

Short Term Market Reaction to the U.S. Quantitative Easing

Announcement of September 13th, 2012

by

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the requirements for the degree of Master of Finance

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Abstract

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U.S. government made the third quantitative easing announcement on September 13th, 2012. Previous study has focused more on the other macroeconomic variables. This paper mainly examines the stock market reaction to this announcement. Because of the failure in previous quantitative easing monetary policy, most study perceives this unconventional monetary tool as negative effect to the market. Using a standard event study methodology, several findings are noted. First, the quantitative easing announcements in the U.S. tend to have a positive impact on the stock returns. Second, a positive abnormal return is also detected on the day prior to the event day. Last, different industries show different reaction to this announcement. Therefore, the third quantitative easing has helped investors rebuild their confidence in the short term market.

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Table of Contents

Acknowledgements	ii
Abstract	iii
Table of Contents	iv
List of Figures	v
List of Table	vi
Chapter I: Introduction.....	1
1.1 Purpose of Study	1
1.2 Background	1
1.3 Need for Study.....	4
1.4 Statement of Problem	7
Chapter 2: Literature Review	8
2.1 Studies on Markey Efficiency Hypothesis	8
2.2 Effectiveness of Quantitative Easing	9
2.3 Market Reaction to Quantitative Easing.....	10
Chapter 3: Methodology	13
3.1 Event Study Model	13
3.2 Formulas	14
3.3 Data Selection and Analysis Process.....	15
Chapter 4: Results	19
Chapter 5: Conclusion and Recommendations	23
References	26
Appendix A: Cumulative Mean Abnormal Return of Representative Industries	30
Appendix B: Abnormal Return in Event Window	31

List of Figures

Figure 1.1 1-Year Treasury Bill Rate

Figure 3.1 Illustration of Event Study Window

Figure 4.1 Stata Running Result Screenshot

Figure 4.2 Data Details

List of Table

Table 4.1 Abnormal Return for Announcement of September 13th, 2012

Chapter I: Introduction

1.1 Purpose of Study

This paper will examine the short term market reaction to the announcement of the third quantitative easing policy of U.S. government on September 13th, 2012, after two completed round U.S. quantitative easing which was ineffective to U.S. market. Because quantitative easing will pull down the long term interest rate, this paper will focus on the short term market reaction rather than a short term market.

America has paid more attention to its unconventional monetary strategy hoping it can help it come back from the recession. With two rounds of quantitative easing completed, it seems ineffective to American economy. Therefore, America has to think about a third quantitative easing so that they can get rid of the dilemma. When people started to speculate that it is possible for quantitative easing to disappear soon, some events emerged that confirmed that the Federal Reserve will have to consider a potential need for taking more quantitative easing strategy than its expectation. It becomes necessary to examine the short term market response to this recent announcement for quantitative easing and to know whether the announcement is a positive signal to the short term market.

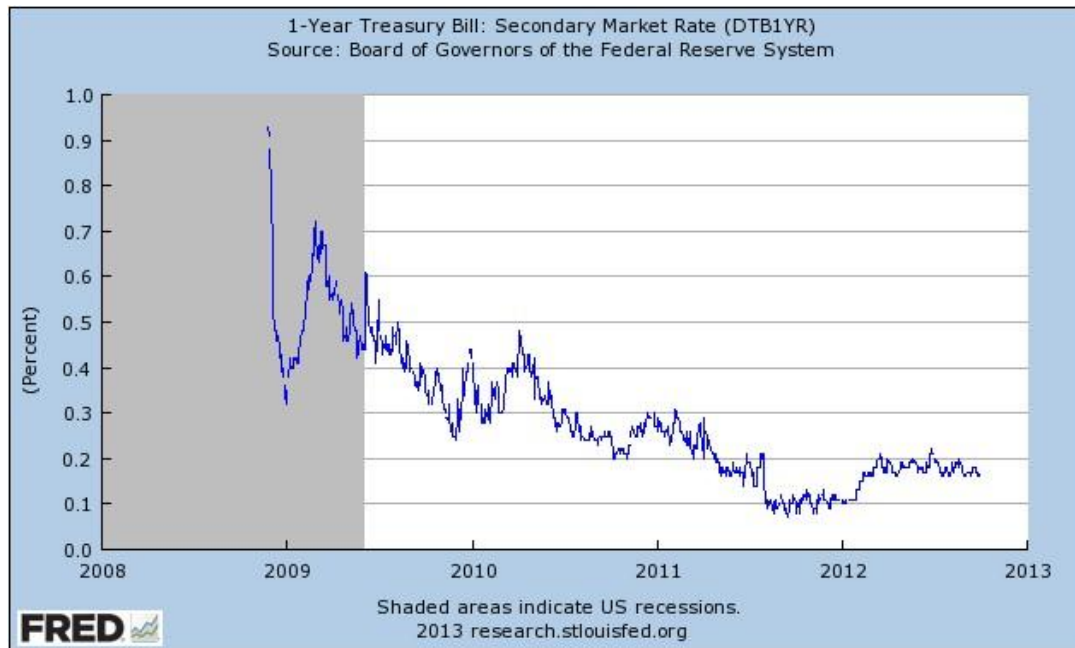
1.2 Background

The great economic shock around the world in late 2008 resulted in a sluggish US economy. Quantitative easing is not new to America. It was used in Japan to help alleviate domestic deflation in the early 2000s. Joyce, Tong and Woods (2011) has referred to the deterioration of financial sector in autumn 2008, the Bank of England purchased 200 billion pounds of assets which mostly made up of government securities,

representing about 14% of annual GDP. Central Banks in these countries want to change the status quo by using the unconventional strategy. America even depended on this strategy to help its domestic economy since the first round in 2008. The U.S. economic recovery has been achieved until 2012. In normal time, the Central Bank influences the economy by using the conventional monetary policy which includes open market operation, direct borrowing through the discount window and reserve requirements (Meulendyke, 1998; Nakornthab, 2009). However, when the interest rate is too low to come down, unconventional monetary policy which is called quantitative easing will be used.

Techarongrojwong (2013) has defined that the Q.E. is an increment the size of the Central Bank's balance sheet by using the newly created money to purchase securities from the commercial banking and private sectors and the purchased securities include long-term government securities and mortgage-backed securities. Quantitative easing will lower the long term interest rate rather than the short term interest rate. When the interest rates are almost at the zero bound, Federal Reserve will have to use the unconditional currency policy. Federal Reserve System has described the situation of the first two quantitative easing which is in a figure as following.

Graph 1.1 1-Year Treasury Bill Rate



According to the 1-Year Treasury bill graph retrieved from Federal Reserve System, there are four obvious low interest rate periods around January in 2009, March in 2010, August in 2010 and middle of 2011. These periods were all the quantitative easing announcement periods which showed a low interest rate. As the interest rate cannot go down more, the currency authority had to seek for a new solution to solve the U.S. economy.

After the subprime crisis in 2008, credit risk quickly penetrated the derivative market and led to the leveraged shrink in financial market. The period between early 2009 and March 2010 saw the U.S. central bank acquire some \$1.7 trillion of government bonds and agency securities (Reinhart, 2010). This was the first quantitative easing. Though the first quantitative easing injected large amount of liquidity to the market, American economy was still in a weak situation. In late 2010, in response to

continuing economic weakness and the zero lower bound, America embarked on a second round of quantitative policies, announcing its intention to purchase a further \$600 billion of longer-term Treasury securities by the end of the second quarter of 2011 (Swanson, Reichlin & Wright, 2011). At the beginning of the second quantitative easing, American economy rebounded in 2010's last quarter. However, American economy did not hold too long which showed a decrease from 2011. In addition, American economy kept showing a weak situation since 2012. Without considering a better unemployment rate which was still under the expectation, U.S. GDP kept staying at a low level, European debt crisis still showed a dark future and emerging economy developed slowly. These factors limited the recovery of American economy. Therefore, Federal Reserve began to think about another new quantitative easing.

In the third quantitative easing which was announced in September 13th last year, five measures will be taken. Firstly, increasing to buy \$40 billion Mortgage Backed Securities every month. Secondly, keeping using operation twist so that to pull down the long term interest rate. Thirdly, continuing to purchase federal agencies' new issued bonds with the principal income. Fourthly, Federal Reserve will continue to take the three former measures as long as the employment market turns to a good situation. At last, maintaining the zero bound (0%-0.25%) strategy until 2015.

1.3 Need for Study

As the globalization around the world and the great effect of U.S. economy, we have to pay more attention to the third quantitative easing announcement. Joyce, Lasaoa, Stevens, and Tong (201 1) found the evidence to support that quantitative easing could affected the financial asset price. This time, quantitative easing 3 has one

biggest different with the former two. Quantitative easing 1 focused on buying Government Supported Entities Bonds and quantitative easing 2 focused on directly buying short term bonds which were issued by American treasury department. Quantitative easing 3 will focus on buying Mortgage Backed Securities. Therefore, as the three round quantitative easing focused on different sides, they may produce different results. It is necessary to study the short term market reaction to the third quantitative easing and it will be helpful for us to know whether it is a good strategy for America to recover the economy.

U.S. has experienced three quantitative easing. Quantitative easing focuses on stimulating the national economy when standard policy becomes ineffective. Central Bank will inject large amount of money to market by buying financial assets from commercial banks and other private institutions so that it could help to increase the monetary base. However, people may begin to question the unconventional strategy because two former rounds did not work. The uncomfortable reality has emerged that: real economy cannot recover from the new strategy which will just boost the stock market and it cannot boost the inflation. Now quantitative easing is under debate, firstly, many people believe that quantitative easing will either cause higher inflation or lead to a financial crisis when it is not ready, and second because it did not bring the American economy back to good situation. America hopes that the third round policy can save their economy. Many people think that the first two rounds have succeeded in recovering the economy. However, the unemployment rate did not improve in the recent study. According to Makin (2013), from a theoretical standpoint, it is not surprised to see the undoing of quantitative easing because at the zero bound, with policy sets

interest rates virtually at zero, the economy is stuck in a liquidity trap. Therefore, he referred that U.S. velocity dropped sharply after 2008 and has continued to fall since 2011, even after QE2 and QE3 were implemented.

After the announcement, the invested money may keep at a low level and the financial institutions will maintain a good liquidity so that it is helpful to create the production and employment opportunities and people's confidence to the recovery. Although the third quantitative easing has its responsibility in today's U.S. economy, whether it is really available for the recovery of American economy is still uncertain. Expectation to the soared resources price will increase the price of the staple commodity. Meanwhile, the bonds price will also increase. As the policy does not have the limitation to the quantity and the time period, the price will deviate from the normal path until an extreme point emerges. Another effect for the policy will be related to the value of U.S. dollar. The value of U.S. dollar will be deteriorated while the other countries' appreciated. With the increasing of the staple commodity's price, Asia and Europe will have to fight with the imported inflation. If the inflation occurs when the economy is weak, it is called stagflation which is terrible to any country. At that time, the other country cannot use its own monetary policy well. The reason is that under the condition of inflation, lowering the interest rate will cause the value of the bank deposit deteriorated while the CPI is still very high. Therefore, it is important for this paper to examine the short term market reaction to the U.S. quantitative easing announcement of September 13th in 2012, namely the third quantitative easing.

1.4 Statement of Problem

U.S. quantitative easing will bring great effect to the developing market. As Techarongrojwong (2013) has concluded that the U.S. quantitative easing announcement resulted in negative effect on the stock return on the Thailand stock market. He also analysed reason for the negative result. Investors in Thailand may regard the third quantitative easing announcement as a negative signal for American economy. Therefore, the stock market will show negative result for this event announcement. Folpmers (2010) thought that China will have to confront various problems such as the inflation risk, hot money flow, deterioration to the stable economy development strategy and the bad influence on foreign exchange reserve. In short, U.S. quantitative easing will shake the economy of developing countries.

The third quantitative easing is not limited by the Federal Reserve because this time the time period and the quantity are not defined and the Federal Reserve insisted in the low interest rate and will maintain it until the middle 2015. Federal Reserve may stop the strategy until America recovers the economy and unemployment rate. This policy is very stimulating. Taking all of the research into consideration, more attention should be paid to focus on the effect of the third quantitative easing and to figure out the short term market reaction.

After knowing the problem, we can begin the research. This paper will study the quantitative easing which just occurred recently and it will also use a different point compared with the former study. Event study which is based on the Efficient Market Hypothesis will be used to focus on how the short term market react to the third round

quantitative easing announcement. After analysing the market data, we can get the CAR and AAR to know the sign of the market reaction.

Chapter 2: Literature Review

2.1 Studies on Market Efficiency Hypothesis

Gupta (2008) used merger announcements to prove that positive average abnormal returns to the shareholder could be found after the announcements. Agarwal and Singn (2002) examined many public announcements aiming at proving that market will react quickly and produced positive and substantial abnormal returns for investors when insider trading occurs. Obaidullah (1992) got the conclusion that “nonexistence of learning lag and slow diffusion of bonus issues in the stock market to support the semi-strong form of efficiency”. In recent days, Singla (2007) found no efficiency of stock market for the semi-strong form by studying stock splits. Many scholars had got the conclusion for stock market reaction by studying on dividend announcements example. Chander, Sharma and Mehta (2007) found that when dividend payment is declared, stock market will react to it with high velocity. However, investors cannot use the information to always get the abnormal return for lesser dividend declaration. According to Agrawal, Jaffe and Mandelker (1992) tested the market efficiency by using dividend announcements. All of these studies suggested that stock market will respond to the dividend declaration which occurred within two years and reflect recent years’ profit. Therefore, dividend declared prior to the recent two years will be considered insignificantly.

Davis and Canes (1978) found that post announcement period will result in returned earnings disappeared quickly which are earned during the pre announcement period. Intense of that Davis et al (1978) concluded that “excess returns could be earned, provided transaction costs are less than the residual return, thereby establishing that market is efficient in the semi-strong form”. Pandey (2001) also observed companies covered in the event has 10% returns which were came from some takeovers during the period April 1997 to April 2001 in developed countries.

Therefore, many studies have covered the semi-strong form of market efficiency in capital market for various event announcements such as dividend declaration, merger and acquisitions, stock splits and so on. However, few studies have been conducted to focus on the effect of macroeconomic event announcement.

2.2 Effectiveness of Quantitative Easing

Quantitative easing is called unconventional monetary policy because it is beyond the scope of the conventional tools, including the interest rate, legal deposit reserve, discount rate and public operation, and it also considers the special economic situation. In general, monetary authority will use short-term interest rate to achieve their main goal (Mishkin, 2007). When considering the situation that the interest rate decreases to zero or near zero which is called zero bound, the normal policy used by monetary authority will be ineffective because it is stuck with the liquidity trap. However, Bernanke, Reinhart and Sack (2004) thought that the quantitative easing can also leads to the rebalance of asset portfolio although short term interest rate decreases to zero. Mishkin (2007) got the conclusion that implementing the monetary policy can adjust the economy status quo and stimulate the recovery of the economy during the

financial crisis period and he also thought that this policy could lower the credit cost and lead to the investment and consumption. Therefore, when the conventional policy tools become ineffective, the Central Bank will consider unconventional tool so that it can inject the money directly to the economy to stimulate the economy. Quantitative easing is not only about decreasing the interest rate or increasing the paper money. It is a way to increase the credit creation by increasing quantity. Eggertsson (2003) suggested that Federal Reserve could inject the reserve fund into the private sector by buying back the assets. In point of that, Bernanke et al (2004) considered the quantitative easing which could enlarge the Federal Reserve's balance sheet as the main monetary policy under the zero interest bound period. Therefore, quantitative easing policy is proved by many scholars and it will be effective under the special economy period.

2.3 Market Reaction to Quantitative Easing

Auerbach and Obstfeld (2005) concluded that quantitative easing may bring inflation, lower real interest rate and hence more aggregate demand because quantitative easing shows a promise to raise the money supply in a long term. They also found that the durability of the monetary base expansion which is related to the banks' expectation will determine the effectiveness of the unconditional policy. This result shows that quantitative easing is effective to help the economy recovery even when the zero bound has been reached. Inflation risk will be considered as an important risk to affect the implementation of quantitative easing. Folpmers (2010) has studied the relationship between inflation risk and quantitative easing. He found that the money multiplies which is resulted by the quantitative easing may be reduced because of the capital constraints of the banking sector. By buying up Treasury notes especially from non-banks, the

liquidity situation will be improved. According to Folpmers (2010), the asset prices will be increased because of the “search-for-yield” and the bank will be still limited by the money creation for their unreduced capital requirement.

This paper analyzes the quantitative easing announcement on September 13th, 2012, when the third quantitative easing began in America. As the earliest countries to use quantitative easing, Japan has been studied for many years. However, there are also many studies focusing on the U.S. quantitative easing in recent years. These studies analyzed clearly about the reason, effect and trend of U.S. quantitative easing. However, these studies mostly research on the effect to emerging countries or the other countries which ignores the effect in domestic market.

This paper conducts the study on the short term market reaction to U.S. third quantitative easing announcement so the relationship between stock prices and the announcement has been a very important point. Kurihara (2006) concluded that the stock price is affected by the quantitative easing announcement and recommended that the market investors should consider the situation and change the portfolio investment based on that. After studying the quantitative easing in Japan at that time, Kurihara (2006) also referred that macroeconomic factors may affect the stock price such as the exchange rate and interest rate. Daily stock prices can also be determined by many different factors such as dividends, firms’ performance, domestic economy, interest rate, exchange rate and so on. According to Joyce et al (2011), the stock price may not show consistent reaction to the quantitative easing announcement because the stock price will decrease after seeing the additional equity risk premium increases. Bernanke and Kuttner (2005) concluded that the expansionary monetary policy affected the company’s funding cost

which will lead to the equity risk premium decreases. As an unconventional monetary policy, quantitative easing has been used by many countries to fight the deflation which has aggravated the recessions and lead to poor economy growth. As a result, it may be recognized as a signal to show a weak economic situation. Joyce et al (2011) proposed their argument against Bernanke and Kuttner (2005) that the equity risk premium reduces because investors have to rethink the possibility for transferring their investment from the lower risky one to a more risky one after the quantitative easing announcement occurs. However, the stock price may go down because the negative information brought by quantitative easing. It is the same when we talk about the dividends. When predicted dividends decrease and risk premium increases, people may expect the stock price to show a decreasing trend.

Connolly and Wang (1998, 2003) have found that there is closed relationship between domestic stock market and foreign stock market because the foreign stock return will affect the domestic stock return. They also think that macroeconomic news is important to explain the relationship between two country's financial market spillover effects. Therefore, Techarongrojwong (2013) used the relationship between Thailand stock market and U.S. stock market to get the result that quantitative easing announcement in the U.S. shows a negative effect on the stock return according to the Thailand stock market index. Although Thailand stock market shows a negative signal to the U.S. quantitative easing announcement, it is still worth studying the domestic market.

Chapter 3: Methodology

3.1 Event Study Model

Investors always focus on the corporate events to get information and then change their behaviour, so the corporate event is a very important signal to lead investors in the market. As event study always studies an event effect using the stock return in the market such as the merger and acquisition announcement, government regulation announcement, competitors' bankruptcy announcement and so on. This paper will use event study which is based on the market efficiency theory to get the result. We expect the market will quickly and correctly respond to the announcement and then we can get the result accurately. The Efficient Market Hypothesis imposes no structure on stock prices. If market is "semi-strong-form efficient", the effects of an event will be reflected immediately in security prices. Thus a measure of the event's economic impact can be constructed using security prices observed over a relatively short time period.

Many studies have been conducted to study the impact of the quantitative easing on the U.S. economy. They often used event study to evaluate the impact of the announcement on the market. Event study, which is a kind of statistical method, often focuses on evaluating the effect of an event on the value of various firms affected by the event. As Federal Reserve announced the third quantitative easing in September 13th, 2012, we could assess the influence of the event by using event study. To solve this problem, this research used the firm level analysis so that it will be easy to capture the industrial specific characteristic and the event study to capture the behavior of mean abnormal return during the event period (Day-30 through Day 30).

Asset prices should completely and quickly reflect the information from a public announcement with the expectation of rational evaluation. Event studies look at a narrow window of time around the specific date for the announcement so that it can see how markets react to the time. However, here comes a problem. It may be a bit uncertainty to assume that the result will only be affected by the announcement we are studying. Sometimes another good news or bad news is announced at the same time. If we insist on using the same time and do not screen the data, the result may be unclear. We cannot define which news lead to the result or the result is resulted from much news. According to the event study, we can know the cumulative abnormal return of the market and then using the data to analyze the effect of event announcement. At last, from the event study, we can get the result how short term market reacts to the U.S. quantitative easing of September 13th, 2012.

3.2 Formulas

We can use formulas to briefly describe the theory of event study. Daily returns were calculated for every firm for a period by using the following formula:

$$R_{it} = (P_{it} - P_{it-1}) / P_{it-1} \quad (3.1)$$

where R_{it} is the return for the firm in period t ; P_{it} and P_{it-1} are the prices in period t and $t-1$ for a firm I .

Market return (R_{mt}) can be calculated by using the following formula:

$$R_{mt} = (I_{mt} - I_{mt-1}) / I_{mt-1} \quad (3.2)$$

where I_{mt} is the index at period t .

For abnormal return for each firm around both pre and post announcements, we can use the following formula:

$$\text{Abnormal return} = \text{Actual realized return} - \text{Expected return} \quad (3.3)$$

Average Abnormal Returns (AAR) for each day (from Day -30 to Day 30) are computed by taking the arithmetic average of abnormal returns for the firm sample.

$$\text{AAR}_t = \sum \text{AR}_{it} / N \quad (3.4)$$

where N is the number of the firms we are studying.

Cumulative Abnormal Return (CAR) is calculating by taking sums of AAR over the study window for the period:

$$\text{CAR} = \sum \text{AAR}_t / N \quad (3.5)$$

If there is no unusual price movement in the market during the event period, one would expect AAR and CAR to fluctuate around zero. If CAR is 0, then market is turned out to be efficient. Therefore, it is important to focus on the sign of CAR and AAR.

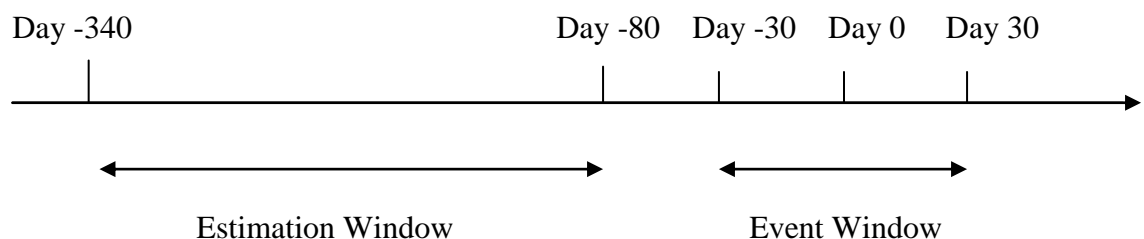
3.3 Data Selection and Analysis Process

Data for this paper will be retrieved from Bloomberg. According to the country, this paper focuses on the U.S. market reaction. After deciding the location, data will be selected from a few different industries to analyse a completed market reaction. These industries will also cover different firms to get the daily stock return during 2012. In general, event study in stata will need two datasets to define the result, one is stock return data and one is the event data. As we only have one announcement for each company, therefore, we can ignore the event dataset. As this paper only focuses on a

single event announcement, it will be different from the normal analysis such as different companies have different merger and acquisition dates or dividend declaration dates. Therefore, it becomes simple for this paper's event study for focusing on only one event date.

This paper investigates the effect of the quantitative easing announcement in the U.S. on short term market by using the event study approach which is a widely used method in examining the announcement effects on the market. The announcement on September 13th, 2012 was examined with some firm-level announcement observations. The market in U.S. should be reflected by the U.S. announcement the following day, so the event day was the last second trading day at which the quantitative easing announcement in the U.S. was publicly available on the Bloomberg. Therefore, the event day (Day 0) for this announcement was September 13th, 2012. The sample around the event day was carefully constructed by using 340 days prior to the event day as the estimation period because this short term period can reflect the short term . According to Swanson et al. (2011), it is sufficient to study the 1- or 2- day change around a major macroeconomic announcement to provide an unbiased result. Therefore, we use three days to be the event window, namely from August 14th (Day -30) to October 13th (Day 30). At last, this paper's event window and estimation window are as following:

Figure 3.1 Illustration of Event Study Window



It is necessary to get much data set to help us to do the analysis. 10 industries are selected from Bloomberg to analyse the market reaction including oil and gas industry, basic materials industry, industrials industry, consumer goods industry, health care industry, consumer services, telecommunication industry, financials industry, technology industry and utilities industry and each industry will cover a few different companies, so there will be 10 different subsamples for the different industries. The industry classification is based on the ICB standard code and the 10 companies in each industry will be selected from the top 20 companies with the largest market value. However, in the process of examination, the data needs to be screened. Excluding the stocks with the IPO announcement for 340 days before the announcement date and the stocks with infrequent trading data could be considered before doing the following analysis. Then we can use the rest firm-announcement observations. Since this study used 261 days before the event study as the estimation window, the stock price and the index were collected from January, 2011 to December, 2012. The three days event window will be the main analysis window. This paper will also look at a 61 days event window and a 141 days event window to compare with the 3 days event window effect.

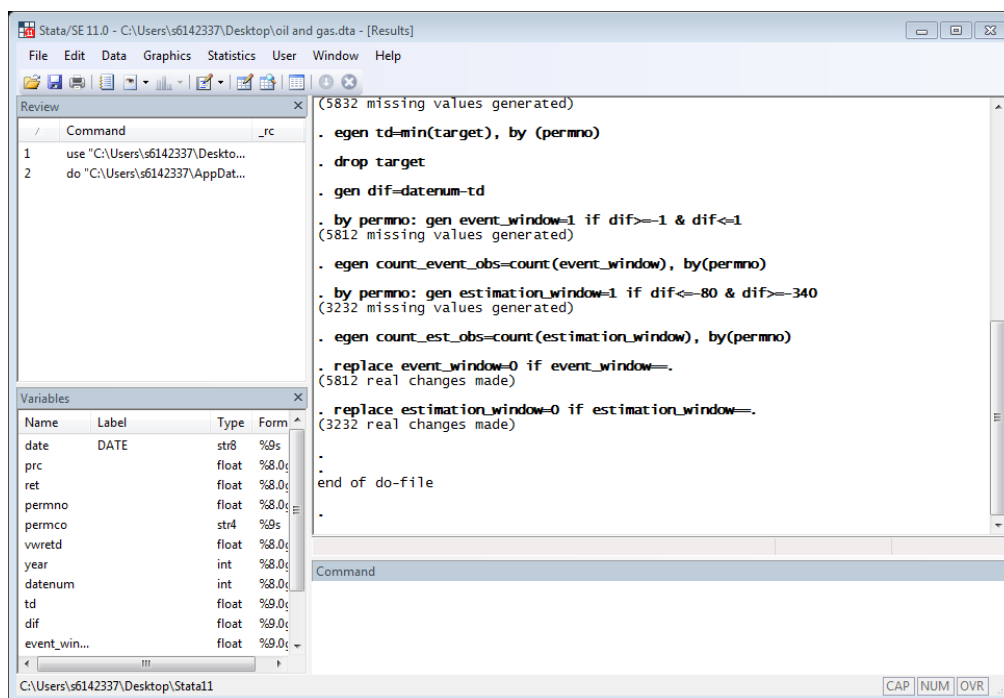
Using stata to do the event study analysis, it is clear to know the market reaction to the U.S. quantitative easing announcement. Firstly, it is necessary to clean the data and calculate the event and estimation windows. As we only have one event announcement which is on September 13th, 2012, we can focus on the single event effect. In this step we use some orders in stata to help screen the data and define the window as above. Secondly, market model will be used to estimate the normal performance in the estimation window. Then abnormal return and cumulative abnormal returns can also be

reached by running orders in stata based on the formulas above. At last, it is necessary to test the significance of the event which will consider the number of trading days in event window. Here is the screenshot of the stata processing situation that this paper used to get the result.

Chapter 4: Results

The first step is to clear the dataset and to prepare for the event window and estimation window. After screening the data, there are 100 firm observations for analyzing the short term market reaction. Figure describes the process of establishing the event window and estimation window.

Figure 4.1 Stata Running Result Screenshot



```
(5832 missing values generated)
. egen td=min(target), by (permno)
. drop target
. gen dif=datenum-td
. by permno: gen event_window=1 if dif>=-1 & dif<=1
(5812 missing values generated)
. egen count_event_obs=count(event_window), by(permno)
. by permno: gen estimation_window=1 if dif<=-80 & dif>=-340
(3232 missing values generated)
. egen count_est_obs=count(estimation_window), by(permno)
. replace event_window=0 if event_window==.
(5812 real changes made)
. replace estimation_window=0 if estimation_window==.
(3232 real changes made)
.
.
end of do-file
.
```

Name	Label	Type	Form
date	DATE	str8	%9s
prc		float	%8.0f
ret		float	%8.0f
permno		float	%8.0f
permco		str4	%9s
vwretd		float	%8.0f
year		int	%8.0f
datenum		int	%8.0f
td		float	%9.0f
dif		float	%9.0f
event_win...		float	%9.0f

From the figure, it is obvious to see the missing values which mean unsuited data are produced after running the orders. Firstly, there are 47620 missing values during the 3 days event window (Day -30 through Day 30). Secondly, the number of missing data in the estimation window (Day -340 through Day -80) before the event day was 23626. Before calculating the predicted return, we got 46653 stock return observations which are sourced from all of the companies in different industries for analyzing the data. Figure 4.1described the result after cleaning the data. It is also obvious for some firms to

show their unavailable for being analysed after defining the event window and estimation window. These companies should be deleted from the analysis to successfully get the analysing result. The figure below is showed in stata after clearly cleaning the dataset.

Figure 4.2 Data Details

```

end of do-file
. do "C:\Users\s6142337\AppData\Local\Temp\STD00000000.tmp"
. set more off
. gen predicted_return=.
(46653 missing values generated)
. sum id, detail

```

		group(permno)			
Percentiles		Smallest			
1%	1	1		Obs	46653
5%	5	1		Sum of wgt.	46653
10%	10	1		Mean	51.03612
25%	26	1		Std. Dev.	29.26332
50%	52		Largest	Variance	856.3419
75%	76	100		Skewness	-.0377126
90%	91	100		Kurtosis	1.783767
95%	96	100			
99%	100	100			

```

. scalar id_N=r(max)

```

According to the running result from stata which showed the cumulative abnormal return is 1.8049084 the short term market showed a positive reaction to the third quantitative easing announcement of September 13th, 2012. For the three days event window, we can get the result as the following:

Table 4.1 Abnormal Return for Announcement of September 13th, 2012

Day	Mean Abnormal Return (%)	Cumulative Abnormal Return	Test (P value)
-1	2.0062725	2.3768923	0.000
0	1.5576882	1.8049084	0.000
1	0.0016574	0.3923231	0.000

According to the table, the cumulative abnormal return for August 14th, 2012 (Day -30) is 2.3768923% for the event day is 1.8049084% and for the October 13th is 0.3923231%. This result is based on all of the companies in the 10 industries. From the result, it can be concluded that most firms' cumulative abnormal return showed a positive reaction to the event announcement. Overall, there are some common findings. Firstly, the positive abnormal return showed that the short term market react positive to the U.S. third quantitative easing announcement. Secondly, the one day prior to the event announcement is statistically significant according to the test result. Thirdly, after the event announcement, the positive effect is still statistically significant at the subsequent days. At last, it also proves from some extent that the market efficiency exists in this announcement period because the market showed the positive reaction quickly after the event announcement as the expectation.

To analyze the market reaction accurately, subsamples of different industries are also created. These data was selected across different firms' return and index return from the Bloomberg. These firms also covered different industries. Therefore, from the result, it can be concluded that many industries in the market react positively to the third

quantitative easing announcement of September 13th, 2012. From these different industries, we can find some characteristics of their reaction. The return for health care industry, telecommunications industry and utilities industry were not obviously affected by the announcement because their mean abnormal return were around 0. However, telecommunications industry showed a negative affect by the announcement. Oil & Gas industry and consumer goods industry changed a little but not very much because these two industries' mean abnormal return did not fluctuate in a specific period. However, the financial industry showed an obvious return change to the quantitative easing announcement. The other industries including industrials, consumer services, technology and Basic materials just fluctuate in a normal range around 2%.

Chapter 5: Conclusion and Recommendations

This study focuses on the impact of the unconventional monetary policy tool on the stock prices in U.S. at the firm level analysis. The quantitative easing announced by U.S. government on September 13th, 2012 aims to lower the short term interest rate. It is worth to know the short term market reaction to the quantitative easing announcement. However, it is necessary to assume that short term market was not contaminated by the other announcement during the 1 year period. Otherwise, we cannot get the clear result from the U.S. quantitative easing announcement. The announcement made on September 13th, 2012 was the beginning of American third quantitative easing, This study used the Bloomberg database as the main source of stock price and the stock index during the period of January 2011 through to the end of 2102.

This study examines two important hypotheses. Firstly, the study examines whether the short term market react to the U.S. quantitative easing which reflect in the stock price. Secondly, this study examines whether the short term market shows a positive reaction to the announcement and whether it is related to the industry sector. By using standard event study methodology, this study clearly examine these hypothesis. The results show that the quantitative easing announcement made by U.S. government brings positive effect on the stock return in the full sample and a few industry subsamples. The mean abnormal return is statistically significant and positive on Day - 30 through Day 30. According to Vega (2006), results will support the preannouncement effect if the stock price of short term market adjusts to the announcement one day prior to the event day. It also proves that the post announcement drift effect exists because the stock price after the event day also reflects in the same direction as the beginning effect.

Fama (1970) concluded that Efficient Market Hypothesis could be proved in the sense that the stock price reacts to the announcement quickly and the mean abnormal return is statistically insignificantly different from zero during those days. As the investors may perceive the quantitative easing announcement made by U.S. government as a signal that more free cash is injected to the private sector and the short term interest rate may be lower, the stock prices in American market are positively affected by this announcement. According to Bondt and Thaler (1985), the adjustment in the mean abnormal return shows the investors' overreaction because the investors will push the stock price up when they perceive the price is too low.

Based on the results of industry subsamples, most industry shows positive react to the announcement. Investors treat quantitative easing as a way to inject more money to the private sector and it can help U.S. economy to recover from the weak situation. Financial industry has the most obvious reaction to the announcement which has a 5.087082% cumulative mean abnormal return. Financial institutions may have the most direct affect by the announcement for buying back mortgage backed securities. Basic materials (2.787804%), consumer services (2.162785%), technology (2.154247%) and industrials (2.382901%) industry have the cumulative mean abnormal return around 2%. The nature of these industries is large capital intensive so they need enough cash to help them change with time and to stimulate the demand. Most of them provide the main materials to the economy and they can be considered as the important source of the production. Therefore, these industries show in the same way. Oil & gas (1.394202%) and consumer goods (1.381887%) are related to people's daily life. These two industries will not show obvious change for they are the necessities in people's life. Therefore,

whether the macroeconomic situation changes will not affect people's demand to these two industries. Health care industry and utilities industry do not show obvious stock return change after or on the event day. They may have the slow reflect to the announcement and they do not have the direct effect from the large cash injection. From the analysis of cumulative mean abnormal return, different industries show its different reaction to the U.S. quantitative easing announcement. The representative industry's cumulative mean abnormal return is showed in Appendix A.

According to the result of the study, it is possible for the third round U. S. quantitative easing to improve the economy. Most industries showed their expectation to the positive effect of this announcement. It also helps investors rebuild their confidence on short term market as market shows positive reaction to the announcement on September 13th, 2012.

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Appendix A: Cumulative Mean Abnormal Return of Representative Industries

Telecommunication	-0.124231%
Utilities	0.3233436%
Health Care	0.4990631%
Consumer Goods	1.381887%
Oil & Gas	1.394202%
Technology	2.154247%
Consumer Services	2.162785%
Industrials	2.382901%
Basic Materials	2.787804%
Financials	5.087082%

Appendix B: Abnormal Return in Event Window

%	Day -30	Day -1	Day 0	Day 1	Day 30
Oil & Gas	1.745554	1.04574	0.1340256	1.430778	1.5366224
Basic Materials	0.5144659	0.7104018	3.296799	2.366617	2.3255658
Consumer Goods	-0.132548	-0.1369477	1.218715	0.3512249	0.3690224
Financials	0.3899149	0.3941308	3.144491	0.2364544	0.2289044
Consumer Services	0.1599342	0.1852653	1.806397	0.2801809	0.2870229
Technology	1.5098839	1.516713	1.851065	0.9518676	1.0248923
Health Care	-1.083923	-0.8879629	0.165034	-2.462772	-2.453902
Telecommunication	-1.709943	-1.872522	0.2965655	0.8494943	0.9678332
Utilities	0.3755129	0.2726365	1.069982	-0.729234	1.0199235
Industrials	3.0284635	3.111625	7.758135	3.4276461	3.4190392