UNIVERSITI PUTRA MALAYSIA

EFFECT OF SHARE PRICE INFORMATIVENESS ON SHARE REPURCHASES AND SHARE PRICE EFFICIENCY

CHEE CHONG MENG

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EFFECT OF SHARE PRICE INFORMATIVENESS ON SHARE REPURCHASES AND SHARE PRICE EFFICIENCY

By

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Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfilment of the Requirements for the Degree of Doctor Philosophy

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EFFECT OF SHARE PRICE INFORMATIVENESS ON SHARE REPURCHASES AND SHARE PRICE EFFICIENCY

By

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July 2020

Chair : Associate Professor Nazrul Hisyam Ab Razak, PhD
School : Business and Economics

There are two contemporary concerns related to firms repurchasing their shares; (i) share repurchases destroy shareholders' wealth; (ii) share repurchases manipulate share prices. In light of the first issue, this study also took the further step of examining the information content which is signalled during firms' share repurchases. By using the concept of share price informativeness (SPI), to provide a better understanding of the influence of SPI on post-repurchase share performance, (i) the effect of stock price informativeness is presented on firms' share buyback performance; (ii) the level of share repurchase intensity causes share price delay. This study also uses actual share repurchase data to overcome the weaknesses of share repurchase announcement data to provide a more reliable result. Panel regression was employed to analyse two separate samples comprising; 339 US and 180 Malaysia firms who repurchased shares in an 8-year panel dataset between 2012 and 2019. For both the US and Malaysia samples, the firm-specific return variation, which is an SPI measure, was found to have a positive influence on post-repurchase abnormal returns among firms repurchasing their shares. The finding was robust regarding the positive influence of SPI on post-repurchase cost savings. A significantly negative impact of the level of share repurchase intensity was found on share price delay for both US and Malaysia firms repurchasing their shares. The finding remained robust when the ratio of repurchased shares to trading volume was used. These results conclude that share repurchases are good for shareholders' wealth and promote a more efficient stock price.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk Ijazah Doktor Falsafah

KESAN DARIPADA INFORMATIVENESS HARGA STOK PADA PEMBILIAN BALIK SAHAM DAN EFISIENSI HARGA SAHAM

Oleh

CHEE CHONG MENG

Julai 2020

Pengerusi : Profesor Madya Nazrul Hisyam Ab Razak, PhD
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Dua perkara kontemporari yang berkaitan dengan syarikat yang membeli balik saham mereka; (i) pembelian balik saham merosakkan kekayaan pemegang saham; (ii) pembelian balik saham memanipulasi harga saham. Mengingat isu pertama, kajian ini juga mengambil langkah lebih jauh untuk memeriksa kandungan maklumat yang ditandakan semasa pembelian saham syarikat. Dengan menggunakan konsep kesan harga stok maklumat (SPI), untuk memberikan pemahaman yang lebih baik mengenai pengaruh SPI terhadap prestasi saham pasca pembelian balik, (i) kesan harga stock maklumat pada prestasi pembelian balik saham syarikat; (ii) tahap intensiti pembelian balik saham menyebabkan kelewatan harga saham. Kajian ini juga menggunakan data pembelian balik saham yang sebenar untuk mengatasi kelemahan data pengumuman pembelian balik saham untuk memberikan hasil kajian yang lebih dipercayai. Regresi panel digunakan untuk menganalisis dua sampel terpisah yang terdiri daripada; 339 syarikat Amerika Syarikat dan 180 syarikat Malaysia yang membeli balik saham dalam set data panel 8 tahun antara 2012 dan 2019. Untuk kedua-dua sampel Amerika Syarikat dan Malaysia, variasi pulangan khusus firma, yang merupakan ukuran SPI, didapati mempunyai pengaruh positif terhadap pulangan abnormal kumulatif selepas pembelian balik saham di kalangan syarikat yang membeli balik saham mereka. Penemuan ini kukuh mengenai pengaruh positif SPI terhadap penjimatan kos selepas pembelian balik saham. Kesan negatif yang ketara dari tahap intensiti pembelian semula saham didapati pada kelewatan harga saham bagi kedua-dua syarikat Amerika Syarikat dan Malaysia untuk membeli balik saham mereka. Penemuan itu tetap kukuh apabila nisbah saham yang dibeli semula dengan jumlah dagangan digunakan. Hasil kajian ini menyimpulkan bahawa pembelian balik saham adalah baik untuk kekayaan pemegang saham dan mempromosikan harga saham yang lebih cekap.

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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Doctor Philosophy. The members of the Supervisory Committee were as follows:

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LIST OF ABBREVIATIONS

AR	Abnormal return
ANA	Stock analyst coverage
BM	Book to market ratio
BP-LM	Breausch and Pagan Lagrangian multiplier test
C.DELAY	Coefficient based price efficiency
CAR	Cumulative abnormal return
COSAV	Post-repurchase cost savings
COSAV2	Post-repurchase cost savings scaled by volume weighted average price
CASH	Cash to total asset
DELAY	Price delay
EFF	Stock price efficiency
FEM	Fixed effect model
FEM RSE	Fixed effect model with robust standard errors
FRSV	Firm-specific variation return
GROWTH	Firm growth measured by its market to book ratio
ILL	Amihud's Illiquidity ratio
INSTI	Institutional holding
LEV	Firm leverage measured by its debt
Ln	Natural logarithm
Obs	Observations
OLS	Ordinary least square
OMR	Open market repurchases
PSR	A dummy variable for positive stock return
NSR	A dummy variable for negative stock return
REM	Random effect model
REP	Share repurchase intensity
RO	Research objective
ROA	Return on asset
RQ	Research question
RTVOL	Share repurchase intensity scaled by trading volume
SIZE	Firm size measured by market capitalization

SER	Share repurchase ratio
SPI	Stock price informativeness
SPR	Bid and ask spread
SR	Stock return
MSR	Market stock return
MY	Malaysia
TVOL	Trading volume
US	United States of America
VOL	Stock return volatility

CHAPTER 1

INTRODUCTION

1.1 Introduction

The payout policy of firms is one of the most important decisions in corporate finance, where firms distribute wealth or return capital to their shareholders. There are two common methods that firms use to reward their shareholders, either by paying a dividend or by repurchasing their shares. A share repurchase or share buyback is a decision made by publicly listed firms when they choose to buy back shares that were previously sold to the public. When publicly listed firms buy back their shares, the shares are; either cancelled or held by the firms as treasury shares, thus, the number of shares outstanding will be reduced. There is a price impact which is related to share repurchases due to the reduction of the number of shares outstanding. Assuming that the market demand for a firm's shares remains constant, in the face of a decline in the supply of shares, based on the demand and supply of shares, share repurchases will tend to increase a firm's share price in the short term.

When corporate earnings are distributed to a lesser number of shares due to a firms share repurchases, the firm's shareholders will possess a larger proportion of corporate ownership after the share repurchases, without having to buy more shares. Shareholders benefit, as each remaining share is more valuable, yet shareholders also have a greater claim on future corporate earnings because of the reduction in the number of shares outstanding, due to the firm's share repurchases. Moreover, share repurchases which result in a lower number of shares outstanding will inflate the valuation metrics of a firm, such as the earnings per share, the net asset value per share, and the cash flow per share. Share repurchases also reduce the equity of a firm, as well as total assets, hence, the return on assets, the return on equity and other metrics will be improved after such share repurchases. Therefore, share buybacks have impacts on a firm's shares, such as reducing the number of shares outstanding and boosting the firm's stock price and the earnings per share.

The research aim of this study is to investigate the influence of share price informativeness during share repurchases on post-repurchase share performance, and the impact of share repurchase activities on share price efficiency. Moreover, the study develops comprehensive theoretical frameworks which posit that a better understanding of; (i) the influence of share price informativeness on shareholders' wealth of share repurchases, (ii) the impact of firm's share repurchase activities on share price efficiency. The next section of this chapter explains the research background and gives an overview of US and Malaysia firms which repurchase their shares. The research problems which inspired the researcher's interest and motivation to conduct this study are also discussed. In the remainder of this chapter, the research questions and objectives of this study are presented. Subsequently, the significance of the study is discussed. The layout of each subsequent chapter is outlined at the end of this chapter.

1.2 Background of the study

Payout policy which encompasses the form, amount, and timing of distributions to shareholders, is a core corporate finance issue. Unlike a dividend which usually is sticky, a share repurchase is a form of payout providing managers with flexibility concerning both the amount and timing of pay-outs. Stock repurchases are a process where the issuing company buys back its shares from shareholders and subsequently destroys these shares, thereby reducing the number of shares outstanding. Firms must announce to the public the total amount of money that they have authorised to be spent on share repurchases via the stock exchange. Commonly there is no obligation for firms to repurchase shares to the full monetary amount that they have authorised or even to repurchase any shares at all, thus, this situation can be seen more like an option to repurchase shares (Hsu & Andreas, 2016).

One of the motives most commonly documented in the existing literature is that share repurchases serve as a tool to signal private information to investors (Jena, Mishra, & Rajib, 2018), such as the future earnings prospects of a firm, high growth opportunities (BC, Bhagwat, & de Bruine, 2019), future earnings, and managerial confidence regarding a firm's future. Share buybacks are a reflection that corporations possess substantial amounts of excess cash. As a firm's managers are more likely to possess private information than outsiders, investors and shareholders will relate a firm's share repurchases to the firm's future earnings, growth prospects and managerial confidence.

Market participants and practitioners widely accept that a motive for firms to buy back their shares is because of share undervaluation. A share repurchase can signal that a firm's shares are undervalued, indicating that share price is below than its intrinsic value (Drousia, Episcopos, & Leledakis, 2019). Firms generally buy back their shares at bargain prices, often during or after a financial crisis, with large share buybacks noticeably occurring on Black Monday 1987, the Asian Financial Crisis 1997, the early 2000s recession, and the US subprime mortgage crisis between 2008 and 2009. For firms which repurchased their shares during or after the financial crisis, their share prices were cheap and the share valuation was attractive. When a share repurchase signals an undervaluation of a firm's shares, investors will also seek to buy the firm's shares.

When a firm's share price is experiencing a sharp decline, a share repurchase can be used to provide price support by absorbing selling pressure from the market to halt a declining share price (Drousia et al., 2019; Liu & Swanson, 2016). Moreover, when a firm's share price is very volatile, a share repurchase can be used to stabilise its share price. Furthermore, stock repurchases by firms' have helped to sustain or prolong stock market rallies, even in a slow-growth environment. The benefits of a share repurchase are greater when it comes to volatile share prices (Rozycki & Suh, 2019).

When a firm has an excessive cash balance and experiences slow growth together with few promising investment opportunities, it may choose to distribute its excessive cash back to shareholders, either by paying a cash dividend or by share repurchases. Jensen (1986) suggested that share repurchases could be used to distribute such excess cash; this potentially reduces the possibility of the agency problem occurring by limiting the free cash flow that might otherwise be diverted towards non-optimal purposes by managers who choose to seek personal interests rather than the interests of shareholders. Therefore, share repurchases may serve as a tool for firms which have excessive cash to avoid the agency problem.

Share repurchase programmes initiated by firms will alter the capital structure of the firm. In a low interest rate environment, where the cost of debt is cheaper than the cost of equity, share repurchases are often used by firms to pare down their existing equity and increase their debt-to-equity ratio (Kaloudis & Tsolis, 2018; Sung & Hae, 2017), thus, it helps firms to achieve their target leverage ratio. The trade-off theory of capital structure (Modigliani & Miller, 1958) suggested that a firm can choose how much debt and equity financing to use to finance its investment by balancing costs and benefits. An optimal level of capital structure is where a firm obtains the lowest cost of capital by maintaining a healthy balance between beneficial tax shields and the risk of financial distress to maximise the firm's value (Tong & Bremer, 2016). Ideally, minimising the cost of capital should lead to greater value creation generated from any investment and will enhance shareholder's value.

Furthermore, share repurchases provide tax advantages to shareholders, which is a major reason why share repurchases are preferable to cash dividends. Dividend payments paid by firms to shareholders are taxable. When firms buy back their shares, the share price usually increases after such share repurchases, due to the reduction in the number of outstanding shares. Shareholders can only be taxed when they have sold shares and a capital gain has been realised from the sale of shares. Shareholders can defer paying tax until a capital gain is realised (Alzahrani & Lasfer, 2012). Thus, share repurchases are a more tax-efficient vehicle for returning capital to shareholders, as compared to dividends.

Despite there being no direct contribution made by share repurchases to the productive capabilities of a firm, the motives of share repurchases mentioned in the preceding discussion are crucial and beneficial to corporate management due to the following; (i) private information can be disseminated to the stock market via share repurchases; (ii) shares are signalled as being undervalued; (iii) the share price can be supported and stabilised by share repurchases when a firm's shares experience a substantial selldown; (iv) the financing decisions of a firm can be altered to achieve an optimal capital structure, potentially obtaining a lower cost of capital; (v) excess cash held by a firm can be reduced to prevent potential conflicts of interest between managers and shareholders. Whatever the motives of firms to repurchase their shares, the stock market has views on share repurchases, either favourably or unfavourably, and the market will react accordingly. Excess or abnormal returns following share repurchases are often interesting to be observed and studied by investors, shareholders, practitioners, scholars and researchers to determine whether share repurchases were good for shareholders' wealth. (Manconi, Peyer, & Vermaelen, 2019).

Some research effort has been devoted to investigating the reaction of the market toward share repurchase announcements, however, managerial market-timing performance has proven the presence of the information content of share repurchases, as well as the signalling effect. The first strand of literature focuses on the market reaction to share repurchases by examining the short term abnormal returns earned surrounding share repurchase announcements among investors to understand whether the market either under-or overreacts to share repurchase announcements in the days surrounding a share repurchase announcement (Drousia et al., 2019). In the second strand of literature, longer-term post-abnormal returns (CAR+20 +40D and +60D) are adopted to investigate whether there is a presence of managerial market-timing performance in share repurchases (Huang & Peng, 2018). The earning of positive post-repurchase abnormal returns suggests the performance of managerial market-timing. The third strand of the literature concentrates on the information signalling and the information content of share repurchases, thereby testing the signalling hypothesis. Researchers have explained that the post-repurchase share performance found in their research is due to the information content of share repurchases (Huang, Liano, & Pan, 2019; Leng & Noronha, 2013; Pankaj K, Suchismita, & Vinh Huy, 2020). However, they have left this subject to future research.

Subsequent or increasing share repurchases may foster further interpretation of the information content of share repurchases (Babenko et al., 2012; Lee & Mauck, 2018; Leng & Noronha, 2013). With the information content and signalling mechanism of share repurchases, as well as its price support, share repurchases may contribute to improved price discovery and bring share prices to a level that fully reflects the available information (Busch & Obernberger, 2017). However, share repurchases can be misused by firms to boost up its share prices above its intrinsic value, that could distort share price discovery as well as share price efficiency, because managers who are insiders may exploit their information advantage over uninformed market participants (Wang, 2020) or give false signal to inflate share prices (Lazonick, Sakinç, & Hopkins, 2020).

1.2.1 An overview of share repurchases in United States

The largest stock exchange in the US, also known as “The Big Board” is The New York Stock Exchange (NYSE), which was established in 1908. The second-largest is the Nasdaq which was founded in 1971. The total number of firms listed on the stock exchange in 2018 was 4,327. The total level of stock market capitalisation in the US has shown an upward trend over the years and recorded a high point of 37.69 trillion US$ in 2019, which came after a drastic decline during the US financial crisis in 2008, as illustrated in Figure 1.1. However, US stock market liquidity, as measured by the stock market turnover ratio, has experienced a gradual deterioration over the years since 2008, and reached 108.51% in 2019, as can be seen from Figure 1.2. The decline in US stock market liquidity has indicated a close relationship with increasing political and economic uncertainties (Dash, Maitra, Debata, & Mahakud, 2019; Marshall, Nguyen, Nguyen, & Visaltanachoti, 2018).

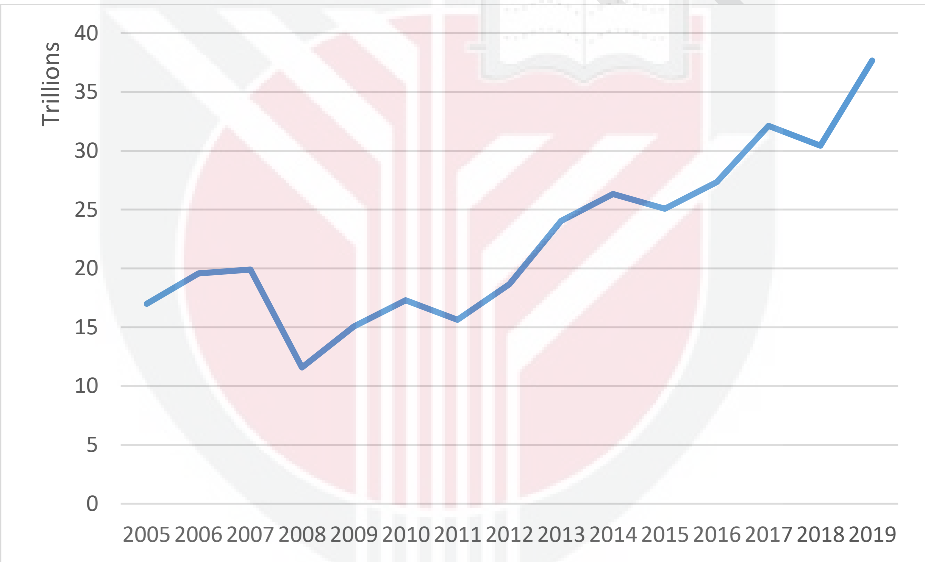

Figure 1.1: Stock Market Capitalisation (Trillions, US$) in the United States.
(Source: Bloomberg database)

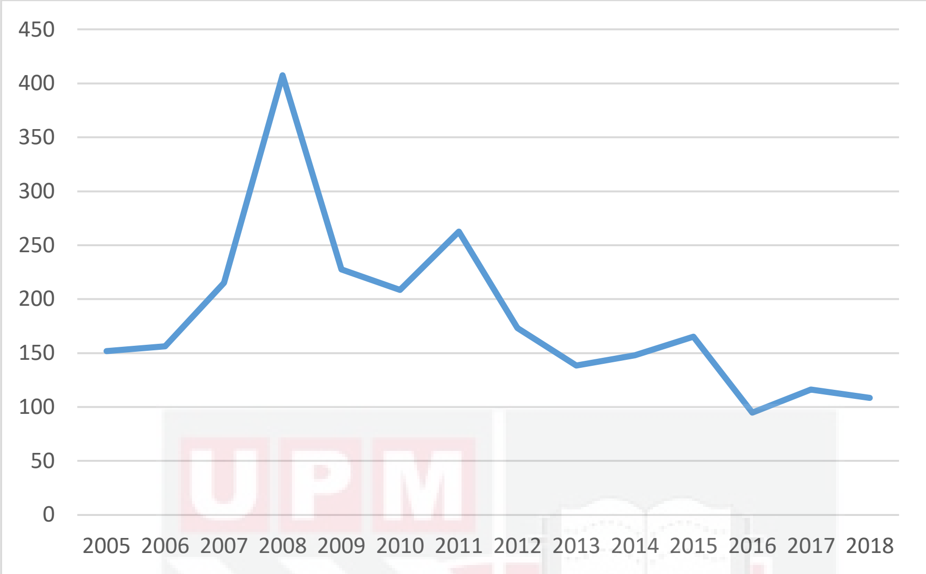

Figure 1.2: Stock Market Turnover Ratio (%) in the United States
(Source: Bloomberg database)

Since the recession in the early 2000s, there has been an increase in share buybacks, which can be seen in the US economy's recovery and the total value in US dollars spent by S&P 500 firms for share repurchases which have outpaced the total value in US dollars paid out as cash dividends to shareholders. Figure 1.3 shows the total value in US dollars spent (trillion) in share buybacks and dividend payouts by S&P 500 firms and the S&P 500 Index. Share repurchases experienced a mild decline during the US subprime mortgage crisis in 2009 and increase substantially after the financial crisis (Birstingl, 2016). Firms have resorted to stock repurchases to replace dividend payouts, to distribute funds back to their shareholders. The US Federal Reserve implemented quantitative easing (QE) between 2008 and 2014 and a zero interest rate policy between 2008 and 2015, these policies were the main catalysts for the buyback boom in the aftermath of the financial crisis, and causing a share buyback frenzy (Mackenzie, Braithwaite, & Bullock, 2014). Analyst and investor consensus generally holds that the 2017 Tax Cuts and Jobs Act fuelled this increase by encouraging companies to repatriate funds which they previously held overseas. Since then, the total US dollar amount spent in US share repurchases has continued to increase quarterly and reached more than 1.3 trillion US dollars in the 4^{th} quarter of 2018. Apple Inc. was the biggest spender in share repurchases. Apple spent a total of US$73 billion on share repurchases in 2018 and US$67 billion in 2019. Oracle Corp was the second-largest repurchaser, spending US$36 billion to buy back its shares, followed by Wells Fargo & Company, Microsoft Corp and Merck & Co.

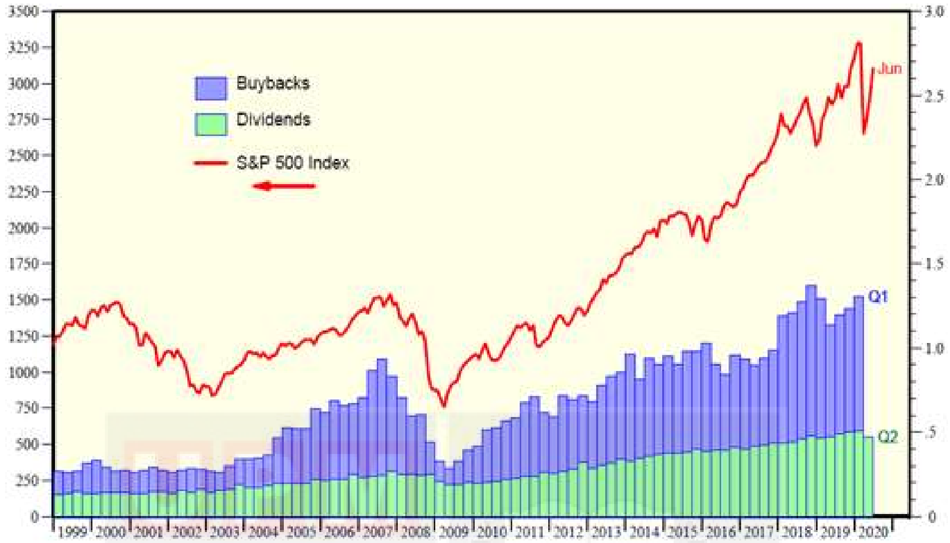

Figure 1.3: The US dollar amount spent (Trillion) in share buybacks and dividend payouts by S&P 500 firms and the S&P 500 Index
(Source: Standard & Poor, Yardeni Research, Inc.)

1.2.2 An overview of share repurchases in Malaysia

The stock exchange of Malaysia is known as Bursa Malaysia. It was established in 1973 and was formerly known as the Kuala Lumpur Stock Exchange. Bursa Malaysia consists of; the main market, the ACE (Access, Certainty and Efficiency) market and the LEAP (Leading Entrepreneur Accelerator Platform) market and the total number of firms listed on Bursa Malaysia in 2019 comprised 929 firms. In the aftermath of the global financial crisis of 2008, the stock market capitalisation of Bursa Malaysia increased to its highest level of 500 billion US dollars in 2013 and stabilised at 404 billion US dollars in 2019, as indicated in Figure 1.4. The stock market turnover ratio in Malaysia, which measures stock market liquidity, was hovering at around 30% after the US financial crisis, as indicated in Figure 1.5.

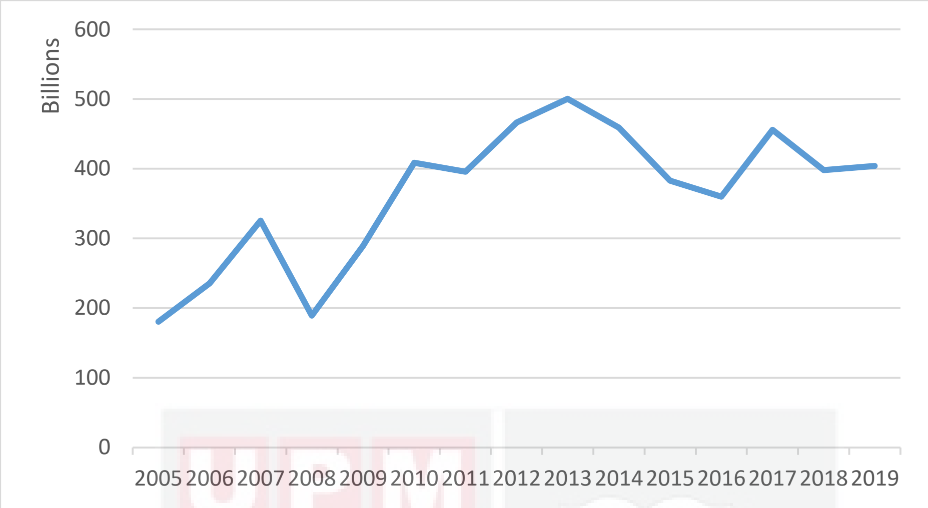

Figure 1.4: Market Capitalisation for Bursa Malaysia
(Source: Bloomberg database)

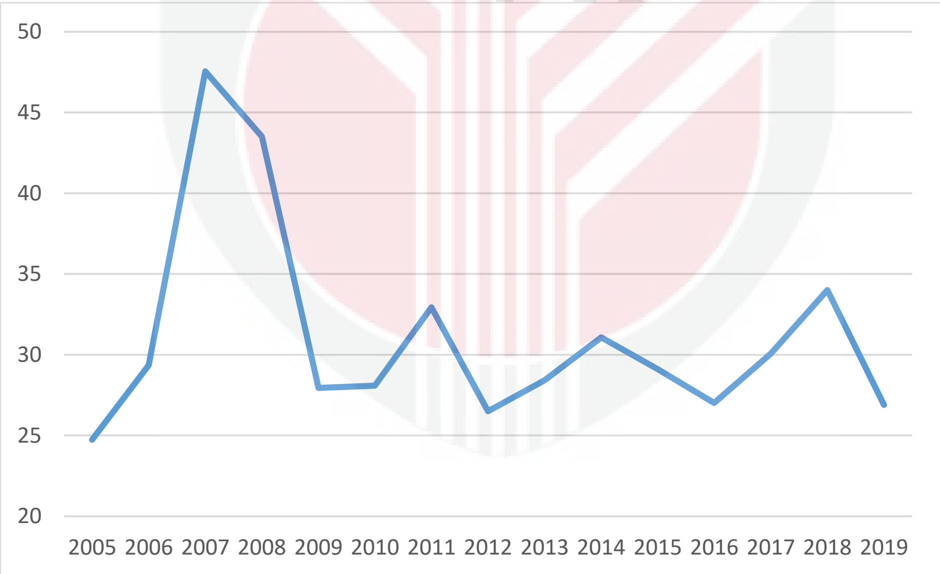

Figure 1.5: Stock Market Turnover Ratio (%) in Malaysia
(Source: Bloomberg database)

The number of shares repurchased by Malaysia firms remained below 600 million shares from 2014 to 2018. When the FBM Kuala Lumpur Composite Index (FBM KLCI) declined by approximately 14% from 1,882.71 to 1,621.04, between the second quarter of 2014 and the fourth quarter of 2015, an increase in the number of shares which were repurchased, accounting for 561.44 million shares in the first quarter of 2016, was seen. Similarly, a stock market downturn of 15%, from 1,863.46 to 1,588.76, between the first quarter 2018 and the fourth quarter of 2019, was followed by a spike in the number of shares repurchased from the open market in the third and fourth quarter of 2019, both quarters accounted for 1615.14 and 815.13 million shares, respectively. Most of the share buybacks were carried out because of the sharp selldown in the stock market following external shocks, such as trade tensions between the US and China which hit the stock market. The future direction of the listed firms was intact and the decline in their share prices had led to the stocks selling for less than their intrinsic values (Toh, 2019). This situation created an opportunity for the listed firms to repurchase some of their shares at a significant discount. In the third and fourth quarters of 2019, publicly listed firms which were involved in heavy share buybacks comprised; Borneo Oil Berhad, Sunway Berhad, KPJ Healthcare Berhad, Tropicana Corp Berhad, MyEG Services Berhad, and Titijaya Land Berhad.

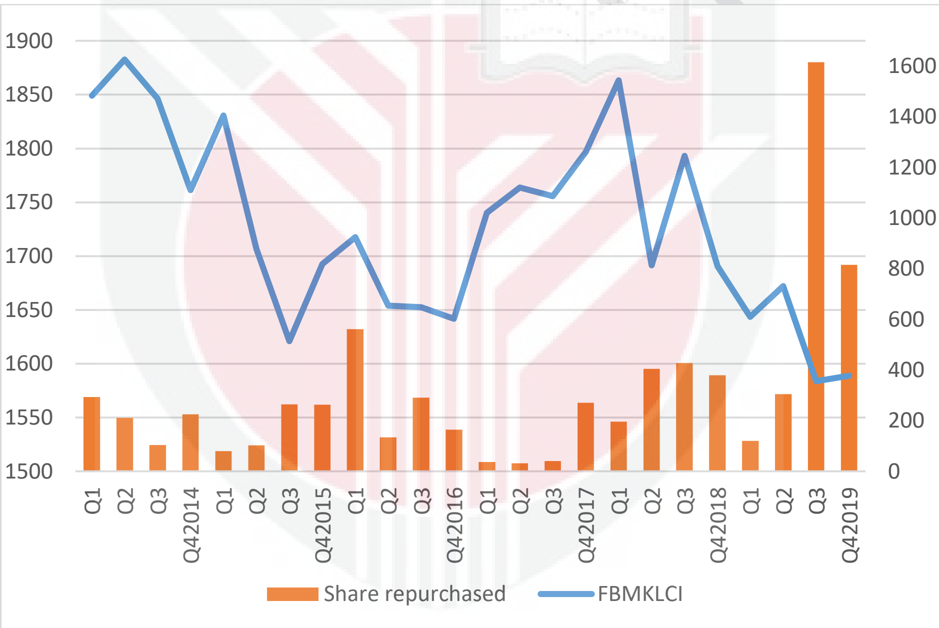

Figure 1.6: Shares repurchased (Millions) and the FBMKLCI between 2014 and 2019
(Source: Bloomberg database)

Before 2008, Malaysia had practised a full imputation tax system on cash dividends. However, a single-tier tax system has been implemented since 2008. Unlike the US stock market, Malaysia practices a single-tier tax system and dividends received are exempt from tax in the hands of shareholders. Furthermore, any capital gains earned by shareholders are also non-taxable in Malaysia. Hence, Malaysia firms may distribute their excess cash, as cash dividends or capital gains as either method would have a similar effect on their shareholder's wealth.

1.2.3 Rule and regulation in share repurchases

To avoid potential liabilities for insider trading in connection with share repurchase programs, a company should publicly disclose any such program via the stock exchange before its commencement. As such, firms will announce the total size of any authorised share repurchase programmes, where firms plan to buy back their shares in the future. The rules and regulations allow repurchased shares to be; cancelled, retained as treasury shares, partly cancelled or partly retained. The retained treasury shares may be used for stock dividend distribution, employee share option schemes, or re-sold to the market. The US and Malaysia are subject to different rules and regulations for share repurchases. There are various restrictions concerning repurchase transactions, the most important of which include; reporting requirements, price and volume restrictions.

The Securities and Exchange Commission (SEC) introduced Rule 10b-18 in 1982 governing open market stock repurchases in the US. The regulation allows a firm's board of directors to authorise the repurchase of a certain number of the firm's shares. Rule 10b-18 provides safe harbour protection to firms against allegations of market manipulation under Sections 9(a)(2) and 10(b) of the Exchange Act and Rule 10b-5 of the Exchange Act, provided that the firm's share repurchases are made following the rules' manner, timing, price and the volume of the share repurchases[1]. Before 2003, it was only necessary for firms to voluntarily report any information about the prices of their share repurchase trades. However, following amendments to Rule 10b-18, Regulations S-K and S-B in December 2003, US firms were required to disclose more detailed information about their stock repurchase activities on additional SEC filings, including Form 10-Q and Form 10-K.

Board approval is sufficient to implement an open market share buyback program in the US. Rule 10b-18 limits firms from repurchasing their securities during the 30 minutes before the scheduled close of trading, this is designed to prevent firms from influencing market prices and volume near the close of trading. There is a price restriction which limits all firms from purchasing their securities at a price that does not exceed the highest independent bid or the last independent transaction price, whichever is higher. The rule also limits the rate at which firms can buy their stock to not more than 25% of the daily trading volume in the US. Furthermore, the quarterly information regarding share repurchase activities which is required to be disclosed includes; the number of shares repurchased, the average repurchase price, the announcement and

[1] The entire text of SEC Rule 10b-18 can be found at https://www.sec.gov/rules/final/33-8335.htm

expiration date of the share repurchase programme and whether it was a publicly announced open market share repurchase program.

In Malaysia, with the enactment of Section 67A of the Malaysia Companies Act on 1 September 1997, share repurchases were permitted. Under Bursa Malaysia's listing requirements in Chapter 12, when the board of directors of a firm have decided to carry out share repurchases, the firm must make an immediate announcement to the stock exchange to submit a proposal to shareholders for the firm to be authorised to repurchase shares. Subsequently, a firm has to seek approval from its shareholders for the proposal at an annual or extraordinary general meeting. The actual purchase of shares takes some time and may even continue for more than a year. If the repurchase is not completed in the approval year, a new approval must be obtained at the next annual general meeting.

Regarding the share repurchase price, the rules require that it must not be greater than 15% above the 5-day average share price calculated over the last five market days immediately before the share repurchase date. Firms are allowed to repurchase a maximum of 10% of the number of their shares outstanding. Firms making share repurchases are also required to disclose details of the transactions, such as the repurchase price and volume on the day that any share repurchase is made, by no later than 6:30 p.m. The Malaysia Accounting Standard Board Technical Release issued in April 1999 provides accounting treatment and disclosure guidelines for firms to record share buyback transactions in their financial statements, as firms must release share buyback accounting and disclosure information.

If a US firm repurchasing shares does not abide by the safe harbour provisions, this alone does not make the firm’s actions illegal or in violation of anti-price manipulation laws. By not conforming with the provisions of Rule 10b-18, the firm simply no longer has safe harbour protection or immunity. However, the firm is not subject to legal liability, solely based on this non-compliance. The daily number of shares repurchased by US firms is restricted, however, there is no limit for the total number of shares repurchased, while the overall buyback volume for Malaysia listed firms is restricted to 10% of the total number of shares outstanding. Moreover, firms repurchasing shares in Malaysia are more highly regulated when considering the timing and volume restrictions, as opposed to US firms who are offered more flexibility. The rule and regulation for share repurchases in the US and Malaysia are summarised in Table 1.1.

Table 1.1: Rules and Regulations for Share Repurchase in the US and Malaysia

Market	Approval	Timing Restriction	Price Restriction	Volume Restriction
United States	Board	Repurchase trading is prohibited during the last 30 minutes of a trading day	No higher than the highest bid price or the last price	25% of daily volume (of the previous 4 weeks)
Malaysia	Shareholder meeting	Repurchase should be carried out within 12 months of authorisation	No higher than 15% above the average price (of the previous 5 trading days)	10% of the total shares

1.3 Problem statement

Stock buybacks in the US have increased over the years since the US financial crisis, surpassing US$800 billion in value during 2018 and were expected to reach a new record of US$1 trillion in value during 2019. This frenzy of activity in share buybacks after the US financial crisis has drawn much attention and has been the subject of intense scrutiny from practitioners, market participants and academicians. Share repurchases have been criticised in the popular financial press, who have stated trillions of US dollars which could have been invested in innovation, research and development and job creation has instead been used to buy back firm's shares (Lazonick, 2014; Lazonick et al., 2020). Furthermore, share buybacks have been criticised as a costly tool used by managers to manipulate their firm's stock price to boost their equity-based compensation (Alsin, 2017; Ausick, 2017; Byrne, 2017; Dohmen, 2017; Gandel, 2017; Lazonick et al., 2020). The argument is that firms may be prone to underinvestment and may use share buybacks to artificially boost their stock price in the short run, at the expense of long-term shareholder value (Manconi et al., 2019).

This frenzy in share buyback activity in the US has aroused the curiosity of this researcher on whether such share buybacks could withstand a firm's ultimate goal of shareholder wealth maximisation (Babenko, Tserlukevich, & Wan, 2020; Manconi et al., 2019). In summary, there are two main concerns from the preceding discussion which are; whether (i) do share repurchases destroy shareholder value and (ii) are share repurchases potentially used as a tool for firms to manipulate their stock prices. Prior research has documented that the presence of share repurchase anomalies, as well as the determinants of share repurchase anomalies and, have suggested that share repurchases are good for shareholders' value. Despite that, the recent frenzy in share buyback activity has caused renewed market concerns that share repurchases may destroy shareholders' value.

The post-repurchase anomalies in share prices which have been found in past empirical findings have often been associated with the presence of signalling or the information content of the share repurchases (Grullon & Michaely, 2004; Liang, 2012; Wrońska-Bukalska, Kaźmierska-Jóźwiak, & Rozkovec, 2018). The findings of these studies have generally indicated that the information content of share repurchases, as well as any signalled private information, was being processed in the stock market, in the form of share price informativeness, however, the previous researchers have not empirically measured this. Thus, the first issue is that there is little understanding regarding share price informativeness during any share repurchase period. Firm's managers may signal private information or convey valuable information via share repurchases since they are insiders and more likely to possess private information than outsiders. The information content of share repurchases would be interpreted by the stock market and investors would trade based on that. The existing literature on share price informativeness demonstrates, with strong evidence, that when investors trade based on private information, that such information content will be contained in the share price, therefore the share price will be more informative (Jiang, Zhou, & Zhang, 2019; Kim, Pantzalis, & Wang, 2018; S. Liu, 2020).

Second, this situation leads to the intriguing question of whether share price informativeness during a share repurchase period is followed by significant short-term or long-term post-repurchase abnormal returns. Theoretically, the extant literature, in their research findings, has collectively suggested that the significant positive cumulative abnormal returns which have been earned by managers and investors after share repurchases are attributed to the information content or information signalling of the share repurchases. Nevertheless, the extent to which the information content signalling during share repurchases may influence post-repurchase abnormal returns remains ambiguous.

Third, there is a problem as cumulative abnormal returns are computed surrounding the announcement date of share repurchases to measure the performance of shares post repurchases, as well as the market-timing. Firms must announce their intention to repurchase shares from the open market, however, firms are not committed to buying back their shares. Many firms have announced share repurchases but have subsequently never repurchased a single share (Bhattacharya & Jacobsen, 2016; Chang, Lin, Mishra, & Shankar, 2013). The use of post-announcement abnormal returns is controversial for three reasons. First, share repurchases announced without any actual repurchases occurring can be used as a false signal to boost a firm’s share price (Chan, Ikenberry, Lee, & Wang, 2010; Fried, 2005; Li, He, Marshall, & Tang, 2019). Second, the measurement of managerial timing performance in share repurchases may not be accurate, since some firms have not repurchased any shares (Stephens & Weisbach, 1998). Third, the post-announcement abnormal returns for firms who have announced share repurchase programs without making any actual share repurchases are significantly different from that of firms who have announced share repurchases and carried out share repurchases (Leng & Noronha, 2013; Sun, Yung, & Rahman, 2014).

Fourth, there has been a shift from cumulative abnormal returns to repurchase cost when measuring post-repurchase share performance and managerial market-timing performance. Since actual repurchase data, such as the price of repurchased shares and the number of shares repurchased from the open market are required by the stock exchange to be disclosed to the public, researchers can compute the share repurchase cost savings or relative share repurchase price to determine whether managers possess market-timing ability from their share repurchases (De Cesari, Espenlaub, Khurshed, & Simkovic, 2012; Dittmar & Field, 2017; Huang & Peng, 2018). However, using share repurchase costs to gauge post-repurchase share performance has not drawn much attention from Malaysia academicians and scholars. Therefore, the empirical evidence that is required to validate the positive post-repurchase abnormal returns has been found from past literature.

Fifth, the intense level of share repurchases in the aftermath of the US financial crisis of 2008-2009 has aroused concern that share repurchases have been misused to manipulate share prices. Although the research by Busch & Obernberger (2017) has provided evidence that share repurchases promote efficient share prices, their research sample only covered the period between 2004 and 2010. Nevertheless, share repurchases in the US have flourished under the US Federal Reserve's interest rate policy, where the interest rate was close to zero between 2008 to 2016, together with the tax cut since 2017, has reignited concern regarding firms using share repurchases to manipulate their share prices. Advocates for share repurchases suggest that; (i) share repurchases are investments in undervalued shares that signal managerial confidence in a company's future. (ii) Share repurchases are necessary to offset the dilution of earnings per share when employees exercise stock options. (iii) Mature firms may have run out of profitable investment opportunities; therefore, they should return their unneeded cash to shareholders to avoid the agency problem. These should be good reasons to support a firm's share price. The critics of share repurchases are concerned that share repurchases may be used to manipulate a firm's share price, as addressed by Professor Lazonick (Lazonick, 2014; Lazonick et al., 2020). If the argument regarding share price manipulation is true, share repurchases may distort the process of price discovery (Busch & Obernberger, 2017). Share price manipulation may occur in Malaysia firms, however, existing studies in Malaysia have mainly focused their research endeavours on post-share repurchase performance.

For the above reasons, this study has carried out a comprehensive analysis covering its two main concerns which are; whether (i) share repurchases destroy shareholders value and (ii) share repurchases distort firm's share prices. To deal with the first concern, this study also takes an additional step, which is to empirically measure share price informativeness (the information content of share repurchases contained in share prices) during share repurchase periods and also analyses the effect of SPI on post-repurchase anomalies. Furthermore, to accurately measure post-repurchase anomalies, as well as the market-timing ability that managers' possess, post-repurchase cumulative abnormal returns are computed using actual share repurchase data and repurchase cost savings are adopted as an alternative measure of post-repurchase anomalies.

1.4 Research questions

For the first problem statement, this study gives insight on the extent to which the information content signalling during the share repurchase period that makes share price informative. For the third research problem, this study uses actual share repurchase data to compute the cumulative abnormal returns and repurchase cost savings. In line with the second, fourth and fifth research problems above, three research questions (RQ) have been formulated as follows:

RQ1: Does share price informativeness, during the share repurchase period, affect the post-repurchase abnormal returns?
RQ2: Does share price informativeness, during the share repurchase period, affect the post-repurchase cost savings?
RQ3: Does the level of share repurchase intensity promote share price efficiency?

1.5 Research objectives

In this research, the general objectives are to investigate; (i) the influence of share price informativeness (SPI) on post-repurchase abnormal returns; (ii) the effect of SPI on the cost savings earned from post-repurchase cost savings; (iii) the impact of firm's share repurchases on stock price efficiency.

The specific research objectives are as follows:

RO1a: To examine the effect of stock price informativeness, during the share repurchase period, on post-repurchase abnormal returns in the United States.
RO1b: To examine the effect of stock price informativeness, during the share repurchase period, on post-repurchase abnormal returns in Malaysia.

RO2a: To investigate whether stock price informativeness, during the share repurchase period, affects post-repurchase cost savings in the United States.
RO2b: To investigate whether stock price informativeness, during the share repurchase period, affects post-repurchase cost savings in Malaysia.

RO3a: To test whether a firm's stock repurchase intensity promotes stock price efficiency in the United States.
RO3b: To test whether a firm's stock repurchase intensity promotes stock price efficiency in Malaysia.

1.6 Scope of the study

This study focuses on whether the information content contained in its share price due to information signalling during firm's share repurchases (share price informativeness during share repurchases) affects post-share repurchase performance. Managers may use share repurchases to convey private information and share repurchase activity is one of the informational channels that the market can obtain information from (Badshah, Koerniadi, & Kolari, 2019; Lee & Mauck, 2018). The existing literature has acknowledged that the positive cumulative abnormal returns found in post-repurchases have been due to the information content of share repurchases being incorporated in share prices (Huang et al., 2019), however, previous research studies have not taken the extra step to provide empirical evidence on this. The motivation behind adopting this research topic is to measure the extent to which the information content being incorporated in share prices, which is also known as share price informativeness (SPI), and to examine the effect of SPI on post-repurchase share performance. Furthermore, the effect of SPI is further tested on the cost savings earned from share repurchases. Last but not least, this study also covers the important determinants of post-repurchase share performance.

This study examines the impact of the level of share repurchase intensity on share price efficiency, to examine if there is the presence of share price manipulation. If share repurchases are genuine, private information delivered to the stock market will take time to be incorporated in share prices and a firm's share prices will eventually reach a price level which fully reflects the private information (Huang et al., 2019; Leng & Noronha, 2013). Hence, the private information conveyed by managers via share repurchases should promote the process of incorporating information into share prices, enhancing share price discovery (Busch & Obernberger, 2017). Since further share repurchases will help the market to further interpret the information content of share repurchases (Leng & Noronha, 2013), an increase in the level of share repurchase intensity should lead to a higher level of informational efficiency. Thereby, translating into more efficient share prices. On the contrary, if share repurchases give a false signal, this will artificially boost a firm's share prices, causing the share price to diverge away from its true value (Cziraki, Lyandres, & Michaely, 2019; Fried, 2005).

The existing literature has documented the effect of the information content of share repurchases on post-repurchase share performance and the impact of the level of share repurchase intensity on share price efficiency, they have mostly focused on US firms. This study has selected US firms which have been involved in share repurchases for several reasons. Firstly, past researches have explained that the positive cumulative abnormal returns on post-share repurchases found in US firms can be attributed to the information content of share repurchases being incorporated in firm's share prices, however, the researchers have not quantitatively measured the information signalling contained in share price (share price informativeness). The US firms which are used in this study fill the research gap that has been left by past literature and also validates their explanation. Secondly, the recent frenzy of share buybacks in the US together with the zero interest rate policy which was implemented by the US Federal Reserve from 2008 to 2015 has seen a flourishing in the level of share repurchases, however, at the same time, it has sparked and intensified market concern regarding whether share repurchases distort share prices (Lazonick et al., 2020). Although past research has investigated whether the share repurchases of US firms' have distorted their share prices, the data period of the study only covered from 2004 until 2010 (Busch & Obernberger, 2017). This study used a current data period from 2012 to 2019 to examine if any price distortion may have been caused by share repurchases.

Malaysia was the other nation which was selected, as this study wished to provide a distinctive insight, from a different context. Malaysia provides information from both a small economy and market, with a weak form of market efficiency and different share repurchase regulations. Malaysia's stock market is relatively much smaller than the US stock market, the World Bank stated that Malaysia's stock market capitalisation accounted for 108.1% of its nominal GDP in Dec 2019 while the US accounted for 147.9% of its nominal GDP. Malaysia's stock market has evidenced a weak form of market efficiency (Singh & Kumar, 2018; Tuyon & Ahmad, 2016). The rules and regulations regarding share repurchases are different between the US and Malaysia, as discussed in Section 1.2.3. Moreover, given the heterogeneity across the stock market, the empirical results from the US should not be generalised for smaller markets, such as Malaysia. Furthermore, there has been little research carried out on Malaysia firms to investigate the impact of the information content of share repurchases on post-repurchase share performance and the impact of the level of share repurchase intensity on share price efficiency.

Besides, it is worth analysing US and Malaysia firms separately due to the distinction between the two countries in terms of the size of their stock markets, as presented in Figure 1.1 and Figure 1.4; their levels of stock market efficiency; and the country's institutional environments; and share buyback rules. The findings regarding the US could serve as a useful reference for Malaysia practitioners and policymakers concerning the role of the information content of share repurchases in the stock market and the translation of informational efficiency to share price efficiency. Policymakers can learn from other experiences when setting their rules and regulations for share repurchases to avoid myopic policy failures (Nair & Howlett, 2017).

1.7 Significance of the study

This study contributes to the debate on whether share repurchases destroy shareholders' wealth and manipulate the share prices of firms'. Shareholders will be victimised if firms misuse share repurchases, should such share repurchases work against the shareholders' best interests. If there is abuse, then share repurchases should be further regulated. Since this study covers an interesting period, namely; the recent frenzy of share buybacks in the US, it provides the latest empirical evidence on these two concerns. This study clarifies and justifies the criticism of some practitioners and scholars on whether share repurchases are detrimental to shareholders' value and share price efficiency. Therefore, the contribution of this study can be viewed from several aspects, namely; academics, shareholders and investors, management and policymakers.

From the viewpoint of academics, this research work contributes to the existing literature in the following four aspects. First, the research contributes by confirming that share repurchases are good for shareholders' wealth. The established share repurchase literature has acknowledged the wealth effect of share repurchases, however, criticism and concern have been aroused when firms have underinvested and subsequently used share repurchases to prop up their share prices in the short run, at the expense of long-term shareholders' value, and the existing literature includes recent empirical evidence covering the period of frenzied share buybacks in the US. Thus far, there has been relatively little research examining post-repurchase share performance during the period of frenzied share buybacks in the US. This study contributes to the literature empirically by analysing the presence of post-repurchase share performance with a sample covering the period of the US share buyback frenzy.

Second, empirical research on share price informativeness toward post-repurchase share performance is scarce. To the best of the researcher's knowledge, thus far, little is known about share price informativeness during share repurchase periods and it is not clear what its influence is on post-repurchase share performance, this emerging strand of literature demands empirical evidence. Despite scholars acknowledge the presence of the information content of share repurchases based the post-repurchase share performance, they have not put much research attention on the share repurchase period. Particularly, the information signalled by share repurchases during the share repurchase period makes the share price informative. Moreover, scholars have explained that the post-repurchase share performance found in their findings has been mainly due to the condition where the stock market takes time to understand and interpret the information content of share repurchases, but this has not yet been empirically justified. This study explores share price informativeness to understand the influence of the information content of share repurchases toward share prices during share repurchase periods that cause the share price to become informative and study the influence of SPI on post-repurchase share performance. A positive influence of SPI on post-repurchase share performance provides empirical justification for the information content that is not fully interpreted by the stock market. To sum up, this study contributes to the literature regarding share price informativeness and share repurchases, both theoretically and empirically.

Third, this study intends to provide the latest empirical evidence on whether share repurchases distort share price efficiency. There is increasing concern from some academicians and scholars regarding share price manipulation caused by the share repurchases of firms. To the best of the researchers' knowledge, there has been no research covering the period after 2011 where US firms have spent a substantial amount of their funds carrying out share buybacks. This research work provides empirical evidence to prove whether the level of share repurchase intensity causes share price delay, using two measures of share repurchase intensity and two measures of share price delay. In doing so, the study provides robust findings and adds new evidence to the existing literature. Furthermore, the study also embeds the information signalling and the price support theory to evaluate how the level of share repurchase intensity affects the share price delay.

Fourth, this research uses actual share repurchase data instead of share repurchase announcement data to test the influence of SPI on post-repurchase share performance and the impact of share repurchases on stock price efficiency, to produce precise and reliable research findings. Actual share repurchase data provides more accurate post-repurchase share performance measure because the amount of shares repurchased by a firm contains information.

From the view of the management of firms repurchasing shares, managers could have more opportunities to time their share repurchases as the stock market takes time to fully comprehend the information content of share repurchases. This study also brings to the attention of managers the factors determining the post-repurchase share performance, as well as the factors determining share price efficiency. Perhaps, this study provides additional insight for managers to improve their post-repurchase share performance and market-timing performance.

From the standpoint of shareholders and investors, this research eases the doubts of shareholders and investors and provides useful insights for them to gain a closer view as to whether the share repurchases are benficial for shareholders' wealth and how share repurchases could promote efficiency in stock prices. The findings of this study also provide empirical evidence regarding the presence of information content of share repurchases. As such, a firm's share repurchase efforts would be acknowledged. Traders, investors, and shareholders will feel more confident, comfortable, and safe in share trading when a firm's shares are involved in buyback activities. Furthermore, this study could prove helpful in drawing investor attention to upcoming firms' share repurchase activities which may eventually enhance share price efficiency. If there is information signalled via share repurchases, investors and traders can keep track of firm’s share repurchase activities and study firm's share repurchases to mimic their trades with firm’s repurchase trades.

From the perspective of policymakers, this study offers clear and comprehensive insight for policymakers, enabling them to formulate an effective repurchase regulatory framework and review existing regulations to better monitor and discipline firm’s share repurchase activities in the stock market and to reduce the misuse of share repurchases, which could pose a threat to shareholders’ wealth. Furthermore, the findings lend support for regulators to understand the determinants of post-repurchase share performance and the determinants of share price efficiency when they evaluate the existing regulations for future policy changes.

1.8 Organisation of the study

The study is organized as follows. Chapter one develops the introduction, including the background of the study, problem statement, research questions, research objectives, scope and motivation, significance of the study and organization of the study. Chapter two focuses on concepts and definitions, theoretical literature, empirical reviews, theories, hypothesis developments, a summary of the existing literature, and the research gap. Specifically, theoretical and empirical literature are about; (i) the influence of stock price informativeness on post-repurchase share performance; (ii) the effect of a firm’s share repurchases on share price efficiency; and (iii) the relationship between the dependent variables and the control variables. Chapter three presents a discussion on the research methodology which consists of; research design, data collection and sampling, stages of estimation, measure of variable, the method of analysis, and econometric model specifications. Chapter four reports the empirical results of the study and provides a discussion. Chapter five offers concluding remarks regarding the study, details the research implications, the known limitations of the study and provides recommendations for further research.

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