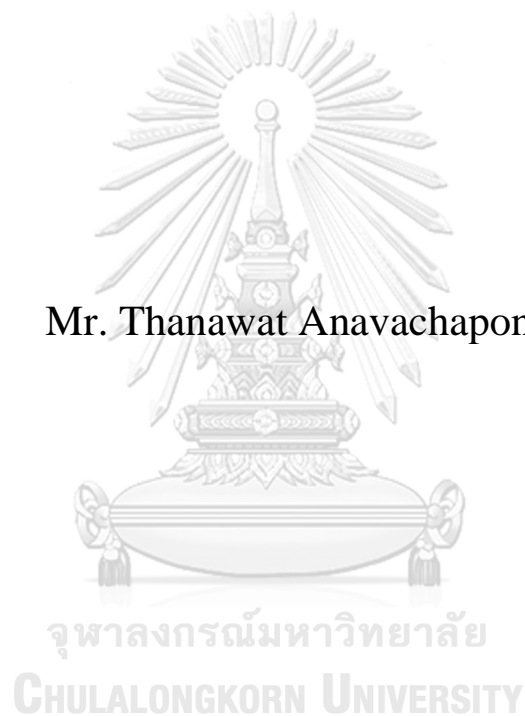Costly signal in Open market repurchase: Evidence in Thailand

Mr. Thanawat Anavachapongpan

An Independent Study Submitted in Partial Fulfillment of the
Requirements
for the Degree of Master of Science in Finance
Department of Banking and Finance
FACULTY OF COMMERCE AND ACCOUNTANCY
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การตอบสนองของราคาหุ้นที่มีต่อข้อมูลที่บริษัทประกาศระหว่างการประกาศซื้อหุ้นคืน

นายธนวัฒน์ อนุวัชพงศ์พันธ์

Independent Study Title	Costly signal in Open market repurchase: Evidence in Thailand
By	Mr. Thanawat Anavachapongpan
Field of Study	Finance
Thesis Advisor	Associate Professor Kanis Saengchote, Ph.D.

Accepted by the FACULTY OF COMMERCE AND ACCOUNTANCY, Chulalongkorn University in Partial Fulfillment of the Requirement for the Master of Science

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ธนวัฒน์ อนุวัชพงศ์พันธ์ : การตอบสนองของราคาหุ้นที่มีต่อข้อมูลที่บริษัทประกาศระหว่างการประกาศซื้อหุ้น
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ปรึกษาหลัก : รศ. ดร.คณิสร์ แสงโชติ

Several studies argue that open market share repurchase has the lowest power to signal the inside information to the market. In this study I explore the market reaction to the announcement of stock repurchase plan with the firm's characters argued in prior literature that they can increase the market confident. Referred from prior literatures, the stated motivation in the press release, insider "BUY" prior announcement, percentage of majority shareholder, and the amount of repurchasing plan are introduced to reflect the level of information signal sent by management. I find that investors have skepticism with an information sent via open market share repurchase. I also find that the cost of stated motivation, Insider transaction before announcement, percentage of majority shareholder, and the amount of repurchasing plan is not high to differentiate good firm from bad firm. In addition, I find that information that release by repurchasing firm at announcement unable to predict the actual action of the firm. The result aligns with previous literatures that since the cost of share repurchase via open market is low and the penalty of not following the word is low, repurchasing firms are indifferent whether they should follow the word or not. The conclusion from this research is that open market share repurchase is not a useful method to signal information to the market. Investors also should not always see a repurchase announcement as good news since there is a high downside risk.

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Thanawat Anavachapongpan : Costly signal in Open market repurchase: Evidence in Thailand. Advisor: Assoc. Prof. Kanis Saengchote, Ph.D.

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ACKNOWLEDGEMENTS

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Chapter 1: Introduction

Management's motivation to repurchase a company's share has been widely discussed in finance literatures. The following hypotheses are used to explain the reason behind share repurchase including signaling hypothesis, free cash flow hypothesis, takeover deterrence hypothesis, etc. Among those hypotheses, signaling hypothesis is mostly used to explain the motivation of repurchasing company. Given the popularity of signaling theory, share repurchase announcement is seen by investors as good news as seen from positive price reaction on announcement day. This also true in Thailand. If investors notice share repurchase are a signal of undervaluation, repurchase can be used to manipulate the stock price since repurchasing firms are not necessary to repurchase as their announcement. However, good firms try to send a signal for help an investor separate themselves from bad firms. This research investigates the reaction of investors to the information. Moreover, this research investigates the reliability of information sent by management.

There are several researches found an evidence of significant positive return around the announcement date and conclude that share repurchase can be used to signal an information to outsider. For example, in US, Vermaelen (1981), McNally (1999), Grullon and Michaley (2002) found abnormal return about 3.7 percent, 2.5 percent, and 2.7 percent, respectively. Comment and Jarrell (1991) analyzed the difference between each repurchasing method and concluded that open market repurchase has lowest signaling power since he found abnormal return were only 2.3 percent for open market repurchase against 11 percent for fixed price tender offer. Even having low

signaling power, open market share repurchase is mostly used by repurchasing firms. The trend is same for Thailand, most repurchasing companies repurchase their stock via open market. In Thailand, Nittayagasetwat, Nittayagasetwat (2013) found abnormal return about 2.23 percent.

Prior researched mainly focus on the return during announcement period, they ignore to investigate the relationship between market reaction and signal information sent by management especially share repurchase via open market. According to low cost of announcing open market program and positive signaling effect, management may use repurchase announcement to mislead investors and boost stock price called "cheap talk". To distinguish themselves from bad firms, good firms must send costly signal, the signal that bad firm cannot replicate, promptly with an announcement. In US., there are evidences of using debt to finance a repurchase can increase the creditability of an announcement, Ross (1977). However, debt financing is prohibited in Thailand. Prohibition makes Thai firms more difficult to signal investors. However, there still has a positive price reaction when repurchase announcement. This research aims to investigate which firm characteristic can increase the confidence to market when announce a repurchase program.

To answer the research question, 128 open market shares repurchase in Thailand between 2001-2019 are studied. The entire sample and the variables used to test the hypotheses are retrieved from SETSMART. Referred from prior literatures, the stated motivation in the press release, insider "BUY" prior announcement, percentage of majority shareholder, and the amount of repurchasing plan are introduced to reflect the level of information signal sent by management. However, I did not find a clear

evidence that these information factors could increase the market confidence and cumulative abnormal return. The result is in line with previous literatures that investors have skepticism with an information sent via open-market share repurchase. Moreover, the cost of information factors observed in this study is not high enough to gain a confidence of the market.

Furthermore, I use the information factors in the previous section to find the relationship with firm's actual action. The result contradicts from what I expect. It shows the positive relationship between probability of false signal and cost score. The result aligns with previous literatures that since the cost of share repurchase via open market is low and the penalty of not following the word is low, repurchasing firms are indifferent whether they should follow the word or not. The conclusion from this research is that open market share repurchase is not a useful method to signal information to the market. Investors also should not always see a repurchase announcement as good news since there is a high downside risk.

The next section is the literature review and hypothesis development. Section 3 describe research methodology. Section 4 describe data and descriptive statistic. Section 5 describe empirical result. Lastly, section 6 describe conclusion.

Chapter 2: Literature Review and Hypothesis Development

2.1 Literature Review

Share repurchase is a transaction whereby a company buys back its own shares from the market. Apart from dividend, share repurchase is also used by company to distribute cash to shareholders. However, it differs from dividend in the way that its occurrence is non-recurring. Thus, companies have flexibility to choose whether when and how much to purchase shares. There are several finance researches done with share repurchase such as the motives behind share repurchase, market reaction following an announcement and the long-run return after an announcement.

There can be a lot different motive for a company to buy back its own share. Following five hypotheses are frequently discussed to explain the motive behind stock buyback: 1) Firms may use the signaling power of share repurchase to diminish an information asymmetry between managers and outsiders. Since the information is released, the market corrects the firm value and the future prospect of a company (Signaling Hypothesis, Vermaelen (1981), Dann (1981)). 2) Firms may repurchase its own share using its debt. The purpose is to restructure a company's capital structure to the optimal leverage ratio and get better term of tax benefit (Leverage Hypothesis, Dittmar (2000)). 3) Firms may carry out managerial entrenchment and suppress free cash flow, to reduce the principal-agent problems. (Free Cash Flow Hypothesis, Jensen (1986), Grullon and Ikenberry (2000)). 4) Firms may return capital to the shareholders through stock repurchase instead of cash dividend due to lower in personal tax rate than cash dividend (Dividend substitution Hypothesis, Grullon and Michaely (2002)). 5) Firms may repurchase its own share to defend against takeover

attempts by potential raiders (Takeover Defenses Hypothesis, Bagnoli, Gordon, and Lipman (1989)). Among these discussions, signaling hypothesis is the most studied in finance literatures.

There are 5 methods a firm can use to repurchase. Fixed-price tender offers, Open-market share repurchases, Dutch-auction repurchases, Transferable put-rights distributions, and Targeted stock repurchases. However, the most popular choice among repurchasing firms is open market share repurchase, followed by fixed-price tender offer, and Dutch-auction repurchase. In Thailand, only open-market share repurchases, and fixed-price tender offer are allowed. For open-market share repurchase, company must announce total amount of money and repurchase period to SEC for public announcement. However, company is not necessary to repurchase as its announced. With this method, price and time for actual repurchase are uncertainty. Several studies find that many programs go unfulfilled (Stephens and Weisbach (1998), Ikenberry, Lakonishok and Vermaelen (2000)). For fixed-price tender offer, the company offers to purchase its stock at specified price. The offer also includes the number of shares sought and the expiration date. Considering from signaling purpose, in fixed price tender offer, company usually announce repurchasing price at a premium. The reason is to send a credible signal to investors that stock price is undervalued. While for open market share repurchase, investors can not notice about a firm's intention directly due to price and time are unknown. In other word, investors cannot distinguish between credible signal and false signal of open-market method. Vermaelen (2005) argued that cost of signaling must be high enough to have any creditability. Supported by Comment and Jarrell (1991), they found that different repurchase method has different signaling power to shareholders. Their research

showed that a fixed-price tender offer has strongest signaling power, followed by Dutch auction tender offer, and open market repurchases. They found that the cumulative abnormal returns were only 2.3% for open-market repurchases against 11% for fixed-price tender offer.

According to low cost of announcing an open-market program and positive signaling effect, managers may consider share repurchase as mechanism to mislead investors and boost stock price. Chan, Ikenberry, Lee, and Wong (2005) found evidence that company's executive use repurchase program to manipulate market opinion. Their research using earning quality as a proxy for propensity of managers to falsely signal or otherwise potentially mislead investors through a buyback program announcement.

So far, studies on share repurchase in Thailand are limited to stock performance around stock repurchase announcement. Several studies found that there are abnormal return following the announcement (Nittayagasetwat, Nittayagasetwat (2013)). Tabtieng (2013) survey managerial of firm which done repurchase program during 2001-2009 found that the most often cited reasons were that the firm's share price were undervalued.

2.2 Hypothesis Development

The main contribution of this research is to investigate the market reaction and information signal sent by firm via open market share repurchase announcement. Moreover, this research aims to use the level of cost signal to investigate probability of firm that might sent false signal to the market.

According to low commitment of open market method, investors are unable to distinguish between true signals (firm value is underpriced) and false signals

(manager announce stock repurchase for their own benefit). To distinguish themselves from bad firms, good firms must send costly signal together with an announcement. There are several ways discussed in finance literature that can improve creditability of an announcement. This research will use the combination of insider trading, percentage of share repurchase announcement, percentage of insider ownership, and undervaluation statement in announcement form as a proxy of information signals refer to Vermaelen (1984), Lakonishok and Lee (2001). Vermaelen (1984) argued that the offer premium, percentage of share repurchase announcement, and the percentage of insider holding can add credibility of an announcement. Lakonishok and Lee (2001) show that insider trade provides valued relevant information to market participant about insider belief regarding firm value and its future prospect. Thus, I expected that firms that send these information signal to the market will receive a better response from the market. To measure the market response, I use cumulative abnormal return (CAR) as a proxy.

Hypothesis 1: The cumulative abnormal return (CAR) is positive correlate with level of information signal.

To investigate which type of firm may announce share repurchase to send false signal to the market, two things must be defined: an evidence of false signal (ex-post), and the character of firm that might send false signal. Firstly, I define the company that do not repurchase as they announce while stock price at ending period below stock price at announcement as an evidence of false signal (ex-post). Secondly, I refer cost proxy from prior section to gauge the firm's intention. Thus, I expect that the firm that intend to send credible signal will have a lower probability of false signal.

Hypothesis 2: The probability of false signal is negative correlate with level of cost signal sent by management.

Chapter 3: Methodology

3.1 Event Study

To examine the stock price reaction around repurchase announcement, event study is employed. Because the repurchasing company must disclose the board resolution within the day or within 9.00 a.m. of the next business day. Thus, board date is set as event date (day 0). The period from day -252 to -22 is set as observation period. In observation period, the stock price of repurchasing firm and the market index (SET index) are regressed to find the relationship between repurchasing company and the market in normal situation. Normal return for each firm during event window will be estimated based on the coefficient (α, β) obtained from the regression. The period from day -1 to day +1 is set as event window. And because of inefficient market, the additional two period; -2 to day +2 and -3 to day +3 are observed. The timeline of the event study is shown in Figure 1.

Figure 1: Timeline of event study
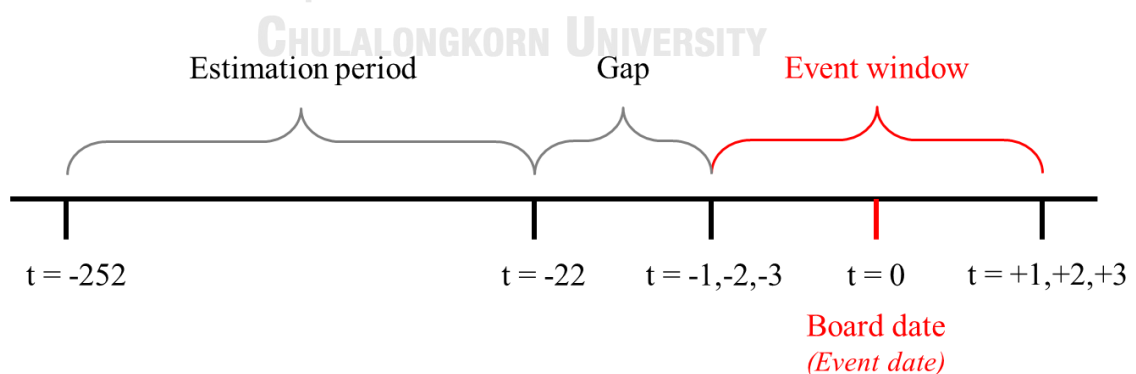
Abnormal return (*AR)* is actual return minus normal return.

$$AR_{i,t} = R_{i,t} - NR_{i,t}$$

Normal return (*NR*) is estimated from OLS regression between repurchasing company and market index during estimate window.

$$NR_{i,t} = \hat{\alpha}_i + \hat{\beta}_i \times R_{m,t}$$

Average abnormal returns for all 128 announcements for each day t ($AR_{i,t}$) are then calculated.

$$\overline{AR} = \frac{1}{128} \sum_{i=1}^{128} AR_{i,t}$$

To study the performance over the whole event window, the cumulative abnormal return ($CAR_{i,t}$) are calculated.

$$CAR_{i,t} = CAR_{i,t-1} + AR_{i,t}$$

Average cumulative abnormal returns ($\overline{CAR}$) for all announcement are then calculated.

$$\overline{CAR} = \frac{1}{128} \sum_{i=1}^{128} CAR_{i,t}$$

3.2 Cross-sectional Regression

In the previous section, I described how to calculate dependent variable, $CAR[-1, +1]$, $CAR[-2, +2]$, $CAR[-3, +3]$, using event study method. In this section, I will introduce independent variables and regression model used to test the hypothesis.

In the first model, I regress a dependent variables, $CAR[-1, +1]$, $CAR[-2, +2]$, $CAR[-3, +3]$, with an independent variables that are proved to have a relationship a dependent variables. The multiple regression estimated using OLS with robust standard error is shown in the form below.

Model 1 : $CAR_i = \alpha + \gamma_1 MTB_i + \gamma_2 SIZE_i + \gamma_3 PASTRETURN_i + \gamma_4 MAJOR_i^* + \gamma_5 SOUGHT_i^* + \gamma_6 INSIDETRADE_i^* + \gamma_7 UNDERVALUE_i^* + \gamma_8 CRISIS_i + \varepsilon_i$

* These factors are used as a factor that management intend to send signal to the market.

In this model, dependent variables are cumulative abnormal return over 3 trading days, 5 trading days, and 7 trading days or $CAR[-1, +1]$, $CAR[-2, +2], CAR[-3, +3]$ respectively. I refer to Vermaelen (1984) who argue that insider "BUY" prior announcement, amount of share repurchases announced by management, and percentage of insider holding can add creditability to an announcement. Thus, I used these variables as a factor that management intend to signal to the market when repurchase announcement. An insider trade, amount of share repurchases, and percentage of insider holding are shown in regression model as *INSIDETRADE*, *SOUGHT*, and *MAJOR,* respectively. I also use the stated motivation to indicate a management intention. For other variables such as Market-to-Book ratio (MTB), firm size, and past stock price return are set as a control variable since Payer and Vermaelen (2009) argued that small firm, low MTB, and low prior return tend to have positive correlate with the market reaction. Below I will explain how these variables have been calculated, and how I expect relationship between each variable and CAR would be.

MTB: Market-to-Book ratio is market value of stock at announcement day divided by book value of equity as reported in the most recent financial statement prior to announcement day. Higher MTB reflect a Higher investor's expectation regard to the firm creating economic value in the future. Firm with high MTB ratios are often referred as "growth" company. On the other hand, firm with low MTB ratios are often called "value" company. As is done in prior literatures, value firms perceived undervaluation is more likely factor in the decision to repurchase than growth firms. Thus, I expect a negative relationship between firm's MTB and average abnormal return during announcement period.

SIZE: Firm size is a logarithm of the firm's market cap in million Baht. Size is treated as a proxy for the extent of information asymmetry between firm and capital markets. The larger firm, the more disclosure to the public will be, and more analyst who cover the company's specific information. Thus, the larger firms tend to have more transparent that the smaller one. Managers of small firms thus have more potential in signaling private information by mean of repurchase announcement than managers of large firms. Thus, I expect a negative relationship between firm's size and abnormal return during announcement period.

PASTRETURN: This variable measures the return of stock price in the last six-month. Like MTB, it attempts to capture the potential for undervaluation of company. The potential for undervaluation is larger for company with poor stock performance than those which have a positive return. Thus, I expect a negative relationship between PASTRETURN and abnormal return during announcement period.

UNDERVALUE: This dummy variable is set to 1 if repurchasing company state "undervaluation" as a motivation for repurchase own share. An example of statement considered as signaling statement are "The company believes that the current market prices of its stock is below the fundamental value of the company", "The management have confidence in the future potential growth of the company and feel that the company present SET prices of share is undervalue", "To reflect the true value of the company's share price", etc. The company's opinion about company's undervaluation can increase confident to the market. Thus, I expect a positive relationship between UNDERVALUE and abnormal return during announcement period.

MAJOR: This variable is the percentage of majority shareholder at the announcement. Doing share repurchase, the firm's portfolio is shifted toward the risky asset because it uses its cash to pay for the repurchase share. Thus, if management do not believe in company's future performance, they will not do repurchase program. Or if they plan to use repurchase announcement to manipulate stock price, they will be punished by investors. The punishment from the market much more than the benefit received from positive price reaction. Thus, I expect that the higher proportion of insider in repurchasing company can add creditability to the announcement. I expect a positive relationship between percentage of insider holding and abnormal return during an announcement.

INSIDETRADE: A repurchase announcement will be a more credible signal of equity undervaluation when it is supported by insider action. Specifically, insiders who buy more stock of their firm before an open market announcement signify that

they believe their stock to be underpriced. Thus, I expect a positive relationship between insider trading (Buying) and abnormal return during an announcement.

SOUGHT: This variable is the maximum percentage of stock that repurchasing firm limit to buy. Chan, Ikenberry and Lee (2004) report that abnormal return is significantly positive related with the percentage of share announce to repurchase as it shown the management's intention to repurchase. Thus, I also expect a positive relationship between percentage of share announce to repurchase and abnormal return during an announcement.

CRISIS: This dummy variable is set to 1 if repurchase announcement occur during bad market condition. In this research, bad market condition is a situation that the market index fall from its peak more than 20 percent in a six months prior period. If repurchase announcement occur during a crisis period, I expect a low response from the market since the investors were in a panic. Thus, I expect a negative relationship between the CRISIS dummy and abnormal return during an announcement.

To answer the first hypothesis, I combine MAJOR, SOUGHT, INSIDETRADE, and UNDERVALUE in form of COST score to reflect the level of commitment as a whole firm.

I expect that a higher score implies a higher intention of management to signal the market from management. After calculation, I will separate the repurchasing firm into a group by COST score and regress analysis in the form below.

Model 2: $CAR_i = \alpha + \beta_1 MTB_i + \beta_2 SIZE_i + \beta_3 PASTRETURN_i + \beta_4 COST_2 + \beta_5 COST_3 + \beta_6 COST_4 + \beta_7 COST_5 + \gamma_8 CRISIS_i + \varepsilon_i$

COST is a dummy variable for each group. The higher COST score is expected a higher β. We compute COST score as the sum of the ranks of the following 3 categories.

1. **MAJOR (ranks 1-5):** Repurchasing firms are ranked by quintile. Firm with lowest percentage of majority shareholder receive a q, the highest receive a 5.

2. **SOUGHT (rank 1-5):** According to regulation, repurchasing firms are allowed to repurchase at maximum 10 percent of their share outstanding. Thus, repurchasing firms are separated into 5 groups. The first group is a group which announce to repurchase lower than 2 percent of share outstanding. And additional 2 percent in the following group.

3. **UNDERVALUE (rank 1,3,5):** Firms where the motivation is "undervaluation" and "confidence in the future business" receive a 5, "show strong financial position" receive a 3, and the others receive a 1.

To answer the second hypothesis, I use probit model to find the relationship between probability of false signal and cost score. I define the company that has completion ratio below 80 percent while stock price at the end of repurchase program below the share price at one day before announcement date as an evidence of false signal. According to the given criteria, the number of false signals is 26 of 106 samples or about 25 percent of total firms. To capture the effect of firm commitment, I separate the sample into 4 groups according to share price and completion rate. The first group is for the company that has share price at the end of repurchase program higher than the share price at one day before announcement date and completion ratio higher than 80 percent. The second group is for the company that has share price at the end of repurchase program higher than the share price at one day before announcement date

and completion ratio below 80 percent. The third group is for the company that has share price at the end of repurchase program below the share price at one day before announcement date and completion ratio higher than 80 percent. And the last group is the group of false signals. The summary table is shown below.

	Completion Ratio > 80%	Completion Ratio < 80%
Share Price at the end > at beginning	Group 1	Group 2
Share Price at the end < at beginning	Group 3	FALSE

Then I combine the separated group into 3 testing group, which are group 1 + FALSE, group 2 + FALSE, and group 3 + FALSE. To observe the effect of firm commitment, the last group should be focused. Since cost score reflect management intention, I expect a negative relationship between probability of false signal and COST score in the last group. The probit model is shown below.

Model 3:

$$FALSE_i = f(COST_i)$$

Where *FALSE* = 1 if found evidence of false signal

= 0 if not found evidence of false signal

Chapter 4: Data and Descriptive Statistic

I used data from SETSMART to identify announcements of share repurchase made by listed firm in Thailand between 2001 and 2019. In SETSMART are also have some company's characteristics at the announcement time such as maximum repurchase amount, the purpose of share repurchases, percentage of minority shareholder, etc. I find 138 reports of share repurchase announcements from the data source.

Table 1 below show a list of the number of shares repurchases announcements per year separated by repurchase method from 2001 to 2019. I find that there are only 10 repurchase done via general offer while the majority done by open market. At the beginning period, number of repurchasing companies was not high. From year 2001–2007, number of shares repurchase announcement is not over 2 digits. Interestingly, in 2008, number of an announcement soar dramatically at 33 announcements then dropped to 5 in year 2009 and recover to 12 in year 2010. After 2010, the number of yearly repurchase announcement fell below 2 digits again. In 2018 the number of announcements increase sharply to 17. Table 2 show number of repurchase announcement classified by industry. I find that repurchasing companies are in every industry. The largest proportion of repurchasing firms are in service industry about 18.8 percent followed by property & construction and industrial about 17.2 percent. Figure 2 show SET index together with repurchase announcement. It clearly seen that year 2008 was bearish year due to dramatically dropped around 50% from the previous year.

Table 1: Number of shares repurchase announcements during 2001-May 2019

Year	All	Open market repurchases	General offer
		No. Share repurchase programs	
2001	2	1	1
2002	5	5	0
2003	4	4	0
2004	6	5	1
2005	7	6	1
2006	3	3	0
2007	2	2	0
2008	33	33	0
2009	5	4	1
2010	12	12	0
2011	6	6	0
2012	5	3	2
2013	5	5	0
2014	5	5	0
2015	7	7	0
2016	7	5	2
2017	4	3	1
2018	17	16	1
2019	3	3	0
Total	138	128	10

Table 2: Number of shares repurchase announcements separated by industry

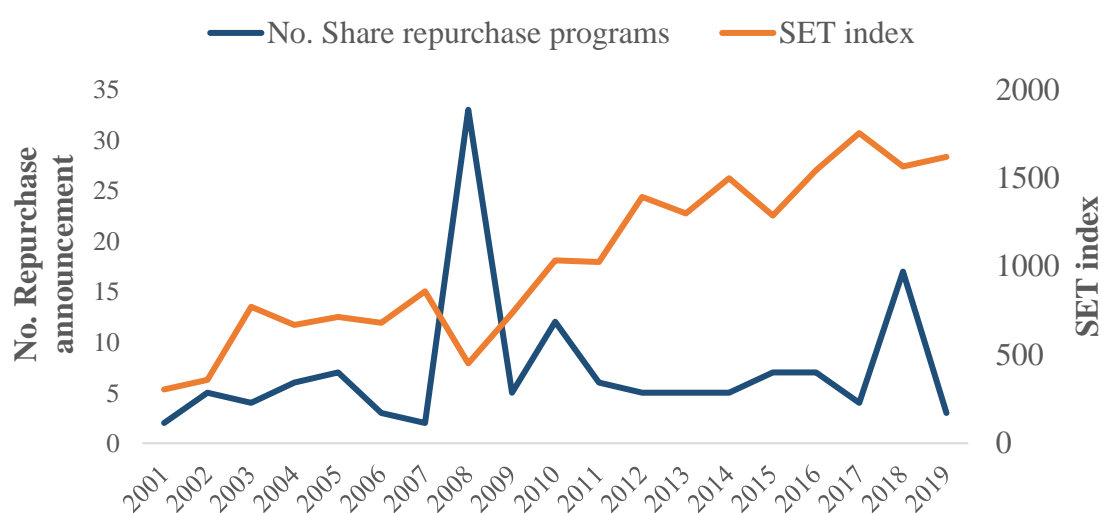|	Number	%
Resources	10	7.8%
Services	24	18.8%
Consumer Products	7	5.5%
Agro & Food Industry	10	7.8%
Financials	14	10.9%
Technology	19	14.8%
Property & Construction	22	17.2%
Industrials	22	17.2%

Figure 2: Stock Exchange of Thailand Index vs. No. of repurchase announcements.

Table 3 show stated motivation announced by management for a repurchase program. According to the information, there are only 24 statement categorized as an information signaling. Seventeen announcements stated that they do repurchase program because the current share price is below than the company's fundamental value. Another seven announcements stated that they do repurchase program because they are confident on future business operation. While the others did not give any specific reason.

Table 3: Motivations of share repurchase announced by management

Motivation	Statement	Frequency
Information Signaling	**- The current market price of company's share price is lower than the company's fundamental value**	**17**
	- The company is confident on the future's prospects of its business operation.	**7**
Others	- To show the strong financial status of the company	37
	- For Financial management	4
	- To enhance the rate of Return on Equity (ROE) and Earning per Share (EPS)	33
	- To maximize the benefits of company's excess liquidity	24
	- Best use of money	4

Figure 3 show completion rate, the percentage that firm complete the share repurchase compare to firm's announcement, for open market repurchase announcement. It clearly seen that most repurchasing firms did not complete as their announcement. There are only 33 companies complete the program.
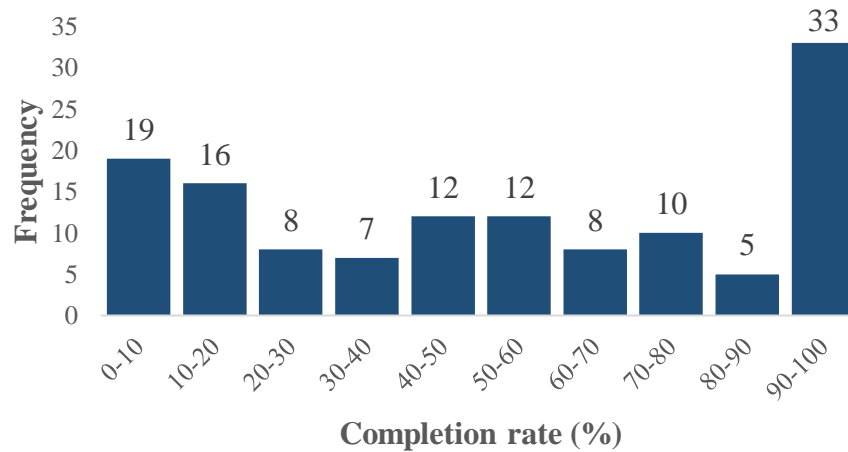
Figure 3: Completion rate for open market repurchase firm

Figure 4 show average daily abnormal return for 11 days period during announcement period. I find that there are only 4 days that have an abnormal return statistically significant different than 0. On announcement day, there is a large positive abnormal return about 0.54 percent. However, most of the price adjustment look to take place in the first day after announcement day with average abnormal return about 2.51 percent.

Figure 4: Average abnormal returns
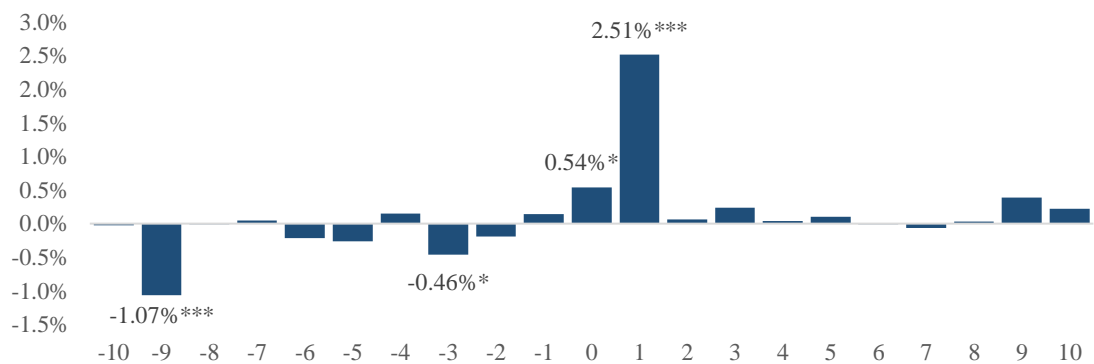
Standard errors in parentheses *** p<0.01, ** p<0.05, *p<0.1

Since the period between 1 day before announcement date to 1 day after announcement seem to contain a valuable information about market response, I sum up the average abnormal return for these 3 days and indicated as a cumulative abnormal return shown in Figure 5. Figure 5 shows that the cumulative abnormal return in an observation period is 3.19 percent. The positive price reaction is in line with those prior literatures. Positive cumulative abnormal return implies that investors in Thailand interpret share repurchase announcement as a good signal sent from management.

Figure 5: Cumulative abnormal return for 128 announcements from -1 to +1
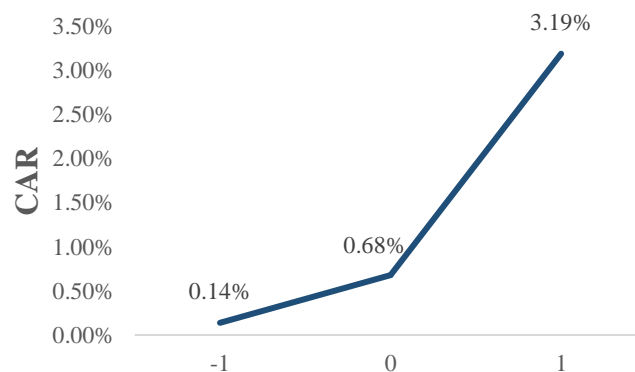
In table 4, I present the summary statistic of each variable used in the research model. The detail of each variable is described below.

Table 4: Summary statistic

	N	Mean	Sd	Min	Max
CAR [-1,1]	128	3.3%	5.6%	-12.9%	20.0%
CAR [-2,2]	128	3.2%	7.0%	-18.6%	30.4%
CAR [-3,3]	128	3.0%	7.8%	-19.5%	31.9%
MAJOR (%) *	128	51.1%	19.2%	8.9%	82.0%
INSIDE (%) *	55*	-0.16%	10.40%	-46.30%	45.20%
SOUGHT (%) *	128	7.3%	3.0%	1.0%	10.0%
UNDERVALUE*	128	0.20	0.40	0.00	1.00
MTB	128	1.64	1.68	0.19	10.40
SIZE (million THB)	128	11,646	21,389	208	110,400
PASTRETURN (%)	128	-9.0%	38.9%	-71.3%	159.0%
CRISIS	128	0.30	0.46	0.00	1.00

CAR is cumulative average abnormal return, where CAR [-1,1], CAR [-2,2], CAR [-3,3] represent the 3 days, 5 days, and 7 days period around announcement date, respectively. INSIDE is a percentage of insider trade compared to company's issued shares. SOUGHT is a percentage of stock that repurchasing firm limit to buy compared to company's issued share. MAJOR is the percentage of majority shareholder at announcement day. UNDERVALUE is a dummy variable set to 1 if repurchasing company state "undervaluation" as a motivation for repurchase own share. MTB is Market-to-book ratio calculated from market value of stock at announcement day divided by book value of equity as report in the most recent financial statement prior to announcement day. SIZE is firm's market cap in million Baht. PASTRETURN is the return of stock price in the last six-month. CRISIS is a dummy variable set to 1 if repurchase announcement occur during the situation that market index fall from its peak more than 20 percent in a six months prior period.

MAJOR: On average, repurchasing firm has percentage of insider holding about 51.1 percent. With a minimum of 8.9 percent and maximum of 82.0 percent. This indicate that, on average, repurchasing company has high concentration ownership structure.

INSIDETRADE: On average, insider tend to sell about 0.16 percent. With a minimum of -46.3 percent and maximum of 45.2 percent. Note that information retrieved from Bloomberg limit with ten-year period. Thus, the insider data has only 55 samples.

SOUGTH: The average percentage of share repurchase that announce by repurchasing companies is 7.3 percent from the maximum that SEC limit at 10 percent. This show that most of the repurchasing company set the repurchase amount at high level.

UNDERVALUE: Table 4 show about 20 percent of repurchasing company state "Undervaluation" as a motivation for a stock repurchase program.

MTB: Market-to-Book ratio has a mean of 1.64, with standard deviation of 1.68. This show that, on average, repurchasing companies tend to be "growth" firm than "value" firm.

SIZE: Firm size has a mean of 11,646 million THB. However, there is a huge different between the largest firm and smallest firm. This indicate that repurchasing company is not only the large company that usually get attention from an investor but also a small company that intend to send any information to the market and bring itself in the news.

PASTRETURN: On average, repurchasing firm has a negative return over the last six-month before announcement day with average of -9 percent. However, there is a large standard deviation of 38.9 percent. With a minimum of -71.3 percent and maximum of 159 percent.

Figure 6 present the empirical distribution of COST score. Base on the empirical distribution, the cutoffs are 6, 8, 10, and 12. The higher COST score are assumed higher intention of management to signal information to the market.

Figure 6: Distribution of COST score
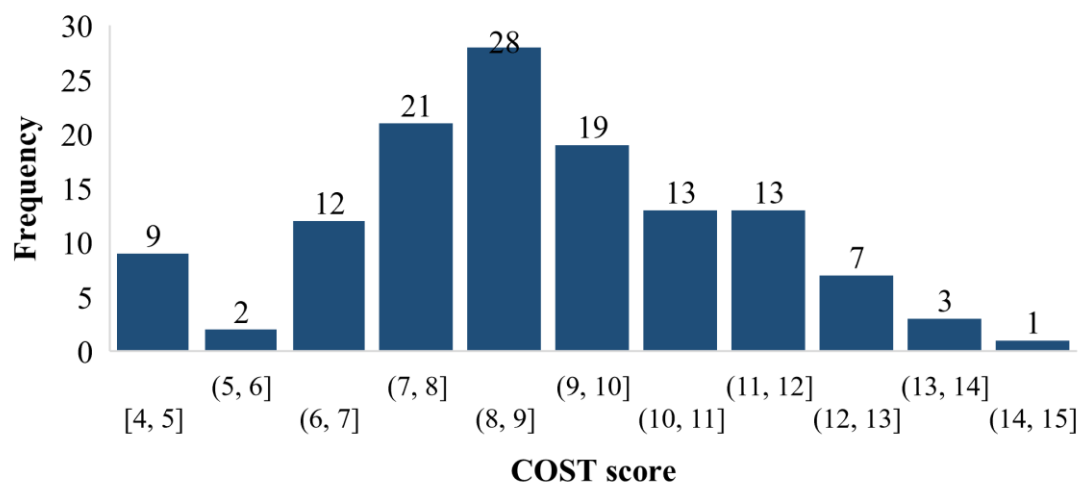
After categorized repurchasing companies with a given criteria, group of repurchasing firms are presented in figure 7.

Figure 7: Group of repurchasing firms categorized by COST score
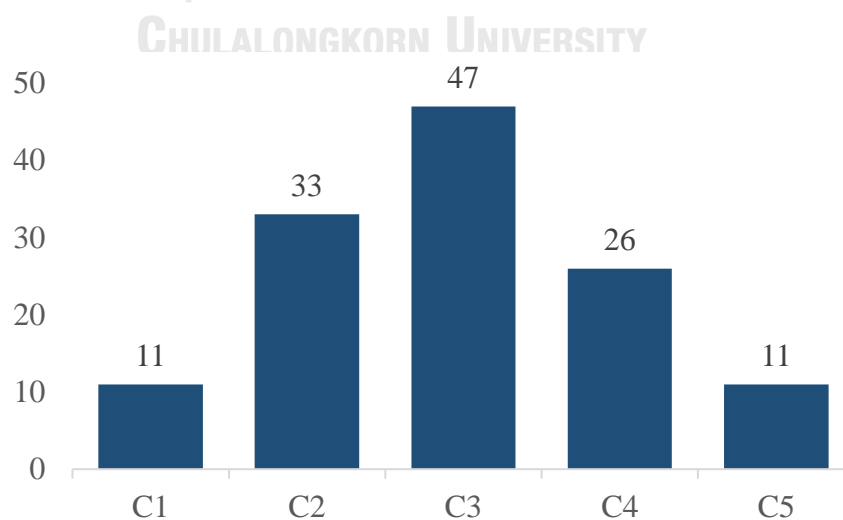
Chapter 5: Empirical Results

In this section, I will present my result from my analysis before reach to the conclusion in the next section.

5.1 Abnormal return and its contributory factors

To test the relationship between the market response and its contributory factors, model 1 and model 1.1 are introduced as already mentioned in methodology section. Table 5 displays all the result of both regression model.

Model 1: $CAR_i = \alpha + \gamma_1 MTB_i + \gamma_2 SIZE_i + \gamma_3 PASTRETURN_i + \gamma_4 MAJOR_i + \gamma_5 SOUGHT_i + \gamma_6 UNDERVALUE_i + \gamma_7 CRISIS_i + \varepsilon_i$

Model 1.1: $CAR_i = \alpha + \gamma_1 MTB_i + \gamma_2 SIZE_i + \gamma_3 PASTRETURN_i + \gamma_4 MAJOR_i + \gamma_5 SOUGHT_i + \gamma_6 INSIDE_i + \gamma_7 UNDERVALUE_i + \gamma_8 CRISIS_i + \varepsilon_i$

Table 5 below show that for those factors assumed to reflect management's intention to signal the market, INSIDE, SOUGHT, MAJOR, and UNDERVALUE, are all have positive effect with the market response as be expected except an insider trading that has a negative effect with CAR [-2,2] and CAR [-3,3]. However, among those factors, only percentage of insider holding is statistically significant coefficient of 0.0426 with CAR [-1,1]. This indicate that even there is a positive effect between the market reaction and the information signal, the market is indifferent for those signals. A clear evidence is that the market did not have any response with the management's perspective about the fundamental value or future business outlook. The result aligns with the previous literatures that investors have skepticism with an information sent via open-market share repurchase. For those variables that reflect the level of firm's

under valuation, MTB, and PASTRETURN, are in line with the previous literatures. Firm's market to book ratio has negative effect and statistically significant. This confirm that the market perceives the repurchase program for a value firm because of undervalued. The share price return prior to announcement (PASTRETURN) also have a negative effect in line with Peyer and Vermaelen (2009) that firm with negative return tend to be more undervalued. Firm's size is no obvious effect since coefficient and statistical are not different from zero. For CRISIS dummy, there is a negative effect with statically significant. This indicate that if repurchase announced during a crisis period tend to be ignored by investors since the market is in panic.

Table 5: Cumulative average abnormal return with contributory factors

VARIABLES	Model 1			Model 1.1		
	CAR [-1,1]	CAR [-2,2]	CAR [-3,3]	CAR [-1,1]	CAR [-2,2]	CAR [-3,3]
INSIDE				0.092	-0.007	-0.040
				(0.125)	(0.126)	(0.163)
SOUGHT	0.167	0.115	0.091	0.303	0.357	0.373
	(0.158)	(0.159)	(0.184)	(0.255)	(0.283)	(0.325)
MAJOR	0.043*	0.035	0.042	0.057	0.023	0.043
	(0.022)	(0.024)	(0.030)	(0.045)	(0.043)	(0.051)
UNDERVALUE	0.010	0.003	0.0028	0.009	0.002	0.008
	(0.010)	(0.011)	(0.013)	(0.019)	(0.018)	(0.020)
MTB	-0.007*	-0.009*	-0.019***	-0.006	-0.007	-0.018***
	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
lnSIZE	0.003	0.001	0.003	0.002	-0.002	-0.003
	(0.003)	(0.003)	(0.004)	(0.005)	(0.005)	(0.006)
PASTRETURN	-0.013	-0.008	-0.012	0.007	0.035	0.024
	(0.019)	(0.020)	(0.024)	(0.033)	(0.030)	(0.034)
CRISIS	-0.028**	-0.025*	-0.036**	0.005	0.015	0.021

	(0.012)	(0.013)	(0.015)	(0.025)	(0.023)	(0.023)
Constant	-0.056	-0.003	-0.021	-0.056	0.048	0.094
	(0.066)	(0.074)	(0.088)	(0.121)	(0.132)	(0.145)
Observations	128	128	128	55	55	55
R-squared	0.090	0.075	0.143	0.110	0.175	0.301

The regression model is $CAR_i = \alpha + \gamma_1 MTB_i + \gamma_2 SIZE_i + \gamma_3 PASTRETURN_i + \gamma_4 MAJOR_i + \gamma_5 SOUGHT_i + \gamma_6 UNDERVALUE_i + \gamma_7 CRISIS_i + \varepsilon_i$, $CAR_i = \alpha + \gamma_1 MTB_i + \gamma_2 SIZE_i + \gamma_3 PASTRETURN_i + \gamma_4 MAJOR_i + \gamma_5 SOUGHT_i + \gamma_6 INSIDE_i + \gamma_7 UNDERVALUE_i + \gamma_8 CRISIS_i + \varepsilon_i$ for model 1 and model 1.1 respectively. CAR is cumulative average abnormal return, where CAR [-1,1], CAR [-2,2], CAR [-3,3] represent the 3 days, 5 days, and 7 days period around announcement date, respectively. INSIDE is a percentage of insider trade compared to company's issued shares. SOUGHT is a percentage of stock that repurchasing firm limit to buy compared to company's issued share. MAJOR is the percentage of majority shareholder at announcement day. UNDERVALUE is a dummy variable set to 1 if repurchasing company state "undervaluation" as a motivation for repurchase own share. MTB is Market-to-book ratio calculated from market value of stock at announcement day divided by book value of equity as report in the most recent financial statement prior to announcement day. lnSIZE is a logarithm of the firm's market cap in million Baht. PASTRETURN is the return of stock price in the last six-month. CRISIS is a dummy variable set to 1 if repurchase announcement occur during the situation that market index fall from its peak more than 20 percent in a six months prior period. R-squared is the correlation coefficient. The numerical values in the table indicate the estimated coefficients of the variables, and the numerical values contain in brackets () indicate the t statistics of the variables. ***, **, and * indicate that the statistics reach significant level of 1%, 5%, and 10% respectively.

Table 6 show regression result for answering hypothesis 1. I hypothesize that firm with strong information signal from management on announcement date will have a higher cumulative abnormal return (CAR) following share repurchase announcement. As mention earlier that COST score reflect the level of management intention. The results are separated into 2 model to observe the effect of COST score in both discrete form and continuous form. Start with continuous form, even there is a positive effect between cumulative abnormal return and COST score, there is not statistically significant in every situation. For a discrete form, there is positive trendline between group 2, 3, and 4 for every situation. However, there is a downward for group 5. Thus,

it is hard to say that there is a relationship between cumulative abnormal return and COST score.

Model 2: $CAR_i = \alpha + \beta_1 MTB_i + \beta_2 SIZE_i + \beta_3 PASTRETURN_i + \beta_4 COST_2 + \beta_5 COST_3 + \beta_6 COST_4 + \beta_7 COST_5 + \beta_8 CRISIS_i + \varepsilon_i$

Model 2.1: $CAR_i = \alpha + \beta_1 MTB_i + \beta_2 SIZE_i + \beta_3 PASTRETURN_i + \beta_4 SUMCOST_i + \beta_5 CRISIS_i + \varepsilon_i$

**Table 6: Cumulative average abnormal return with cost factor**

VARIABLES	Model 2			Model 2.1		
	CAR [-1,1]	CAR [-2,2]	CAR [-3,3]	CAR [-1,1]	CAR [-2,2]	CAR [-3,3]
SumCOST				0.003	0.002	0.002
				(0.002)	(0.002)	(0.002)
C2	0.023	0.022	0.024			
	(0.016)	(0.016)	(0.020)			
C3	0.020	0.028*	0.026			
	(0.014)	(0.015)	(0.019)			
C4	0.030*	0.028*	0.028			
	(0.015)	(0.017)	(0.020)			
C5	0.026	0.018	0.022			
	(0.021)	(0.022)	(0.024)			
MTB	-0.006*	-0.008*	-0.017***	-0.007**	-0.008*	-0.017***
	(0.003)	(0.004)	(0.005)	(0.003)	(0.004)	(0.004)
lnSIZE	0.001	-0.001	0.000	0.002	-0.000	0.001
	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)
PASTRETURN	-0.013	-0.007	-0.012	-0.012	-0.008	-0.012
	(0.019)	(0.020)	(0.023)	(0.019)	(0.020)	(0.024)
CRISIS	-0.028**	-0.025**	-0.036**	-0.026**	-0.025*	-0.036**
	(0.013)	(0.013)	(0.014)	(0.012)	(0.013)	(0.014)
Constant	-0.003	0.045	0.030	-0.014	0.034	0.018

	(0.059)	(0.066)	(0.077)	(0.059)	(0.066)	(0.077)
Observations	128	128	128	128	128	128
R-squared	0.076	0.081	0.140	0.067	0.064	0.135

The regression model is $CAR_i = \alpha + \beta_1 MTB_i + \beta_2 SIZE_i + \beta_3 PASTRETURN_i + \beta_4 COST_2 + \beta_5 COST_3 + \beta_6 COST_4 + \beta_7 COST_5 + \beta_8 CRISIS_i + \varepsilon_i$, $CAR_i = \alpha + \beta_1 MTB_i + \beta_2 SIZE_i + \beta_3 PASTRETURN_i + \beta_4 SUMCOST_i + \beta_5 CRISIS_i + \varepsilon_i$ for model 2 and model 2.1 respectively. SumCOST is a combination of COST score from SOUGHT, MAJOR, and UNDERVALUE. C2, C3, C4, and C5 is a dummy variable taking the value one when COST score are between 6 and 8, 8 and 10, 10 and 12, and more than 12. R-squared is the correlation coefficient. The numerical values in the table indicate the estimated coefficients of the variables, and the numerical values contain in brackets () indicate the t statistics of the variables. ***, **, and * indicate that the statistics reach significant level of 1%, 5%, and 10% respectively.

Figure 8: Trendline coefficient for each cost group
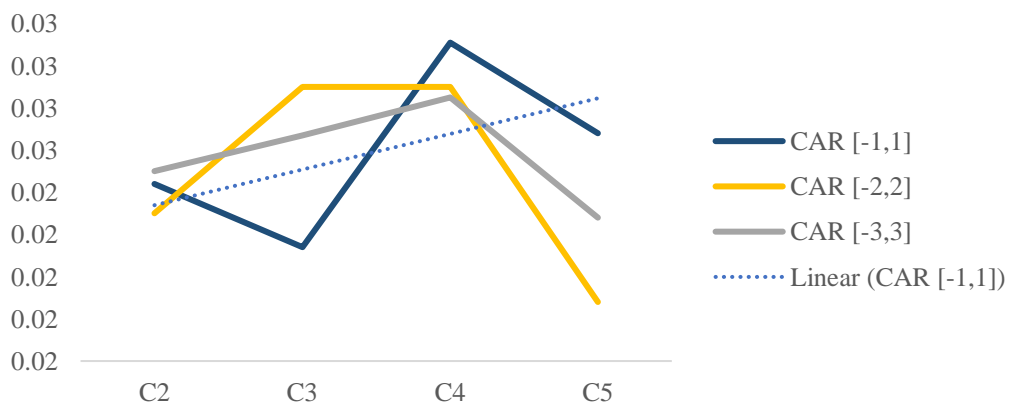
Model 3: $$FALSE_i = f(COST_i)$$

Table 7 show regression result for answering hypothesis 2. The probit result shows that there is no evidence of relationship between firm commitment and false signal in group 1 and 2. In addition, for group 3, the result contradict from what I expect. The result show that there is a positive relationship between probability of false signal and cost score. The result aligns with previous literatures that since the cost of share

repurchase via open market is low and the penalty of not following the word is low, repurchasing firms are indifferent whether they should follow the word or not.

Table 7: FALSE signal with cost factor

	Group 1	Group 2	Group 3
VARIABLES	FALSE	FALSE	FALSE
SumCOST	0.161	-0.0853	0.161*
	(0.134)	(0.0762)	(0.0939)
MTB	-0.270	-0.0609	0.117
	(0.173)	(0.111)	(0.252)
lnSIZE	0.111	0.0750	0.113
	(0.147)	(0.109)	(0.165)
PASTRETURN	0.0609	0.157	-0.578
	(0.742)	(0.360)	(0.467)
CRISIS	0.615	-0.285	0.0113
	(0.515)	(0.358)	(0.507)
Constant	-3.240	-1.018	-3.688
	(3.369)	(2.496)	(3.561)
Observations	40	78	40
Robust standard errors in parentheses			
*** p<0.01, ** p<0.05, * p<0.1			

Chapter 6: Conclusion

In this paper, I investigate the short-term effects of open market repurchase on stock prices with an information signal sent by management. Moreover, this research aims to find a relationship between an information signal and company's actual action at the end of repurchase program. I collect data from SETSMART and end up with a sample of 128 observations between 2001 and 2019.

I find that an average abnormal return on announcement day and the day after announcement day statistically significant. On announcement day, there is a positive average abnormal return of 0.54 percent. However, most of the price adjustment look to take place in the first day after announcement day with average abnormal return of 2.51 percent. The 3-day cumulative abnormal return around share repurchase announcement, CAR [-1,1], is 3.19 percent. The result is in line with prior literatures, Nittayagasetwat, Nittayagasetwat (2013). The result indicates that investors in Thailand interpret the share repurchase announcement as a good signal sent from management.

The contributory factors that affect the short-term effect on the stock prices are separated into two groups in this research. The first group referred from Payer and Vermaelen (2009) who argued that market-to-book ratio, firm size, and prior raw return could reflect the level of firm's undervaluation. Company with low market-to-book ratio, small size, and negative prior raw return have higher probability to repurchase because of undervaluation than company with high market-to-book ratio, large size, and high prior raw return. The result shows that only market-to-book ratio is statistically significant. No evidence was found for company's size and past stock

price return. Furthermore, this research extends the study of Payer and Vermaelen (2009) by including signaling factors sent from management and observe the market reaction. Referred from prior literatures, the stated motivation in the press release, insider "BUY" prior announcement, percentage of majority shareholder, and the amount of repurchasing plan are introduced to reflect the level of information signal sent by management. I hypothesized that these factors could increase market confidence and follow by a higher cumulative abnormal return. However, the result show that only percentage of insider holding is statistically significant. Furthermore, I aggregate the effect of these four factors as COST factor to reflect the level of management's intention as a whole firm. The result aligns with the first result. There is no clear evidence show that the information factor could increase the market confidence and cumulative abnormal return. The result is in line with previous literatures that investors have skepticism with an information sent via open-market share repurchase. Moreover, the cost of information factors observed in this study is not high enough gain a confidence of the market.

Lastly, this research aims to observe the relationship between an information signal and firm's action at the end of repurchase program. I hypothesize that if the penalty of not following an announcement is existing, repurchasing firm will not lie to investors on announcement day. Thus, I expect that investors can use the information that firm sent with an announcement to forecast firm's actual action at the end of repurchase program. In this research, I define the company that has completion ratio below 80 percent while stock price at the end of repurchase program below the share price at one day before announcement day as an evidence of false signal. According to a given criteria, the number of false signals is 26 out of 106 samples or about 25 percent of

repurchasing firms. According to my hypothesis, these false signal firms should not have any information signal sent from management on announcement day. Furthermore, I use COST score calculated in the previous section as an indicator of management intention. I use probit model to find the relationship between the probability of false signal and COST score. The result contradicts from what I expect. The result show that there is a positive relationship between probability of false signal and cost score. The result aligns with previous literatures that since the cost of share repurchase via open market is low and the penalty of not following the word is low, repurchasing firms are indifferent whether they should follow the word or not. The conclusion from this research is that open market share repurchase is not a useful method to signal information to the market. Investors also should not always see a repurchase announcement as good news since there is a huge downside risk.

REFERENCES

Chan, K., et al. (2001). Earnings quality and stock returns, National bureau of economic research.

Comment, R. and G. A. Jarrell (1991). "The relative signalling power of Dutch-auction and fixed-price self-tender offers and open-market share repurchases." The Journal of Finance **46**(4): 1243-1271.

Dann, L. Y. (1981). "Common stock repurchases: An analysis of returns to bondholders and stockholders." Journal of financial Economics **9**(2): 113-138.

Dittmar, A. K. (2000). "Why do firms repurchase stock." The Journal of Business **73**(3): 331-355.

Grullon, G. and D. L. Ikenberry (2000). "What do we know about stock repurchases?" Journal of Applied Corporate Finance **13**(1): 31-51.

Grullon, G. and R. Michaely (2002). "Dividends, share repurchases, and the substitution hypothesis." The Journal of Finance **57**(4): 1649-1684.

Grullon, G. and R. Michaely (2004). "The information content of share repurchase programs." The Journal of Finance **59**(2): 651-680.

Ikenberry, D., et al. (2000). "Stock repurchases in Canada: Performance and strategic trading." The Journal of Finance **55**(5): 2373-2397.

Jensen, M. C. (1986). "Agency costs of free cash flow, corporate finance, and takeovers." The American economic review **76**(2): 323-329.

Jones, J. J. (1991). "Earnings management during import relief investigations." Journal of accounting research **29**(2): 193-228.

Lakonishok, J. and T. Vermaelen (1990). "Anomalous price behavior around repurchase tender offers." The Journal of Finance **45**(2): 455-477.

Peyer, U. and T. Vermaelen (2009). "The nature and persistence of buyback anomalies." The Review of Financial Studies **22**(4): 1693-1745.

Sloan, R. G. (1996). "Do stock prices fully reflect information in accruals and cash

flows about future earnings?" <u>Accounting review</u>: 289-315.

Vermaelen, T. (1981). "Common stock repurchases and market signalling: An empirical study." <u>Journal of financial Economics</u> **9**(2): 139-183.

Vermaelen, T. (1984). "Repurchase tender offers, signaling, and managerial incentives." <u>Journal of Financial and Quantitative Analysis</u>: 163-181.

Vermaelen, T. (2005). <u>Share repurchases</u>, Now Publishers Inc.

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