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Share Repurchase: An Event Study of Companies Listed in the Stock Exchange of Thailand

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Abstract
This study examines the impact of share repurchase announcements on stock prices listed on the Stock Exchange of Thailand (SET) during the period 2018-2023. An event study methodology excluding financials and Market for Alternative Investment (MAI) listings was employed to analyze abnormal returns or price fluctuations around the announcement date. The market model estimated expected returns, with abnormal returns measured in three windows: (-15, 15), (-10, 10), and (-5, 5) days in relation to the announcement. The key findings reveal statistically significant abnormal returns, particularly in the window surrounding the announcement date and those 10 to 15 days after, which align with the first repurchases for some portions of the companies investigated. This suggests potential price movements around both the announcement and the initial repurchase transactions and highlights the importance of analyzing short-term market reactions. It also hints at possible information leakage prior to repurchasing. These results hold implications for both investors, who can utilize this knowledge for potential short-term gains, and regulators, who may need to investigate market dynamics around repurchase announcements and consider measures to ensure a level playing field for all market participants.

Keywords: Share Repurchase, Stock Buyback, Event Study, Stock Price Reaction, Thai Stock Market

1. Introduction

Shares repurchase (or stock buyback) is a way for companies to spend excess cash to repurchase their shares. Since it causes the outstanding numbers of shares to decrease, it has the potential for making stock prices subsequently go up (Isagawa, 2002; Duivenvoorden, 2018). It has been one of the most important tools at the disposal of firms to manage their financial situations. This is especially the case in the U.S., where stock buyback is regulated and controlled by the Securities and Exchange Commission (SEC) to ensure transparency and fairness in the market (Said & Weddington, 2023). Three repurchasing methods have been identified. They include:(i) buying stocks via the open or public market, (ii) tender offers (TO), and (iii) private negotiations (Grullon & Ikenberry, 2000). In the case of TOs, firms send formal invitations to shareholders to tender or sell their shares at a predetermined price within a specific timeframe. The price is either fixed by the company or bid by among shareholders and the firm will finally determine the bid prices. As to private negotiations, companies negotiate directly with specific shareholders or institutional investors to repurchase shares outside the open market (Grullon & Ikenberry, 2000; Hsu et al., 2019). These transactions may involve purchasing shares from large shareholders, institutional investors, or employee stock ownership plans (ESOPs).

The most cited explanations as to why firms may decide to pursue repurchasing is that a firm's stocks are undervalued, and the firm believes their actual value should be higher and that a repurchase should therefore be conducted (Duivenvoorden, 2018; Hsu et al., 2019; Chen & Obizhaewa, 2022). Since share repurchasing almost invariably sends a positive signal to investors and the market, most of the time the market responds rather positively and yields positive abnormal returns (Ginglinger & Hamon, 2007). In Thailand, stock buyback was first allowed in December 2001 when regulations governing repurchasing were first enacted by the Stock Exchange of Thailand (SET) that was officially founded in 1974 to control and regulate the operations of finances and securities companies (Thanatawee, 2013). The SET divides share repurchase into 2 distinct categories: In one case, if the shareholders vote against the resolution of the shareholders' meeting to amend the company's articles of association in matters related to voting rights or rights to receive dividends, the company shall adopt a General Offer (GO) as a way to make repurchasing deals. The other case occurs when the company has accumulated profit and excess liquidity and sees stock buyback as part of its financial management strategy. This can be achieved via the SET Automatic Order Matching (AOM), the pen market, or a GO. It is important to note that implementing an AOM is needed when the repurchase of shares is less or equal to 10% of the paid-up capital. On the other hand, when the repurchase of shares is more than 10%, a GO shall be used (Thanatawee, 2013). The SET also determines the disclosure date, which enables researchers to precisely examine the impacts of share repurchases on the Thai stock market (Thanatawee, 2013).

Nittayagasetwat & Nittayagasetwat (2013) studied the effect of common stock repurchase on the SET during the period 2001-2012 using collective data obtained from the SET database and observed average abnormal returns (AAR) and cumulative average abnormal returns (CAAR). The findings showed a positive sign of CAARs with 99% statistical significance. One graph in the study sharply spikes up from 1 day prior the announcement date (day 0) and then goes on until the edge of focusing window (day 10). Their study confirms the existence of asymmetric information and the Signaling Hypothesis discussed in prior studies in other parts of the world (e.g. Masulis, 1980; Dann, 1981; Vermaelen, 1981; Asquith & Mullins, 1986; Ofer & Thakor, 1987; Grullon & Ikenberry, 2000; Isagawa, 2002; Mazur, Dang, & Vo, 2023). As determined in these studies, since information is held unequally, once a company announces a repurchase plan, the market reacts positively; the prevailing belief being that the company is sending a signal that its actual value is not representative of its true value. Inspired by the aforementioned articles on the Thai stock market and research on other markets' reaction to stock buybacks, this study seeks to determine question of whether share repurchase announcements lead to statistically significant abnormal returns in the stock prices of companies listed on the Stock Exchange of Thailand (SET). The focus is on the period 2018-2023 (Q1). Specifically, it aims to assess whether publicly available information is fully reflected in stock prices as posited by the semi-strong form of the Efficient Market Hypothesis (EMH). Evidence of the effect of share repurchases in emerging markets like Thailand is still scarce. Thus, by analyzing recent data and conducting robustness checks on various event windows, this study aims to fill this gap in knowledge. Additionally, it can reveal potential windows of opportunity for investors to develop trading strategies that could lead to improved portfolio performance.

2. Literature Review

- *Share Repurchase*

The topic of share repurchase has gathered significant attention in academic research and has been the subject of numerous studies (e.g. Vermaelen, 1981; Ofer & Thakor, 1987; Ikenberry & Vermaelen, 1996; Dittmar, 2000; Grullon & Ikenberry, 2000; Chan, Ikenberry, & Lee, 2007;

Almeida et al., 2016; Manconi, Peyer, & Vermaelen, 2019; Chen & Obizhaeva, 2022; Said & Weddington, 2023). Punwasi & Brijlal (2016) studied the market reaction to share repurchase announcements on the Johannesburg Stock Exchange (JSE) in South Africa , and found that they have a significant influence on the movements of stock prices after announcements were made but not any significance in market timing ability. The market reacted negatively only on the announcement date (Day 0) but positively on the rest of the event window based on the AAR and CAAR measurements. The price significance is consistent with the Signaling Theory (Spence, 1973), which advances that, since there are information asymmetries, insider behavior and corporate actions can act as valuable signals for investors and traders (Stiglitz & Weiss, 1981). Almeida, Fos, & Kronlund (2016) explored the effect of share repurchase in the U.S. and found that company earnings per share (EPS) sharply increased in cases where the EPS of that firm had not met the EPS forecast in the absence of a repurchase event more than in cases where the firm met or beat the EPS forecast. The findings suggest that managerial teams may be willing to trade off investment and employment for repurchasing their own share in order to meet EPS forecasts. Almeida et al. (2016) concluded that EPS-motivated share repurchase would lead to the negative result or reduction of investment, employment, and R&D.

In the same vein, Wesson & Botha (2019) examined whether share repurchases as a perspective for company growth, investment, employment, and R&D opportunities would be negative in South Africa. In contrast to Almeida et al. (2016), they reported that it was positive, meaning these opportunities were not affected by share repurchases on the JSE. Hsu et al.'s (2019) empirical study of share repurchases in Taiwan concluded that companies with higher debt are more likely to pursue share repurchases. Examining the effect via event study, they found that there is a positive effect within 10 days after the announcement period and that this trend steadily declines and becomes negative on the 41st to 44th trading day. They also concluded that companies with higher repurchase real rates encountered poorer abnormal returns. This is consistent with Modigliani & Miller's (1958) Leverage Theory which postulates that using borrowed money to build capital can increase both potential returns and risks and that excessive debt could lead to financial stress.

For transparency purposes, the rules and regulations governing share repurchasing in Thailand require that a company reports a planned share repurchase at least 14 days before the repurchasing process starts and then complete the buyback within 6 months from the day of the buying back (Anavachapongpan, 2019). Since share repurchasing was first allowed in Thailand in December 2001 (Thanatawee, 2013), the Thai history of repurchases is therefore much shorter as compared to the U.S. and European countries. Still, as noted in the introduction, several studies have investigated the impact of share repurchasing on the Thai market. (e.g. Thanatawee, 2013; Nittayagasetwat & Nittayagasetwat, 2013; Anavachapongpan, 2019). Thanatawee (2013) studied the impact of buyback on liquidity by comparing the means and median of liquidity and repurchase days and non-repurchase days over a 6-month window. A multiple regression analysis was conducted. It was found that there was a significant positive relationship between the number of shares which were repurchased and the liquidity measures. This result is consistent with Cook, Krigman, & Leach's (2004) study which examined U.S. firms listed on the New York Stock Exchange (NYSE) and NASDAQ but contradict prior findings by Brockman & Chung (2001) in relation to Hong Kong and by Ginglinger & Hamon (2007) in relation to France.

- Share Repurchase Rationale

Several studies have sought to explain the motivations behind share repurchase events (e.g. Masulis, 1980; Dittmar, 2000; Drousia, Episcopos, & Leledakis, 2019; Chen & Obizhaeva, 2022). Vermaelen (1981) postulated that four main hypotheses account for them. They include the so-called signaling, personal taxation, leverage, and bondholder expropriation hypotheses.

The signaling (or information hypothesis) suggests that share repurchases can be used as a signal by companies to convey positive information about their prospects or the undervaluation of their stocks. It posits that share repurchases serve as a positive signal to the market. This hypothesis is consistent with multiple shares repurchase research (e.g Ofer & Thakor, 1987; Grullon & Ikenberry, 2000; Chan et al., 2007; Punwasi & Brijlal, 2016; Mazur et al., 2023). The personal dividend (or taxation) hypothesis, as explained by Vermaelen's (1981), assumes that share repurchases may be driven, in part, by the desire to provide a tax-efficient alternative to cash dividends for shareholders. The argument is based on the premise that dividend payments are subject to personal income taxes, whereas capital gains from share repurchases may be taxed at lower rates or deferred until the shares are sold. Under this hypothesis, companies may choose to repurchase shares as a means of returning cash to shareholders while potentially reducing the tax burden on those shareholders.

The third hypothesis, the leverage hypothesis, proposes that companies may engage in share repurchases as a mean to adjust their capital structure and manage their leverage since when a company repurchases its own shares, it reduces the number of outstanding shares, effectively increasing the proportionate ownership stake of the remaining shareholders. As a result, the company's debt-to-equity ratio improves, leading to a decrease in leverage. Companies may strategically use share repurchases to signal to the market that they are actively managing their leverage and maintaining a desirable capital structure. By adjusting their capital structure through repurchases, companies may thus enhance their perceived financial strength and reduce financial risk, potentially leading to positive market reactions.

Finally, the bondholder expropriation hypothesis suggests that companies may engage in share repurchases as a mean to expropriate wealth from bondholders. When a company repurchases its own shares, it utilizes its available cash or raises debt to buy back shares from the market. This reduces the company's cash reserves or increases its debt levels, potentially negatively impacting the company's ability to fulfill its obligations to bondholders. Companies may strategically engage in share repurchases to benefit shareholders at the expense of bondholders. By using cash or debt to repurchase shares, companies may be diverting funds that could otherwise be used to honor interest payments or repay principal to bondholders. This could lead to increase financial risks for bondholders and potentially reduce their value to them. However, as Vermaelen (1981) argues, the possibility that this happens is low due to the restrictions imposed by the rules and regulations governing repurchase in many places.

- Event Study

Event study provides valuable insights into the efficiency and informational content of financial markets and helps researchers understand the effects of specific events based on asset prices. This approach involves estimation and event windows. When Duivenvoorden (2018) conducted an event study to explain the effect of stock repurchase announcements on stock price performance in the United Kingdom to find abnormal returns and actual returns (the study sample involved 65 purchasing companies), the event window focused on 4 days before and after the announcement date (the event date). Expected returns in the absence of the event are calculated through the estimation window and the estimation window is the chosen range of period before the event windows. Estimation periods must not overlap with the event range in order to avoid cluster and error results (MacKinlay, 1997; Sitthipongpanich, 2011).

MacKinlay (1997) identified two approaches to event studies: a statistical approach and an economic approach; each including specific sub-models. One is the Constant Mean Return Model used in the statistical approach (e.g. Brown & Warner, 1980). Another is the Capital Asset Pricing Model (CAPM), commonly adopted with an event study methodology (Lintner, 1965; MacKinlay, 1997; Sharpe, 1964). This model describes the relationship between

systematic risk and expected return and established linear relationship between the required return on an investment and risk. Duivenvoorden (2018) chose the CAPM to estimate actual returns. Alternatively, the Arbitrage Pricing Theory (APT) model can be adopted to explain the expected return as a linear combination of multiple risk factors (MacKinlay, 1997). As Sitthipongpanich (2011) cautioned, there is no event study limitation, since there is no set number of periods from any empirical study. The number of period ranges should be carefully picked and since there are many possible choices, it will implicitly reflect the market situation. It is a tradeoff between estimation accuracy and potential parameter shift. It may be too short to capture the significant effect of the event or too long to dilute the most meaningful effect. Sitthipongpanich (2011) performed an event study based on the assumption of the market efficiency hypothesis (Fama, 1970). There are two key takeaways to be derived from this hypothesis. One is that share prices reflect all information, stocks trade at their fair market value.

The second is that investors get benefits from investing at low cost. Market efficiency can be divided into the following three categories: weak, semi-strong, and strong. In a weak efficiency market, stock prices fully reflect all historical data which means the technical analysis or prediction purely depends on past information. A semi-strong efficiency market assumes the stock prices not only reflect from the past but also all available public information (news, announcements, financial statements, economic data, etc.) It is impossible for investors to always achieve positive abnormal returns in this form. Those with access to private information could gain the upper hand. And in a strong efficiency market, the stock prices reflect not only past data and public information but also private information, making the insider not consistently gain positive abnormal returns through trading.

3. Research Methodology

- *Data Sample*

Given the focus of this study on stock buyback events, the dataset comprises all firms listed on the SET that engaged in the repurchase of their own shares between 2018 and March 2023, roughly spanning a period of five years. The choice of this sample period reflects the availability of the most recent data at the time this investigation was conducted as well as the need to cover a reasonable length of historical data in order to allow for statistical inferences. It is also consistent with the sample periods found in relevant studies as most of them utilize similar length of sample period (e.g. Comment & Jarrell, 1991; Hodrick, 1998; Fenn & Liang, 2001; Kahle, 2001; Oded, Ben-Rephael, & Wohl, 2011). During this timeframe, a total of 89 share repurchase events were identified, involving 74 distinct companies. It is important to note that companies listed on the Market for Alternative Investment (MAI), ten of them in this study, fall outside the ambit of this study as they are smaller in market capitalization and generally have lower free float and trading activities, potentially indicating different price behaviors. Furthermore, the financials sector was excluded and observations with insufficient data or errors, such as missing historical stock prices, data overlapping within previous repurchase events, or within the estimation windows, were eliminated as well. After applying these criteria, the dataset was refined down to 60 observations from 53 distinct firms.

Data collection in this study relied on two key sources: SETSMART, an internet-based application developed by the SET and Bloomberg, a globally recognized provider of financial news and information, accessible through FinLab from the SET Library. They offer both real-time and historical data since the SET Library subscribes to Bloomberg Terminal, making it accessible to users, particularly for academic purposes.

- Event Study

To achieve the study's objectives, an event study methodology was employed. As noted above, event studies, pioneered by Fama et al. (1969) and MacKinlay's (1997) seminal works, offer an approach for analyzing the market's reaction to specific events, More specifically, this methodology allows researchers to isolate the announcement effect on stock prices by comparing the actual returns to the expected returns based on a broad market index during a defined window around the announcement date. Adopting this approach can thus help to determine whether the repurchase announcement led to statistically significant changes in stock price performance and control general market movements.

(i) Spanning Windows

Based on Seiler's (2003) study, an estimation window with the range of -115 to -16 trading days (-115, -16) and an event window in the range of -15 to 15 trading days (-15,15) were adopted. Additionally, two alternative event windows were set for robustness checks: an estimation window (-110, -11) with an event window of (-10,10) and an estimation window of (-105, -6) with an event window (-5,5). The event date (Day 0) was the date when share repurchase was officially announced.

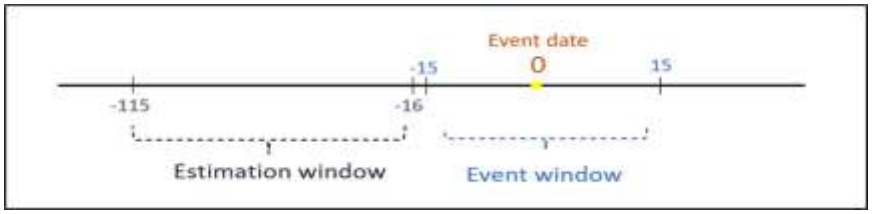

Figure 1: Estimation and Event Windows **(**Seiler, 2003)

(*ii) Abnormal Returns and the Market Model*

Before an abnormal return could be found, a non-event return or expected return (also called normal return) was calculated by implementing the market model using following sequential equations:

$$\text{Abnormal Return } (AR) = R_i - E(R_i) \quad (1)$$

where $E(R_i)$ = expected or non-event return of securities *i*
R_i = return of securities *I*

Return or R_i can be obtained by performing the following computation:

$$R = LN\left(\frac{P_t}{P_{t-1}}\right) \quad (2)$$

where LN = natural logarithm
P_t = closing price at present day
P_{t-1} = closing price at previous day

The *Market Model* was then implemented to determine $E(R_i)$

$$E(R_{i,t}) = \hat{\alpha} + \hat{\beta} R_{m,t} \quad (3)$$

where $\hat{\alpha}$ = the intercept of the regression line and it is the expected mean when market return is zero
$\hat{\beta}$ = the slope of the regression line indicating the level of effect of market return on security return
$E(R_{i,t})$ = non-event return in the event period t for security *i*
$R_{m,t}$ = return of the market in the event period t

Once abnormal returns were estimated, standardization was applied as shown below (Seiler, 2003).

$$SAR_{i,t} = \frac{AR_{i,t}}{\sqrt{s^2_{AR_{i,t}}}} \quad (4)$$

where $SAR_{i,t}$ = Standardized abnormal return for firm *i* at time *t.*

$\sqrt{s^2_{AR_{i,t}}}$ *or* $s_{AR_{i,t}}$ or standard deviation of AR for firm *i* at time *t*

Variance $s^2_{AR_{i,t}}$ was calculated as:

$$s^2_{AR_i} = \left(\frac{\sum_{t=-115}^{-16}\left(AR_{i(est.window)} - \overline{AR}_{i(est.window)}\right)^2}{D_i - 2}\right) * \left(1 + \frac{1}{D_i} + \frac{\left(R_{mt(event)} - \bar{R}_{mt(est.window)}\right)^2}{\sum_{t=-115}^{-16}\left(R_{mt(est.window)} - \bar{R}_{mt(est.window)}\right)^2}\right) \quad (5)$$

where $AR_{i(est.window)}$ = abnormal return for firm *i* on estimation window

$\overline{AR}_{i(est.window)}$ = mean of AR for firm *i* on estimation window

$R_{mt(event)}$ = market return at time *t* over event window

$R_{mt(est.window)}$ = market return at time *t* over estimation window

$\bar{R}_{mt(est.window)}$ = mean of market return at time *t* over estimation window

D_i = number of observed trading day of firm's return *i* over estimation window

After standardization, the SAR was aggregated on each day across the firms. The total standardized abnormal returns (TSAR) were then computed as:

$$TSAR_{t1,t2} = \sum_{t=t1}^{t2} SAR_t \quad (6)$$

and

$$Cummulative\ TSAR_{t1,t2} = \sum_{t=t1}^{t2} TSAR_t \quad (7)$$

where $TSAR_t$ = total standardized abnormal return for each day in the event window

$t1$ = earliest day in the event window

$t2$ = later date in the event window (ex. From -15 to +15)

- Significance Test

The statistical significance was determined by implementing z-statistic as follows:

$$Z - statistic_t = \frac{total\ SAR_t}{\sqrt{\sum_{i=1}^{N}(D_i - 2)/(D_i - 4)}} \quad (8)$$

where N = number of observations.

$Z - statistic_t$ = z-statistic for each day in event window (z-statistic follows a standard normal distribution (zero means and standard deviation of 1.0))

For z-statistic result of cumulative SAR, the equation is:

$$Cummulative\ Z_t = \frac{Cummulative\ TSAR_{t1,t2}}{\sqrt{(t2 - t1 + 1)[(D_i - 2)/(D_i - 4)]}} \quad (9)`$$

Once the z-statistic results were obtained, they were converted into p-values. A resulting p-value of less than 0.05 implies statistical significance and the rejection of the null hypothesis

(H_0) with 95% level of confidence. Similarly, a p-value below 0.01 indicates a confidence level elevated to 99% (Seiler, 2003). The only scenario in which the null hypothesis cannot be rejected is when the p-value exceeds 0.10.

4. Results

The discussion of the key findings in this study covers four main areas. The first one is descriptive statistics on repurchase activities, including the number of repurchasing firms compared to the overall market, the total number of repurchase events, and the transaction size details categorized by period. The second one is about unstandardized average abnormal returns (AARs) and cumulative average abnormal returns (CAARs), which provide a sense of the magnitude of the market reactions to repurchase announcements. The third area covered is the results on statistical significance of the standardized abnormal returns (SARs), which help to illustrate the strength of the relationship between share repurchases and stock price movements. The fourth area is about ensuring the robustness of the findings, which requires abnormal returns to be analyzed using different event window specifications.

(i) Descriptive Statistics

In order to understand the prevalence of repurchases and provide insights into the size and distribution of repurchase transactions, this section presents various descriptive statistics. Table 1 presents overall data before any exclusions. It offers a breakdown of the distribution of the repurchasing firms compared to non-repurchasing firms on the SET during the period 2018-March 2023. Out of the 616 firms listed on the SET only 75 firms (12.18%) chose to repurchase their shares, implying that it is a somewhat targeted strategy for specific companies or for companies under particular market conditions. Most of the repurchasing firms (65 out of 75) are listed on the SET's main board, a clear indication that repurchases might be less common among smaller or less mature MAI companies. As can be seen in Table 1, among the repurchasing firms on the SET's main board, some industries have a higher inclination to use share repurchases than others. This is the case with the services industry that has the highest representation (16 firms), followed by the property and construction sector (14 firms) and the Industrial sector (9 firms).

Table 1: Repurchasing Firms on the Thai Stock Market (2018-March 2023)

Non-Repurchasing Firms			541
Repurchasing Firms (75)	Listed on the SET's main board (65)	Agro & Food Industry (AGRO)	7
		Consumer Products (CONSUMP)	2
		Financials (FINCIAL)	4
		Industrials (INDUS)	9
		Property & Construction (PROPCON)	14
		Resources (RESOURC)	6
		Services (SERVICE)	16
		Technology (TECH)	7
	Listed on the MAI		10
Total Number of Firms			**616**

Source: Authors' computations based on data collected from SETSMART and Bloomberg

Table 2 reports the characteristics of share repurchase activities in Thailand during the period 2018-March 2023 in terms of transaction value. The repurchase value fluctuated markedly across the years with the year 2020 witnessing a surge in repurchases with the highest frequency (29) and the largest total value (nearly 23 billion baht).

Table 2: Repurchasing Transaction Value (in Million Baht)

Period	No. of Repurchases	Total Value	Average	Minimum	Maximum
2018	17	9,172.89	539.58	2.00	2,328.24
2019	20	4,672.29	233.61	1.70	1,187.60
2020	29	22,572.21	778.35	5.63	6,084.50
2021	8	891.78	111.47	13.29	365.44
2022	12	3,098.41	258.20	3.30	1,080.72
Q1 2023	2	24.51	12.26	7.56	16.96

Source: Authors' computations based on data collected from SETSMART and Bloomberg

A deeper look at the frequency and value by industry indicates that, as noted above, the Property and Construction and the Agro and Food industries were more inclined to utilize repurchases. While the total value of the repurchase transactions throughout the sample period amounted to around 40 billion baht, representing roughly 0.05% of the total trading value on the SET during that same period (approximately, 88 trillion baht), individual firms were able to strategically gain from their repurchase decisions, as shown by the number of repeat purchasers – two companies announced three rounds of repurchases and 10 companies conducted two rounds during the study period.

(ii) Unstandardized AARs and CAARs Results

Focusing on a specific sample of repurchase announcements as explained in the methodology section, the unstandardized AARs across all events CAARs were utilized to provide a clearer picture of the actual return movements compared to the expected market performance. By examining these metrics across various trading days before and after the repurchase announcement, the impact on stock prices and its persistence over time could be gauged.

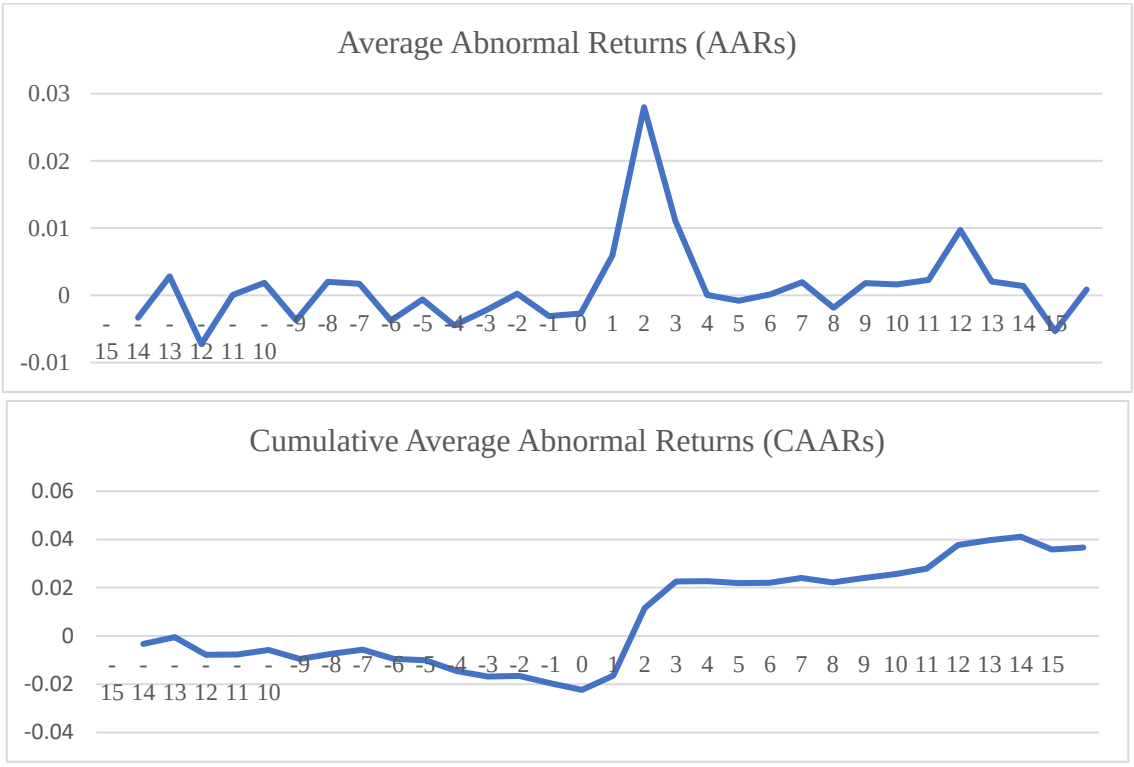

Figure 2: AARs and CAARs (-15 to 15) Days (Created by Authors)

Figure 2 shows some preliminary evidence of possible abnormal returns surrounding the announcement of share repurchases. Specifically, there were several occasions of negative abnormal returns prior to the announcement, then a sharp positive spike in abnormal return concentrated around the announcement day and the days immediately following it, suggesting a short-term positive impact on stock prices due to the repurchase announcement. However, as can be easily seen, the effect seems to diminish over time as the positive returns subside before rebounding just around 10-15 days after the announcement.

(iii) Statistical Significance of TSARs and CTSARs

Having examined the magnitude of AARs and CAARs surrounding repurchase announcements, this subsection discusses the statistical significance of these observed movements, focusing on TSARs and CTSARs. The AARs and CAARs represent actual difference between a stock's return and the expected return based on a market model during a specific period and are expressed in the original units of return, which means that while they can provide valuable insights, their interpretation can be challenging due to the potential variations in stock volatility. Hence the need to investigate their standardized counterparts, the TSARs and CTSARs.

Table 3 details the TSARs and CTSARs and the corresponding test statistics[1]. The results are largely consistent with the remarks made in the previous sections in relation to preliminary evidence, including the negative abnormal returns a few days before the announcement, the surge after, and the rebound in the following 10-15 days.

Table 3: TSARs and CTSARs (-15, +15) and Statistical Significance

Days	TSAR	Z-statistics of TSAR	p-value of TSAR		Z-statistics of CTSAR	p-value of CTSAR	
-15	-12.3833	-1.5823	0.1136		-1.5823	0.1136	
-14	7.9023	1.0097	0.3126		-0.4049	0.6856	
-13	-17.3475	-2.2166	0.0267	**	-1.6103	0.1073	
-12	1.9076	0.2438	0.8074		-1.2727	0.2031	
-11	0.5709	0.0729	0.9418		-1.1057	0.2689	
-10	-11.0227	-1.4084	0.1590		-1.5844	0.1131	
-9	5.7787	0.7384	0.4603		-1.1878	0.2349	
-8	-0.0235	-0.003	0.9976		-1.1121	0.2661	
-7	-6.6579	-0.8507	0.3949		-1.3321	0.1828	
-6	-8.2765	-1.0575	0.2903		-1.5981	0.1100	
-5	-19.9565	-2.5499	0.0108	**	-2.2926	0.0219	**
-4	-7.0419	-0.8998	0.3682		-2.4547	0.0141	**
-3	-8.4843	-1.0841	0.2783		-2.6591	0.0078	***
-2	-13.4894	-1.7236	0.0848	*	-3.023	0.0025	***
-1	-13.1915	-1.6856	0.0919	*	-3.3557	0.0008	***
0	19.1538	2.4474	0.0144	**	-2.6373	0.0084	***
1	101.4322	12.9605	0.0000	***	0.5848	0.5587	
2	30.3191	3.874	0.0001	***	1.4814	0.1385	
3	6.2677	0.8009	0.4232		1.6257	0.1040	

[1] *, **, and *** denote rejection of the null at the 90%, 95% and 99% confidence levels

4	-7.4111	-0.947	0.3437		1.3727	0.1698	
5	-0.766	-0.0979	0.9220		1.3183	0.1874	
6	2.0606	0.2633	0.7923		1.3441	0.1789	
7	-3.6982	-0.4725	0.6365		1.2161	0.2240	
8	8.2776	1.0577	0.2902		1.4063	0.1596	
9	0.1762	0.0225	0.9820		1.3824	0.1668	
10	17.5099	2.2373	0.0253	**	1.7944	0.0728	*
11	32.1363	4.1062	0.0000	***	2.5511	0.0107	**
12	10.6121	1.356	0.1751		2.7614	0.0058	***
13	-1.0713	-0.1369	0.8911		2.6879	0.0072	***
14	-14.8353	-1.8956	0.0580	*	2.2966	0.0216	**
15	3.4599	0.4421	0.6584		2.3387	0.0194	**

An in-depth analysis of each individual transaction reveals that the period corresponding to the 10 to15 days following the repurchase announcement coincided with a substantial portion (28%) of firms making their first trading transactions as shown in Table 4, suggesting special considerations required for firm-specific processes for the planning and execution of repurchase program, as well as implications for investors and regulators.

Table 4: Frequency of Events of First Trading Transaction Days After Repurchase Announcement

Days after the announcement	No. of events of first trading transaction	%
5	1	1.12
10	5	5.62
15	25	28.09
20	42	47.19
25	46	51.69
30	54	60.67
45	65	73.03
60	66	74.16
75	72	80.90
90	76	85.39
120	82	92.13
150	84	94.38
180	87	97.75
200	89	100.00

Source: Authors' computations based on data collected from SETSMART and Bloomberg

(iv) Robustness Check with Alternative Event Windows

Event studies rely on a defined timeframe, the event window, to isolate the impact of an event like a share repurchase announcement on a firm's stock price. While the chosen window could significantly influence the observed abnormal returns, there is no single, universally agreed-upon window length supported by established financial theories. The optimal window size can vary depending on the specific event and market characteristics. To strengthen the reliability

of the findings and address potential concerns regarding the chosen event window, a robustness check was conducted. Specifically, abnormal returns were analyzed using alternative, narrower windows around the announcement day.

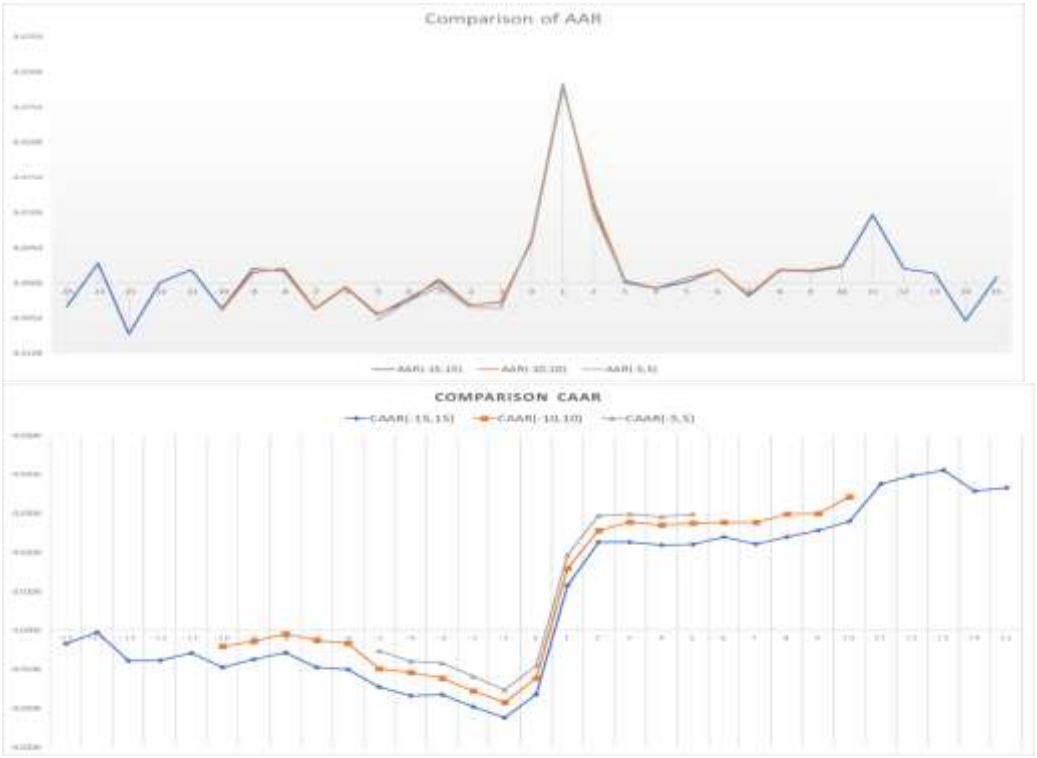

Figure 3: AARs and CAARs with Alternative Event Windows (Created by Authors)

Figure 3 depicts the AARs and CAARs with three different event windows: the baseline (-15,15) days, (-10,10) days, and (-5,5) days. The graphs appear to be qualitatively similar, with narrower windows suffering less of the negative abnormal returns in the period before the announcement date and showing a stronger surge in the CAAR on days immediately following the announcement. In other words, the core findings regarding the market reaction to repurchases remain consistent across different window lengths.

5. Conclusion and Recommendations for Future Studies

This research sought to determine the significant effects of share repurchase activities in the SET during the period 2018-March 2023. Thanks to the comprehensive data collected and complete analysis of 60 observation data points meaningful results emerged. They are statistically significant within the focused window range (-15, 15), which includes 15 days prior to the event date, the event date, and 15 days after the event date. The presence of significant results on several days before the event date strongly hints at information leakage occurring before the official announcements were made. Previous research conducted in Thailand, also reported significant results at a confidence level of 99% (p-value < 0.01). This is the case for instance with Nittayagasetwat & Nittayagasetwat's (2013) study, conducted during the period 2001-2012. Positive abnormal returns and statistically significant results were detected days prior to the event date. Whether calculating cumulative TSAR and finding z-statistic based on Seiler (2003) or applying a focused window as, for example, in Duivenvoorden (2018), This study's results also align with many prior studies conducted abroad (Asquith & Mullins, 1986; Dann, 1981; Grullon & Ikenberry, 2000; Isagawa, 2002;

Masulis, 1980; Ofer & Thakor, 1987; Vermaelen, 1981). Overall, these results provide compelling evidence that share repurchase announcements in Thailand trigger a positive market response, with statistically significant abnormal returns observed, particularly in the window surrounding the announcement date and 10-15 days after. This suggests that investors perceive share repurchases as a signal of company confidence and future value creation, leading to an increase in stock prices. However, the presence of statistically significant abnormal returns prior to the official announcement raises the critical issues of potential information leakage and ethical problems. Further investigation is therefore necessary to determine if some investors are gaining an unfair advantage by accessing information before the official announcement. These findings contribute significantly to our understanding of repurchase practices and investor behavior in the Thai market. By highlighting the positive market response as well as potential information leakage concerns, this study offers valuable insights for both companies and regulators. Companies can leverage these findings to optimize the timing and communication strategies surrounding share repurchases to maximize their intended impact. As to regulators, they can utilize them to assess the fairness and efficiency of the Thai market and the need to adopt and implement measures to address any information asymmetry and ensure a level playing field for all investors.

In summary, this study sheds light on the complex dynamics between share repurchases, abnormal returns, and investor behavior in the Thai market. First and foremost, it highlights the need for further research on potential information leakage. It also provides valuable insights for companies and regulators to navigate this evolving landscape.

- *Study Limitations and Recommendations for Further Studies*

This research has some limitations. Most specifically, this analysis covers data from 2018 to March 2023 which encompasses the period of COVID-19. Since the pandemic added a layer of complexity and could have significantly impacted various sectors and investor behavior, the observed relationship between share repurchases and prices during this period might not therefore be entirely representative of pre-pandemic conditions. Moreover, while this study provides some insights into the market reaction to share repurchase announcements in Thailand, the investigation could be extended in several promising directions. For instance, future research could dig deeper into the rationales driving share repurchases by Thai companies. It could for example examine potential variations in the effect across different segments such as large versus small cap stocks or across different industry sectors, In addition, future studies could explore the effects on repurchase of stocks listed on the Market for Alternative Investment (MAI). Furthermore, since companies have various methods to execute share repurchases, such as open market and fixed-price tenders, future research could explore whether any chosen method influences the market reaction and stock price impact. This research adopted the event study approach and focused on the short-term impact around the announcement date. Future study could explore the long-term consequences of repurchases for both investors and companies.

Finally, the possibility of information leakage, detectable by event study methodology, might warrant further investigation by regulators seeking to ensure a fair and transparent market for all participants. Interestingly, the trading timelines for a portion of the sample added a layer of complexity, suggesting new avenues for future research on company-specific trading procedures.

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