

The Effect of Stock Split Announcements on  
Stock Prices: an Empirical Investigation for the  
Toronto Stock Exchange (TSX)

By

Omer Subaih

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Written for MFIN 6692.0 under the direction of  
Dr. Francis Boabang

Faculty Advisor: **Dr. Francis Boabang**

MFIN Director: **Dr. Francis Boabang**

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## **Abstract**

### The Effect of Stock Split Announcements on Stock Prices: an Empirical Investigation for the Toronto Stock Exchange (TSX)

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This paper investigates the effect of stock split announcements on stock prices in the Toronto Stock Exchange (TSX). Unlike other papers, the short-term effect is only considered in this study. The results constructed on this paper, are that the abnormal returns are only existed in a very short period surrounding stock split events. On the other hand, there is no evidence suggested that the abnormal return will continue to exist in the long-run. However, the results of this paper are pretty much consistent with what Fama et al (1969) found. That is the abnormal returns will die out through the time.

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# Chapter 1

## Introduction

This paper investigates how significantly stock prices change due to stock split announcements. Stock split is defined by as a corporate event that does not affect a firms' future cash flow (e.g., Ding, 2009). Stock split happens when management chooses to reduce share price to a certain trading range. However, stock split event will increase the number of share outstanding of a firm. Thus, theoretically, neither the market value nor the ownership percentage will be affected by stock split action. While no one can argue about the latter (ownership percentage), however much academic research has been conducted on the impact of stock split on market value of the firm.

Stock price may positively or negatively affected by stock split event. Efficient Market Hypothesis (EMH) refers to the speed and accuracy of the price adjustment to new information released. According to EMH the market will rapidly adjust stock prices to any new information released (Fama et al. 1969). Therefore, investors cannot generate abnormal returns in a consistent way. In general Efficient Market Hypothesis assumes that all securities should be fairly priced. Thus, there is no opportunity to observe any overpriced or underpriced security in the market.

### **1.1 The Logic Behind Stock Split:**

Managers may choose to split the firm stock for several reasons. However, for any given reason the main point of splitting a firm stock should not come in a conflict with shareholders wealth. Many papers explain the logic behind stock split from management prospective. Lakonishok and Baruch (1987), found that whenever a firm observes its stock price growing continuously, it is most likely that the firm will declare a stock split. Nguyen, Tran and Zeckhauser (2012) discussed reasons why management use stock split activity, which are: 1) A firm's manager may want to keep the stock price within a certain trading range, which is preferred by investors (e.g., Amihud, Mendelson, and Uno (1999)); 2) Stock split announcement could be used as a signal to resolve information asymmetry (e.g., Byun and Rozeff (2003)); 3) Increasing the liquidity of a firm's stock is also another reason behind stock split. That is, when the stock price is low the stock becomes more liquid (e.g., Lin, Singh, and Yu (2009)). For these reasons a firm may decide to declare stock split.

### **1.2 Purpose of The Study:**

This paper investigates the short-term behavior of stock's prices around the stock split announcement date using data from the Toronto Stock Exchange over the past eight years. The aim is to measure and test returns around such an event to see whether it generates positive or negative abnormal returns. That might help individual investors as well as financial institutions in making decisions about their positions in the TSX.

The purpose of this study is to see how significantly the abnormal return would be around the period of stock split announcement. Unlike other studies, a short-term effect of stock split announcement will be considered in this paper. The time interval of this study is between three to ten days. That is we will start by testing the abnormal return in a three-day event window, one day prior- and post- stock split announcement date, and then we keep expanding the event window till it reaches ten days. A sample of 40 stock split announcements that occurred between the years 2005 to 2012 at the Toronto Stock Exchange will be examined. The split ratios selected for this study are either 2 for 1 or 3 for 1. An event study methodology will be performed to test how significantly the abnormal return would be in a period surrounding the stock split announcement date.

This paper is composed of five chapters organized as follows: 1) Chapter One contains a general introduction and a brief discussion about stock split; 2) Chapter Two contains a literature review of some theories and papers about stock split reaction; 3) Chapter Three explains the methodology used to interpret the result as well as the data used in this paper; 4) Chapter Four shows the results; 5) Finally, Chapter Five contains the conclusion, limitation of the study, and recommendations for further study.



## Chapter 2

### Literature Review

Stock split events have been investigated by academic researchers from different countries. Some focused on the reasons why firms declare stock splits. Some investigated the stock price behavior around stock split announcement dates in different stocks markets. Others analyzed the signal sent to the market from the stock split announcements.

#### 2.1 Abnormal Return

One of the first studies that investigated the effect of the post-split announcements on stock prices was conducted by Fama, Jensen, Fisher and Roll in 1969. In their paper, they studied the process of stock price adjustments to stock split announcements on the New York Stock Exchange (NYSE) between the years 1927 to 1959. Stated differently, they tested to what extent the New York Stock Exchange (NYSE) was efficient in receiving information about stock splits.

They specified two criteria for a split announcement to be included in their sample. The first was that the split ratio must be 25 per cent or greater, and the other is that the company declaring the split must be listed on the NYSE for at least twelve months prior and post the announcement. However, 940 splits met their criteria. They divided the sample to stock split associated with dividend increase and stock split associated with dividend decreases. Fama et al, found

that in the period prior to stock split the cumulative average abnormal return (CAAR) increased steadily up to the split ex-date, and then CAAR decreased after the split ex-date. Stock split information was fully reflected in the stock price at least by the end of the split month. Therefore, they concluded that the market was efficient in the period between the years 1927 to 1959 with respect to stock split announcements.

A recent study performed by Boehme & Danielsen examined the relationship between stock split and post-split long-run abnormal returns (2007). Their study was performed on a long period sample (from 1950 to 2000), and they observed that abnormal returns associated with stock split existed in a short period. Also the abnormal returns did not continue after the actual split happened.

Additionally, they considered the industry momentum effect in presenting their results. They concluded that the post-split trend existed in a short period after the split announcements, and suggested that the trend is caused by market friction instead of behavioral bias.

## **2.2 Merger and Acquisition (M&A)**

For Merger and Acquisition purpose a firm might declare a stock split. A recent study was done by Guo, Liu and Song questioned why management tends to split their stocks before a Merger and Acquisition (M&A) announcement especially when the acquisition is financed with stocks (2006). Their sample consisted of 4,782 acquisition announcements from 1980 to 2003, which occurred in NYSE, AMEX and NASDAQ. However 8.66% of their sample was

associated with stock split announcements in the period of six months before the acquisition was announced. They assert that a general explanation about why management declares stock splits before (M&A) announcement is based on either signaling theory or optimal trading price range hypothesis. They found that management declares stock splits before (M&A) announcement to inflate their equity value (Guo, Liu and Song, 2006). They concluded it is much more likely for acquiring firms to split their stocks than for firms that do not plan to acquire other firms.

### **2.3 Liquidity**

Some papers show evidence on the abnormal return generated in the period surrounding stock split announcements. Michael M. Grayson (2005) came up with an explanation that abnormal returns driven by stock splits. Michael relied on the fundamental theory of supply and demand. He argued that since the stock price decreases when a company declares stock split brokers can convince unknowledgeable investors, who do not have an idea about stock split, to buy the stock with a lower price comparing to the prior split price. When that happens the underlying stock's demand curve moves up; therefore, the stock's price will increase. In his argument we can say that the author took a further step beyond the liquidity result from splitting a particular stock, which already had been introduced by Barker (1956) and Lamoureux & Poon (1987), by explaining the role of the brokerage and unknowledgeable investors. However, their findings were inconsistent with Copeland (1979). Copeland stated that liquidity would decrease post split date. He measured the liquidity by trading

volume, brokerage revenue, and bid-asked spread. Also, Lakonishok & Lev (1987) compared a sample of firms that issued stock split with a sample of firms that did not experience stock split with respect to trading volume. They found that trading volume in both samples were quite similar.

On the other side of the argument Anshuman & Kalay (2002) suggest that stock split increases liquidity. In their evidence, they rely on liquidity trader's behavior, the change in the tick size, and the optimal stock price theory. They found that when the stock price is relatively low, liquidity traders have an incentive to manage their trading time, which means that it become worthwhile to monitor stocks with lower prices relatively than higher price. Stated differently, the lower the stock prices the higher the incentive for liquidity trader to manage their trading the higher the stock liquidity.

Till now it seems to be that there are two schools of thought one argues that the liquidity will increases after the split announcement and the other says the opposite. However, a study performed by Dennis & Strickland (1998) proved that both of them could be right under some circumstances. They suggested that due the increase in liquidity it becomes possible to see new investors are joining the old shareholders in holding the splitting firm's shares. However, they relied on the ownership structure to determine which is true in any particular situation. They came up with three interesting results (Dennis & Strickland (1998)). First they found that if financial institutes compose the majority of the shareholders, that will result a lower liquidity post-split date. This indicates the negative

relationship between post-split liquidity and financial institutes when they compose the higher percentage of the shareholders. Second they found that the institutional ownership would increase post split for firms that have lower institutional ownership prior to the split due to the increase in the liquidity. Finally they explored that there is a negative relationship between institutional ownership and the abnormal return derived from split announcements based on their liquidity explanation previously discussed.

#### **2.4 Tick size**

Lipson and Mortal investigated whether the relationship between stock splits and clientele is effected by binding tick sizes or not (2005). Their study was based on NYSE. The process that was followed in their study was by observing a sample of stock split announcements over time and then comparing the change in clientele among the split announcements sample, which is expected to vary due to the effect of tick size. They found that stocks' prices that experienced splits had not dropped within the same period that NYSE declined the tick sizes from 12.5 pennies to 6.25 pennies at one point and form 6.25 pennies to a penny at another point. Also in the same period of reduction in the tick sizes they did not observe any increase in stock split announcements. They stated that if the purpose of the split is to keep the stock price in a preferred trading range or to encourage brokers by the commission they get per-share then they expected that firm's decision to split its stock would be encouraged by previous changes in the stock prices not by the changes in the tick sizes. In sum, their results suggested that there was no strong evidence to support that tick size effect is

relevant for stock split to impact clientele; however, they came up with a result which suggests that binding tick-sizes raises gross revenue to the liquidity providers (Lipson and Mortal, 2005).

## **2.5 Signaling**

From a signaling prospect, a theory introduced by Brennan & Copeland explained a costly stock split from the investors' point of view (1988). They found that initially the costs are observed by the existing shareholders and then by the future shareholders. However, in a competitive market environment the cost will be capitalized in the stock price; therefore, the costs will be shifted back to the initial shareholders. They argued that investors who owned round-lots after the split end up with odd-lots, which are more costly to sell. They extended their theory and explained the signaling cost of issuing stock split. They argued that based on the fact that splitting stock is costly for investors, the perfect split strategy adopted by a firm is to continuously split its stock until its stock's price reaches to a level where the transaction costs are minimized. This perfect strategy should be separately chosen from management's private information about future stock price' movement. They argued that by doing so, splitting stock would not reveal or signal any private information to the market. They stated that stock split composed of three types of costs, which are printing, legal, and other administrative costs. However, the administrative cost caused by stock split is hard to determine; moreover, it might send some private information. They concluded that there is a chance that management reveals information to the investors via split activity because the trading cost depends on the stock price.

Continuing in signaling theories beyond stock split, a recent paper issued by Ding in 2009 gathered all the hypothesizes about the purpose of stock split into two categories: one is signaling-based and the other is liquidity-based.

Therefore, he suggested that firms might choose to split their stocks for one of the two motivations stated above or for both. He stated that if we consider the signaling-based then the firm has private information; on the other hand if we consider the liquidity-based then the firm does not have private information, and in this case he assumed that the management are not optimistic about the firm's future performance. In addition, Ding argued that if the post-split liquidity increase is associated with abnormal return (AR) then that AR can be explained by the fact that the managers tried to send some private information through stock split. However, he succeeded in proving his hypothesis by performing the necessary tests on a sample of 3170 two-for-one splits, but he could not prove which one is dominant over the other (signaling or liquidity).

A most recent study performed on the Vietnamese stock market, which indeed is considered as a developing market, suspected that there is a relationship between illegal insider trading and abnormal return prior to split announcement (Nguyen, Tran, Zeckhauser, 2012). They found that when insiders composed a higher percentage of the shareholders, then stock split events became more frequent. Moreover, those firms achieved much higher abnormal returns in the short-run than other firms. These abnormal returns observed were higher pre-split than post-split. However, in the long-run they found that the market was

correcting itself. They concluded, that the Vietnamese stock market did not reflect real stocks values in the period of their study (2007 to 2011).

Wulff performed a study on the German capital market to see to what extent companies are using stock splits as a signaling tool (1999). He argued that due to market regulations, firms' choices in splitting their stocks are limited. However, the market role in Germany requires a minimum par value per share. Therefore, companies are unable to split their stocks continuously. He supported that by finding abnormal returns surrounding stock split announcements and actual date of a stock splits were much lower in the German capital market than in U.S due to institutional differences between the two countries.

One of the most popular theories introduced by Grinblatt, Masulis, and Titman in 1984 ends the discussion about signaling theories behind stock split. They argued that stock splits usually associated with good information about the firms' future performance. They stated, that firms use stock split activity to let the market believe that their stocks are undervalued; therefore, bring the attention on their stocks. However, by doing so they believe that investors will be encouraged to by their stock.



## **2.6 Summary:**

To sum up, there are many previous studies that have been done about stock split issues. Some of them were trying to measure the abnormal return around the period of split, and others focused on the liquidity change resulting from issuing stock split; others investigated how firms are using stock splits as a signaling tool. However, this paper is focusing on the short-term abnormal return generated from issuing stock splits in the Toronto Stock Exchange. The next chapter provides deep information about the data as well as the methodology that will be used.

## Chapter 3

### Data, Sources and Methodology

#### **3.1 Data:**

Data for this paper were collected from the Bloomberg database which generate updated information about the major stock markets around the world. Forty stock split announcements were identified from the Bloomberg. The split factors for this study were identified to be either 2 for 1 or 3 for 1 that picked randomly from the Toronto Stock Exchange (TSX) from 2005 to 2012. The returns surrounding the split announcement dates for the 40 companies we picked for this study are also collected from the Bloomberg. Finally, STATA program will be used to manipulate the data.

#### **3.2 Methodology:**

Event study has straightforward steps to follow. First, we collect stock returns in two different periods. The first period where stock splits were announced (known as the Event Window). The second period is a clean period, where we assume that there is no any dependent or related event (known as the Estimation Window). Then, we compare the returns in both windows to see whether they are significantly different or not. Out of this compression, if the event window's returns are significantly different from the estimation window's returns then we can conclude that the corporate event that we are interesting in (stock split in this paper) has a significant impact on stock returns. However, this impact could

be either positive, if we observe an increase in the event window's return, or negative if we find the opposite.

### **3.3 Model:**

The result of this work is mainly determined by empirical analysis. Capital Asset Pricing Model (CAPM), which was first introduced by William Sharp in 1964, is one of the models that will help to construct the results. However, there are some important parameters should be included to run this model, those parameters are the stock beta, the risk free rate in the market, and the market return. This model consists of two types of risk, which are the systematic risk and the unsystematic risk. The systematic part in this model composed of the first part ( $\alpha + \beta R_m$ ) where the unsystematic is the error term ( $e_{i,t}$ ). In this paper the use of CAPM will determine the stock's return in the Estimation Window.

$$E(R_{it}) = \alpha + \beta R_m + e_{i,t}$$

Where:

$R_{it}$  = the expected return on the stock  $i$ , in period  $t$  (estimation window),

$\alpha$  = the intercept of the regression line,

$\beta$  = the slope of the regression line,

$R_m$  = the return on the market portfolio (here S&P/TSX),

$e$  = the error term for security  $i$ , in period  $t$ .

In general, this model expresses the linear relationship between the stock return and the return on the market portfolio (S&P/TSX in this paper). This model seems to be very

simple; however, this model mainly used by Fama et al 1969 to examine how the NYSE was efficient in receiving the information of stock split announcements.

Continuously, after running the above regression we use the estimated parameters (Alpha & Beta) to determine the stock return for the period where stock split announced as follow:

$$E(R_{i,t}) = \alpha + \beta R_{m,t}$$

Where:

$E(R_{i,t})$  = is the expected return on stock i, in period t (event Window),

$\alpha$  = is the estimated intercept of the regression line,

$\beta$  = is the estimated slope of the regression line,

$R_{m,t}$  = is the expected return on the market portfolio

After we calculate both the expected returns in the estimation window and the expected returns in the event window, easily we can get the abnormal return by subtracting the former from the latter, expressed in the following equation:

$$AR_{i,t} = E(R_{i,t}) - E(R_{i,t})$$

Where:

$AR_{i,t}$  = is the abnormal return for stock i, in period t

Based on the above equation's result will help to figure out whether the abnormal return exists on our sample or not. Continuously, the average abnormal return (AAR) for each individual stock can be calculated as follow:

$$AAR_i = \sum \frac{AR_{it}}{N}$$

Where:

N= is the total number of the stock split announcements in the sample (40).

However, to build the decision about how significance of the abnormal return calculated from the previous formula, the t-statistic should be calculated as follow:

$$t\text{-statistic} = \frac{AAR_t}{\sigma / \sqrt{N}}$$

Where:

$\sigma$  = is the standard deviation

Finally, the cumulative abnormal return (CAR<sub>t</sub>) for each individual stock in the sample can be calculated as follow:

$$(CAR_t) = \sum AAR_t$$

The reason why the CAR should be calculated is that to see the cumulative impact of the stock split announcement on the stock return.

### **3.4 Hypothesis:**

The hypothesis here is to test the significance of the abnormal returns. We do this by comparing the t-statistic calculated previously with the t<sub>c</sub> (critical).

However, if the t-statistic is greater than the  $t_c$ , then null hypothesis is rejected, and we conclude that the abnormal returns are significant. On the other hand, if the t-statistic is smaller than the  $t_c$ , then the alternative null is rejected and we conclude that there was no evidence that the stock split announcements has a significant impact on the stocks return. The hypothesis van be written as follow:

$H_0$ :  $AAR_t = 0$ , the abnormal returns are equal to zero,

$H_1$ :  $AAR_t \neq 0$ , the abnormal returns does not equal to zero

## Chapter 4

### Results and Interpretation

In this chapter we will test the significance of the abnormal return around the period of stock split announcement. The data set is composed of 40 stock split announcements occurred in the Toronto Stock exchange between the year 2005 and 2012. Those split announcements were picked randomly, but we identified the split ratio to be either 2 for 1 or 3 for 1. However, the results were conducted using STATA program to see how significance the abnormal return is in different size of event windows.

#### **4.1 Regression Analysis:**

In this section we will perform the regression analysis on the data set identified previously. For the seek of being accurate we will keep changing the size of the event window, which is the period where the stock splits were announced, while we keep the size of the estimation window constant. The time interval for the event widow would be starting from 3 days, that is one day before stock split announcement, the announcement date, and one day after the announcement, and then we will keep expanding the event window till it reaches 7 days. On the other hand, the estimation window is fixed at a month (30 days) 180 days before the event window.

#### **4.2 Three Days Event Window:**

In this section we test how significance the abnormal return one day before and one day after the stock split announcement. However, we perform the regression described in the previous chapter we obtain the following:

cumulative~n	Robust				
	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
_cons	.1058812	.0472016	2.24	0.031	.010407 .2013555

As shown in the table the P-value is less than 5%. According to our test hypothesis we reject the null hypothesis since the P-value is less than 5 per cent (3.1%), and we conclude that the abnormal return does exist in the period of two days surrounding stock split announcement. However, based on this conclusion a trader can observe an a abnormal return by managing his or her trading time in a short period surrounding stock split announcement date.

#### **4.3 Five days Event Window:**

In this sub-section we will perform the same regression, but with a slight expanding toward the size of the event window. The event window would be two days before and after stock split announcement. After running the same test we get the following results:



cumulative~n	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
_cons	.0944254	.0473049	2.00	0.053	-.0012578	.1901087

Again all our concern is would be about the P-value. However, the P-value here is greater than 5 per cent, so we do not reject the null hypothesis that state the absence of the abnormal return, and we conclude that there is no evidence indicates the existing of the abnormal return in five days event window.

#### **4.4 Seven Days Event Window:**

Consequently, we keep expanding the event window to seven days, that is we test the significance of the abnormal return in the period of three days prior and post stock split announcement date. The conducted results are shown in the table below:

cumulative~n	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
_cons	.0756521	.0429352	1.76	0.086	-.0111924	.1624967

By looking at the P-value we figure out that the abnormal return does not in exist this period, since the p-value is less than 5 per cent, so we reject the alternative hypothesis, which support the existing of the abnormal return when firms do split their stocks. Or in other word, the abnormal return is not significant five per cent

level, so we cannot generate a return that exceeds the market return in the long run.

#### **4.5 Summary:**

Based on the conducted results on the above regression analysis we can say that the cumulative abnormal return exists on short-term period surrounding the stock split announcement. On the other hand, there are no evidence support that the cumulative abnormal return would continue to exist when we expand the size of the event window.

## Chapter 5

### Conclusion, Limitation & Recommendation

#### 5.1 Conclusion:

This paper investigates the significance of abnormal return surrounding the period of stock split announcement. We begin by introducing the stock split concept and why firms are usually taking this corporate action. Then we moved on some literature reviews, where we provided empirical as well as theoretical evidence about stock split. After that we described the model that used to reach to a proper conclusion, which describes the relationship between stock split and abnormal return.

The conclusion we obtain in this paper is that the abnormal return does exist in short-term period surrounding the event date. I found that those cumulative abnormal returns are significant at five per cent level in short term period, while in long-term horizon the cumulative abnormal returns were only significant at ten per cent level. However, the ten per cent level of significance does not give any strong evidence about the existing of the abnormal return in the long run. To some extend, the result of this paper was consistent with what Fama et al (1969) found. That is stock split information is rapidly adjusted and reflected in stock prices. Therefore, market participants cannot generate abnormal return in a long period surrounding stock split announcement.

In term of market efficiency, efficient market hypothesis asserts that for a market to be efficient all available information must be fully reflected in stock prices. Therefore, all securities in the market should be correctly priced, where the opportunity to find an overpriced or underpriced security in the market does not exist. According to efficient market hypothesis investors cannot generate abnormal returns in a constant way that is the abnormal returns can be randomly captured. However, since our results suggests that the abnormal returns only exist in a period of one-day prior- and post stock split announcement dates this indicates that the Toronto Stock Exchange was efficient in receiving the information of stock split.

To sum up, when Canadian firms take stock split action the return generated by their stocks were outperforming the market index return (S&P/TSX) only in the short run. In other words, the abnormal returns that we observe in short run will die out through the time because stock prices will be automatically adjusted.

## **5.2 Limitation:**

The sample size is a major concern on this paper. Forty stock split announcements only were considered in this paper, while the actual number of stock split announcements were much higher in the period between 2005 and 2012. Also, the time range for this study is very narrow. One last point, is that the stock returns were calculated on a daily bases.

In contrast, most of the major research papers were testing the relationship between stock split announcements and abnormal returns considered all stock split announcements in their time frames. Their time frames were much wider than the one we are using in this paper. For example, the study performed by Fama et al in 1969, was based on a sample of 940 stock split announcements that happened in a period of 32 years. However, their study was based on a return that was collected on monthly bases.

Capital Asset's Pricing model (CAPM) is the only model been used in this paper while other models are available. Fama (1997) argued that using different asset different asset pricing model lead to different expected returns. More importantly, Fama asserts that there are tow main disadvantage of using any asset's pricing model, which named as "bad-model" issues. Fama (1997) reported " 1) any asset pricing model is just a model and so does not completely describe expected returns; 2) even if there were a true model, any sample period produces systematic deviations from model prediction, that is, sample-specific patterns in average returns that are due to chance.

Continuously, Fama explained other disadvantage of using market model. One point he added that is the intercept ( $\alpha$ ) and the slope ( $\beta$ ) used to calculate the expected returns in the event window, were estimated outside the event period i.e., in the estimation window, where we assumed that there is no any related or dependent event. The main issue of using estimated and constant slope and intercept in the market model is the moving nature of these parameters. Thus,

assuming constant slope and intercept may provide misleading results. However, Fama suggested that to get rid of this issue a “firm-specific model” should be used.

With a regard to these limitations the conclusion drawn on this paper may not be accurate. Therefore, building a trading strategy based on the results of this paper may be misleading.

### **5.3 Recommendation:**

It is strongly recommended for further studies to avoid the stated limitations of this paper in order to obtain more reliable results. An increase in the sample size is a primarily thing to consider. Also, a wider time frame is suggested.

Fama also recommended some methods to avoid “bad-model” problem.

One approach suggested by Fama was to use firm-specific model instead of assuming solid slope and intercept value. Another approach is that rather than using the traditional way of event study, that is comparing returns in two different periods (event & estimation windows), we compare stock’s returns that experienced the event with the return on a clear stock that has not been exposed to any event in the same period where the event was occurred.

However, the two stocks must be similar in size and book-to-market value of equity.

A development of this paper also can be made. The test of the liquidity is one thing can be added to this paper, since the increase or the decrease in the liquidity would affect the return level of the stock as previously discussed in the literature review part.

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