

**THE RESPONSE OF THAI STOCK TO
FOMC ANNOUNCEMENT**



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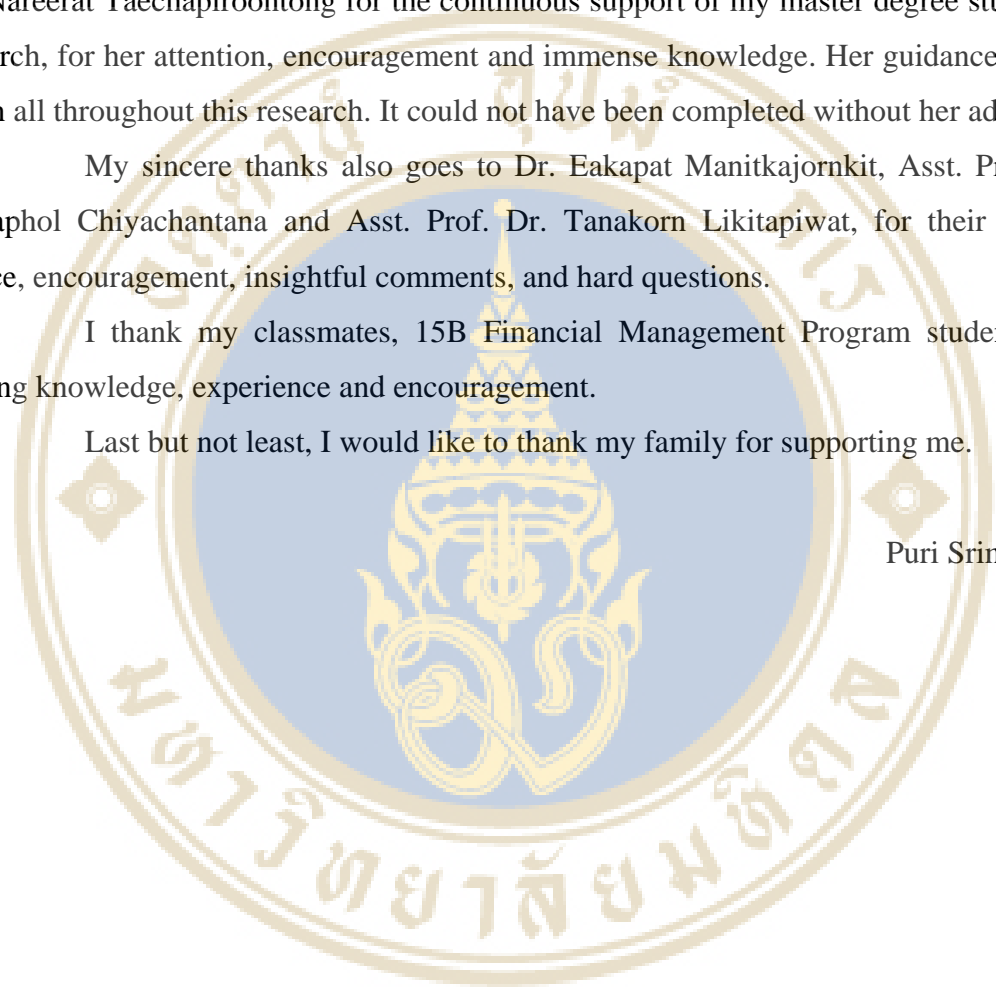
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This paper examines the correlation between the mean returns of SET index and the trading behavior, industry index and market condition in participation in FOMC announcement. The minutes that issues after the decisions made at scheduled meetings of the Federal Open Market Committee (FOMC). Proprietary Trading follow negative news in the pre-event, at the event and post-event while Foreign Investors and Local Individuals response on the positive news in the post-event period only. The industry indices that have high impact on the announcement are the indices that have high correlation to the global consumption such as Technology and Resources. While the industries that correlate to domestic consumption have less impact to the announcement. Lastly, in order to classify market condition into bull and bear market, only the negative news has statistic significant in term of different mean returns on those different market condition.

KEY WORDS: FOMC announcement / SET index return / SET / industry index / investor type

27 pages

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CHAPTER I

INTRODUCTION

In the past few decades, Thai stock market has experienced fluctuates in anticipation of U.S. monetary policy decisions made by FOMC committee at FOMC meetings. The term "monetary policy" refers to the decisions make by U.S. central bank, The Federal Open Market Committee (FOMC, or Committee) to maximum employment, stable prices and to help promote national economic goals.

In term of policy instruments the FOMC has mainly rely on 3 tools which are (1) open market operation (OMOs) is the purchase and sale of securities in the open market by a central bank. Historically, the Federal Reserve has used OMOs to adjust the supply of reserve balances so as to keep the federal funds rate. It is the interest rate at which depository institutions lend reserve balances to other depository institutions overnight--around the target established by the FOMC¹, (2) the discount rate is the interest rate charged to commercial banks and other depository institutions on loans they receive from their regional Federal Reserve Bank's lending facility², (3) and reserve requirements are the amount of funds that a depository institution must hold in reserve against specified deposit liabilities³. The Board of Governors of the Federal Reserve System is responsible for the discount rate and reserve requirements, and the Federal Open Market Committee is responsible for open market operations.

The Federal Open Market Committee (FOMC) consists of twelve members--the seven members of the Board of Governors of the Federal Reserve System; the president of the Federal Reserve Bank of New York; and four of the remaining eleven Reserve Bank presidents, who serve one-year terms on a rotating basis⁴. In generally, the FOMC holds eight regularly scheduled meetings per year. At these meetings the committee determines the appropriate monetary policy based on current situation on economic and financial conditions, assesses the risks of long term economic stability and

¹<http://www.federalreserve.gov/monetarypolicy/openmarket.htm>

²<http://www.federalreserve.gov/monetarypolicy/discountrate.htm>

³<http://www.federalreserve.gov/monetarypolicy/reservereq.htm>

⁴<http://www.federalreserve.gov/monetarypolicy/fomc.htm>

growth. After the meetings, statements were released. On my analysis focuses on the sample from January 1997 through December 2013 which FOMC releases were made at, or within a few minutes of, 2:15 pm. U.S. time thus the time that Thai stock market was closing.



CHAPTER II

LITERATURE REVIEWS

The Pre-FOMC announcement drift by David O. Lucca and Emanuel Moench, July, 2013, Journal of Finance, forthcoming examined average excess return on U.S. equities, other major international equity indices, U.S. Treasury securities and money market futures in anticipation of monetary policy decision made at scheduled meeting of the Federal Open Market Committee (FOMC) since the 1980s. They found that the U.S. and several other major economies have experienced large excess returns in anticipation of such the event. They call this phenomenon as the pre-FOMC announcement drift. They find no such effect in U.S. Treasury securities and money market futures. The Pre-FOMC returns are higher in periods the Treasury yield curve is low implied equity market volatility is high.

They examine financial asset returns based on intraday data which is the 24-hour period from 2 pm on the day before to 2 pm on the day of FOMC announcement thus the returns of financial assets do not contain meeting outcome in order to study anticipation effects of FOMC announcements. They assess the magnitudes of excess stock market returns prior to scheduled FOMC announcements by running the simple dummy-variable regression model:

$$r_{\text{æ}_t} = \beta_0 + \beta_1 I_t (\text{pre-FOMC}) + \beta_{\text{æ}} X_t + \varepsilon_t$$

Where $r_{\text{æ}_t}$ denotes the cum-dividend log excess return on the SPX over the risk-free rate in percentage points. The dummy variable for scheduled pre-FOMC announcement windows equal to one and zero otherwise. X_t refer to additional control variables. β_1 is the mean return on pre-FOMC windows when the constant β_0 is omitted. β_0 is the unconditional mean excess return earned on all time periods outside of the pre-FOMC window. The excess return on the SPX over the 24 hours before the event has on average been 3.89% annualized while only 0.88% on all remaining trading days. Investors

can earn profit by simple strategy that buy and hold the SPX at 2 pm the day before FOMC announcement and sell it fifteen minutes before the announcement. They also run regression to estimate for the five days before and after FOMC announcements and found that only the pre-FOMC dummy is significant. In addition, the cumulative returns on the five days before and on the five days after pre-FOMC news windows are also statistically zero.

They found that the SPX does not have abnormal excess returns before other major macroeconomic announcements. Fixed income assets returns also don't have relationship with pre-FOMC announcement.

A related literature, Global Asset Prices and FOMC Announcements by Joshua Hausman and Jon Wongswan who are Board of Governors of the Federal Reserve System (2006). The paper examines the impact of foreign equity indices, short- and long-term interest rates, and exchange rates in many countries in anticipation of U.S. monetary policy announcement surprises. The sample period includes all FOMC announcements from February 4, 1994 through March 22, 2005. They classified types of monetary policy into 2 types which are The change to the current target federal funds rate (target surprise) and the revision to the path of future monetary policy (path surprise) They found the different respond to different asset classes and different components of the monetary policy surprises. They found that foreign asset price do respond to FOMC announcements.

There is a table in this analysis examines the responses of many international equity indices to FOMC announcements by running the regression of equity index returns including Thai equity index on the 2 surprises:

$$R_{i,t} = \alpha + \beta_1 TS_t + \beta_2 PS_t + \varepsilon_{i,t}$$

Where R is the return of the country. i is equity index on day t, TS is the target surprise, and PS is path surprise II. The result of the regression shows Thai equity index has statistically significant at 5% to both surprises.

Table 2.1 Responses of Thai equity indices to FOMC announcements.

	Target Surprise	Path Surprise II	Adj. R-sq
Thailand	-5.539 (0.044)	-6.201 (0.023)	0.095

Another literature, The Financial Market Effect of FOMC Minutes by Carlo Rosa who is an economist in the Federal Reserve Bank of New York's, examines whether and to what extent that the financial market effect of monetary news released on Federal Open Market Committee (FOMC) meeting days by looking at asset price volatility and trading volume in a narrow window. They found that the volatility of U.S. asset prices and their trading volume have statistically significantly.



CHAPTER III

DATA AND METHODOLOGY

3.1 Data

On my analysis, I would like to examine Thai stock market returns around FOMC minutes. The sample period is from January 1, 1997 to December 31, 2013. Since the FOMC minutes were released at, or within a few minutes of, 2:15 pm. U.S. time. It's the time that Thai stock market was closing. Thus the timing of released minutes doesn't have impact on Thai stock index. I evaluate the SET index returns based on daily basis. The period of studying has been categorized into 3 stages. Event day is date t or pre-FOMC announcement date. Pre-event represents date $t-5$ to date $t-1$ or five days before FOMC announcements while Post-event represents date $t+1$ to date $t+5$ or five days after FOMC announcements



Figure 3.1 Three stages of event period

In order to classify the event situation as positive news or negative news for FOMC announcement, I calculate the SET returns on date t by the following equation;

$$SET\ Index\ return = \frac{\log(\text{close SET index on date } t)}{\log(\text{close SET index on date } t - 1)}$$

If the return of SET index on date t is more than zero, it is positive news event. While if the return of SET index on date t is less than zero, it is negative news event. I also used the same equation to calculate industry indices returns.

I classify the market situation as bull market year or bear market year by calculating the SET return on that year. If the return of SET index on that year is more than zero, it is bull market year. While if the SET index return on that year is less than zero, it is bear market year. Then I assign dummy variable for the market situation, one for bull market and zero for bear market.

For the net trading balance of each type of investor, I calculated by taking daily buy volume minus daily sell volume, then divided this amount with the summation of daily buy volume plus daily sell volume. The equation for the calculation as followed;

$$\text{Imbalance ratio}_{i,t} = \left(\frac{\text{Buy(volume)}_{i,t} - \text{Sell(Volume)}_{i,t}}{\text{Buy(volume)}_{i,t} + \text{Sell(Volume)}_{i,t}} \right)$$

I study further in order to examine the SET returns in anticipation to FOMC announcement without the effect of Thai news by excluding the July 3, 1997 FOMC minutes because it was the day after the Bank of Thailand's decision to float the Thai Baht.

I document data from several sources: www.federalreserve.gov for FOMC announcement schedules. Set Smart for daily SET index, buy & sell volume from each investor types, Industry indices. www.bot.or.th for Thai interest policy announcements by the Monetary Policy Committee under the new Bank of Thailand.

This study composes of 126 FOMC announcement dates. The sample period is from January 1, 1997 to December 31, 2013. Table 3.1 reports summary statistics on pre-FOMC windows used in our empirical analysis. The table provides the number of positive and negative news of FOMC minutes, number of Thai interest policy announcements dates.

Table 3.1 Descriptive Summary

	Negative events	Positive events	Number of Observation
SET Index	66	60	126
SE1 Index exclude decision of floating rate	65	60	125
Bull Market	38	29	67
Bear Market	27	31	58
Investor Types	65	60	125
Industry Indices	65	60	125

This table reports summary number of data in anticipation of FOMC announcement. The sample period is from Jan 1, 1997 to Dec 31, 2013. This paper has classified the events into two categories which are negative and positive. MPC denotes Thai monetary policy announcements of changing interest rate policy. Bull market and Bear Market denotes market situation. Investor Types composed of 4 types which are local institutions, proprietary trading, foreign investors and local individuals. Industry indices are Agro & Food Industry, Consumer Products, Financials, Industrials, Property & Construction, Resources, Services and Technology.

3.2 Methodology

My empirical methodology follows the standard event study literature. I examine Thai stock index returns on daily basis around FOMC announcement that took place around 8 times per year. Then I group them into three event periods, pre-event, event and post-event. I find the average returns on Thai equity in anticipation in those periods. I classify the event as positive or negative using SET index returns at the event day. If SET return at the event day is more than zero then it is positive event. If SET return at the event day is less than zero then it is negative event. I examine the relationship between Thai stock returns and each type of investor and market situation using multiple regressions on those three different periods.

CHAPTER IV

EMPIRICAL RESULTS

4.1 Positive & Negative news of FOMC announcement on SET index returns.

The Pre-FOMC Announcement Drift (2013) shows the evidence that U.S. stock returns have a striking pattern around FOMC announcements over a three-day window from the market open of the day ahead of scheduled FOMC meetings to the day after. For this paper, the empirical study would examine the average response of daily SET index returns to U.S. monetary policy announcements over different return windows. I first document FOMC minutes schedule. Then document daily SET index returns in anticipation of FOMC announcements. I then classified the event to positive or negative news. There are 3 different periods, pre-event, event and post event. I do further research on different market situation whether good year and bad year of investment has impact on the daily SET index returns. I study returns on different type of industry indices and study behavior of different kind of investors. Lastly, I examine the relationship of the returns of SET index and the previous variables using multiple regression in order to investigate the factor that drive SET index returns in anticipation of FOMC minutes.

Table 4.1 presents the average response of daily SET index returns to FOMC announcements over five days before and after. The sample period is from Jan 1, 1997 to Dec 31, 2013. By construction, the returns on different periods around FOMC minutes have been classify into positive news and negative news. As seen in the last column, there were 66 FOMC observations in the negative news and 60 observations in the positive news. FOMC news at $t + i$ ($t - i$) denotes trading session before (after) FOMC minutes. Pre-event denotes for the cumulative returns of SET on the five days before while Post-event denotes for the five days after FOMC news windows. In the sample, I found that the only day that has significant result form the event is date $t-1$ or one day before the FOMC announcement. Starting with the result of negative news, the one day return right before the FOMC minutes has on average been 1.2%, with a t-statistic of -8.56 or significant at

1%. The result is similar to the positive new, the average been 1.2%, with a t-statistic of 6.62 which gives the same significant level. While the returns on the five days before and after FOMC announcement are not significant and also the cumulative returns on the five days before and after the event day.

Table 4.1 SET returns before, at, or after the FOMC minutes.

Event Signal	FOMC news at:	Mean	Min	Max	N.Obs	
Negative	t - 5	-0.002	-1.034	-0.102	0.022	66
	t - 4	-0.003	-1.319	-0.113	0.024	66
	t - 3	0.002	1.181	-0.018	0.042	66
	t - 2	-0.001	-0.394	-0.076	0.100	66
	t - 1	-0.002	-0.784	-0.083	0.034	66
	t (Event)	-0.012 ***	-8.561	-0.061	0.000	66
	t + 1	0.001	0.457	-0.049	0.050	66
	t + 2	0.001	0.753	-0.027	0.030	66
	t + 3	0.000	0.263	-0.034	0.029	66
	t + 4	0.002	1.183	-0.030	0.028	66
	t + 5	0.000	-0.082	-0.034	0.033	66
Positive	t - 5	-0.001	-0.665	-0.058	0.048	60
	t - 4	0.004	0.879	-0.026	0.035	60
	t - 3	0.002	0.904	-0.029	0.033	60
	t - 2	0.000	0.201	-0.062	0.067	60
	t - 1	0.000	-0.086	-0.039	0.043	60
	t (Event)	0.012 ***	6.629	0.000	0.071	60
	t + 1	0.003	1.468	-0.035	0.055	60
	t + 2	0.002	0.579	-0.034	0.101	60
	t + 3	-0.001	-0.260	-0.059	0.042	60
	t + 4	-0.002	-0.682	-0.080	0.043	60
	t + 5	0.001	0.493	-0.102	0.039	60
Negative	Pre-event	-0.006	1.056	-0.077	0.102	66
	Event	-0.012 ***	-8.561	-0.061	0.000	66
	Post-event	0.004	-1.129	-0.220	0.071	66
Positive	Pre-event	0.004	0.729	-0.151	0.108	60
	Event	0.012 ***	6.629	0.000	0.071	60
	Post-event	0.005	0.928	-0.099	0.121	60

This table reports results statistics on SET return on days prior, of, and after FOMC minutes. The sample period is from Jan 1, 1997 to Dec 31, 2013. FOMC news at $t + i$ ($t - i$) denotes trading session before (after) FOMC minutes. Pre-event denotes for the cumulative returns of SET on the five days before while Post-event denotes for the five days after FOMC news windows. *** significant at 1%, ** significant at 5%, * significant at 10%.

The Result shows that the FOMC announcements have impact on SET index returns at the date of event on positive events and negative events. The average daily SET index returns have been less than 0.4% on five days before and after FOMC news

windows. The result indicates that equity market investors have at times been surprised by the FOMC decision¹ (Bernanke and Kuttner (2005)).

Compare the return on the event day (one day before the FOMC announcements) with cumulative returns on pre-event (five days before FOMC announcements) and post-event (five days after FOMC announcements). The average return on the event day is higher than the cumulative returns on FOMC windows on positive news and vice versa. Moreover the returns on each day on pre-event and post-event are only added up to a few basis points. This is consistent with the literature, S&P500 returns before, at, or after the FOMC news. The result shows that S&P500 returns on only the pre-FOMC dummy is significant.

4.2 FOMC announcements impact on SET index returns exclude the incident on the July 3, 1997 since it was the day after the Bank of Thailand had made a decision to float the Thai Baht.

One may argue that the result from the previous table is statistically significantly dependent on the FOMC announcements. According to the Global Asset Prices and FOMC Announcements by Joshua Hausman and Jon Wongswan (2006), they examine the impact of Thai stock index returns in anticipation of U.S. monetary policy announcement surprises. They use only observations that influenced by FOMC announcement exclude the incident that coincided with an important event of that country. For Thailand, they exclude the July 2, 1997 FOMC meeting because it coincided with the floating Thai Baht policy made by the Bank of Thailand.

In my paper, I would apply the same method. I study further in order to examine the daily SET returns in anticipation to FOMC announcement without the effect of Thai news by excluding the July 3, 1997 FOMC minutes because it was the day after the Bank of Thailand had made a decision to float the Thai Baht. Then compute return by using the same method of index return in table 3.1.

¹The Journal of Finance, What Explains the Stock Market's Reaction to Federal Reserve Policy?, BEN S. BERNANKE^{1,2} and KENNETH N. KUTTNER (2005)
<http://onlinelibrary.wiley.com/doi/10.1111/j.1540-6261.2005.00760.x/full>.

Table 4.2 SET index returns exclude the event that the Bank of Thailand's decision to float the Thai Baht

Event Signal	FOMC news at:	Mean	t	Min	Max	N.Obs
Negative	Pre-event	-0.003	-0.664	-0.172	0.071	65
	Event	-0.011 ***	-9.516	-0.041	0.000	65
	Post-event	0.003	0.893	-0.077	0.102	65
Positive	Pre-event	0.005	0.928	-0.099	0.121	60
	Event	0.012 ***	6.629	0.000	0.071	60
	Post-event	0.004	0.729	-0.151	0.108	60

This table reports results statistics on SET return on days prior, of, and after FOMC minutes exclude the July 3, 1997 since it was the date after the Bank of Thailand had made decision to float the Thai Baht. *** significant at 1%, ** significant at 5%, * significant at 10%.

Table 4.2 shows statistic results of SET Index returns of participation in FOMC announcement exclude the day that Bank of Thailand floated the Thai Baht. The result is slightly different to the table 4.1 with higher statistically significance level on the event day of negative news. I would use this data for the rest of this analysis.

4.3 The response of SET index returns in anticipation of FOMC announcement in good year and bad year of investment.

For a further concern about the sensitivity of these results, I consider the market condition as a potential issue. Table 4.3 provides a potential explanation of the sensitivity of SET returns on market condition. In table 4.3, I classify the market situation into good year and bad year using the SET index return on that year which calculated by the following equation;

$$\text{Market Situation} = \left(\frac{\text{SET index at the end of year}_t - \text{SET index at the end of year}_{t-1}}{\text{SET index at the end of year}_{t-1}} \right)$$

If the return of SET index on that year is more than zero, it is good market condition year or bull market while if the SET returns on that year is less than zero, I classify it as bad market condition year or bear market. I assign dummy variable for the market situation, one for bull market and zero for bear market. Then compute return by using the same method of index return in table 3.1.

Table 4.3 SET index returns which has been classified to bull market or bear market.

Market Situation	Event Signal	FOMC news at:	Mean	t	Min	Max	N.Obs
Bull Market	Negative	Pre-event	-0.007	-1.445	-0.087	0.052	38
		Event	-0.008 ***	-6.998	-0.028	0.000	38
		Post-event	0.000	-0.035	-0.077	0.059	38
Bear Market	Negative	Pre-event	0.003	0.307	-0.172	0.071	27
		Event	-0.015 ***	-7.189	-0.041	-0.001	27
		Post-event	0.009	1.358	-0.028	0.102	27
Diff			0.006 ***	-2.800			
Bull Market	Positive	Pre-event	0.000	0.060	-0.035	0.079	29
		Event	0.011 ***	4.719	0.001	0.054	29
		Post-event	-0.009 *	-1.811	-0.067	0.055	29
Bear Market	Positive	Pre-event	0.009	1.011	-0.099	0.121	31
		Event	0.013 ***	4.683	0.000	0.071	31
		Post-event	0.016 *	1.857	-0.151	0.108	31
Diff			0.002	0.590			

This table reports results statistics on SET returns on days prior, of, and after FOMC minutes. Market situation "Bear Market" denotes annual SET return less than zero while "Bull Market" denotes annual SET return more than zero. The sample period is from Jan 1, 1997 to Dec 31, 2013. *** significant at 1%, ** significant at 5%, * significant at 10%.

The mean returns on table 4.3 are statistic significant only on the date of event or one day right before the FOMC announcement on both market conditions. While the cumulative mean returns of five days before and five days after FOMC announcements are not statistic significant. Compare the result in table 4.3 with the result in table 4.1. The results shows when the time of negative news impact the market, the mean returns on good year or bull market is higher than the mean returns on bad year condition or bear market. This is consistent with a paper, Investor sentiment and the stock market's reaction to monetary policy. The result in the paper shows the effect of monetary news on sentiment depends on market conditions (bull versus bear market).

On the contrary, the mean return on positive news in the bear market gives higher returns than in bull market. In order to explain the result, I examine the difference of the mean returns on those two market conditions that has been shown on the row of Diff. The difference of the mean returns on negatives news in two market conditions is 0.6%. It's statistic significant at 1% level. But the difference of mean returns on positive news is only 0.2%. The results imply that returns are more volatile to market condition when it's negative news but not statistic insignificant difference when it is positive news

4.4 The reaction of different investor types in participation in FOMC announcements.

In order to examine how different each type of investors interpret and react to the news, I investigate the market participant reaction in anticipation in FOMC announcements. The investor sentiment on the same event might be distracted based on their level of confidence about the precision of private information and biased self-attribution². At this section, I would examine the impact of FOMC announcement on different types of investor who are local institutions, proprietary trading, foreign investors and local individuals. The FOMC announcement would be classify into positive and negative news the same as in the previous table. To estimate trading behavior, I calculate trading balance of each type of investor. The sample period is from Jan 1, 1997 to Dec 31, 2013.



² Investor Psychology and Security Market Under- and Overreactions by Kent Daniel, David Hirshleifer and Avanidhar Subrahmanyam (2002)

Table 4.4 Investor Types before, at, or after the FOMC minutes.

Local Institutions						
Event Signal	FOMC news at:	Mean	t	Min	Max	N.Obs
Negative	Pre-event	0.078	0.698	-2.256	2.210	65
	Event	-0.001	-0.037	-0.416	0.852	65
	Post-event	-0.019	-0.152	-2.639	3.758	65
Positive	Pre-event	-0.049	-0.312	-3.060	2.838	60
	Event	0.013	0.352	-0.550	0.871	60
	Post-event	-0.033	-0.262	-2.450	1.786	60
Proprietary Trading						
Event Signal	FOMC news at:	Mean	t	Min	Max	N.Obs
Negative	Pre-event	-0.110 **	-2.007	-2.443	0.830	65
	Event	-0.044 **	-1.922	-0.899	0.434	65
	Post-event	-0.075 **	-1.724	-1.090	1.000	65
Positive	Pre-event	-0.060	-1.261	-0.967	0.785	60
	Event	-0.003	-0.135	-0.508	0.428	60
	Post-event	-0.006	-0.089	-1.557	2.376	60
Foreign Investors						
Event Signal	FOMC news at:	Mean	t	Min	Max	N.Obs
Negative	Pre-event	-0.051	-0.832	-1.145	1.385	65
	Event	0.019	1.239	-0.313	0.287	65
	Post-event	0.053	0.804	-1.275	1.843	65
Positive	Pre-event	-0.060	-0.773	-1.847	1.988	60
	Event	-0.029	-1.325	-0.597	0.321	60
	Post-event	-0.154 **	-2.003	-1.436	1.218	60
Local Individuals						
Event Signal	FOMC news at:	Mean	t	Min	Max	N.Obs
Negative	Pre-event	0.029	0.999	-0.876	0.488	65
	Event	0.012	1.155	-0.131	0.459	65
	Post-event	-0.013	-0.450	-0.696	0.457	65
Positive	Pre-event	0.004	0.076	-1.796	0.816	60
	Event	0.006	0.497	-0.353	0.222	60
	Post-event	0.097 **	2.362	-0.586	1.139	60

This table reports results statistics on each investor type on days prior, of, and after FOMC minutes. There are 4 types of investor type which composed of local institutions, proprietary trading, foreign investors and local individuals. The sample period is from Jan 1, 1997 to Dec 31, 2013. *** significant at 1%, ** significant at 5%, * significant at 10%.

The results show that the only type of investor that has statistic insignificant around FOMC announcements is local institutions. While other types of investors has statistic significant on FOMC window.

The results in negative news show that the only investors who response to the announcement is proprietary trading. The cumulative mean net trading volume of this type of investors is significant on the negative news for the five days before, at the event and the five days after the announcements. The results indicate that the announcement influences proprietary trading to send the selling order in to the market in event of

negative news with significant level of 5%. The highest mean net trading volume is on the five day before the event.

By looking at the positive news, foreign investors and local individuals response statistic significant to the announcements on the five days after the event. They react to the news in the opposite side. On the other word, in the periods of five days after the announcement the foreign investors are seller and the local individuals are buyer in the market at 5% significant level.

For the explanation of the results above, I would refer to a recent research: Investor type trading behavior and trade performance: Evidence from the Thai stock market³. In this paper, they found that foreign investors follow a positive feedback, momentum strategy and are good short-term market timers. They have a macro (marketing timing) but not a micro (security selection) information advantage relative to local investors. Based on the results in this section, it is imply that after the announcements in the event of positive news foreign investors are seller in the market because the price of the assets already reflected the good news so that they sell the assets to lock in short term returns without considering the performance or fundamental of the stocks. The other possible explanation, since foreign investors are good short term market timers, they have a high restricted with the level of returns that they set since the beginning of the investment. For the nature of local individual investors who has high micro (security selection) information advantage, they are the investors who found that the time the foreign investor sell those stocks, the price of the stocks become attractive after consideration that the announcement doesn't change the fundamental factor of those companies. They found that it is a good timing to collect a good fundamental stock with low price. While proprietary react to only negative news because they are type of investors who has high liquidity in short term period and the negative news has larger impact on the market thus consider as a good time to trade in order to make a short-term profit.

³ Investor type trading behavior and trade performance: Evidence from the Thai stock market by SuwipaPhansatana, John G. Powellb, SuparatanaTanthanongsakkunc, SirimonTreepongkarunad

4.5 FOMC announcements impact on each industry indices.

In this section, I attempt to investigate the daily SET index returns on each industry index. There are 8 industry in the Stock Exchange of Thailand composes of Agro & Food Industry, Consumer Products, Financials, Industrials, Property & Construction, Resources, Services and Technology. From my assumption, the industry that performance depends on global consumption would be more relate to the FOMC announcement. On the contrary, the returns of the industries that composed of companies that performance depends on domestic consumption should not have equally impact by the announcement. To examine the assumption, I find the daily returns of each industry index using the same method as finding the SET index return. The sample period is from Jan 1, 1997 to Dec 31, 2013.



Table 4.5 Industry indices before, at, or after the FOMC minutes.

Agro & Food Industry						
Event Signal	FOMC news at:	Mean	t	Min	Max	N.Obs
Negative	Pre-event	-0.002	-0.631	-0.082	0.058	65
	Event	-0.005 ***	-3.659	-0.033	0.013	65
	Post-event	-0.002	-0.533	-0.039	0.052	65
Positive	Pre-event	-0.002	-0.374	-0.082	0.081	60
	Event	0.007 ***	2.737	-0.024	0.055	60
	Post-event	-0.002	-0.370	-0.049	0.080	60
Consumer Products						
Event Signal	FOMC news at:	Mean	t	Min	Max	N.Obs
Negative	Pre-event	0.001	0.662	-0.034	0.036	65
	Event	-0.002 **	-2.086	-0.014	0.008	65
	Post-event	0.001	0.260	-0.024	0.054	65
Positive	Pre-event	0.001	0.342	-0.034	0.050	60
	Event	0.005 ***	3.488	-0.022	-0.023	60
	Post-event	0.001	0.392	-0.078	0.042	60
Financials						
Event Signal	FOMC news at:	Mean	t	Min	Max	N.Obs
Negative	Pre-event	-0.001	-0.150	-0.058	0.052	65
	Event	-0.014 ***	-6.406	-0.055	0.006	65
	Post-event	0.002	0.458	-0.063	0.057	65
Positive	Pre-event	0.001	0.188	-0.121	0.104	60
	Event	0.015 ***	4.902	-0.023	0.072	60
	Post-event	0.004	0.732	-0.059	0.074	60
Industrials						
Event Signal	FOMC news at:	Mean	t	Min	Max	N.Obs
Negative	Pre-event	0.000	0.028	-0.062	0.119	65
	Event	-0.010 ***	-4.185	-0.042	0.029	65
	Post-event	0.001	0.110	-0.132	0.076	65
Positive	Pre-event	0.011	1.246	-0.145	0.178	60
	Event	0.013 ***	4.027	-0.021	0.090	60
	Post-event	-0.003	-0.451	-0.071	0.057	60

Table 4.5 Industry indices before, at, or after the FOMC minutes (Cont').

Property & Construction						
Event Signal	FOMC news at:	Mean	t	Min	Max	N.Obs
Negative	Pre-event	0.005	1.019	-0.061	0.111	65
	Event	-0.011 ***	-6.174	-0.051	0.006	65
	Post-event	-0.002	-0.478	-0.055	0.061	65
Positive	Pre-event	0.005	0.684	-0.107	0.113	60
	Event	0.013 ***	4.212	-0.020	0.077	60
	Post-event	0.003	0.631	-0.056	0.092	60
Resources						
Event Signal	FOMC news at:	Mean	t	Min	Max	N.Obs
Negative	Pre-event	-0.001	-0.226	-0.051	0.060	65
	Event	-0.011 ***	-6.606	-0.035	0.011	65
	Post-event	-0.001	-0.197	-0.083	0.068	65
Positive	Pre-event	0.004	0.510	-0.105	0.159	60
	Event	0.016 ***	4.995	-0.029	0.073	60
	Post-event	0.000	0.072	-0.059	-0.105	60
Services						
Event Signal	FOMC news at:	Mean	t	Min	Max	N.Obs
Negative	Pre-event	0.001	0.148	-0.047	0.083	65
	Event	-0.007 ***	-4.949	-0.041	0.011	65
	Post-event	-0.003	-0.686	-0.050	0.065	65
Positive	Pre-event	0.003	0.424	-0.098	0.125	60
	Event	0.011 ***	4.250	-0.010	0.070	60
	Post-event	0.002	0.402	-0.035	0.062	60
Technology						
Event Signal	FOMC news at:	Mean	t	Min	Max	N.Obs
Negative	Pre-event	-0.009	2.199	-0.063	0.068	65
	Event	-0.013 ***	-4.997	-0.075	0.012	65
	Post-event	-0.005	-0.958	-0.072	0.052	65
Positive	Pre-event	0.004	0.608	-0.064	0.083	60
	Event	0.013 ***	4.220	-0.017	0.064	60
	Post-event	0.000	0.060	-0.039	0.052	60

This table reports results statistics on industry indices of the market on days prior, of, and after FOMC minutes. The sample period is from Jan 1, 1997 to Dec 31, 2013. There are 8 industry indices composed of Agro & Food Industry, Consumer Products, Financials, Industrials, Property & Construction, Resources, Services and Technology . *** significant at 1%, ** significant at 5%, * significant at 10%.

The result in table 4.5 shows consistent results with the table 4.1 and table 4.2 that only the mean returns at the event has statistic significant with the FOMC announcements. In this table almost all on the industry indices has the same result. All of the mean returns have 1% significant level at the event date on both positive and negative

event but in different percentage. Only the consumption index that has 5% significant level at the event date on the negative event.

Table 4.6 Summary of table 4.5 on negative news

Negative news	Mean	t	Min	Max	N.Obs
Financials	-0.014 ***	-6.406	-0.055	0.006	65
Technology	-0.013 ***	-4.997	-0.075	0.012	65
Property & Construction	-0.011 ***	-6.174	-0.051	0.006	65
Resources	-0.011 ***	-6.606	-0.035	0.011	65
Industrials	-0.010 ***	-4.185	-0.042	0.029	65
Services	-0.007 ***	-4.949	-0.041	0.011	65
Agro & Food Industry	-0.005 ***	-3.659	-0.033	0.013	65
Consumer Products	-0.002 **	-2.086	-0.014	0.008	65

This table compares the mean returns of each industry indices at the event day. The Financial index has the lowest mean returns at -1.4%. Follow by Technology index at -1.3% mean returns. The next index is Property & Construction which has the same mean returns as Resources at -1.1%. Industrials is the next index with mean returns at -1.0%. The last three indices are Services which has mean returns at -0.7%, Agro & Food Industry at -0.5% and Consumer Products at -0.2%. All the indices are statistic significant at 1% exclude Consumer Products is statistic significant at 5% level.

Table 4.7 Summary of table 4.5 on positive news.

Positive news	Mean	t	Min	Max	N.Obs
Resources	0.016 ***	4.995	-0.029	0.073	60
Financials	0.015 ***	4.902	-0.023	0.072	60
Industrials	0.013 ***	4.027	-0.021	0.090	60
Property & Construction	0.013 ***	4.212	-0.020	0.077	60
Technology	0.013 ***	4.220	-0.017	0.064	60
Services	0.011 ***	4.250	-0.010	0.070	60
Agro & Food Industry	0.007 ***	2.737	-0.024	0.055	60
Consumer Products	0.005 ***	3.488	-0.022	0.023	60

This table compares the mean returns of each industry indices at the event day. The Resources index has the highest mean returns at 1.6%. Follow by Financials at 1.5% mean returns. The next industry are Industrials, Property & Construction and Technology have the same mean returns at -1.3%. The last three indices are Services with mean returns at 1.1%., Agro & Food Industry at 0.7% and Consumer Products at 0.5%. All the indices are statistic significant at 1%

As seen in the table 4.6 and 4.7, the industry index displays a strong correlation between the stock that has economic link with the global consumption and international news. Start with negative news, the Financials and technology have the lowest mean returns. While the Agro & Food Industry and Consumer Products index which price of the stocks are derived from domestic consumption get least impact from the FOMC announcements. In the anticipation in positive news, the resources index which composes of Energy & Utilities and Mining sector has the higher mean returns in participants in the announcements because the performance of the stocks in this industry has direct impact the global consumption and economic outlook. While the Agro & Food Industry and Consumer Products index get the least impact the same as in negative news.

From the result above, investors can create strategy to invest at the time of participation in FOMC announcements. For example, if U.S. central bank imply to purchases government securities or other securities from the market in order to lower interest rates and increase the money supply to promote the economic growth⁴,c then it's a good timing to invest in the industry that link to the global economic growth. On the other hand, if the central bank implies to reduce to purchase government securities to higher the interest rates and decrease the money supply to promote the economic growth, then it's time to switch from the industry that has economic link to global economy to domestic consumption. This strategy is helpful to the mutual fund and provident fund especially the equity fund. By the S.E.C. regulations stated that the equity fund must invest not less than 65% in equity any time. The fund manager can't be able to invest less than 65% in equity even they forecast bad market condition in equity. They can switch the stocks in the portfolio into the stock that has lower effect in participation in FOMC announcements in short term to enhance the returns of the fund comparing to benchmark.

4.6 Correlation between SET index returns and the trading of investors and market conditions in anticipation in FOMC announcements.

From all of the above results, I find the correlation between SET index returns and the trading of investors and market conditions in anticipation in FOMC announcements by estimating the FOMC announcements regression model at the event

⁴<http://www.investopedia.com/terms/q/quantitative-easing.asp>

day (1 day before) when FOMC issue a minutes of their meetings. First I document SET returns, net trading of each type of investors and assign market condition to dummy variables, one for bull market and zero for bear market. The sample period is from Jan 1, 1997 to Dec 31, 2013.

Table 4.8 Regression table on negative news: Daily SET returns

statistics of the model				
Pr > F	0.016			
F Value	3.050			
Adj R-Square	0.138			
Dependent variables:	Parameter Estimate	Standard Error	t Value	N. Obs.
Intercept	0.000 ***	0.002	-7.890	
Net_localIns	-0.002	0.005	-0.200	65
Net_PropTrade	0.003	0.008	-0.630	65
Net_ForInv	-0.018 **	0.014	-2.190	65
Net_LocalInv	-0.005 *	0.021	-1.900	65
MKT_sign	0.007 ***	0.002	2.640	65
This table shows relationship between daily SET returns (1) for the (pre-) FOMC announcements (date = t) regression. The dependent variables are: net local institutions (2) , net proprietary trading on date t (3), net foreign investors on date t (4), net local individuals on date t (5), market situation dummy variable (6) which is equal to zero when the returns of SET on that year was less than zero and one otherwise. *** significant at 1%, ** significant at 5%, * significant at 10%.				

Table 4.8 summarizes results from these regressions on negative news for I found that foreign investors are in selling side of the market at 5% significant level as well local individuals at 10% significant level. Foreign investors are likely to have more impact on SET index returns than local individuals. The market situation dummy is significant at 1% level means that if the event happens in the bull market which I assign as number one in the regression model, the mean returns of SET index will be 0.7% more than in bear market while hold other variable constant. Other types of investors are statistic insignificant from this model.

Table 4.9 Regression table on positive news: Daily SET returns

statistics of the model				
Pr > F	0.274			
F Value	1.310			
Adj R-Square	0.026			
Dependent variables:	Parameter Estimate	Standard Error	t Value	Obs.
Intercept	0.011 ***	0.003	4.200	
Net_localIns	-0.009	0.007	-1.260	60
Net_PropTrade	-0.002	0.011	-0.200	60
Net_ForInv	-0.006	0.026	-0.240	60
Net_LocalInv	0.039	0.040	0.970	60
MKT_sign	0.000	0.004	-0.030	60
announcements (date = t) regression. The dependent variables are: net local institutions (2) , net proprietary trading on date t (3), net foreign investors on date t (4), net local individuals on date t (5), market situation dummy variable (6) which is equal to zero when the returns of SET on that year was less than zero and one otherwise. *** significant at 1%, ** significant at 5%, * significant at 10%.				

Table 4.9 summarizes results from the regressions on positive news. The result shows that in the participation in positive news, none of the variables are statistic significant to the SET index returns.

The results in table 4.8 and 4.9 are imply that investors in stock market are seem to have pattern behavior of investment in stock in anticipation in negative news more than in positive news. One other possible way to rationalize the timing of trading behavior of each types of investors is that in the event of negative news hit the stock market, investors are attempt to eliminate the risk of invest in stock market by selling risky assets and wait until the market situations are more certainty.

From the regression result, I derive a simple regression model:

$$r_{\alpha t} = \beta_0 + \beta_1 (\text{MKT Con.}) + \beta_{\alpha} X_t + \varepsilon_t$$

Where $r_{\alpha t}$ denotes the cum-dividend return on the SET index over the FOMC announcements. β_0 is the unconditional mean return gained at the event of FOMC announcements. β_1 is the mean return on market condition when the constant β_0 is

omitted. The dummy variables for market condition equal to one in case of bull market and zero in bear market. X_t refer to additional control variables such as investor types.



CHAPTER V

OTHER EXPLANATIONS

In this section I consider other alternative explanations about the abnormal returns at the event date of FOMC announcement. The reasons behind are that the time of the announcement hit the market, different type of investors have different limit access and different confidence level to the information. They trend to react differently in the same events. Moreover investors are different objectives in terms of investment. The long term investor are trend to buy assets that are considered undervalue by fundamental analysis while short term investors are trend to eliminate the risk of uncertainty and take profit before the assets impact from the announcements.

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