HOW LONG DOES STOCK PRICE REACT TO EARNING ANNOUCMENT?

KACHAIN PUTTIWARAWUT

THEMATIC PAPER SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF MANAGEMENT
COLLEGE OF MANAGEMENT
MAHIDOL UNIVERSITY
2014

Thematic paper
entitled

HOW LONG DOES STOCK PRICE REACT TO EARNING ANNOUCMENT?

was submitted to the College of the Management, Mahidol University
for the degree of Master of Management
on
April 23, 2014

……..…
Mr. Kachain Puttiwarawut
Candidate

……..	……...…
Nareerat Taechapiroontong, Ph.D. Advisor	Tanakorn Likitapiwat, Ph.D. Committee member
……..	……...…
Asst. Prof. Annop Tanlamai, Ph.D. Dean College of Management Mahidol University	Asst. Prof. Chiraphol Chiyachanta Ph.D. Committee member

ACKNOWLEDGEMENT

To complete this research, I would like to pay sincere gratitude to my advisor, Dr. Nareerat Taechapiroontong, Asst. Prof. Dr. Chiraphol Chiyachantana, Dr. Tanakorn Likitapiwat and Dr. Eakapat Manitkajornkit who gave me a lot of valuable advice and time. I would like to thank them kindly attention, encouragement and patience whilst instructing me. This research could not have been completed without them.

In addition, I would like to thank all fifteen respondents for their excellent information and willingness to help me to conduct this research.

I also would like to thank all of my friends; part-time students in 15B financial management program in sharing their knowledge, information, encouragement and willingness to help me to conduct this research. I really appreciate their help and friendship.

Finally, I would like to pay sincere gratitude to my family, who encourage and support me graciously.

Kachain Puttiwarawut

HOW LONG DOES STOCK PRICE REACT TO EARNING ANNOUCMENT?

KACHAIN PUTTIWARAWUT 5549153

M.M. (FINANCIAL MANAGEMENT)

THEMATIC PAPER ADVISOR COMMITTEE: NAREERAT TAECHAPIROONTONG, Ph.D., CHIRAPHOL CHIYACHANTANA, Ph.D., TANAKORN LIKITAPIWAT, Ph.D., EAKAPAT MANITKAJORNKIT, Ph.D.,

ABSTRACT

This study investigates the number of average day that stock price reacts to earning announcement for the period 1997–2012 data from the SETSMART database. First in this paper, a thorough investigation is done with the help of 'event study methodology' to analyze the average number of day that reach the average of maximum cumulative abnormal return and average of minimum cumulative abnormal return after the earning announcement. Second, examines the trend of rate of return of each stock during pre-event period affect to the number of day to reach the average maximum CAR or average minimum CAR of each earning announcement. Third, examines the number of day to reach the average maximum CAR and average minimum CAR of each earning announcement to each industry in SET, which category into 8 industries. Forth, examines that the earning announcement may effect to the investment behavior of each investor types, or not. After the studying, I find that the bad news event reach the minimum CAR in the average faster than the good news event reach the average of maximum CAR. I expected that the study will not only help in developing investors' awareness regarding stock price sensitivity towards earning announcement, but also help to design their investment decision to protect their interest. However, only earning announcement is the limitation for study as well. So The investor still need to concern and analyst based on other news or information, which will be helped to get more efficiency investment planning.

KEY WORDS: Earning announcement / stock price / EPS / cash dividend / SET

30 pages

CONTENTS

CONTENTS (cont.)

LIST OF TABLES

LIST OF FIGURES

CHAPTER I
INTRODUCTION

Stock market is the biggest funding source for every company, while it is also provide the highest return to the investor too. Anyway, the high return always together with high risk too. As we know to earn the highest return you have to buy when the price is low as much as possible, and sell it when the price is high as much as possible. The movement of the price is depended on the offer and order price from the investor in the stock market. So if you understand the investor behavior you may predict the movement of price in the stock market. There are many theories that can explain about the motivation's factor affect to the investor behavior, which one of the major motivation is "News". There are also many kinds of news that can affect to the investor behavior i.e. domestic - global economy, political, business, government policy, etc. One of the major news that mostly affect to the investor behavior, is its own company news i.e. dividend announcement, merging, event, changing in management or policy, earning announcement, and etc.

We already know that what the motivating investor behavior are which lead to next questions. However, we still need to know what direction of price is going. They are many researchers that support that we have to know what type of news that leads to positive trend or negative trend, which are "good news" and "bad news"

Even we know the price is going to increase or decrease, but we still do not know when it is going to move? So to buy low and sell high many you need to know the time too which lead to many research on investment timing or event study. For finding the pre-post event to help the investor predict the right time to buy and sell.

Therefore, based on event study method, we have to focus on the specific event to receive the efficient result. Since the SET (stock market exchange of Thailand) was open in 1991, and the database has recorded since 1997 which its age is

less than 2 decades. So the data sample will be limited to efficient study. I have chosen the earning announcement event, which is the one major news that affect to the investor behavior and it also has enough event sample too. I also expect that the result of study would be the one of measurement to help the investor plan their investment plans.

CHAPTER II
LITERATURE REVIEW

There are many researches on the study event period. The event study methodology to conduct this thesis. It is a standard approach established by Fama et al. (1969). Most of them are study on stock return after the specific news items support the idea of underreaction, which is defined as average post-event abnormal returns of the same sign as event date returns (abnormal or raw). The main examples include signaling events and scheduled news releases. Signaling events include dividend initiations and omissions, which are covered by Michaely et al. (1995). They find evidence of underreaction. Stock splits could also fall in this category, examined recently by Ikenberry and Ramnath (2002), with similar conclusions. Scheduled news releases include earnings announcements. The impact of earnings announcements on stock prices in US market has been reviewed in many studies. Ball and Brown (1968) and Beaver (1968) were the first to study stock prices around earnings announcements. Their studies present the evidence that the information contained in quarterly earnings do not fully reflect stock prices when they are announced. There are three methods commonly used (Benos & Rockinger, 2000). The first method is to use the sign of actual EPS to determine good news and bad news. With this method, positive earnings per share will be qualified as good news and negative earning will be qualified as bad news. The second method is to use the increase of current earnings to those from a year ago, where positive (negative) EPS changes are labeled good (bad) news. Third, a relevant measure is the analyst‟s forecast error, which equals the reported EPS minus the analysts‟ consensus forecast of that year's EPS, good (bad) news occur when analysts‟ expectations are (not) met. The study by Shenoy & Chauvin, 2000 has shown that insiders may manipulate the timing of good news and bad news for their interest (Shenoy & Chauvin, 2000) Chenxi Wang and Gerky King Phet (2012) construct the third measure and based on earning surprise to sorted companies into

three categories: the positive surprise (good news), no surprise and the negative surprise (bad news). Their study shows that stock behavior does respond gradually to the earnings announcement and the effect of positive earnings surprise on stock price lasts longer than that of negative earnings surprise.

Based on the literature review to find out the number of day to reach peak or bottom of average CAR after the earning announcement, is still never done in stock market exchange of Thailand.

CHAPTER III
METHODOLOGY

3.1 Daily Stock Return

I collect daily stock in SET data from SETSMART database during 1997 – 2012. I filter data by keeping only common stock of SET only. However, the table still contains holiday data, i.e. Saturday, Sunday or public holiday. There is also has non common stock list in the table, so I have to cut those data out. I also calculate the daily rate of return and abnormal return for each common stock, and add day trade, which is the counting date since the SET was opened. The calculation of common stock rate of return as the following:

$$R_{it} = \frac{(P_{it} - P_{it-1})}{P_{it-1}} \times 100$$

Where R_{it} is the rate of return of stock i on day t

P_{it} is the price of stock i on day t

P_{it-1} is the price of stock i on day t-1

3.2 Earning announcement

The earning announcement data also collect from SETSMART database during 1997-2012. I focus only on earning announcement on the end of each quarter. The result of earning announcement will reflect in earning per shares (EPS) of each common stock. However, the earning announcement table does not have EPS on each date or event date. I merge earning announcement table with EPS from daily stock return table base on matching date trade from both table. Anyway, there are some announcement date is on holiday i.e. 31 December. So I have to adjust EPS to be as of the closet date trade. Due to the earning announcement is divided into 2 types of

events which are quarterly and annually, so I have to classify data into 2 tables, quarterly and annually table. Base on my objective, to find the how many days that stock abnormal return will reach "peak" (the maximum CAR for each event) or "bottom" (the minimum CAR for each event) after earning announcement, so I have to classify event into "good event" and "bad event" for finding "peak" and "bottom" respectively. Based on DEGEORGE et al. [1999], "Good news" and "Bad news" were classified by comparing EPS at time T with T-1. For quarterly data, I compare EPS at T with EPS at T-4 to cut off the seasonal effect. If EPS_T is greater than $EPS_{T-1,}$ the event will be classified as "good news". So if EPS_T is less than $EPS_{T-1,}$ the event will be classified as "bad news". Each table will have "Event ID" as the key indicator for filler. Therefore, there will be 4 earing announcement event tables, (1) quarterly-good event, (2) quarterly-bad event, (3) annually-good event, and (4) annually-bad event.

Table 3.1: Number of event sample

The table will contain with (1) type of earning announcement which are annually, and quarterly, (2) type of news which are good or bad news, (3) the number of sample event, (4) total event period / amount of days in the studying period

Type of announcement	Type of news	No. of sample Event	Total Event Period / amount of days
Annually	Good	616	-40 – 100 / 141 days
	Bad	506	-40 – 100 / 141 days
Quarterly	Good	2714	-40 – 45 / 86 days
	Bad	2459	-40 – 45 / 86 days

3.3 Study Event

Study event table is conducted from daily stock return table merging with each of earning announcement (1) quarterly-good event, (2) quarterly-bad event, (3) annually-good event, and (4) annually-bad event). The study period is set for 86 days and 141 days for quarterly event and annually event respectively. So the pre-event period is event number -40 to -1 while event number +1 to +100 for annually (+40 for quarterly) is post-event period. The event date is set at day zero or ± 0. The reason to set pre event and post event is to avoid the intersection period of each event. Note that each event will have only 1 event ID as the indicator. To calculate daily abnormal return, we use market adjust return as previous studies (Brown and Warner, (1985)). There are no associate important events within the event windows on pre and post announcement period Daily abnormal returns are computed as following:

$$AR_{it} = R_{it} - R_{mt}$$

Where AR_{it} is the abnormal return of stock i on day t

R_{it} is the return of stock i on day t

R_{mt} is the return of SET index on day t

I also calculate cumulative abnormal return (CAR) across firms for each day by:

$$CAR_{t1,t2} = \sum_{t1}^{t2} AR_{it}$$

Where $CAR_{t1,\ t2}$ is the cumulative abnormal return for each firm between day *t1* and day *t2* period

I add event running number start from event period -1 till the end of post event to be parts of indicator for finding peak or bottom of each event.

3.4 Peak or Bottom Result

I find “peak” or “bottom” of each event by pick the maximum CAR or minimum CAR of each event along with the event running number, which is the number of day per each event. I find the average number of day to reach “peak” or “bottom” by calculation the average of running number of each result of CAR maximum (peak) or minimum (bottom). So the average running number will represent the amount of day in the average to reach the maximum CAR or minimum CAR for each earning announcement type.

3.5 LS-mean Significant Test

Since the result from good news and bad news are the numbers of day to reach peak and bottom, may have the same LS-mean. So I have to test that LS-mean of good event and LS-mean of bad event is different.

The null hypothesis is LS-mean of good news = LS-mean of bad news

If the t-test is significant, it means I can reject the null hypothesis and there is different between both LS- mean.

3.6 Simple Liner Regression

I would like to test that the number of day to reach maximum or minimum CAR, has liner relationship with maximum or minimum CAR or not.

The model of the regression is

$$MCAR_i = \alpha_i + (\beta_i \times RN_i) + e_i$$

Where

$MCAR_i$ is max/min cumulative ab-normal return of event no. i

RN_i is Running no. of days of event no. i

e_i is the error term of the sample

To check the liner regression relationship, I have to set the null hypothesis to check that βi is equal to zero.

The null hypothesis is βi is equal to zero.

If the t-test is significant, it means I can reject the null hypothesis and there is a liner relationship between RN_i and $MCAR_i$.

3.7 Pre-Event Return Effect

The objective is to find out the trend of rate of return of each stock impact to the number of day to reach the maximum or minimum of CAR of each earning announcement type or not. The trend of rate of return of each stock can be classified into 2 types which are "positive trend" and "negative trend". The classified is base on the average return of each stock during the pre-event (event day number -40 to -1) of each earning announcement. If the average result is positive sign, the trend of rate of return of pre-event will be classified as "positive trend", therefore if the average result is negative sign, it will be classified as "negative trend". I use this result as the criteria, to filer the study event table. I have to find the number of day to reach the maximum CAR and minimum CAR in the average based on good news and bad news of each announcement types again. The result is showed on positive good news of quarterly earnings announcement, positive bad news of quarterly earnings announcement, positive good news of quarterly earnings announcement, to compare with the original result to find out there is any different or not.

3.8 Industry Effect

There are many industries in SET, which each of them has a different business nature so the investor should react differently in each industries earning announcement. Based on daily common stock return table from SET Smart data based, it already has industry ID stated on each common stock symbol. Therefore I use it as the criteria to classify each industry of common stock from Study Event table. There are 8 major industries, which are (1) agriculture, (2) consumption, (3) financial, (4) industry, (5) property & construction, (6) resource, (7) services, and (8) technology. I use those industries as the based to find the number of day to reach the peak and bottom of CAR for each earning announcement types. So I can compare which industry is the fastest industry to reach peak or bottom of CAR in the average.

3.9 The Investor Category Trading on Peak or Bottom Date

To assess the impact on returns of investor category trading, I calculate an indicator variable like that of Barber and Odean (2002). Our daily buy–sell imbalance (BSI) indicator is computed for each investor category for each stock with Equation

$$BSI_{jit} = \frac{(P_{jit} - S_{jit})}{(P_{jit} + S_{jit})}$$

Where

p_{jit} (S_{jit}) is the number of shares of stock i purchased (sold) on day t by investor category j.

This transformation results in a variable that varies between -1 and 1, which indicating the direction of category trading while eliminating the confounding effects of different trading volumes.

I merge the BSI back in to the event table to find out the effect of different trading volumes of peak or bottom date after each earning announcement event.

To study the trend of the investor trading, I also need to find the cumulative daily buy-sell imbalance (BSI) indicator with equation below

$$CBSI_{t1,t2} = \sum_{t1}^{t2} BSI_{jit}$$

Where

BSI is the percentage of imbalance of stock i on day t by investor category j.

CBSI $_{t1,\ t2}$ is the cumulative percentage of imbalance for each investor category between day *t1* and day *t2* period

CHAPTER IV
RESEARCH FINDING

4.1 The Number of Day To Reach CAR Peak And Bottom For Event

Based on the metrology that classified the earning announcement into 2 types, which are quarterly and annually. The studying is on the number of day that CAR, will reach peak or bottom based on good or bad news respectively.

Table 4.1 Peak – Bottom result

Event type	**Peak / Good News**		**Bottom / Bad News**	
Announcement type	Quarterly	Annually	Quarterly	Annually
No of sample event	2,714	616	2,459	506
No. of days (Average)	23***	59***	18***	41***
CAR (%)	12.75***	21.81***	-11.76***	-16.73***
SD of no. of days (%)	16.41	37.46	15.29	34.00
SD of CAR (%)	23.07	35.5	16.17	17.74
Max CAR of event (%)	322.98	351.41	0.00	0.00
Min CAR of event (%)	0.00	0.00	-150.07	-150.07

Remark: *** represents that the data is significant at 99% of interval level.

4.1.1 Peak result

Refer to the peak – bottom result table, it is clearly that after quarter earnings announcement spend 23 days in the average to reach the highest CAR at 12.75% in the average, which faster than annually earnings announcement that spend 59 days in the average to reach the highest CAR at 21.81% in the average.

For the standard deviation or SD of number of day to reach peak of CAR, we can see quite clearly that the SD of quarterly earnings announcement is smaller

than annually earnings announcement. So the number of day to reach peak would not be deviate much from the average.

From the total sample good news event of quarterly and annually earnings announcement, are 2714 and 616 events respectively. There is only one of each event type, which has the highest CAR at 322.98% and 351.41% for quarterly and annually earnings announcement respectively. While the minimum CAR of each event types is 0.00% (zero) due to the assumption of the study, which setting the first day of CAR calculation on -1 of the event study date, and there is no sharply decreasing in ab-normal return in the average during the post event period.

4.1.2 Bottom result

Refer to the peak – bottom result table, it is clearly that after quarter earnings announcement spend 18 days in the average to reach the lowest CAR at -11.76% in the average, which faster than annually earnings announcement that spend 41 days in the average to reach the highest CAR at -16.73% in the average.

For the standard deviation or SD of number of day to reach bottom of CAR, we can see quite clearly that the SD of quarterly earnings announcement is smaller than annually earnings announcement. So the number of day to reach bottom would not be deviate much from the average.

From the total sample of bad news event of quarterly and annually earnings announcement, are 2459 and 506 events respectively. There is only one event, which has the CAR at -150.07%, which is the same event for quarterly and annually earnings announcement. Due to this study event is in the 4 quarter which is the same window period of 2 type of studying. While the maximum CAR of each event types is 0.00% (zero) due to the assumption of the study, which setting the first day of CAR calculation on -1 of the event study date, and there is no sharply increasing in ab-normal return in the average during the post event period.

4.2 Different Test on Good and Bad Event

To test that LS-mean of good event and LS-mean of bad event is different. If the test is significant, it means there is different between both LS- mean.

Table 4.2 Different test result

Type of announcement	No. of observation	T-Value	Prop.
Annually	1122	-7.95***	<0.0001
Quarterly	5173	-9.90***	<0.0001

Remark: *** represents that the data is significant at 99% of confident interval level.

Base on null hypothesis, which LS-mean of both news events has no different. As the result from the table, we can see clearly that at 99% significant the LS-mean of both news events are different to each other.

4.3 Simple Liner Regression

Refer to peak-bottom result table; it represents the number of day to reach the peak or bottom of CAR after earning announcement. I would like to test that does the number of day to reach the peak or bottom of CAR have the liner relationship or not?

The model of the regression is

$$MCAR_i = \alpha_i + (\beta_i \times RN_i) + e_i$$

Where

$MCAR_i$ is max/min cumulative ab-normal return of event no. i

RN_i is Running no. of days of event no. i

e_i is the error term of the sample

Table 4.3 Simple liner regression result

Type of Announcement	Type of news event	No. of observation	β_t	R^2 / R^2 Adj	T-Value	F-Test
Annually	Good	616	0.0034	12.79% / 12.65%	9.49***	<0.0001
	Bad	506	-0.0024	20.89%/ 20.73%	-11.54***	<0.0001
Quarterly	Good	2714	0.0044	9.78%/ 9.75%	17.15***	<0.0001
	Bad	2459	-0.0049	21.03%/ 21.00%	-25.58***	<0.0001

Remark: *** represents that the data is significant at 99% of confident interval level.

4.3.1 The annually earning announcement

Good news event, based on analysis of variation F-test probability is below than 0.001, which represent that the simple model is fitted for the population. R^2 adjusted is 12.65% or the running no. of days of event no. i can explain maximum cumulative ab-normal return of event no. i for 12.65%. T-value test of beta of the running no. of days of event no. i is also significant at 99% of confident interval level. So if the running no. of days of event is increased by 1 day, maximum cumulative ab-normal return of event no. i would be increased by 0.0034 in the average while other variables are constant.

Bad news event, based on analysis of variation F-test probability is below than 0.001, which represent that the simple model is fitted for the population. R^2 adjusted is 20.73% or the running no. of days of event no. i can explain minimum cumulative ab-normal return of event no. i for 20.73% T-value test of beta of the running no. of days of event no. i is also significant at 99% of confident interval level. So if the running no. of days of event is increased by 1 day, minimum cumulative ab-normal return of event no. i would be decreased by 0.0024 in the average while other variables are constant.

4.3.2 The quarterly earnings announcement

Good news event, based on analysis of variation F-test probability is below than 0.001, which represent that the simple model is fitted for the population. R^2 adjusted is 9.75% or the running no. of days of event no. i can explain maximum cumulative ab-normal return of event no. i for 9.75%. T-value test of beta of the running no. of days of event no. i is also significant at 99% of confident interval level. So if the running no. of days of event is increased by 1 day, maximum cumulative ab-normal return of event no. i would be increased by 0.0044 in the average while other variables are constant.

Bad news event, based on analysis of variation F-test probability is below than 0.001, which represent that the simple model is fitted for the population. R^2 adjusted is 21.00% or the running no. of days of event no. i can explain minimum cumulative ab-normal return of event no. i for 21.00% T-value test of beta of the running no. of days of event no. i is also significant at 99% of confident interval level. So if the running no. of days of event is increased by 1 day, minimum cumulative ab-normal return of event no. i would be decreased by 0.0049 in the average while other variables are constant.

4.4 The Trend of Stock's rate of Return during Pre-event Period

Based on the methodology, this result is classified by the trend of the rate of return of each common stock in SET during the pre-event period, which classified into 2 types. They are "positive" and "negative".

Table 4.4 Positive pre-event trend

Event type	Peak / Good News		Bottom / Bad News	
Announcement type	Quarterly	Annually	Quarterly	Annually
No of sample event	1,486	358	1,005	506
No. of days	23***	59***	18***	41***
No. of days - Positive	23***	57***	18***	40***
CAR (%)	12.75***	21.81***	-11.76***	-16.73***
CAR – Positive (%)	12.78***	21.43***	-10.53***	-16.57***

Remark: *** represents that the data is significant at 99% of confident interval level.

Refer to positive pre-event trend table above, if we compare the number of day to reach peak or bottom and CAR from the peak-bottom result table with the data that filler with positive pre-event trend, we will found that the outcome number is very close to each other. Even there is slightly different result of number of day to reach peak or bottom in annually earning announcement type for good news and bad news event. However, it seem to be no significant different between each data.

Table 4.5 Negative pre-event trend

Event type	Peak / Good News		Bottom / Bad News	
Announcement type	Quarterly	Annually	Quarterly	Annually
No of sample event	1,231	259	1,454	357
No. of days	23***	59***	18***	41***
No. of days - Negative	13***	46***	19***	45***
CAR (%)	12.75***	21.81***	-11.76***	-16.73***
CAR – Negative (%)	12.80***	23.32***	-12.61***	-13.09***

Remark: *** represents that the data is significant at 99% confident interval level.

Refer to negative pre-event trend table above, for bad news event, if we compare the number of day to reach bottom and CAR from the peak-bottom result table with the data that filler with negative pre-event trend, we will found that the number also close to each other.

For good news event, the result show that if the stock has negative trend during the pre-event period, after the good news of earning announcement hit the

market, the stock likely to reach peak faster. As the table shows that the number of days after filler with negative pre-event trend is 13 days which less than the number from peak-bottom table at 23 days for quarterly announcement. For annually announcement, is also reach peak faster too, which spend less than 13 days comparing with the data from peek-bottom table. However, for CAR the result outcome number also close to the peek-bottom table, and does not show any significant different.

4.5 The Different in Industry Effect

Due to each industry has a different nature of its business, so the number of day to reach peak or bottom should be different.

Table 4.6 the different in industry effect good news of annually earnings announcement

Name is the industry name while other is un-classified industry. CAR mean represents the average maximum CAR of event i. Max represent the highest value of CAR from all observation event. As the table result, the total observation is 618 events.

Name	No. of observation	No. of days (CAR)	CAR Mean	Max	SD
OTHER	7	89***	34.76%***	95.63%	0.3255
AGRO	46	65***	18.93%***	169.93%	0.2631
CONSUMP	35	63***	22.36%***	227.01%	0.3953
FINCIAL	142	59***	15.33%***	98.56%	0.1662
INDUS	44	59***	33.15%***	351.41%	0.6046
PROPCON	138	57***	28.34%***	252.81%	0.4821
RESOURC	38	55***	18.52%***	146.76%	0.2412
SERVICE	87	51***	18.70%***	161.51%	0.2310
TECH	81	62***	24.01%***	240.19%	0.4039

Remark: *** represents that the data is significant at 99% confident interval level.

Based on table result, the fastest industry to reach peak is service. It spends only 51 days in the average after good news of annually earnings announcement, to reach peak of CAR of 18.70% in the average. The slowest industries are financial and Industry. They spends 59 day in the average after good news of annually earnings announcement, to reach peak of CAR of 15.33% and 33.15% in the average respectively. Anyway, in the overall result there is no any significant different for each industry

The service industry normally, has low capitalization comparing with other industry, which also lead to small trading volume per day or less active. So it would reach the peak faster than other industries. The slowest industries are financial and Industry due to both industries has a quite strong fundamental and also has high trading volume per day or more active.

Table 4.7 the different in industry affect bad news of annually earnings announcement

Name is the industry name while other is un-classified industry. CAR mean represents the average maximum CAR of event i. Max represent the highest value of CAR from all observation event. As the table result, the total observation is 586 events.

Name	No. of observation	No. of days (CAR)	CAR Mean	Max	SD
OTHER	7	39***	-26.16%***	-54.85%	0.1705
AGRO	53	42***	-16.86%***	-70.69%	0.1709
CONSUMP	26	49***	-14.41%***	-67.43%	0.1679
FINCIAL	94	45***	-21.41%***	-150.07%	0.2377
INDUS	38	33***	-12.21%***	-70.34%	0.1311
PROPCON	135	36***	-15.19%***	-74.90%	0.1516
RESOURC	26	42***	-20.64%***	-87.87%	0.2331
SERVICE	147	48***	-7.13%***	-81.07%	0.1354
TECH	60	45***	-15.08%***	-48.44%	0.1251

Remark: *** represents that the data is significant at 99% confident interval level.

Based on table result, the fastest industries to bottom are industry, it spend only 33 days in the average after bad news of annually earnings announcement, to reach bottom of CAR of -12.21% in the average. The slowest industry is consumption. It spends 49 day in the average after bad news of annually earnings announcement, to reach bottom of CAR of -14.41% in the average.

The industry normally, has quite good fundamental even it was hit by the bad news, the mostly investor will buy it when it undervalue anyway. For consumption product industry with is spend the longest day to reach bottom, but the minimum CAR in the average is not significant different from other industries. So I think because the smaller trading volume per day that will case the under reaction after the news.

Table 4.8 the different in industry effect good news of quarterly earnings announcement

Name is the industry name while other is un-classified industry. CAR mean represents the average maximum CAR of event i. Max represent the highest value of CAR from all observation event. As the table result, the total observation is 2,721 events.

Name	No. of observation	No. of days (CAR)	CAR Mean	Max	SD
OTHER	44	24***	18.78%***	168.21%	0.2660
AGRO	240	20***	10.54%***	208.72%	0.1823
CONSUMP	145	21***	8.16%***	71.12%	0.1038
FINCIAL	590	26***	11.47%***	105.34%	0.1275
INDUS	211	21***	15.16%***	322.99%	0.3732
PROPCON	637	23***	16.25%***	250.53%	0.3161
RESOURC	157	23***	11.36%***	159.34%	0.1924
SERVICE	382	22***	10.73%***	174.85%	0.1321
TECH	315	22***	13.19%***	233.13%	0.2579

Remark: *** represents that the data is significant at 99% confident interval level.

Based on table result, the fastest industry to reach peak is agriculture. It spends only 20 days in the average after good news of quarterly earnings announcement, to reach peak of CAR of 10.54% in the average. The slowest industry is financial. It spends 26 day in the average after good news of quarterly earnings announcement, to reach peak of CAR of 11.47% in the average. Anyway, in the overall result there is no any significant different for each industry.

The agriculture industry normally, also has low capitalization comparing with other industry, which also lead to small trading volume per day or less active. So it would reach the peak faster than other industries. The slowest industries are financial industries has a quite strong fundamental and also has high trading volume per day or more active.

Table 4.9 the different in industry affect bad news of quarterly earnings announcement

Name is the industry name while other is un-classified industry. CAR mean represents the average maximum CAR of event i. Max represent the highest value of CAR from all observation event. As the table result, the total observation is 2,459 events.

Name	No. of observation	No. of days (CAR)	CAR Mean	Max	SD
OTHER	56	20***	-20.20%***	-130.32%	0.2599
AGRO	276	18***	-9.10%***	-106.78%	0.1289
CONSUMP	138	18***	-7.66%***	-87.37%	0.1018
FINCIAL	499	19***	-12.89%***	-150.08%	0.1848
INDUS	197	17***	-10.08%***	-86.06%	0.1388
PROPCON	579	18***	-12.76%***	-138.17%	0.1692
RESOURC	122	17***	-10.81%***	-94.70%	0.1470
SERVICE	301	20***	-12.57%***	-110.13%	0.1641
TECH	291	19***	-11.39%***	-81.71%	0.1376

Remark: *** represents that the data is significant at 99% confident interval level.

Based on table result, the fastest industries to bottom are industry and resource. They spend only 17 days in the average after bad news of quarterly earnings announcement, to reach bottom of CAR of -10.08% and -10.81% in the average respectively. The slowest industry is service. It spends 20 day in the average after bad news of quarterly earnings announcement, to reach bottom of CAR of -12.57% in the average. Anyway, in the overall result there is no any significant different for each industry.

The industry normally, has quite good fundamental even it was hit by the bad news, the mostly investor will buy it when it undervalue anyway. For the longest day to reach bottom is service industry normally, which has low capitalization comparing with other industry, which also lead to small trading volume per day or less active.

4.6 The Investor Trading Imbalance

To find out the significant different trading for each investor type during the study period, I have conducted the figure to study the trend of each investor behavior, based on the cumulative imbalance of each investor type.

The figure will represent in the percentage of each investor type, when the number is positive, it represents that investor type has a significant buying. So the number is negative, it represents that investor type has a significant selling. CVM is represented the institution investor. CVP is represented the company investor. CVF is represented the foreign investor. CVC is represented the detail customer investor. While number of day represent the event day from -1 to peak day result from table 1.

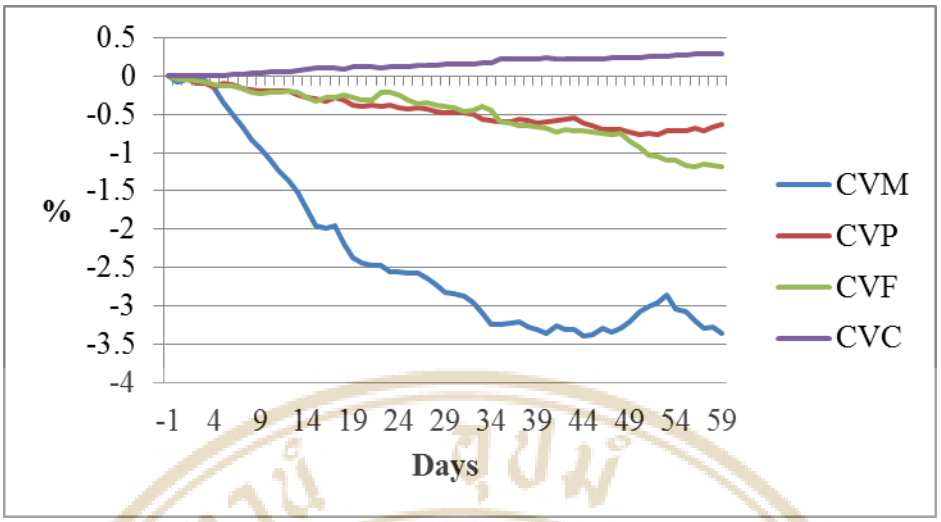

Figure 4.1 Imbalance of investor type after the good news of annually announcement

The figure will represent in the percentage of each investor type, when the number is positive, it represents that investor type has a significant buying. So the number is negative, it represents that investor type has a significant selling. CVM is represented the institution investor. CVP is represented the company investor. CVF is represented the foreign investor. CVC is represented the detail customer investor. While number of day represent the event day from -1 to peak day result from table 1.

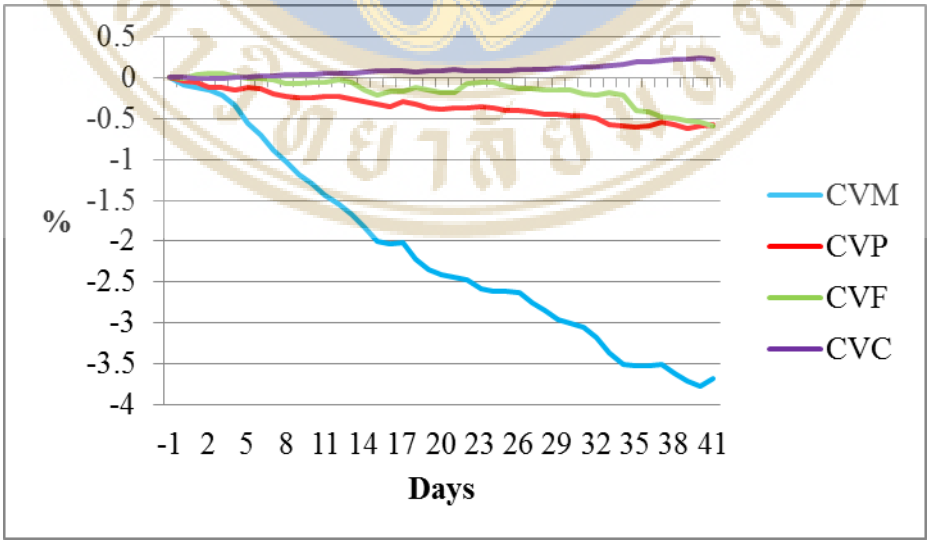

Figure 4.2 Imbalance of investor type after the bad news of annually announcement

The figure will represent in the percentage of each investor type, when the number is positive, it represents that investor type has a significant buying. So the number is negative, it represents that investor type has a significant selling. CVM is represented the institution investor. CVP is represented the company investor. CVF is represented the foreign investor. CVC is represented the detail customer investor. While number of day represent the event day from -1 to peak day result from table 1.

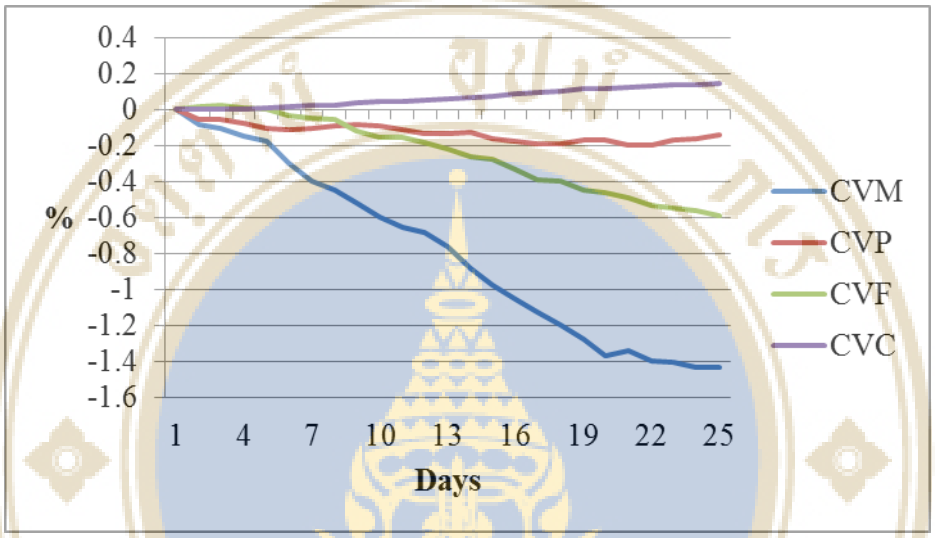

Figure 4.3 Imbalance of investor type after the good news of quarterly announcement

The figure will represent in the percentage of each investor type, when the number is positive, it represents that investor type has a significant buying. So the number is negative, it represents that investor type has a significant selling. CVM is represented the institution investor. CVP is represented the company investor. CVF is represented the foreign investor. CVC is represented the detail customer investor. While number of day represent the event day from -1 to bottom day result from table 1.

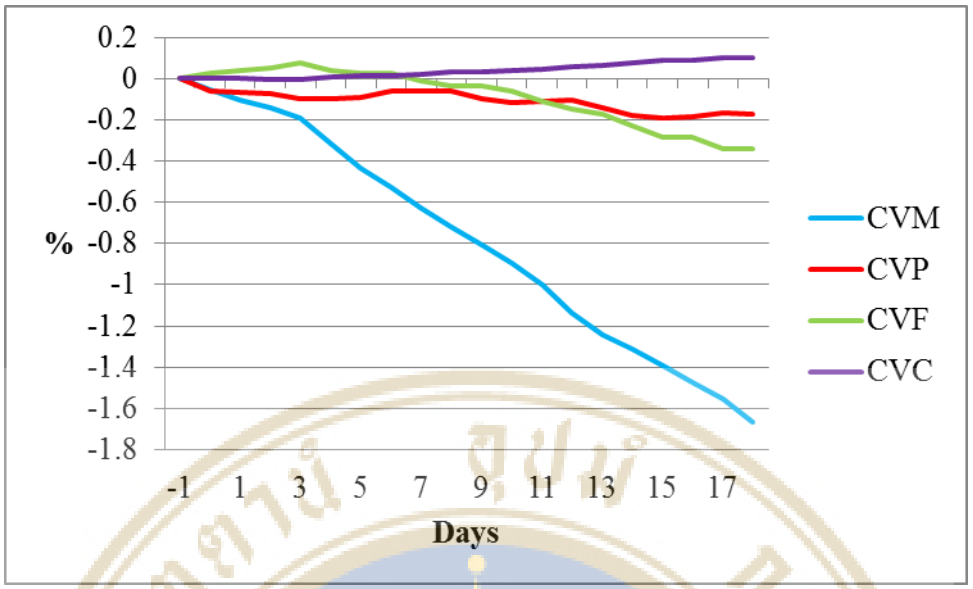

Figure 4.4 Imbalance of investor type after the bad news of quarterly announcement

Based on the figure 1 – 4, all of figures have very similar trend. We can see the trend clearly that the institution investor has a very high selling trend after the earning announcement for 5 days in the average. The shape of graph also is very sharply dropped after 5 days, while company and foreign investor constant increase selling after the earning announcement. The only one buying investor is detail customer investor.

From the result we can see clearly that institution, company, and foreign investor are selling after the event, due to the earning announcement is the great opportunity to make a return, and most of them also have a lot of information (including inside information) about the announcement and may predict the result of the announcement in the advance. So they may buy the stock in advance and selling them after the period while the retail customer does not know and make inefficient decision on their investment after the announcement.

CHAPTER V
CONCLUSOION & RECOMMENDATION

This study investigates whether analyst the number of day to reach peak or bottom of average CAR after the earning announcement. As the result, I found that bad news event spend less number of days to reach peak or bottom in the average for both announcement type. The number of days result from quarterly earnings announcement type is also spend less time than annually earning announcement whether the news is good or bad. However the amount of highest CAR or lowest CAR of annually earning announcement also is much greater than quarterly earnings announcement. So for investment planning, if we expect the good news would be announced, we should hold for a month for quarterly announcement, and 2 months for annually announcement. We also can use the average CAR of peak or bottom from the study to be the benchmark to plan the investment strategy for selling or buying the stock.

The study of stock return trend during the pre-event told that if the stock return trend before the earning announcement was negative and we could expect that the company will have a good earnings announcement, the study result shows that it will spend much less days to reach a peak of CAR. So we should adjust our investment plan to selling the stock within 2 or 3 weeks after quarterly earnings announcement and 9 – 10 weeks for annually earning announcement.

Based on further study in each industry, in the good news event, we also found that service, and resource industry would reach the peak of CAR faster than others after the annually announcement. In other hand, for quarterly announcement, there would be consumption or industry product. For the bad news event, the industry product also reach bottom faster than others after the annually announcement, while for the quarterly announcement, is also the industry product or resource. So we can use result to be a sign of peak or bottom to forecast that other industry would be reach the peak or the bottom soon then adjust the portfolio to earning the appropriate profit.

Based on the study result in the daily trading imbalance at the peak or bottom date, we could see that the institution investor would have a very high selling volume, while the buying demand is come from only retail customer. Due to the earning announcement is the great opportunity to make a return, and most of them also have a lot of information (including inside information) about the announcement and may predict the result of the announcement in the advance. So they may buy the stock in advance and selling them after the period while the retail customer does not know and make inefficient decision on their investment after the announcement. Anyway, it still need more study to find out the rational of this result, so we can refer it as the signal or benchmark for investment plan.

However, the major limitation of this study is focused on only the earning announcement news while in the realistic there may be other news i.e. economy, political, global news, etc. that hit the market or stock at the same period. So I still recommend using other information for analyst and preparing your investment plan.

REFERNCES

Alexandros BENOS, Michael ROCKINGER., 2000 ., Market Response to Earnings Announcements and Interim Reports: An Analysis of SBF120 Companies., *MARKET RESPONSE TO EARNINGS ANNOUNCEMENTS.*, 149-175.

Anwer S. Ahmed, Gerald J. Lobo, and Xiao-hu Zhang., Do analysts under-react to bad news andover-react to good news?,. *Social Science Research Network Electronic Paper Collection.*, http://papers.ssrn.com/paper.taf?abstract_id=253889

Ball, R. and Brown P., 1968. An Empirical Evaluation of Accounting Income Numbers. *Journal of Acccounting Research.*

Beaver, W., (1968). The Information Content of Annual Earnings Announcements. Empirical Research in Accounting: Selected Studies,. *Supplement to Journal of Accounting* Research 6.

Benas A. & Rockinger M., 2008. Market response to earnings announcements and interim reports: An analysis of SBF120 companies. *Annales d'Economie et de Statistiques. 60.*

Brown L. D. (1997)., Earnings Surprise Research: Synthesis and Perspectives., *Financial Analysts Journal, pp.* 13-19.

Chenxi Wang and Gerky King Phet., 2012., Stock return performance around earnings announcements., *Stock Return Performance around Earnings Announcements.*

Fama, E. F., 1970, "Efficient Capital Markets: A Review of Theory and Empirical Work," *Journal of Finance*, 25, 383-417.

Fama, E. F., 1998, "Market Efficient, Long-Term Returns, and Behavioral Finance," *Journal of Financial Economics*, 49, 283-306.

Fama, E. F., L. Fisher, M. C. Jensen, and R. Roll, 1969, "The Adjustment of Stock Prices to New Information," *International Economic Review*, 10, 1-21.

Ikenberry, D., J. Lakonishok, and T. Vermaelen, 1995, “Market Underreaction to Open Market Share Repurchases," *Journal of Financial Economics*, 39, 181-208.

Ikenberry, D. L., and S. Ramnath, 2002, ”Underreaction to Self-Selected News Events: The Case of Stock Splits," *Review of Financial Studies*, 15, 489-526.

Michaely, R., R. H. Thaler, and K. L. Womack, 1995, “Price Reactions to Dividend Initiations and Omissions: Overreaction or Drift?," *Journal of Finance*, 50, 573-608.

Shenoy. C, Chauvin K (2000)., Stock price decreases prior to executive stock option grants, *Journal of Corporate Finance* 103_2000.

Wesley S. Chan (2001)., Stock Price Reaction to News and No-News: Drift and Reversal After Headlines, *Social Science Research Network Electronic Paper Collection*., http://papers.ssrn.com/