	0.000037790	0.000009520	0.000000000
t-5	0.000178444	0.000001279	0.000000189	0.000000000	0.000005411	0.000000123	0.000007884	0.000000004	0.000240460	0.000066495	0.000068513	0.000000069	0.000000000	0.000026941	0.000003522	0.000096739	0.000014825	0.000000018
t-4	0.000012216	0.000002247	0.000002654	0.000000000	0.000003700	0.000000246	0.000006737	0.000000307	0.000261547	0.000104044	0.000040351	0.000000549	0.000000000	0.000029953	0.000005440	0.000040906	0.000021228	0.000001006
t-3	0.000018584	0.000006063	0.000000486	0.000000244	0.000016097	0.000000272	0.000006130	0.000000372	0.000211791	0.000093477	0.000040317	0.000004560	0.000000069	0.000015356	0.000001423	0.000073804	0.000010239	0.000002764
t-2	0.000013769	0.000005684	0.000000154	0.000000000	0.000016277	0.000001614	0.000017115	0.000002058	0.000126376	0.000035882	0.000073822	0.000000524	0.000000000	0.000015234	0.000006297	0.000041558	0.000006071	0.000000003
t-1	0.000012280	0.000004965	0.000001104	0.000000000	0.000017277	0.000002826	0.000025732	0.000001094	0.000080265	0.000059262	0.000059084	0.000002532	0.000000000	0.000033869	0.000005312	0.000052319	0.000009947	0.000000865
Before	0.000343222	0.000027807	0.000005811	0.000000244	0.000083604	0.000007260	0.000077032	0.000004125	0.001574145	0.000815642	0.000451899	0.000008508	0.000000120	0.000300009	0.000066834	0.000569928	0.000106043	0.000010814
t0	0.000004229	0.000001645	0.000000921	0.000000000	0.000003928	0.000000286	0.000007101	0.000001089	0.000020795	0.000027938	0.000002366	0.000000007	0.000000013	0.000025567	0.000001399	0.000009493	0.000004730	0.000000400
t+1	0.000002292	0.000000603	0.000000094	0.000000000	0.000006761	0.000000112	0.000004035	0.000000923	0.000014210	0.000011555	0.000002334	0.000000046	0.000000000	0.000010734	0.000002490	0.000008098	0.000003721	0.000000022
t+2	0.000004268	0.000002457	0.000000046	0.000000000	0.000007886	0.000000159	0.000004734	0.000000612	0.000020518	0.000007063	0.000004435	0.000001432	0.000000000	0.000014851	0.000007207	0.000021848	0.000003236	0.000000277
t+3	0.000001623	0.000007456	0.000000058	0.000000000	0.000008624	0.000000112	0.000002898	0.000000260	0.000023110	0.000017787	0.000004048	0.000000224	0.000000000	0.000017681	0.000002049	0.000008047	0.000006296	0.000000109
t+4	0.000002158	0.000002739	0.000000040	0.000000000	0.000004083	0.000005023	0.000003473	0.000000232	0.000012579	0.000006116	0.000008868	0.000000116	0.000000000	0.000080280	0.000007417	0.000008533	0.000002804	0.000001143
t+5	0.000003109	0.000002662	0.000000107	0.000000163	0.000003034	0.000002521	0.000001918	0.000000117	0.000016368	0.000005445	0.000007623	0.000000178	0.000000000	0.000023615	0.000002336	0.000011453	0.000002391	0.000000712
t+6	0.000003546	0.000001745	0.000000007	0.000000112	0.000003254	0.000000574	0.000004307	0.000000125	0.000038733	0.000006389	0.000004661	0.000000017	0.000000000	0.000017578	0.000002823	0.000018732	0.000001977	0.000000933
t+7	0.000007124	0.000007302	0.000001680	0.000000248	0.000006754	0.000000419	0.000001955	0.000000103	0.000026561	0.000004367	0.000010460	0.000000073	0.000000000	0.000009277	0.000011327	0.000014033	0.000001654	0.000000593
t+8	0.000003398	0.000003222	0.000000493	0.000000011	0.000005964	0.000000750	0.000005063	0.000000226	0.000011757	0.000015234	0.000006205	0.000000066	0.000000000	0.000012310	0.000007437	0.000011435	0.000002570	0.000000458
t+9	0.000004139	0.000002870	0.000000250	0.000000000	0.000003284	0.000003300	0.000003392	0.000000146	0.000009619	0.000027056	0.000004074	0.000000179	0.000000000	0.000074876	0.000004726	0.000003145	0.000002387	0.000001874
t+10	0.000001518	0.000001733	0.000000206	0.000000143	0.000002682	0.000005418	0.000006321	0.000000464	0.000014221	0.000010114	0.000007813	0.000000212	0.000000000	0.000051104	0.000003320	0.000022344	0.000002487	0.000000837
After	0.000033176	0.000032788	0.000002981	0.000000677	0.000052325	0.000018389	0.000038097	0.000003207	0.000187675	0.000111126	0.000060521	0.000002542	0.000000000	0.000312307	0.000051131	0.000127667	0.000029524	0.000006957

Appendix 10

Normality Test (Kolmogorov Smirnov) of Abnormal Return

NPar Tests

One-Sample Kolmogorov-Smirnov Test

		ARbefore	ARafter
N		10	10
Normal Parameters ^a	Mean	.00195200	3.7360000 0E-3
	Std. Deviation	.004848720	.01583228 8
Most Extreme Differences	Absolute	.173	.253
	Positive	.173	.213
	Negative	-.116	-.253
Kolmogorov-Smirnov Z		.547	.801
Asymp. Sig. (2-tailed)		.926	.543
a. Test distribution is Normal.			

Appendix 11

Normality Test (Kolmogorov Smirnov) of Trading Volume Activity

NPar Tests

One-Sample Kolmogorov-Smirnov Test

		TVAbefore	TVAafter
N		10	10
Normal Parameters ^a	Mean	.0000247391	.00000595
	Std. Deviation	.0000081574	.00000144
Most Extreme Differences	Absolute	.286	.224
	Positive	.286	.224
	Negative	-.114	-.129
Kolmogorov-Smirnov Z		.905	.710
Asymp. Sig. (2-tailed)		.385	.695
a. Test distribution is Normal.			

Appendix 12

One Sample Test- Test for Abnormal Return during 21 days

T-Test

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Before10	18	4.926111111 E-4	.020737659	.004887913
Before9	18	.00342450	.013010790	.003066673
Before8	18	3.68438889 E-3	.023472442	.005532508
Before7	18	.00190333	.022341676	.005265984
Before6	18	3.83694444 E-3	.022025474	.005191454
Before5	18	3.58027778 E-3	.024174109	.005697892
Before4	18	.00981878	.034339107	.008093805
Before3	18	.00257978	.024983921	.005888767
Before2	18	.00629844	.026690996	.006291128
Before1	18	.00708922	.024206235	.005705464
t0	18	.01552450	.037808681	.008911592

After1		-		
	18	5.59638889	.023107909	.005446586
		E-3		
After2	18	.00260706	.044909789	.010585339
After3		-		
	18	1.18242778	.023631822	.005570074
		E-2		
After4	18	.00335917	.033668249	.007935682
After5		-		
	18	4.47098333	.164327673	.038732404
		E-2		
After6	18	.00058017	.064629700	.015233366
After7	18	.00791628	.069215703	.016314298
After8		-		
	18	4.96922222	.018306500	.004314883
		E-3		
After9	18	.00642222	.027933626	.006584019
After10	18	.00885517	.028286777	.006667257

One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Before10	-.101	17	.921	-.000492611	-.01080521	.00981998
Before9	1.117	17	.280	.003424500	-.00304561	.00989461

Before8	-.666	17	.514	-.003684389	-.01535696	.00798818
Before7	.361	17	.722	.001903333	-.00920692	.01301359
Before6	-.739	17	.470	-.003836944	-.01478995	.00711607
Before5	-.628	17	.538	-.003580278	-.01560178	.00844122
Before4	1.213	17	.242	.009818778	-.00725766	.02689521
Before3	.438	17	.667	.002579778	-.00984443	.01500399
Before2	1.001	17	.331	.006298444	-.00697468	.01957156
Before1	1.243	17	.231	.007089222	-.00494826	.01912670
t0	1.742	17	.100	.015524500	-.00327731	.03432631
After1	-1.028	17	.319	-.005596389	-.01708768	.00589490
After2	.246	17	.808	.002607056	-.01972606	.02494017
After3	-2.123	17	.049	-.011824278	-.02357611	-.00007245
After4	.423	17	.677	.003359167	-.01338366	.02010199
After5	-1.154	17	.264	-.044709833	-.12642806	.03700840
After6	.038	17	.970	.000580167	-.03155943	.03271976
After7	.485	17	.634	.007916278	-.02650388	.04233644
After8	-1.152	17	.265	-.004969222	-.01407283	.00413439
After9	.975	17	.343	.006422222	-.00746884	.02031329
After10	1.328	17	.202	.008855167	-.00521152	.02292185

Appendix 13

One Sample Test-Test for the Average of Abnormal Return

T-Test

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
AR	20	-8.9200000E-4	.011763703	.002630444

One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
AR	-.339	19	.738	-.000892000	-.00639758	.00461358

Appendix 14

One Sample Test- Test for Trading Volume Activity during 21 days

T-Test

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Before10	18	.000018085983	.0000338677157	.0000079826971
Before9	18	.000014447856	.0000220266090	.0000051917215
Before8	18	.000020779294	.0000324588833	.0000076506322
Before7	18	.000020546989	.0000394045602	.0000092877439
Before6	18	.000035905444	.0000896911569	.0000211404084
Before5	18	.000039495350	.0000690738987	.0000162808741
Before4	18	.000029618456	.0000634046060	.0000149446090
Before3	18	.000027891567	.0000529781084	.0000124870599
Before2	18	.000020135456	.0000327492911	.0000077190819
Before1	18	.000020485133	.0000255031735	.0000060111556
t0	18	.000006217161	.0000090087429	.0000021233811
After1	18	.000003779450	.0000045574902	.0000010742108
After2	18	.000005612644	.0000068393211	.0000016120434
After3	18	.000005576789	.0000071512302	.0000016855611
After4	18	.000008089061	.0000183824949	.0000043327956
After5	18	.000004652883	.0000064286517	.0000015152477
After6	18	.000005861817	.0000098876601	.0000023305438
After7	18	.000005773867	.0000068807688	.0000016218127
After8	18	.000004810978	.0000049738488	.0000011723474
After9	18	.000008073150	.0000177804535	.0000041908931

After10	18	.000007274367	.0000124239573	.0000029283548
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One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Before10	2.266	17	.037	.0000180859833	.000001243965	.000034928002
Before9	2.783	17	.013	.0000144478556	.000003494281	.000025401431
Before8	2.716	17	.015	.0000207792944	.000004637872	.000036920717
Before7	2.212	17	.041	.0000205469889	.000000951562	.000040142416
Before6	1.698	17	.108	.0000359054444	-	
					8.696918578570E-	.000080507807
					6	
Before5	2.426	17	.027	.0000394953500	.000005145708	.000073844992
Before4	1.982	17	.064	.0000296184556	-	
					1.911913219667E-	.000061148824
					6	
Before3	2.234	17	.039	.0000278915667	.000001546173	.000054236960
Before2	2.609	17	.018	.0000201354556	.000003849616	.000036421295
Before1	3.408	17	.003	.0000204851333	.000007802704	.000033167563
t0	2.928	17	.009	.0000062171611	.000001737219	.000010697104
After1	3.518	17	.003	.0000037794500	.000001513063	.000006045837
After2	3.482	17	.003	.0000056126444	.000002211530	.000009013759
After3	3.309	17	.004	.0000055767889	.000002020566	.000009133012

After4					-	
	1.867	17	.079	.0000080890611	1.052338532187E-	.000017230461
					6	
After5	3.071	17	.007	.0000046528833	.000001455990	.000007849777
After6	2.515	17	.022	.0000058618167	.000000944799	.000010778834
After7	3.560	17	.002	.0000057738667	.000002352141	.000009195592
After8	4.104	17	.001	.0000048109778	.000002337541	.000007284415
After9					-	
	1.926	17	.071	.0000080731500	7.688615086557E-	.000016915162
					7	
After10	2.484	17	.024	.0000072743667	.000001096078	.000013452655

Appendix 15

One Sample Test- Test for the Average of Trading Volume Activity

T-Test

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
TVA	20	.000015344845	.0000111986323	.0000025040903

One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
TVA	6.128	19	.000	.0000153448450	.000010103724	.000020585966

Appendix 16

Paired Sample Test- Testing for Abnormal Return Before and After Announcement

T-Test

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	ARbefore	.00195200	10	.004848720	.001533300
	ARafter	-3.7360000 0E-3	10	.015832288	.005006609

Paired Samples Correlations

	N	Correlation	Sig.
Pair 1 ARbefore & ARafter	10	.683	.029

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
					Mean	Std. Deviation			
Pair 1	ARbefore - ARafter	.005688000	.013009426	.004113942	-.003618383	.014994383	1.383	9	.200

Appendix 17

Paired Sample Test- Testing for Trading Volume Activity Before and After Announcement

T-Test

Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 TVAbefore	.00002473 9160	10	.0000081574397	.0000025796089
TVAafter	.00000595 0530	10	.0000014460851	.0000004572923

Paired Samples Correlations

	N	Correlation	Sig.
Pair 1 TVAbefore & TVAafter	10	-.238	.509

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	TVAbefore - TVAafter	.0000187886300	.0000086162483	.0000027246969	.0000126249373	.0000249523227	6.896	9	.000