Chapter 1

INTRODUCTION

The introduction chapter consists of the background information about share buybacks activities, the definition of the research problems and the purposes of the study as well as the research questions. The significance, scope of the study and research framework are also being discussed in this chapter. Finally, the organization of the report gives reader an overview structure of the thesis.

1.1 Overview of Share Buyback

Share buyback, also known as share repurchase or share reacquisition, is referred to share acquisition of a company by its own. Over few decades since the first share buyback, share buyback has now become a common but important event in financial markets across the globe. According to Mitchell and Robisson (1999), share buybacks have investment, signalling, financial restructuring and strategic management implication for a company's operation, therefore the management of the companies should take share buyback seriously.

Since the Asian financial crisis in 1997, share buybacks were legalized and approved in the Bursa Malaysia, which formerly known as Kuala Lumpur Stock Exchange (KLSE). Share buyback is engaged as a response to induce confidence and rejuvenate the depressed market after the Asian financial crisis. Through share buybacks the company can stabilises the supply and demand of the floating outstanding shares which eventually supports or even lifts the share price.

By virtue of the enactment of section 67A of the Malaysian Companies Act 1965, starting from September 1st 1997, a public listed company, which is solvent at the event of buybacks, is allowed to repurchase its own shares using the distributable profit or free cash flow, given that prior approval from shareholders is obtained during the Annual General Meeting (AGM). Share buybacks must be made in a good faith and in the interest of the company and shareholders. In order to obtain the mandate for executing share buyback, the company is required to send circulars proposing the share buybacks programmes and state its past track records, current financial position, rational of repurchase shares, potential advantages and disadvantages of the proposed share buyback as well as its effects to all shareholders. The company, through two brokers in Bursa Malaysia, shall not repurchase its own shares exceeding 10% of issued share capital. The company may repurchase its own share at a premium that is not exceeded 15% of average share price over the last five trading days. Subsequent from the actual share buyback, the company is required to lodge a share buyback report to Suruhanjaya Syarikat Malaysia (SSM) and Security Commission (SC) as well as Bursa Malaysia under “Form 28A: Notice of Share by a Company” for every share buyback episode. The repurchasing company has the rights to retire the repurchased shares, to include into treasury shares and reissue as share option / bonus share or resell to public in Bursa Malaysia at a later time (Suruhanjaya Syarikat Malaysia, 1973; Low, 2001; Zainudin and Regupathi, 2003; Ramakrishnan *et al.*, 2007).

Over a decade since the relaxation of the Malaysian Companies Act 1965, share buyback activities in Bursa Malaysia become common with the participation of more companies. Share buybacks has started to bloom in 2004, where over RM1.9 billion worth of share being repurchased, which is nearly four times from the

preceeding year costing RM 554 million. Further stimulated by the bullish market, the share buybacks activities continued to peak in 2005 which recorded RM 2.3 billion worth of share being repurchased. However, ever since, despite the increase in the companies participate in share buybacks, the value of share buyback faced a decline in the subsequent year, which is valued at RM 1.2 billion (See Table 1.1) (Ramakrishnan *et al.*, 2007). In United States, Taub (2009) reported a drastic decline of 42.3% in the value of share buybacks for Standard and Poor (S&P) 500, in the year of 2008. It is argued that given the global financial crisis started with the subprime mortgage crisis and combined with the uncertainty of future cash flow, companies hold back its capital and reduced the share buybacks activities to remain strong in cash flow. Besides, it is also believed that the tumbled share price in the US market during 2008 also caused the total value of share buybacks has reduced such tremendously.

Table 1.1: Summary of share buybacks in Bursa Malaysia between 1999 and 2006

Year	No. of Companies	No. of Actual Buybacks	Number of Share Repurchased (Millions)	Value of Shares Repurchased (RM' millions)
1999	12	294	27	166
2000	13	433	107	530
2001	26	1,199	194	489
2002	32	1,182	114	279
2003	62	1,731	286	554
2004	70	3,126	544	1,974
2005	127	5,942	1,026	2,327
2006	145	5,363	753	1,232

(Source: Ramakrishnan *et al.*, 2007)

1.2 Research Problem

The rational of relaxing the regulation that allows companies to repurchase their own shares is to support the market share price. Ikenberry and Vermaelen (1996) argued that share buyback provide an option to the shareholders, to buy, hold or sell shares of the company. The option value very much depends on the ability of the management to detect and seize the opportunity when the share price is relatively undervalued based on the insider information about the company's future prospect. However, whether insider managers have better judgement than outside investors about the fair price, are inconclusive. Brockman and Chung (2001), Zhang (2005) and Chan *et al.* (2007) supported that management exhibits substantial timing ability and the ability to determine the undervaluation of share price in the context of Hong Kong. On the other hand, Cook *et al.* (1999) found no evidence of market timing ability using New York Stock Exchange (NYSE) and National Association of Securities Dealers Automated Quotations (NASDAQ) traded companies.

In addition, Ramakrishnan *et al.* (2007) highlighted that smaller companies have higher information asymmetry as compared to large companies. Due to the information asymmetry, share buyback events by smaller companies may result a more significant CAR compared to the share buyback events by bigger companies. Besides that, Zhang (2005) found that the price performance of the companies that undergone share buyback responded differently across firm size and book-to-market ratio (BTM). Some previous studies did not take into account the effect of market capitalization size, BTM ratio as well as the share buyback volume in studying the CARs surrounding share buyback, hence this resulted an inconclusive answer in determining the timing capability of the company management for share buybacks.

The share price performance can be influenced by the volume of share that is bought back. In fact, bigger buyback volume reflected higher confidence of the company management to the company's future cash flow and vice versa. In addition, bigger buyback volume will have bigger impact in stabilizing the supply and demand of the company's floating outstanding shares that eventually stabilises the share price. Again the empirical result on CARs resulted by the actual open-market share buybacks and effect of share repurchase volume towards share price performance for shares in developing market as such Bursa Malaysia remain unanswered.

Many previous studies have been investigating the market reactions to open-market share buyback by determining the Cumulative Abnormal Returns (CARs) surrounding the share buyback period. Interested to note that, abnormal return resulted from open-market share buyback at the immediate window period, vary across different countries, for instance Germany and Japan (approximately 6% CAR); United States, Australia, Canada and Korea (approximately 3% CAR); while United Kingdom, France and Hong Kong at the lower end of approximately 1% CAR (See Table 1.2). Despite the fact that many empirical evidence of market reactions to share buybacks from various countries, the study on share market in developing countries such as Malaysia is lacking in empirical evidence. Furthermore the investigation of share performance after share buyback event for longer term is also been lacking in empirical evidence.

Besides that, among the previous studies, many of them investigated the market reaction to open-market share buyback proposal announcements, to quote a few, Comment and Jarell (1991); Dann (1981); Ikenberry *et al.* (1995); Vermaelen (1981); McNally (1999). While in actual fact these companies are not committed to completely follow the proposed share buyback volume. Conversely the actual share

buybacks may be far apart from the proposed share buyback announcement. Hence this may resulted the CAR calculated based on share buyback proposal announcement are not that of resulted from a share buyback event.

Table 1.2: Prior empirical results of CARs following announcement of open-market repurchase programmes (OMR)

Country	Study	Abnormal Return	Dataset
USA	Grullon and Michaley (2002)	CAR [-1; +1]: 2.7%	4,443 OMR (1980-1997)
	McNally (1999)	CAR [-1; +1]: 2.5%	702 OMR (1984-1988)
	Stephens & Weisbach (1998)	CAR [-1; +2]: 2.7%	591 OMR (1981-1990)
	Ikenberry et al. (1995)	CAR [-2; +2]: 3.5%	1,239 OMR (1980-1990)
	Comment and Jarrell (1991)	CAR [-1; +1]: 2.3%	1,197 OMR (1984-1988)
	Vermaelen (1981)	CAR [-1; +1]: 3.7%	243 OMR (1970-1978)
Australia	Lamba and Ramsay (2000)	CAR [-1; +1]: 3.3%	103 OMR (1989-1998)
Canada	Li and McNally (1999)	CAR [-2; +2]: 3.6%	183 OMR (1989-1992)
	Ikenberry et al. (2000)	CAR [-15; +15]: 0.9%	1,060 OMR (1989-1997)
France	Ginglinger and L'Her (2006)	CAR [0; +1]: 0.6%	363 OMR (1998-1999)
Germany	Hackethal & Zdantchouk (2006)	CAR [-1; +1]: 11.6%	224OMR (1998-2003)
	Gerke et al. (2003)	CAR [-1; +1]: 6.1%	120 OMR (1998-2000)
	Seifert and Stchle (2003)	CAR [-1; +1]: 5.9%	192 OMR (1998-2003)
	Schremper (2002)	CAR [-1; +1]: 4.1%	112 OMR (1998-2000)
Japan	Zhang (2002)	CAR [-1; +2]: 6.0%	39 OMR (1995-1999)
Korea	Jung and Lee (2003)	CAR [0; +5]: 2.8%	382 OMR (1994-1998)
Switzerland	Dumont et al. (2004)	CAR [-2; +2]: 1.8%	10 OMR (1999-2003)
Hong Kong	Zhang (2005)	CAR [0, +2]: 0.43%	800 OMR (1993-1996)
	Zhang (2005)	CAR [0, +20]: 0.69%	800 OMR (1993-1996)
UK	Rau and Vermaelen (2002)	CAR [-2; +2]: 1.1%	126 OMR (1985-1998)
	Oswald and Young (2002)	CAR [-1; +1]: 1.4%	266 OMR(1995-2000)
	Rees (1996)	CAR [-2; +2]: 0.3%	882 OMR (1981-1990)

(Source: Hackethal and Zdantchouk, 2006, and Zhang, 2005)

1.3 Research Objectives

As a share market of a developing country, Bursa Malaysia is relatively less matured and not many studies have been done in developing country like Malaysia, let alone using empirical methodology such as CARs. Hence it is important to know the ability of the management to time and identify the undervaluation of the share by factor in the effect of market size and BTM ratio of a developing market. Besides that this study will also identify the effect of share prices performance, immediate after and 1 month after share buyback event to determine the effective of share buyback to act as a tool to stabilise share prices and to signal share undervaluation. The research objective of the study is to identify:

1) The CARs for before, immediate after- and 1 month after- share buyback events.
2) The effect of market capitalization size, on CARs for before, immediate after and 1 month after share buyback events.
3) The effect of BTM ratio, on CARs for before, immediate after and 1 month after share buyback events.
4) The effect of buyback volume, on CARs for before, immediate after and 1 month after share buyback events.

1.4 Research Questions

1) Can the management identify the undervaluation of shares and time for the share buybacks?
2) Does the share price increases / decreases significantly (different from zero) after share buybacks? If yes, what is the cumulative abnormal return (CARs)?

3) Is there any difference for the CARs (before, immediate after and 1 month after share buyback) while the samples are divided into sub-group based on market capitalization size?
4) Is there any difference for the CARs (before, immediate after and 1 month after share buyback) while the samples are divided into sub-group based on book-to-market (BTM) ratio?
5) Is there any difference for the CARs (before, immediate after and 1 month after share buyback) while the samples are divided into sub-group based on share buyback volume?

1.5 Significance of Study

Albeit the empirical evidences of market reactions to share buyback from various countries, the study on developing countries such as Malaysia is lacking in empirical evidence. Among the study on share buybacks in Malaysia, Ramakrishnan *et al.* (2007) tested the "still water pond analogy" concept that focus on validating the share price fluctuation between "before", "at" and "after" share repurchase; While Zainudin and Regupathi (2003) studied on the motivations for share buybacks in Malaysia. The CARs resulted from the open-market share buyback events in Bursa Malaysia remain unknown. For this reason, this study will empirically test the CARs resulted by the actual open-market share buybacks in Bursa Malaysia.

In less matured equity market like Bursa Malaysia (in relative to matured market such as US and Hong Kong), investors tends to be more speculative and would take advantage on share buybacks period to obtain quick return. CAR (0, 2) post share buyback provides an answer to the question on profitability for immediate term speculation on share buyback. Share price performance over a longer period is

more informative to investors and company management. Because it shows whether the event has successfully stabilise the price or signal the information of share price undervaluation. Hence the effect of share buybacks on share price performance in medium term, which is a calendar month after actual share buybacks (usually 21 trading days), is also included in this study to address the issue.

Zhang (2005) found that the price performance of the companies that undergone share buyback responded differently across company size and book-to-market ratio (BTM). The market responded favourably to the share buyback by small and value (high BTM value) companies and is found to be benefiting shareholders in long term. Similarly Hackethal and Zdantchouk (2006) also found that CAR resulted from share buybacks are on average greater for companies with high BTM ratio. Ramakrishnan *et al.* (2007) also highlighted that smaller companies may have higher information asymmetry as compared to large companies, and hence the CAR for smaller companies are to be more significant. This implies that size of the company is affecting the CAR. Thus this study also looks into the effect and the relationship of market capitalization size and BTM ratio in the share price performance subsequent from actual share buyback.

The share price performance can also be influenced by the volume of share that is bought back. Logically, bigger buyback volume reflected stronger signal and higher confidence to the public. Furthermore, by repurchasing more shares from the floating outstanding share, the supply of shares decreased proportionally. Hence it will result higher price based on supply and demand theory.

This study may contribute to both literature and practical world by unfolding the myth of share price performance surrounding share buyback event between different sub-groups based on market capitalization size and BTM ratio as well as the effect of

share buyback volume. This study also provides a measurement in determining the market timing capability of the management. The outcome of the study may act as guidance to the industry player in forecasting the share performance following share buybacks programme and value add to the literature on study of share performance following share buyback especially on the developing market such as Malaysia.

1.6 Scope of Study

This paper presents the empirical study of share price performance surrounding actual share buyback events in Bursa Malaysia. The sample portfolio comprised of share buyback events starting from 2006 until 2009, which included the ASEAN financial crisis period (2007 and 2008). This study will also looks into the relationship of market capitalization size and BTM ratio as well as the effect of buyback volume in determining the CAR surrounding actual share buyback events. This study only focus on the shares listed in FBM Top 100, which comprises of top 100 biggest companies based on market capitalization listed in Bursa Malaysia.

1.7 Research Framework

Based on literature review presented in chapter 2, a research framework has been developed to investigate the capability of the company management in identifying share undervaluation and time the share buyback. This study also empirically determines the CARs following actual share buyback events at immediate term period and medium term period. Furthermore this study also tested the relationship of share price performance with market capitalization size, BTM ratio and share buyback volume. (Figure 1.1)

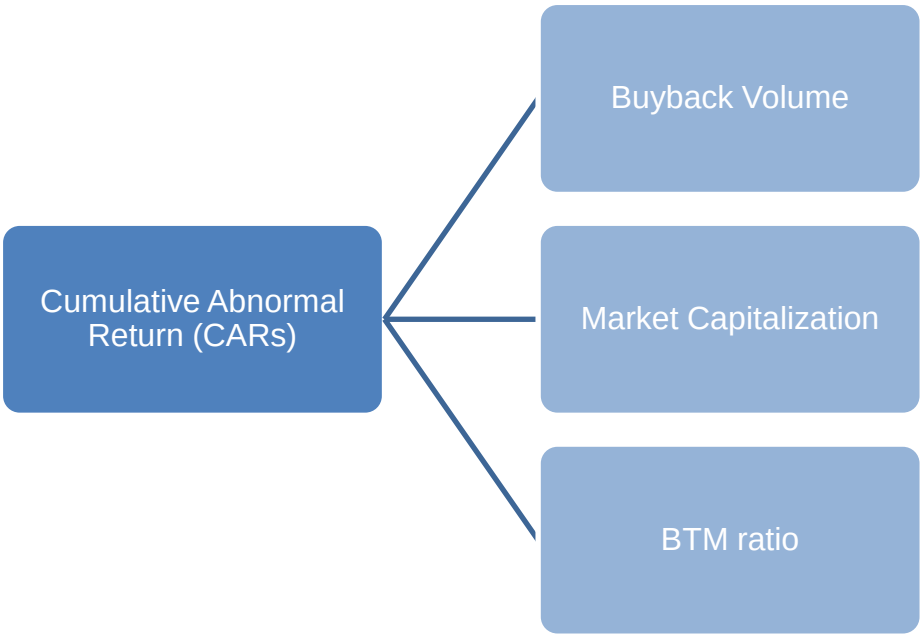

Figure 1.1 Research Framework

This study used the standard market model event study that employed by Zhang (2005), and Hackethal and Zdantchouk (2006) to measure the CAR for three event window periods surrounding share buyback events, which are CAR [-20, -1], CAR [0, +2], and CAR [0, +20]. The CARs are measured in relative to the market model, whereby the beta coefficient, β and the stock alpha, α, were estimated from the 250 days daily return, which is 270 to 21 days prior to the actual share buyback.

A cross sectional regression will be performed to further analyze the nature of the market reactions. Two dependent variable which are short term CAR and medium term CAR will be regressed against the characteristics of the shares. The independent variables included in the regression model will be

Ln_MCap: Natural logarithm of the market capitalization size on the share buyback event day.

BTM: Book-to-Market ratio on the share buyback event day is taken from the nearest announced BTM value before the share buyback event day.

Pc_BBVol: Percentage of share buyback volume over the total outstanding shares for the share buyback episode.

Past_Return: CAR [-20; -1] that are measured using the market model will be treated as the past return or a determination to share undervaluation.

Based on the literature, below are the hypotheses formulated:

H1: Share price performance has significantly decreased prior to share buyback.

H2: Share price performance is significantly different from zero after share buyback.

H3: CARs are significantly different if market capitalization is taken into consideration. (Smaller companies experience higher CARs than bigger companies)

H4: CARs are significantly different if BTM ratio is taken into consideration (Value stock (high BTM ratio), experience higher CARs than glamour stock (low BTM))

H5: CARs are significantly different if buyback volume is taken into consideration. (Bigger buyback volume experience higher CARs).

1.8 Organization of Study

This report consists of five chapters (See Figure 1.2) and is organized as follow:

Chapter 1: The introduction chapter comprised of the background information about share buy-back activities, the definition of the research problems and the objectives of the study. Research questions, significance of the study are also being discussed. Scope of the study and research framework is also included in Introduction chapter. Last but not least, this chapter also presented the organization of the report.

Chapter 2: The literature review chapter explains about the share buybacks activities. This chapter starts with the overview of share buyback and overseas developments. It is followed by methods of share buyback and the motives of share buyback. Finally, the literature review also discussed the factors affecting share performance after share buybacks namely market capitalization size, BTM ratio and share buyback volume. Last but not least this chapter also presented the share buyback activities in Malaysia.

Chapter 3: The Research Methodology chapter presents the methodology employed in the study. This chapter starts with the review of the research framework. On top of that, this chapter also discussed the hypotheses developed to assess the CARs surrounding share buyback events, as well as the relationship of CARs with market capitalization size and BTM ratio of the company as well as the effect of share buyback volume on CARs. Finally, this chapter presents the methodology employed on data collection and method used to measure the CARs and test the hypotheses developed.

Chapter 4: The result and discussion chapter presents the result obtained and discussion on the findings. This chapter provides answers to the research questions and research hypotheses developed. The *t*-statistic test results are presented based on 1) entire sample, 2) market capitalization, 3) BTM ratio, 4) share buyback volume. The result of cross sectional regression model is also been presented and discussed. Last but not least, this chapter also discuss on the robustness check that uses company as sample.

Chapter 5: This conclusion chapter provides an overview of the study and summarize up the finding of the study. This chapter also stated the limitation and assumption of this study and provides suggestions for future studies.

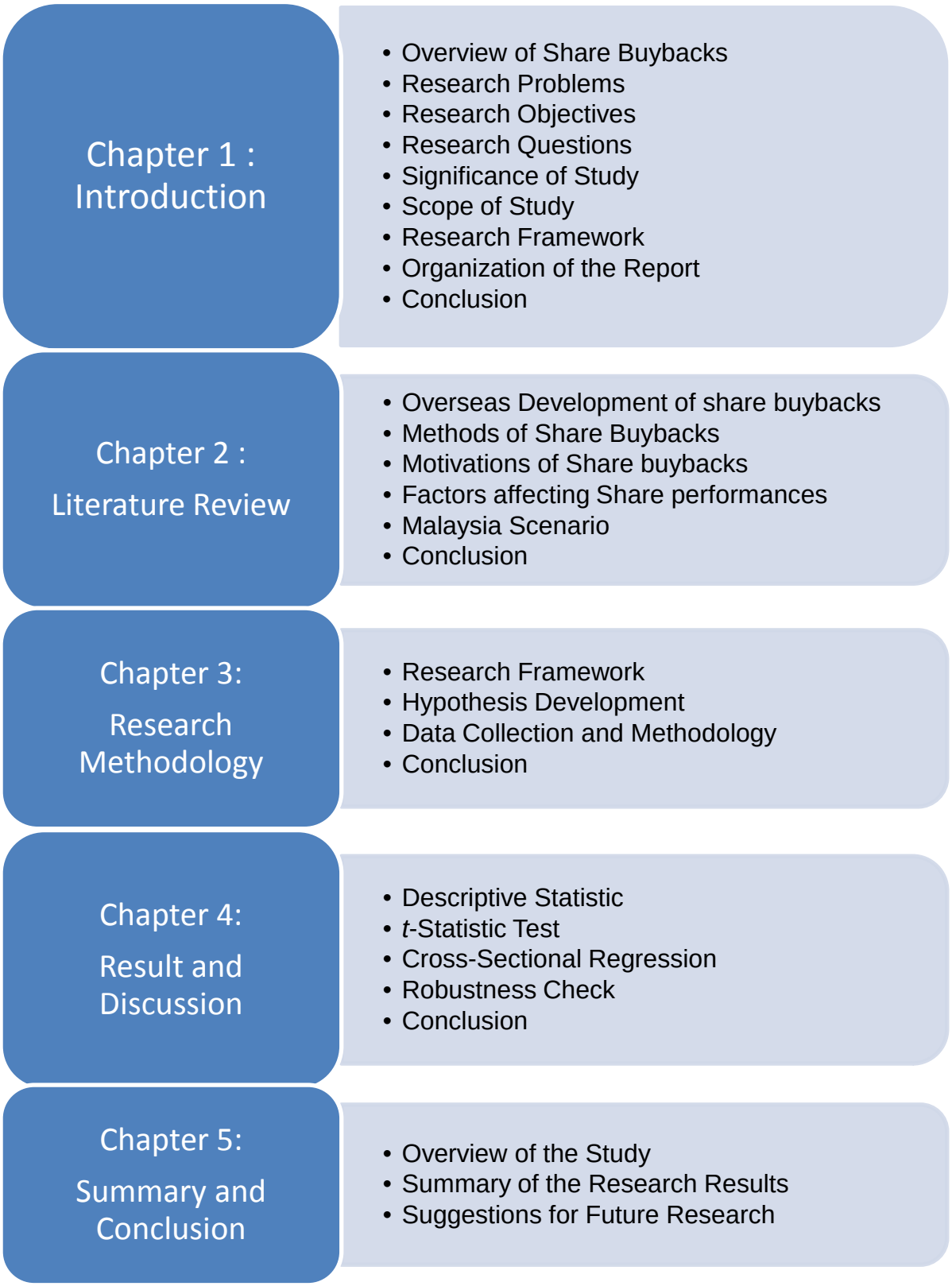

Figure 1.2: Organization of the Study

1.9 Conclusion

This chapter presented an overview of the share buybacks and the research problems that related to share buybacks. This chapter also discussed about the research objective and research questions. This is followed by the discussions on significance of the study and determined the scope of study as well as stating the research framework for this study. Last but not least, this chapter presented the organization of the study to provide an overview of this study to the reader. Following chapter, Chapter 2 will discuss on the literature review on share buyback that provide the fundamental basic to the study.

Chapter 2

LITERATURE REVIEW

This literature review chapter explains about the overall share buybacks activities. This chapter starts with the overview of share buyback and overseas developments. It is followed by tools of share buyback and the motives of share buyback. Finally, the literature review discussed the factors affecting share price performance surrounding share buyback and the share buyback activities in Malaysia.

2.1 Share Buyback

Share buybacks (also known as share repurchase or share reacquisition), is referred to an acquisition by a company of shares in itself. Over few decades since the first share buyback, share buyback has now become a common but important event in financial markets across the globe. Share buybacks have investment, signalling, financial restructuring and strategic management implication for the company operations, hence share buyback should be performed in favour of the company as well as the shareholders. (Mitchell and Robisson, 1999)

2.1.1 Overseas Developments

During the 80's, share buyback started with the United States of America, where most of the share buyback literatures can easily be found. Similarly, in 1981, United Kingdom too started to adopt share buyback legislation (Dixon *et al.*, 2008). In 1989, the legislative framework for buyback in Australia was established. By the

effort of Corporations Law Simplification Task Force, it was further relaxed in 1995 (Mitchell and Robison, 1999)

During the 90's many countries started to adopt a more flexible share buyback legislation. For instance, in 1991, Hong Kong legalised the share buyback through the Companies (Amendment) Ordinance 1991 (Firth and Yueng, 2005). This is followed by Japan, who passed the legislation allowing share repurchases in June 1994 (Hackethal and Zdantchouk, 2006). In the year of 1998, Germany has followed the trend and allowed German public listed company to perform share buyback (Hackethal and Zdantchouk, 2006). In July of the same year, France introduced the provision that authorized open-market share buyback.

Malaysia, in September 1997, has amended the Companies Act 1965 and authorized public listed company to execute share buyback, provided the company is solvent and obtained prior mandate from the shareholder to repurchase shares of its own. Over a decade, open-market share buyback activities have increase tremendously, with the participation of more companies in repurchasing their own shares.

2.1.2 Tools of Share buybacks

Generally there are four primary ways of share buybacks: open-market, fixed price tender offer, Dutch auction and as well as private negotiation share buyback. Different motives may affect the company in choosing the means of share buyback. Among these open-market share buybacks are the most commonly practiced and been thoroughly studied, to quote a few, Ikenberry *et al.* (1995), Erwin and Miller (1998), and Stephens and Weisbach (1998), Grullon and Michaely (2000).

2.1.2.1 Open Market Share Buyback

Open market share buyback, where share buyback is performed in stock exchange, are the most common share repurchasing method across the world. In United States, more than 90% of share buybacks is done by open market share buyback (Ikenberry *et al.*, 1995; Stephens and Weisbach, 1998).

For open market share buyback, the company may or may not announce the information prior to an actual share buyback, depending on the regulations imposed by the country as well as the strategic planning by the management. For instance, US companies are not required to make share buyback announcement, while German companies are mandatorily to announce the share buybacks activities. However for strategic planning per se, usually high-quality companies choose to make share buybacks announcement, while low quality companies may not. This is to take advantage on the market information asymmetry and market inefficiency to profit from the abnormal return following the share buyback.

Interested to note that, even a prior share buyback announcement has been made, the management remains the option of deciding whether, when and how much to repurchase. The management can repurchase all, a portion or none of the announced share buyback volume over a period of time. Stephens and Weisbach (1998) reported that most companies usually will follow through the share buyback volume as per announced, only 10% of the sample companies repurchased less than 5% of the target buyback share volume. Conversely, Ikenberry and Vermaelen (1996) argued that fulfilment of entire share buyback volume announced by the companies were unrealistic. These company managements are required to adjust according to timely information and perform share buyback if share price are in favour. Prior to share buyback, the management needed to acquire or renew the

mandate for executing share buyback from the shareholders in the last Annual General Meeting (Comment and Jarrell, 1991; Isagawa, 2002; Hackethal and Zdantchouk, 2006).

Open market share buyback is being done through brokers appointed in the stock exchange, and the seller of the shares does not aware that he or she is selling the share to the company. The repurchasing companies are required to pay the normal brokerage fee and processing fee. A share buyback episode may span over days, weeks or even months, in order to fulfil the targeted share buyback volume at the targeted share price range. However, repurchasing companies are usually allowed to repurchase not exceeding a define percentage of the paid up capital from the stock exchange, while the premium of the share buyback are usually fixed within a defined percentage range based on the average share price of few days prior to share buyback event. The percentages are different based on the regulation of the different country. Malaysia regulation has fixed the maximum allowed for share buyback at 10% paid up capital as not exceeding 15% of average share price over five trading days prior to share buyback.

Many earlier studies have been focusing on investigating the share price performance surrounding the open-market share buyback event. The outcome of these studies indicated that different countries experienced different extend of CARs subsequent from share buyback event (Comment and Jarell, 1991; Dann, 1981, Ikenberry *et al*., 1995; Vermaelen, 1981; McNally, 1999). Averagely, the CAR found to be approximately 3% in previous studies done in US context. However the CARs are found to be different across countries. The CARs also said to be change over timeline as the market mature and the market condition or economic condition changes (Mitchell and Robison, 1999).

2.1.2.2 Fixed Price Tender Offer Share Buyback

Fixed price tender offer share buyback is a onetime offer to purchase a stated number of shares at a stated fixed price, usually at a premium over the current market price. Prior to the 80's, share repurchase were usually executed using a fixed price tender offer share buyback. Prior to fixed price tender offer share buybacks, the company required to specify a single repurchase price, the number sought, and the duration of the offer as well as the motivation of the share buybacks.

Upon ending of the tender offer, if the sought share volume has not been matched, the company may apply for an extension in the tender expiration from the authority (Comment and Jarrell, 1991). If the outstanding number of shares that tendered exceeded the volume of share sought, the company may repurchase the share sought at a pro rata basis or repurchase all the tenders at the specified price (Vermaelen, 1981). Normally, such a tender offer may come with condition whereby the director, executives of the company to be precluded in participating the tender offer, or set a minimum and maximum limits to the share volume to be repurchased. Fixed price tender offers share buyback may be motivated by strategic decision that requires large volume of shares, for instance privatisation, merger and acquisition that requires huge amount of share for exchange, mandatory general offer or even financial restructuring to lift the gearing ratio of the company to benefit from tax incentives (Vermaelen, 1981). Lakonishok and Vermaelen (1990) suggested that fixed price tender offer is made, particularly by larger firms, as a means of preventing a hostile takeover. Regardless of the motives of the fixed price tender offer, Dann (1981) reported the average price of fixed price tender offers was about 22% above the market price shortly before the share buyback proposal announcement. While

Comment and Jarrell (1991) reported an average of 11% CAR from the share buyback using fixed price tender offer.

2.1.2.3 Dutch Auction Share Buyback

Dutch auction share buyback is essentially similar to that of fixed price tender offer. Dutch auction share buyback differs from that of fixed price tender offer, in offering price. Dutch auction share buyback allow the company to specify a targeted repurchasing price range for share buyback, rather than a fixed repurchasing price. This is first introduced in 1981 as an alternative form of tender offer share buyback, and Todd Shipyards as the first company that perform Dutch auction (Bagwell, 1992).

In Dutch auction share buybacks, shareholders are invited to tender their shares, at any volume and price within the stated range. The company will compile the tender offers and sort according to the tender prices, creating a demand curve for the stock. The repurchasing price is the lowest price that the company can obtain the pre-specified number of shares sought. All shares tendered at or below the repurchasing price will be repurchased at the repurchasing price. In order words, the repurchasing price is partially determined by the market based on supply and demand theory.

Similar to fixed price tender offer, if the number of shares tendered exceeds the number sought (at the purchase price), then the company may repurchase the shares based on a pro rata basis to all who tendered at or below the repurchasing price. In contrary, for the shares that tendered above the purchase price, will not be bought back. If too few shareholders participated and the pre-defined share volume sought are not being met, then the firm can either cancel the offer (provided it had

been made conditional on a minimum acceptance when the announcement is made), or the company just buys back all tendered shares at the maximum price. (Comment and Jarrell, 1991; Bagwell, 1992) In the study done by Comment and Jarrell (1991), Dutch auction share buyback resulted CAR of 8% at the immediate term.

2.1.2.4 Private Negotiation Share Buybacks

As the name implies, this method of share purchases are being done through private negotiation between the company and, usually, the major shareholders, or institutional investors who owned a big block of shares. Such share buyback methods are usually used to prevent hostile takeover or corporate restructuring. Not much previous study has focus on this type of share buyback as this is not commonly used.

2.1.3 Motivation of Share Buybacks

Share buyback motivations have been researched extensively and many theories have been highlighted as possible motives for share buyback. Among these literatures, some attempted to determine the motives of the management when deciding a share buyback programme, while some look into how these motives will affect the share price performance. At any given share buybacks, multiple motivations may be supported. Overtime the share buyback motivations will change due to changing of economic and market conditions, particularly following major event such as economic crisis or stock market crash in 1987 (Tsetsekos *et al.*, 1991; Mitchell and Robison, 1999). This section will discuss on the motives that induce the share buyback decision, besides the general hypothesis as mentioned by Wansley

et al. (1989), other possible buyback motivations from other literature will also be discussed in order to provide a comprehensive ideas of share buyback motivation (Dixon, *et al.*, 2008).

2.1.3.1 Information Signalling Hypothesis

Among the proposed hypotheses, information signalling hypothesis has been widely accepted by most literatures (Dann, 1981; Vermaelen, 1984; Ofer and Thakor, 1987, Sinha, 1991). In the study done by Wansley *et al.* (1989), all the respondents agreed that information signalling is a motivation for share buyback. While Cudd *et al.* (1996) show only partial support for the information signalling hypothesis from the study. A more recent work by Rau and Vermaelen (2002) similarly identifies open-market share buybacks as a poor signalling tool. They argued that there is no obligation for the company to completely fulfil the share buyback volume announcement and this demonstrated weak management belief that the share price is undervalued.

Isagawa (2002) argued that, market are always full with noise and make the market inefficient and tempt informational asymmetry. When the market possess huge information gap between shareholders and management, signalling theories as a share buyback motivation hold (Mitchell and Robison, 1999; Isagawa, 2002). Outside shareholders may not understand the market condition, the technological advancement, economic and business condition as good as the management, hence there is always an information gap in between. Jaffe (1974) and Seyhun (1986) provide strong evidence that management had information than other investors does not acquire the information.

In general, Dann (1981) and Vermaelen (1981) breakdown the management signalling objective into two sub-groups, as follows:

A) Undervaluation of Share Price

Dyl (1974) and Vermaelen (1981) both argued that repurchases reflect management's perception that the firm is undervalued. When the share price is perceived to below the intrinsic value (undervalued), management will use share buyback announcement as a vehicle to inform the shareholders that the share price is underpriced (Mitchell and Robison, 1999; Hackethal and Zdantchouk, 2006). In the survey conducted by Financial Executive International Research Foundation, Badrinath and Variaya (2001) reaffirmed that company exercise share buyback when the company share price is undervalued, and this has been the key motivation for share buyback. Two-third of the respondents in the study conducted by Li and McNally (1999), stated share price undervaluation as their main motivation of share buyback. Conversely, it is very difficult to determine the "fair price" of the share. However according to the previous literature, CAR for US is only about 3% or the UK is only about 1%, this can hardly convinced that management are able to identify the undervaluation error (Dixon *et al.*, 2008). Hence it is said that share buybacks merely gives an exchange option to the shareholders.

In the context where share buybacks announcement are not made compulsory, Isagawa (2002) suggested that, high-quality companies usually choose to make share buyback proposal announcement, while low quality companies may chose not to announce it, in order to take advantage on the information asymmetry and market inefficient to make abnormal profit.

B) Confidence in Future Cash Flow

Besides from signalling undervaluation of share price, management may utilize share buyback as a medium to convey message to the shareholders that the management is convinced and confident about the future of the company and its future profitability and cash flow of the company. It is believed that no outside investors may know the company, market and industry better than the management. Hence the information asymmetry has created value for executing share buyback as a means to enhance shareholder's confidence and keep them excited. Therefore it is assumed that the management possess favourable information to the company and not known to the market, and thus represents management's confidence in the future of the company (Wansley *et al.*, 1989; Isagawa, 2002).

2.1.3.2 Dividend Substitution Hypothesis

In many circumstances, share buybacks are motivated by the dividend substitution hypothesis. In favour of tax treatment for the shareholders, company may issue repurchased shares as a bonus shares or share dividend to treat as an alternative for cash dividends in distributing surplus cash to shareholders. For shareholders, return is calculated as the sum of dividend and capital gain. The effects of a cash dividend and value from the bonus shares are indifferent in terms of shareholders wealth (Dixon *et al.*, 2008).

Besides that, even if the repurchased shares are not used as bonus share, the share price appreciated due to share buybacks also provides another avenue to redistribute the wealth to shareholders who give up their shares (Dann, 1981). Short term shareholder or speculative investors may take this golden opportunity to exit

and sell the share at a premium price, thus obtain higher capital gains. Market speculation of potential buyback has become more pronounced in the Australian context (Mitchell and Robison, 1999).

In some countries, cash dividends are highly taxed, while capital gains from share are not or less taxable than cash dividend, hence capital gain or bonus shares are more favourable than cash dividend, when personal tax of the shareholders are taken into consideration (Grullon and Michaely, 2000). Though, the shareholder preference for capital gain in relative to cash dividend is very much depends on their income tax status (Mitchell and Robinson, 1999). In Australian market, there was an overall preference for capital gains. (Brown and Clarke, 1993) However, according to dividend growth model, dividend is the fundamental for estimating the fair share price. Hence share buyback is recommended to use only on seasonal increased cash flow, while the increase in operation cash flow remains as cash dividend payment (Weigand, 2005).

On the other hand, despite the benefits discussed above, Wansley *et al.* (1989) found that both repurchasing companies and non-repurchasing companies disagreed with the use of repurchase as a substitute for cash dividends. Baker *et al.* (1981) also found strong negative responses from both repurchasing companies and non-repurchasing companies that dividend substitution as a share buyback motivation. It contradicts with the finding by Badrinath and Variaya (2001), where the respondents see dividend substitution as a key motivation for share buyback.

2.1.3.3 Optimal Capital Structure Hypothesis

In previous studies on share buyback motivations, optimal capital structure hypothesis has generally been accepted by the researchers (Medury *et al.* 1992; Tsetsekos *et al.*, 1991). Nevertheless, the recent survey conducted by Financial Executive International Research Foundation with its members, has reaffirm that altering capital structure is one of the key motivations for share buyback (Badrinath and Variaya, 2001). Share buybacks has an effect in reducing the equity of the firm and thereby changing the capital structure mix to suit the strategic planning of the company (Cathro, 1992). Companies with additional debt capacity and better liquidity can utilise share buyback to adjust their gearing ratio in order to achieve desired optimal capital structure (Finnerty, 1975, Dixon *et al.*, 2008).

Share buyback provides a better and more economical way for the management to restructure its capital structure. Share buybacks is considered as one of the easiest way to improve company's capital structure (Mitchell and Robison, 1999). However, it is also argued that open market share buybacks are ineffective and time consuming in improving the gearing ratio. The argument is based on that only a small amount of shares are allowed to be repurchased from the stock market, hence it will be very time consuming for a big market capitalization company and may incurred opportunity cost especially in this fast moving business world. Hence, it can be safely claimed that open market share buybacks will only be effective in adjusting leverage ratio for company of small market capitalization. While Grullon and Ikenberry (2000) point out that share buyback can only be effective in fine tuning the capital structure of share repurchasing company. Dann (1981) suggested that in order to adjust capital structure, the company may issue new debt, execute fixed price tender offer or Dutch Auction share buybacks or even perform direct debt for

equity exchange, which is considered to be more effective in restructuring the company capital structure.

In addition with achieving optimal capital structure, Ramakrishnan *et al.* (2007) argued that if companies are below their optimum capital structure, share buybacks will increase its debt to equity ratio, and increase the interest tax shield that eventually increase the company's value. This is supported by the study done by Rau and Vermaelen (2002), which stated that share repurchase can reduce corporate taxes and thus lower the company's cost of capital. Masulis (1980) also found that CARs following share buybacks are related to the tax effect of leverage in relation to tender offer.

2.1.3.4 Anti-Takeover Hypothesis

In some circumstances, share buyback maybe performed in the advantage of the company's management. Share buyback increases the percentage ownership of the company by the management and hence reduce the likelihood of the management to be hostile taken over (Wansley *et al.*, 1989). Share buybacks will reduces the number of share available to the public and also increase the leverage of the company (making the company less appealing as a takeover target). Given that open-market share buyback are commonly capped at 10% of company's outstanding share, hence it might be ineffective in fending off the takeover threat. However open market share buyback can be part of the strategy to prevent hostile takeover. Ramakrishnan *et al.* (2007), has pointed out a typical example of anti-takeover motivated share buyback in Malaysia. Southern bank aggressively bought-back its shares when non-friendly party made a formal acquisition bid of its shares.

Several studies also look into the share price performance for the share buyback event that is motivated by anti-takeover hypothesis. Davidson and Garrison (1989) found that market reacted negatively to share buybacks motivated by anti-takeovers hypothesis. This is again supported by Lamba and Ramsay (2002). On the other hand, it is believed that, the targeted company will pay great share premium to repurchase its own shares to reduce the chance of being successfully taken over. Brandley and Wakeman (1983) reported a 12.5% CAR when the repurchase is to avoid takeover by another company. Likewise, Cudd *et al.* (1996) also suggested positive CAR when the motives of share buyback is to gain control (prevent takeover by reducing the outstanding shares).

2.1.3.5 Reissue Hypothesis

Share reissue is also believed as one of the motivations for share buybacks. Repurchased shares can be reissued under retirement programme, employee stock options, as well as bonus shares, share incentives for the employee or management (Baker *et al.*, 1981). However, countries like United Kingdom requires the share repurchasing companies to retire or cancel the repurchased share, hence this reissue hypothesis may not practicable for them, at least until the passing of Finance Bill in 2003 (Dixon *et al.*, 2008). Besides that, company can resell the shares back to the stock exchange in the later stage to control the supply and demand of the share. In the study on the relation between motivation and share price performance, Davidson and Garrison (1989) found that share buyback motivated by employee stock option does not produce any abnormal return.

2.1.3.6 Investment Hypothesis / Free Cash Flow Hypothesis

Cash rich companies with no good investment opportunity (lack of growth opportunity) may choose to exercise share buybacks, in order to return the excessive cash flow to the shareholder through capital gain. Share buyback is assumed to be one of the simplest and cheapest ways to return the surplus cash to its shareholders (Mitchell and Robison, 1999). Company can repurchase shares to be put under treasury shares, and reissue or resell the shares when the company required additional cash for new investments, at the later time. Share buyback motivated by this hypothesis have been commonly practice in the share repurchasing companies (Medury *et al.*, 1992; Badrinath and Variaya, 2001; Zhang, 2005). This rationale is to reduce surplus cash, thus preventing the management from over invest in unreliable and project that have expected return that is lower than required rate of return by the shareholders.

Another rationale is based on the arguments that share buybacks allow the company to reduce its total dividend payment by reducing the distributable free cash flow, while maintaining a constant dividend yield (Dixon *et al.*, 2008). Researchers posits that the quantity of share buybacks vary with the cash flow position of the company. Free cash flow provides the company with flexibility in timing the market for share buyback programme, and takes advantage when share price declined (Ramakrishnan *et al.*, 2007).

Share buyback is also seen as an investment by both the share repurchasing companies and non-repurchasing companies (Baker *et al.*, 1981; Wansley *et al.*, 1989). Davidson and Garrison (1989) found significant and large CAR when the announced share buyback motive is to repurchase undervalued stock as investment. If the share price is undervalued and the share price appreciate in a longer term,

then this investment represent a positive net present value (NPV) project or an investment that can increase the company's future cash flow, and hence considered to be a good investment (Dixon *et al.,* 2008). Share buyback by companies of manufacturing industry and mining industry are usually motivated by the reason of lacking in good investments and excess in free cash flow, the management usually will take share buyback as investment (Cudd *et al.*, 1996).

Ikenberry *et al.* (1995) pointed out that if the market evaluates the shares based on fundamentals of the company, then share buybacks will not be profitable in immediate term following the share buyback announcement, but the share price will appreciate in longer term. Ikenberry *et al*. (1995) also documented that the companies that repurchased their own shares and hold for four year, the abnormal return of these repurchased shares are approximately 12.1% (US market). Similarly, an over 20% CAR can be obtained by a three year buy-and-hold share buyback strategy in Hong Kong, the study share price of share repurchasing companies with comparison against portfolio of control firms that are matched by size and BTM ratio (Zhang, 2005). Company can make use of this market undervaluation and buy its outstanding shares at a bargain price, then hold them until the market misperception (undervaluation) disappears, and the firm can earn a handsome capital gain (Isagawa, 2002). For this reason, the share repurchasing companies that have strong fundamental are encouraged to repurchase its own share, even though these companies are not obligate to repurchase their own shares.

On the other hand, some directors view share buybacks as a sign of weak management bereft of ideas in increasing shareholders value. Shareholders would prefer the company to invest the free cash flow in other investment rather than to undertake a buyback of share. (Ferguson, 1995)

2.1.3.7 Window Dressing Hypothesis

A number of studies showed that companies employ share buyback strategy to disguise poor results with respect to performance indicators like Earning per Share (EPS) and gearing ratios (Chan *et al.* 2006; Li & McNally, 2003). This can be commonly seen during the period before financial closure or quarterly and midyear financial reviews. Probably, this is one of the reasons causing the hike in share price during such periods. Mitchell and Robison (1999) showed that the cyclical nature of share buybacks frequency, where they proposed to be influenced by the economic cycle or the timeline of financial event.

Share buybacks with this motive are said to be able to generate cumulative abnormal return (Vermaelen, 1981) and hence is verify as one of the key motivation for share buyback (Badrinath and Variaya, 2001). Mitchell and Robinson (1999) reaffirmed the window dressing hypothesis using the Australia context. It assumes increases in financial performance indicators, regardless of achieved through window dressing by accounting method, will be viewed positively by the market. On the other hand, by using share buybacks to conceal the company's financial difficulties are not in the best interest of the shareholders (Norgaard and Norgaard, 1974). If a buyback results in a reduction in cash reserves below that required level to maintain an efficient operation of the company, it could affect the business operation and eventually reduce operational profits thus decreases the EPS. In this situation, and despite an initial increase in EPS achieved through a share buy-back, a firm's share price will be negatively affected. Hence Dann (1981) concluded that the likelihood of share price to increase is small, if window dress hypothesis is the only reason for share buyback because investors will not be fooled by relatively transparent financial adjustment that lack in substance.

Through share buyback, company can undo its EPS, in the event where employee stock option, bonus shares are exercised or resell of treasury shares. However it is also argued that since the limitation to the open-market share buyback, the number of share bought back may not be sufficient to significantly affect the EPS comparing with tender offers (Ramakrishnan *et al.*, 2007).

2.1.3.8 Stabilise Share Price Hypothesis

Besides the hypothesis above mentioned, some previous studies also stated that share buybacks are with the intension to stabilise the share price. Companies tend to announce share repurchase programme after abnormal share price decline (Vermaelen, 1981; Netter and Mitchell, 1989; Ikenberry *et al*, 1995). Isagawa (2002) also many company tend to announce open-market share repurchase programmes after experiencing systematic shock, for instance the case crash in 1987 and the Asian financial crisis. This has been part of the reason Malaysia authorize share buyback immediate after the Asian economic crisis (Ramakrishnan *et al.*, 2007). Share buyback can creates demand of the company's shares, by reducing the outstanding share available and lifting the flagging share price, at least in immediate term. (Ferguson, 1995) This can be effective for companies of small market capitalization.

However, Ramakrishnan *et al.* (2007) also claimed that companies may artificially inflate the share price by share buyback programmes to please the shareholders in the short run. This may punish the company in two ways; firstly, if the firm buybacks it share with unreasonably premium (to artificially inflate share price), the share price may soon decline to its true intrinsic value and hence the company incur a loss from the buyback; Secondly, companies that does not follow

their initial share buyback announcement may damage their own reputation and credibility (Hackethal and Zdantchouk, 2006). Vermaelen (1981) shows evidence that the strength of the information signal is a function of the company's credibility. Hence for long run falsifying price hike by share buyback will cause more harm to the company. In order to increase the price for a long run, the company should improve its fundamental (revenue, marginal profit, marketing strategy, management effectiveness and efficiency) to increase in share price. Nevertheless external issues such as technological advancement may also play a role in pushing up the share prices of the company.

2.1.4 Factors Affecting Share Price Performance

In previous studies, many researchers have pointed out that share prices are in relation with several variables. Among the suggested factors affecting share price performance following share buybacks, size and book-to-market ratio are the most commonly accepted. Besides that, economical condition, industry characteristic and motives are also suggested to influence the share price performance following share buybacks.

2.1.4.1 Market Capitalization Size

Market capitalization size is widely discussed as a factor influencing the share price performance (Vermaelen, 1981). Subsequently, Ikenberry *et al*. (1995) also documented that share price are inversely related to firm size. They argued that information asymmetries are larger in the smaller firm. This may be caused by less focus and researches on smaller firms by the equity analysts or smaller firm disclose

lesser information to the capital market. The information asymmetries have potentially caused greater share price undervaluation / mispricing and hence abnormal return when the management signals the undervaluation to the shareholders. Hackethal and Zdantchouk (2006) argued that the larger a firm, the more analysts will cover the firm resulting in a greater amount of firm-specific information being publicly available. Manager of small firms can creates more valuable information signalling through share buybacks announcement, and hence a greater CAR to be expected from firm of smaller size.

In the context of Germany, Gerke *et al.* (2003) demonstrated that shares of repurchasing companies in small cap index experience a +4.8% abnormal return following buyback announcement while for those in DAX 100 index only experience +2.3% abnormal return following share buyback announcement. While in the study done by Zhang (2005), found that smaller firms (0.94%, 4.127%) achieve higher abnormal return compared to larger firms (-0.074%, -1.531%) in both immediate term and 20 trading days (medium term) respectively. This has again supported the argument that share prices performances are in favour of firms with smaller size. He has also pointed out that smaller firm tends to make actual share repurchase in advantage of information regarding future of the company, while larger firms make repurchase as a response to recent price decline and these motivational differences maybe influencing the share price performance following share buybacks.

2.1.4.2 Book-To-Market (BTM) Ratio

Share performance following share buybacks always been related to BTM ratio. Companies with low BTM ratio are referred as “growth” stock / “glamour” stock, thus shareholders are usually putting high expectations in future earning from the

companies. On the other hand, companies with high BTM ratio are usually known to be “value” stocks, where expectations are more modest. The difference between expectation and actual performance for small companies are usually high, and hence this supports the argument that market reacts more favourably to value stock than glamour stock in a long run. Besides that, glamour stocks usually get better coverage by the equity analyst and media, hence the information asymmetric for glamour stocks are lesser, as compared to value stocks.

Zhang (2005) documented that value stocks perform better in share price post share buyback, compared to glamour stock for both immediate and after 20 trading days. Value stock obtained CAR (1.413%, 1.899%) while glamour stock obtained a negative CAR (-0.283% and -2.775%) for immediate term and after 20 trading day respectively. While for the study in Germany, share repurchasing firms with high BTM (value stock) outperform the control portfolio by 45% (Hackethal and Zdantchouk, 2006).

2.1.4.3 Economic Condition

Share buyback are cyclical in nature said Mitchell and Robison (1999). Based on the study, in Australia, the frequencies of buybacks change according to the market condition. In a more recent study, Gerke *et al.* (2003) documented a +3.7% CAR following share buyback during the bullish market (1998 to 2000), while fantastic +7.1% of CAR at the subsequent bearish market (Hackethal and Zdantchouk, 2006). Seifert and Stehle (2003), on the other hand, rejected the findings and state no significant different between the two period. Tsetsekos *et al.* (1991) argue that motivations change over time as a result of the changing economic and market conditions, particularly following the impact of a major events, for

example the stock market crash of 1987 etc. Similarly, changes in economic and market conditions will also affect the price performance following share buyback. This is believe the market sentiment and physiological different of the investors between the two period of time has play a significant role.

2.1.4.4 Industry Characteristic

In some cases, share buyback may have different effect on share prices. One of the possible influencing factors maybe of Industry characteristic. Erwin and Millers (1998) recommended that the firm's industry characteristics may influence the signalling power of the open market share buyback. Different industry may influence the share price in different extend. For instance, an IT company execute open market share buyback programme, this may convey a message to the shareholders that the company may possible acquired technology advancement and foresee increase in future cash flow; while for a mining that perform share buybacks, the abnormal return may not be as good as that of in technology industry. This may be due to that share buybacks for manufacturing and mining industry are usually due to surplus cash, while chances of share being underpriced due to future cash flow is relatively low, because if future expand of business usually requires additional capital and does not make sense for the company to spend its finance capacity in share buyback. However Cudd *et al* (1996) found that the impact of industry groupings on the share price performance is observed to be inconsistent and hence inconclusive.

2.1.4.5 Motives

As suggested by Dittmar (2000), different companies may purchases share for different reason. Gerke *et al.* (2003) documented that a +8.9% abnormal return for firms that stated undervaluation as their share buyback motivation while +5.2% for share buyback motivated by disbursement of free cash flow. However, Cudd *et al.* (1996) study the relationship between share repurchase motives and stock market reaction has documented inconsistent wealth-motive relationship. From the study, signalling motives is partially supported but, a positive relationship between anti-takeover hypothesis; while the rest of the hypothesis are found to be inconclusive. In contrast, Davidson and Garrison (1989) found that lower repurchase premiums are negatively associated with anti-takeover hypothesis.

2.1.5 Share Buyback in Malaysia

Subsequent to Asian financial crisis, Malaysia has authorised public listed company to buy back their own share from Bursa Malaysia since 1st September 1997. During the infancy stage of share buyback in Malaysia, only few companies engage in open-market share buyback. The slow pick up in the initial years probably due to the conservatism of corporate managers towards the return of capital to shareholders, a lack of corporate and market familiarity with the benefits of buybacks. However, open market share buybacks activity in Malaysia started to pick up its momentum in 2003, and since then more and more company have requested for mandate for share buybacks. In 2006, 145 public listed companies actively engaged in open market share buybacks. By looking in the trend, it is believe to be increasing in the following years. According to Ramakrishnan *et al.*, 2007, Malaysia only acknowledges open market share buybacks, while private negotiation is prohibited.

Prior to share buyback, companies listed in Bursa Malaysia that intended to repurchase their shares are required to acquire the mandate from shareholders during annual general meeting. Subsequent, the companies can repurchases share of their own with not exceeding 10% of their paid up capital. However, companies that requested for the mandate in executing share buyback do not required to fulfil the share buyback. For each share buyback event, the price premium offered if forbidden to exceed 15% of the average share price of last five trading days.

Prior to the actual share buyback, companies in Bursa Malaysia usually do not make announcement, as they are not required to do so. However, companies are required to disclose the number of share repurchased as well as the value involved before the next trading day. The repurchasing company is required to submit official notice, namely “Form 28A: Notice of Share by a Company” after the share buyback episode has ended, to Suruhanjaya Syarikat Malaysia, Security Commission and Bursa Malaysia. During the mean time, companies will usually report their daily share repurchase record to Bursa Malaysia.

In the study done by Zinudin and Regupathi (2003), the authors stated nine motivations that triggers share buyback programmes. Among which, the widely stated motivations are dividend substitution hypothesis, investment hypothesis, stabilise share price hypothesis, free cash flow hypothesis and window dressing hypothesis (increase EPS). While the less stated motivations are to distribute cash, reissue hypothesis, optimal capital structure hypothesis and antitakeover hypothesis. However, signalling theory is not being included in their research. Nevertheless, Ramakrishnan *et al.* (2007) topped up the study by stating that managers in Malaysia uses share buybacks to signal information to the shareholders.

In the study done by Ramakrishnan *et al.* (2007), the authors focus on testing the hypothesis on share price different between “before”, “at” and “after” share buyback from the sample period between 1999 and 2006 as a mean to signalling hypothesis. From the study, the authors concluded that there is significant price different between the period “before” with “at” and “after” and hence suggested that, share price performance in Malaysia is influenced by signalling hypothesis.

Share buyback activities in Malaysia is largely conducted by companies in industrial sector, followed by trading/service sectors and property sectors, which accounted for about 70% of the all companies that performed share buybacks during the study period (Ramakrishnan *et al*., 2007). This is believed to be information asymmetries are far greater in these industries.

2.2 Conclusion

Chapter 2 presented the overview of share buyback and its development over the globe. This is followed by discussion on the ways in repurchasing shares and the motivation behind share buyback. The factors affecting the share price performance are also being discussed. Last but not least, this chapter discussed the share buyback activities in Malaysia.

Chapter 3

RESEARCH METHODOLOGY

This chapter presents the methodology employed in the study. This chapter starts with the review of the research framework. On top of that, this chapter also discussed the hypothesis developed to assess the Cumulative Abnormal Returns (CARs) after share buybacks based on market capitalization size and the book-to-market (BTM) ratio of the company as well as the effect of share buyback volume on CARs. This chapter also presents the methodology employed on data collection and method used to measure the CARs. Finally this chapter presented the summary of the process for data collection and analysis.

3.1 Research Framework

Based on the literature review presented in chapter 2, a research framework has been developed to investigate the capability of the company management in timing the share buyback during share undervaluation (by determining the CARs of 20 days before actual share buybacks). This study also empirically determines the cumulative abnormal return (CAR) following an actual share buyback for a short term period (two days after actual share buybacks) and medium term period (21 trading days which equivalent to almost 1 calendar month). Furthermore this study also test the relationship of share price performance subsequent from actual share buybacks with market capitalization, BTM ratio and buyback volume. (Figure 3.1)

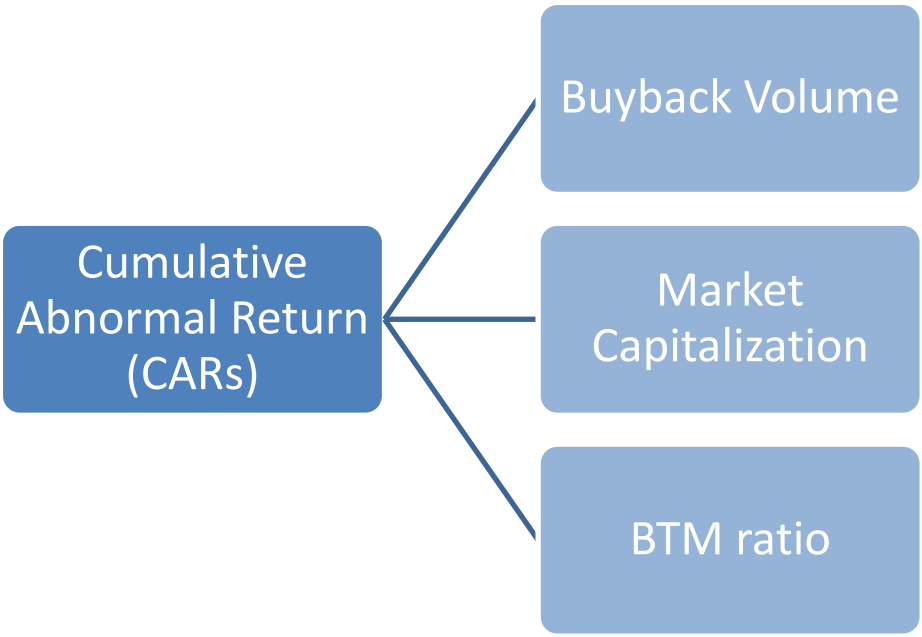

Figure 3.1 Research Framework

This study will use the standard market model event study used by Zhang (2005) and Hackethal and Zdantchouk (2006) to measure the CAR following the actual share buybacks over three different time window surrounding the share buyback event, which are CAR [-20;-1], CAR [0,+2], and CAR [0, +20]. The CARs are measured in relative to the market model. The expected normal daily return are derived from the CAPM model of each shares, whereby the beta coefficient and stock alpha is estimated by using 250 days of return data, from 270 to 21 days prior to the event day.

A cross sectional regression analysis will be performed to further analyze the nature of the relationship between market reactions and the factors studied. Two dependent variable which are short term CAR and medium term CAR will be regressed against the characteristics of the shares. The independent variables included in the regression model will be

Ln_MCap : Natural logarithm of the market value of firm's equity on the share buyback event day (outstanding share volume x share price).

BTM : Book-to-Market ratio on the share buyback event day is taken from the nearest announce book value before the share buyback event day.

Pc_BBVol : Percentage of share buyback volume over the total outstanding shares for the share buyback episode.

Past_Return : CAR [-20; -1] that are measured using the market model will be treated as the past return or a determination to share undervaluation.

Based on the literature, the below are the hypotheses formulated:

H1: Share price performance has significantly decreased prior to share buyback.

H2: Share performance is significantly different from zero after share buyback.

H3: CARs are significantly different if market capitalization is taken into consideration. (Smaller companies experience higher CARs than bigger companies)

H4: CARs are significantly different if BTM ratio is taken into consideration (Value stock (high BTM ratio), experience higher CARs than glamour stock (low BTM))

H5: CARs are significantly different if buyback volume is taken into consideration. (Bigger buyback volume experience higher CARs).

3.2 Hypothesis Development

3.2.1 Market time capability

Initially, the idea of allowing companies to buybacks their own shares is to support the share price when the share price performance is underperformed the market. Whether insider managers have better judgement than other investors about

the fair price, are inconclusive. Brockman and Chung (2001) and Zhang (2005) supported that management exhibit substantial timing ability and the ability to determine the undervaluation of share price in the context of Hong Kong. On the other hand, Cook et al. (1999) found no evidence of market timing ability using New York Stock Exchange (NYSE) and National Association of Securities Dealers Automated Quotations (NASDAQ) traded firms.

H_0: Share price performance has no significant different prior to an actual share buyback

H_A: Share price performance has significantly decreased prior to an actual share buyback.

3.2.2 Cumulative Abnormal Return

Many previous studies have been investigating the market reactions to open market share buybacks by determining the Cumulative Abnormal Returns (CARs) during the share buyback period. Interested to note that, abnormal return resulted from open-market share buybacks vary across different countries, for instance Germany and Japan (~6% CAR); United States, Australia, Canada and Korea (~3% CAR); while United Kingdom and Hong Kong at the lower end of about or less than 1% abnormal return.

H_0: Share price performance has no significant different subsequent to an actual share buyback

H_A: Share price performance has significantly increased subsequent to an actual share buyback.

3.2.3 Market Capitalization

In the study done by Zhang (2005), found that smaller firms (0.94%) achieve higher CAR subsequent from share buyback compared to larger firms (-0.074%). Zhang argued that share prices performances are in favour of firms with smaller size. Zhang also pointed out that smaller firm tends to make actual share repurchase in advantage of information regarding future of the company, while larger firms make repurchase as a response to recent price decline and these motivational differences maybe influencing the share price performance following share buybacks. Ikenberry *et al.* (1995) documented that share price are inversely related to firm size. Ramakrishnan et al. (2007) also highlighted that smaller companies may have higher information asymmetry as compared to large companies, and hence the CAR for smaller companies are to be more significant. Smaller companies are lesser focused and researched by equity analyst and hence higher information asymmetry that potentially caused greater share price undervaluation. Gerke *et al.* (2003) also demonstrated that shares of repurchasing companies in small cap index experience a +4.8% CAR while those listed in DAX 100 index only experience +2.3% abnormal return following share buyback announcement. This implies that size of the company is affecting the CAR. Thus this study also looks into the effect of size and book to market ratio in the share performance following an actual share buybacks for the shares listed in FBM Top 100.

H_0: CARs are not significantly different if market capitalization is taken into consideration.

H_A: CARs are significantly different if market capitalization is taken into consideration. (Smaller companies experience higher CARs than bigger companies)

3.2.4 Book-to-Market Ratio

Zhang (2005) found that the price performance of the companies that undergone share buybacks responded differently across book to market ratio (BTM). Value stock (high BTM ratio) obtained CAR (1.413%) while glamour stock (low BTM ratio) obtained a negative CAR (-0.283%) subsequent from share buyback events. The market responded favourably to the share buybacks by value companies (high BTM value) and was found to be benefiting long term shareholders. Is it argued that shareholders usually put high expectations in future earning for “glamour” stocks while modest expectation for “value” stocks. The difference between expectation and actual performance for “value” stocks is bigger and hence the CAR during share buyback is usually higher and vice versa. Besides that “glamour” stocks usually get better coverage by equity analyst and media, hence the information asymmetric is lesser as compared to “value” stocks.

Similarly Hackethal and Zdantchouk (2006), using Germany companies also found that CAR effects from share buybacks are on average greater for firms with high BTM ratio. This implies that size and book to market (BTM) ratio of the company is affecting the CAR. Thus this study also looks into the effect of book to market ratio in the share performance following an actual share buybacks for the shares in FBM Top 100 Index.

H_0: CARs are not significantly different if BTM ratio is taken into consideration.

H_A: CARs are significantly different if BTM ratio is taken into consideration (Value stock (high BTM ratio), experience higher CARs than glamour stock (low BTM))

3.2.5 Buyback Volume

Share buyback volume acted as a tool to project the extend of the confidence of the company management towards the future of the company. Bigger buyback volume projected stronger signal than share buyback with smaller volume. If the motive of the share buybacks is to stabilise the share price, small share buyback volume does not affect the share supply in the stock exchange. Hence it cannot improve the share price performance, if the share buyback volume is too small over the outstanding share.

H_0: CARs are not significantly different if buyback volume is taken into consideration.

H_A: CARs are significantly different if buyback volume is taken into consideration. (Bigger buyback volume experience higher CARs and vice versa).

3.3 Data Collection and Methodology

3.3.1 Data Collection

Information such as last price, book-to-market ratio and market capitalization for all 100 shares listed in FBM Top 100 Index within the period of June 1st, 2004 until 31st December 2009 are extracted out using Bloomberg terminal service. Non-trading days such as Saturday and Sunday have been excluded in this study. Despite the fact that the study period started from January 1st, 2006 until December 31st, 2009, share information are extracted starting June 1st, 2004. This is to accommodate the need of price information in calculating the beta coefficient and stock alpha of each stocks, that needed the share price movement of 250 days prior

to the share buyback study period (-270 to -21 day). Besides that, the quotes for FBM KLCI also being extracted using Bloomberg terminal, in order to calculate the market return. This is required to compute the expected return in relation to the market return, as suggested in Zhang (2005) and Hackethal and Zdantchouk (2006). All data are exported to Microsoft Excel for further analysis. All price information extracted using Bloomberg terminal are chosen to be normalized to avoid the false alarm due to capital restructure activities such as share split or bonus shares etc.

Information on share buybacks such as share buyback date, share buyback volume and share buyback value are extracted from Bursa Malaysia's website (http://www.bursamalaysia.com/) and compiled with the share information extracted from Bloomberg terminal earlier on. Companies that not involved in share buyback within the study period have been excluded out from the subsequent study. There are some instances where some companies execute regular share repurchase within a short period of time. Hence if every single repurchase days are included as an event, these companies will ended up with excessive weighting in our sample portfolio and create biasness as well as affect the reliability of the study. On the other hand, much useful data will be disregarded, if only the first repurchase day are included. Hence this study uses the announcement made under "Form 28A: Notice of Share by a Company". Under the Suruhanjaya Syarikat Malaysia (SSM) and Security Commission (SC) requirement, a company is required to lodge Form 28A to SSM, SC and Bursa Malaysia to report the share buyback activities performed by the company during a particular share buyback episode, which may last for several days. Hence this announcement is used in this study to reduce the undue weighting of share buyback events as well as remaining the useful share buyback information.

Besides that, during this step, the companies that only repurchase share volume of less than 2,000 shares per share buyback episode are being eliminated. This is because share buyback volume is too small to entice a different in share price performance. In other words, the share buyback event were not informative to the study as it does not projects any management confidence or even to signify undervaluation of the share.

3.3.2 Compute Cumulative Abnormal Return (CARs)

This study employed the standard market model event study used by Zhang (2005), to measure the CAR surrounding the actual share buybacks event over three that comprise of three different time window, which are CAR [-20;-1], CAR [0,+2], and CAR [0, +20].

The beta coefficient (β) and alpha (α) for a stock at time, *t* is estimated using the daily return from day -270 until day -21 from the day. During this step, share buybacks event that has not enough prior share price information has been dropped. This is to ensure the beta coefficient and alpha calculated are reliable. The formula (1) presented below is the market model use to estimate the α and β. However, the step by step method will be discuss further in formula (2) to (4)

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad ; \quad \text{for } t = -270, -269, \ldots, -21$$
$$\text{with } \mathrm{E}(\varepsilon_{it}) = 0 \quad \text{and} \quad \mathrm{Var}(\varepsilon_{it}) = \sigma^2(\varepsilon_{it}) \tag{1}$$

First of all, the daily returns of all the shares and KLCI index, which represent the market. The daily returns are calculated starting from June 1st, 2004 until December 31st, 2009 using the formula (2).

$$Return_t = \frac{Price_{\ t} - Price_{\ t-1}}{Price_{\ t-1}} \quad (2)$$

Subsequently, calculate the market variance (VAR $_{[market]}$) and covariance of stock and market (Cov $_{[stock, market]}$) using the daily stock return and the daily market return obtained by formula (2), starting from the day 270 until 21 days prior to the share buyback. Using the Covariance information calculate the beta (β) coefficient of the all stock by using formula (3), for whole study period.

$$\beta_{i,t} = \frac{Covariance_{\ (i,\ t-270:t-21),\ (m,\ t-270:t-21)}}{Variance_{\ (m,\ t-270:t-21)}} \quad (3)$$

$$\text{with } i = stock; m = market;\ t = date$$

The calculated β coefficient of stocks is then used to calculate the stock alpha (α), which is needed to estimate the expected return of the stock. Another two variables that is required for the calculation of the stock alpha are stock average return and market average return. Average return for both market and stock are calculated based on the daily return information of 250 days prior to the date (-270 until -21 days). By incorporating the value into formula (4), stock alpha can be calculated.

$$\alpha_{i,t} = Avg\ Retrn_{(i,\ t-270:t-21)} - (Avg\ Retrn_{(m,\ t-270:t-21)} \times \beta_{i,t}) \quad (4)$$

$$\text{with } i = stock; m = market;\ t = date$$

After having all the information on stock alpha (α) and stock beta (β), the expected return of the stock at a particular date can be incorporate the values of stock alpha (α), stock beta coefficient(β) and market daily return into formula (5).

$$R_{it}^{*} = \alpha_{it} + \beta_{it} \times R_{mt} \quad (5)$$

$$t = date;\ i = stock\ ; m = market$$

Abnormal Return (AR) of all the stocks and dates can then be calculated by minus the expected return of a stock (R_{it}^{*}) from the actual daily stock return as show in formula (6)

$$Abnormal\ Return_{i,t} = Actual\ Return_{i,t} - \ R_{it}^{*} \tag{6}$$

The cumulative abnormal return (CARs) are calculated by sum up the abnormal return (AB) during the study period for example CAR [-20;-1], CAR [0,+2], and CAR [0, +20]. Formula (7) represented the formula used to calculate cumulative abnormal return (CAR) for the three event window surrounding the share buyback event day.

$$CAR_{t}^{t+n} = \sum_{j=t}^{t+n} AR_{ij} \tag{7}$$

In order to investigate whether the management can effectively time their share buyback programme (execute share buyback when the share price is under performing the market), CAR [-20;-1] is being introduced. In the German and US samples, companies experienced a conspicuous abnormal downward trend over the 30 days trading before the share buyback announcement. However this study focus on 20 days before the actual share buyback (approximately a trading month) as suggested by Zhang (2005).

On the other hand, CARs [0; +2] are used to calculate the immediate market reaction on share buyback. CARs [0; +2] can effectively capture the immediate market reaction to actual share repurchases because usually the share buyback information will take two days time to reach the mass public. Even though it is claimed that share buybacks information can be obtained on the following trading day through Bursa Malaysia webpage, however most of the shareholders will not

check on the webpage every now and then, but to wait for the paper media to report, which will be on the 2nd day after share buyback (+2).

Nevertheless, CAR [0; +20] investigates the medium term share performance following the share buyback. Opposing to some study that does not include the study for a longer term, this study will also determine the CARs for medium term in this case +20 trading days is being use in this study (approximate a calendar month). This is because the immediate market appreciation is expected and does not provide additional information to the management on the effectiveness of using share buyback as a tool to communicate the message about share undervaluation to the mass public. Besides that immediate market appreciation may not be the intention for the management, but a share appreciation in the medium term or long term may be their ultimate goal. Hence CAR [0; +20] may give a better understanding on the effectiveness of signalling power of share buybacks in Bursa Malaysia.

3.3.3 Data Analysis

In this study, analysis is done by using Statistical Package for the Social Sciences (SPSS) version 16. CARs of all the stocks for the three window periods surrounding the actual share buyback are extracted into SPSS together with database on factors to be analysed, which includes the market capitalization, BTM ratio and Buyback volume. The *t*-statistic test are used to test the Hypothesis 1 and Hypothesis 2 on the sample portfolio for CARs [-20,-1], CARs [0,2] and CARs[0,20].

In order to test the Hypothesis 3, Hypothesis 4 and Hypothesis 5, all the three independent factors which are market capitalization size, BTM ratio and Buyback volume for all the samples are tested against the CARs for the three window period

surrounding an actual share buyback. Each of the factors is divided into 4 quartiles. The quartile ranking for each factor is determined in relative to the overall sample. Using t-statistic test, CARs [-20,-1], CARs [0,2] and CARs[0,20] are tested against each factors and its quartiles ranking. This provides an idea of the significance of the factors in influencing the CARs.

Since some of the companies made frequent share buyback and some made only handful of share buybacks ever the study period, the result maybe influenced more by those company with frequent share buyback activities. Hence to examine and check the robustness of the study, each of the CARs are average out by company and conduct another round of *t*-statistic test by taking companies as individual sample.

Cross sectional regression is also being employed in this study to analyse the relationship of the CAR and the independent factors namely market capitalization, BTM ratio, share buyback volume and past return. Due to the fact that vast difference among the market capitalization size as well as among buyback volume, instead of raw data, the natural logarithm of market capitalization and buyback volume are used in this regression model.

The regression model is presented as:

$$\mathrm{CAR} = \beta + \beta 1 X1 + \beta 2 X2 + \beta 3 X3 + \beta 4 X4$$

CAR	Cumulative Abnormal Return
X1	Natural Log of Market Capitalization
X2	Book-to-Market Ratio
X3	Natural Log of Buyback volume
X4	Past Return, CAR[-20,-1]

3.3.4 Summary of the process

1) Selection of study samples.
2) Data collection for the study samples from Bloomberg terminal.
3) Share buyback Information collection from the Bursa Malaysia website.
4) Compilation of share information and share buyback information.
5) Computation of the beta coefficient and stock alpha for all the stocks.
6) Computation of the expected returns and abnormal return for the period surrounding the actual share buyback.
7) Computation of the CARs for [-21,-1], [0,2], and [0,20] period.
8) Analysis of the CARs result using SPSS.

3.4 Conclusion

This chapter presents an overview of the research framework and hypothesis developed for the study. This chapter also discussed the data collection procedure, and the methodology employed to calculate the market model in computing the beta coefficients of each company and the cumulative abnormal returns around the share buyback period. This chapter also discuss the methodology used to determine the relationship of the CARs with market capitalization, BTM ratio and buyback volume. Next chapter will discuss on the empirical results and the analysis on each of the hypotheses developed as presented in this chapter.

Chapter 4

RESULT AND DISCUSSION

This chapter presents the result obtained and discussed the results obtained in the study. This chapter starts with the summary of the share buyback activities in Malaysia from January 2006 until December 2009 that describe the share repurchasing pattern in Bursa Malaysia. This is followed by the t-statistic test analysis for overall samples as well as that factors quartiles for the three independent factors includes market capitalization, BTM ratio and share buyback volume. Result of the regression model also being presented and discussed in this chapter. Last but not least this chapter also presented the t-statistic study using firms as the sample to check the robustness of this study.

4.1 Descriptive Statistic

The sample consists of all open-market share buyback activities that were made by the listed companies in FBM Top 100 Index the entire study period. Over the 100 companies listed in FBM Top 100 only 35 companies participated in the share buyback activities over the four year period, which make up to 35%. However during the study period, a total of 53 companies has proposed and obtained from the shareholders, the authority to repurchase share of its own. Out of the 53 companies, only 35 companies have performed share buyback during the study period, this showed that only 66% of the companies that proposed share buybacks have actually fulfilled the proposal made. See Appendix I for the list of the companies listed in FBM Top 100 Index as well as the companies that obtained authority for share buybacks as well as that actually done the share buybacks during the study period.

Table 4.1 describes the actual share buyback activities in Malaysia between January 2006 and December 2009. During the period, a total of 1056 share buyback episodes are recorded for the 35 companies studied. A total of 1.610 billion shares, which accounted for RM 6.566 billion worth of share were repurchased during the four year study period. Different companies exhibit different share buybacks behaviour. Some companies did only few share buybacks events, to quote a few Genting Plantation Berhad (2 episodes), Hap Seng Plantation Berhad (2 episodes), Berjaya Corporation Berhad (4 episodes) and Fraser and Neave Holdings Berhad (5 episodes). On the other hand, some companies recorded frequent share buybacks episodes over the four year sampling period, these companies are Berjaya Land Berhad (60 episodes), YTL Cements Berhad (63 episodes), YTL Power International Berhad (113 episodes) and YTL Corporation Berhad (132 episodes). However most of the companies only made five to 50 share buybacks episode within the sampling period, which made up to 27 companies and 77.2% out of 35 companies. The average share buyback event per companies is recorded at 30.2 events.

Table 4.1 Summary statistic of overall share buyback activities in Bursa Malaysia from January 2006 until December 2009

No. of companies	35 companies
No. of daily repurchases	1056 events
Total number of shares repurchased	1,609,790,464 shares
Total value of shares repurchased	RM 6,566,467,343
No. of companies with ≤ 5 repurchase event	4 companies (11.4%)
No. of companies with ≤25, >5 repurchase event	17 companies (48.6%)
No. of companies with ≤50, >25 repurchase event	10 companies (28.6%)
No. of companies with >50 repurchase event	4 companies (11.4%)
Average repurchase event per company	30.2 events

Over the entire study period, it clearly showed that the high share buyback events are mainly contributed by the year 2007 and 2008 (See Table 4.2). During 2007, a total of 498.6 million of shares, which worth of RM 2.47 billion were being repurchased. Similarly in 2008, 650 million shares worth RM 2.93 billion were being repurchased. Despite the tremendous increase in share value and number of shares repurchased, the number of share buyback episode has not been increased tremendously. This may be due to the fact that during the two financial crisis years, companies repurchased more shares at a cheaper price per episode in order to stabilise the supply and demand of the floating shares available in the market and to inject confidence to the public. Year 2007 and year 2008 were recorded as one of the worst time for a lot of the countries across the globe due to the global financial crisis started with the sub-prime mortgage crisis in US (Melvin, 2009; Hyun, 2009). Malaysia economy has been closely related to the US economy, during the financial crisis period, Malaysia economy has being very much affected by the chain effect and started to tumble at the fourth quarter of 2007 and last until early 2009. During this period, investor has been very overwrought and tense, companies have to intervene the market by buyback their own shares to support the share price performance.

Table 4.2 Summary of share buyback activities in Bursa Malaysia by year

Year	No. of companies	No. of actual share buybacks	Total No. of shares repurchased (million)	Total value of share repurchased (RM, million)
2006	18	215	249.5	707.3
2007	23	241	498.6	2,470.6
2008	29	372	650.0	2,928.9
2009	26	228	211.7	460.0

4.2 *t*-statistic Test

4.2.1 Overall

The detail of the t-statistic test result of the cumulative abnormal return (CAR) surrounding share buyback event windows of (-20,-1), (0, 2) and (0, 20) using the entire sample size were tabulated in Table 4.3. The main entry represents the mean CAR for the various event windows, whereas the numbers in the parentheses represent the *p*-value.

From the study result, the mean CAR (-20, -1) is -0.44%, and it is significantly different from zero and is negative in nature, which means the null hypothesis 1 can safely be rejected at the 90% significance level and accept the alternative hypothesis that share price performance has decrease prior to the share buyback event. The negative sign signifies that the cumulative abnormal return (CAR) for the period before share buyback event has decreased and underperformed the expectation calculate from standard market model. In another word, the share buyback event is done during the share price is below the “fair price”. This suggested that in general the managements are able to identify when the share price is undervalued and able to time the share buyback activities. The result of this study coincides with previous studies done by Brockman and Chung (2001) and Zhang (2005) using Hong Kong sample, as well as Chan *et al* (2007) using samples of US.

Table 4.3: *t*-statistic result for Cumulative Abnormal Return (CAR) surrounding actual share buyback event (overall)

Full sample (N = 1056)		Window (days)		
		(-20, -1)	(0, 2)	(0, 20)
CAR	1056	-0.4426	0.2575	0.5302
p-value		(0.064)	(0.009)	(0.031)

On the other hand, the CAR (0, 2) is having a positive cumulative abnormal return. For the two day immediate period after share buyback event day, the mean CAR is recorded at 0.26%, and is significantly different from zero with p-value of 0.009. This suggested that the null hypothesis 2 can be safely rejected and accept the alternative hypothesis 2 at a 99% confidence level. Share price performance is significantly different from zero and show improvement immediate after share buyback. Market reacted positively to the actual share buyback. This outcome of this test matched with the finding from previous studies, to quote a few, Grullon and Michaley (2002) based on US sample, Hackethal and Zdantchouk (2006) based on Germany sample, Jung and Lee (2003) using Korea sample and etc. Although the positive response is statistically significant but the magnitude of the CAR is relatively smaller and is similar to countries like United Kingdom, France and Hong Kong, which have small CARs that around or lesser than 1% as opposed to other countries which have higher CARs like Japan by Zhang (2002) and US by Ikenberry *et al.* (1995). This is suspected to be reasoned by these two studies are based on the market reaction to share repurchase announcements; Whereas this study focused on the actual share repurchase that represent the implementation of share buyback in oppose to the corporate communication activity.

In order to show the usefulness of share buyback in improving share performance, this study also included CAR (0, 20), which act as a medium period to indicate the CAR for a longer period. The mean CAR (0, 20) is recorded at 0.53% with a p-value of 0.031. This means the share price performance is significantly different from zero after share buyback and skewed toward positive. This suggested that the null hypothesis 2 can be rejected safely at 95% confidence level. Comparing the medium term and immediate term CAR, medium term CAR recorded a higher

CAR. This suggested that the management can effectively sustain and improve the share price performance by using share buyback but with a relatively low magnitude. Zhang (2005) also suggested the same outcome whereby the CAR(0, 20) and relatively better than CAR (0, 2).

4.2.2 Market Capitalization

Different company may have different reason of performing share buyback (Dittmar, 2000). Some company perform share buyback to project confidence of company management to the future of company, whereas some companies want to sustain their share price or inform about share undervaluation. Among the companies, smaller companies are often being undervalued because less analysed by analyst. Hence market may react more favourable to smaller companies that repurchased their own shares. Therefore, market Capitalization is identified as one of the key factors that affecting the CARs. Table 4.4 presented the *t*-statistic result for Cumulative Abnormal Return (CAR) surrounding actual share buyback event using sample that divided into subgroups of Market capitalization.

Zhang (2005) reported that smaller companies experience higher CAR after share buyback event and decreases across size quartile. Similarly, in this study, the CAR of all three event window surrounding share buyback events provided a consistent decreasing pattern across the size quartile. Unfortunately, CAR (-20,-1) are mostly statistically insignificant except with largest company quartile. Despite the insignificance p-value, interesting to note that CAR (-20, -1) for the smallest companies quartile does not obtained a negative result. It is suggested that smaller companies perform share buyback to take advantage of the future positive information and project confidence of management in company's future due to

insider information. Whereas larger companies usually repurchase share in order to sustain the share price, when share price underperform the market. This is consistent to the assumption that information asymmetry between outsider investor and insider managers happen to be higher for smaller company as suggested by Ramakrishnan *et al.* (2007).

Comparing the magnitude of the CARs for quartile 3 and 4, in spite of the insignificance, generally the share price performance improves immediate after share buyback, but this does not last or further improved in the longer period. This indicated that the companies for quartile 3 and 4 can effectively sustain the share price at immediate term but is unable to lift the share price for a longer period. However, this cannot be drawn as a strong indicator as not all the CARs values for quartile 3 and 4 are statistically significant.

It is interested to note that, the CAR (-20, -1) for quartile 1 are in positive sign (despite the fact of statistical non-significant). This may indicate that the companies in quartile 1 are not performing share buyback to sustain share price but to signal share undervaluation. This may suggest that the motive of share buyback can be influencing the CAR. In short, CARs around share buyback event decreases by increasing the market capitalization size.

Likewise from the regression analysis, natural logarithm of market capitalization (Ln_MCap) also show negative relationship with CAR (-20,-1), CAR (0,2) and CAR (0,20), with all having *p*-value of less than 0.022. (See table 4.5) The negative sign indicates that CARs have an inverse relationship with market capitalization. In other word, CAR decreases when Market Capitalization increases. For all three event window period, the null hypothesis 3 can be safely rejected with a confidence level of at least 95% and accept the alternative hypothesis.

Table 4.4: *t*-statistic result for Cumulative Abnormal Return (CAR) surrounding actual share buyback event (Subgroup of Market capitalization)

Full sample (N = 1056)			Window (days)		
			(-20, -1)	(0, 2)	(0, 20)
CAR	228	1	0.3960	0.5033	2.3545
p-value		(small)	(0.416)	(0.019)	(0.000)
CAR	275	2	-0.4621	0.3850	0.8741
p-value			(0.361)	(0.075)	(0.101)
CAR	307	3	-0.5341	0.2839	0.2096
p-value			(0.194)	(0.092)	(0.614)
CAR	246	4	-1.0837	-0.1457	-1.1452
p-value		(large)	(0.035)	(0.457)	(0.026)

Table 4.5: Regression result for Cumulative Abnormal Return (CAR) surrounding actual share buyback event against Market Capitalization

Full sample (N = 1056)		Window (days)		
		(-20, -1)	(0, 2)	(0, 20)
CAR	1056	-0.398	-0.162	-0.830
p-value		(0.020)	(0.022)	(0.000)

* Natural logarithm of market capitalization were used in this study.

4.2.3 Book-to-Market Ratio

Besides market capitalization size, another well know factors that has been identified is book to market ratio (BTM). Value stock (high BTM ratio) experience higher CARs than glamour stock (low BTM). Glamour stock (low BTM) has been at the lime light all the while has lesser information asymmetry hence there is not much of information surprises. Besides that high BTM also may indicate share overpricing, hence it may not resulted high CAR after share buyback. Zhang (2005) and Hackethal and Zdantchouk (2006) found that CAR effects from share buybacks are

on average greater for firms with high book to market BTM ratio in sample of SEHK and Germany Frankfurt Stock Exchange.

From Table 4.6, despite the statistically non-significance of the CARs in quartile 1 and quartile 2, in general, it clearly showed there is a consistent increasing pattern for CAR (0, 2) and CAR (0, 20) across the BTM quartile from low (glamour stock) to high (value stock). For quartile 3 and quartile 4, CAR (0, 2) experience higher mean CAR which are 0.34% and 0.40% respectively, with both having *p*-value of less than 0.085. As expected mean CAR (0, 20) for quartile 3 and quartile 4 are even higher, which are 1.21% with *p*-value of 0.008 and 1.45% with *p*-value of 0.005 respectively. The market responded favourably to the share buybacks by and value (high BTM value) companies and found to be benefiting long term shareholders. This result indicated the similar argument by Zhang (2005) and Hackethal and Zdantchouk (2006) that value stocks (high BTM ratio) experience higher CARs post share buyback event.

Table 4.6: *t*-statistic result for Cumulative Abnormal Return (CAR) surrounding actual share buyback event (Subgroup of BTM Ratio)

Full sample (N = 1056)			Window(days)		
			(-20, -1)	(0, 2)	(0, 20)
CAR	279	1	-0.8178	0.0506	-0.3180
p-value		(low)	(0.132)	(0.794)	(0.542)
CAR	251	2	-0.1850	0.2450	-0.2169
p-value			(0.663)	(0.167)	(0.639)
CAR	257	3	-0.8563	0.3419	1.2139
p-value			(0.053)	(0.055)	(0.008)
CAR	269	4	-0.2437	0.4032	1.4538
p-value		(high)	(0.608)	(0.085)	(0.005)

Table 4.7 showed the regression result for CAR surrounding share buyback event against the BTM ratio. From the table it clearly showed that CAR (-20,-1), and (0,20) has significant relationship with BTM ratio, with *p*-value of 0.078 and 0.000 respectively. In conjunction with the *t*-statistic result, it is suggested that the null hypothesis 4 can safely be rejected for CAR (0, 20) at a 99% confidence level. At the same time, CAR (-20, -1) can also safely be rejected at 90% confidence level. Unlike that of the other two, the result for CAR (0, 2) suggested that the null hypothesis cannot be rejected safely at 90% confidence level.

Table 4.7: Regression result for Cumulative Abnormal Return (CAR) surrounding actual share buyback event against BTM ratio

Full sample (N = 1056)		Window(days)		
		(-20, -1)	(0, 2)	(0, 20)
CAR	1056	0.826	0.313	1.732
p-value		(0.078)	(0.107)	(0.000)

4.2.4 Buyback Volume

Since the 1997 Asian financial crisis, companies in Bursa Malaysia is allowed to repurchase its own shares in order to provide a platform to stabilise the share price through stabilizing the supply and demand of outstanding shares. The quantity of the share repurchased will significantly affects the floating shares (number of outstanding share excluded the share held by institution, major shareholders) in Bursa Malaysia and indirectly lift the share prices by controlling the supply of shares. According to the theory of supply and demand, bigger share buyback volume will resulted lower supply of share in the market and hence lifted the share price. Hence

bigger share buyback volume per episodes will result higher CARs post share buyback event and vice versa.

Table 4.8 presented the *t*-statistic result for Cumulative Abnormal Return (CAR) surrounding actual share buyback event by subgroup of share buyback volume. The share buyback volume quartile is divided based on the share buyback volume for each episode. According to the tables, there is no distinct pattern across different repurchase volume quartile. Hence it suggested that it is unable to reject null hypothesis 5. Share price performance does not increase in accordance to increase in share buyback volume. Similarly previous result by Zhang (2005) also found no significance different for different share repurchase size quartile.

Table 4.8: *t*-statistic result for Cumulative Abnormal Return (CAR) surrounding actual share buyback event (Subgroup of Share Buyback Volume)

Full sample (N = 1056)			Window(days)		
			(-20, -1)	(0, 2)	(0, 20)
CAR	249	1	-0.1075	0.1519	0.7078
p-value		(small)	(0.788)	(0.414)	(0.160)
CAR	260	2	-1.1602	0.3800	0.6270
p-value			(0.021)	(0.068)	(0.218)
CAR	273	3	0.6229	0.4656	0.9724
p-value			(0.192)	(0.013)	(0.017)
CAR	274	4	-1.1276	-0.0298	-0.1637
p-value		(large)	(0.027)	(0.886)	(0.764)

Table 4.9 presented the regression result for Cumulative Abnormal Return (CAR) surrounding actual share buyback event against natural logarithm of share buyback volume. All three CARs surrounding the share buyback event day, show negative relationship with share buyback volume, however all the CARs are

statistically insignificant hence it cannot be concluded as statistically significance inversely related with share buyback volume. Again this showed that the null hypothesis 5 cannot be rejected with a confidence level of at least 90.

Table 4.9: Regression result for Cumulative Abnormal Return (CAR) surrounding actual share buyback event against natural logarithm of Share buyback volume

Full sample (N = 1056)		Window(days)		
		(-20, -1)	(0, 2)	(0, 20)
CAR	1056	-1.27	-0.026	-0.164
p-value		(0.296)	(0.603)	(0.191)

4.3 Cross sectional Regression

In order to further analyze the nature of the price performance, cross sectional regression analysis is performed. However this regression model focused only on post share buyback market reaction and regressed against market capitalization (natural logarithm of market capitalization), BTM ratio, share buyback volume (percentage of share buyback volume over outstanding shares) as well as the past return (CAR [-20, -1]). The regression result is tabulated in Table 4.10. The main entries are the regression coefficient and the numbers in parentheses are the *p*-values of the coefficient.

From the result, it clearly showed that CAR (0, 2) is significantly related to past return and market capitalization but not significantly related to BTM ratio and percentage of share buyback volume. The adjusted R^2 of CAR (0, 2) is 0.011 with an *F*-statistic of 3.935 and *p*-value of 0.004. On the other hand, the CAR (0, 20) only showed significant relationship with market capitalization; while past returns, BTM ratio and percentage of share buyback volume are statistically insignificant. However,

the adjusted R^2 for CAR (0, 20) is slightly higher than CAR (0, 2), which is 0.022 with an *F*-statistic of 7.031 and *p*-value of 0.000.

In this model, among all these 4 independent variables, only the market capitalization show consistent significant relationship among samples of CAR (0, 2) and CAR (0, 20). As expected, market capitalization showed negative relationship with share price performance. Both BTM ratio and percentage of share buyback volume are not significantly different from zero for the even period of immediate term and medium term. Past returns are significantly affecting the short term CAR but not medium term window period. Hence only the result of "market capitalization" is consistent with the *t*-statistic analyses.

Table 4.10: The cross sectional regression result of the CAR for the event window (0, 2) and (0, 20) against Market capitalization, BTM ratio, past returns and share buyback volume

Full sample, n =1056	Dependent Variables	
Independent Variables	CAR (0, 2)	CAR (0, 20)
Intercept	1.322	5.282
	(0.072)	(0.004)
CAR (-20,-1)	-0.035	0.040
	(0.006)	(0.208)
Ln_MCap	-0.154	-0.680
	(0.049)	(0.000)
BTM	0.123	0.828
	(0.569)	(0.123)
Pc_BBVol	0.980	1.724
	(0.163)	(0.321)
Adjusted R^2	0.011	0.022
F Value	3.935	7.031
	(0.004)	(0.000)

4.4 Robustness Check

Given that different companies may adapt to different share buyback pattern, whereby some make frequent share buyback and some make only several transaction over the four year study period. Hence the result in the *t*-statistic test above (table 4.3) maybe biased because of undue weighting of several companies that made frequent share buybacks such as YTL Corp Berhad and YTL Power Internationl Berhad. In order to examine that possibility, the each of the CARs for the three event window periods were averaged out by companies and tested using *t*-statistic across 35 companies. Table 4.11 showed *t*-statistic result for Cumulative Abnormal Return (CAR) surrounding actual share buyback event by company. CAR[-20,-1] recorded a mean CAR of -1.411, with a p-value that is not significant at 90% confidence level. This means the null hypothesis 1 cannot be safely rejected by taking 90% confidence level is companies are the samples for the *t*-statistic.

Whereas CAR[0,2] recorded a mean CAR of 2.082, with a *p*-value of 0.045 and the mean CAR for CAR[0,20] is 1.781, with a *p*-value of 0.084. These results suggested that the null hypothesis 2 can again be safely rejected at 90% confidence level using sample of companies. However, this does not project the same suggestion presented in Table 4.3, whereby longer term CAR is better than CAR of immediate term. The insignificance of CAR (-20,-1) and the different pattern for CAR[0,2] and CAR[0,20] may be due to small sample size.

Table 4.11: *t*-statistic result for Cumulative Abnormal Return (CAR) surrounding actual share buyback event by company

Full sample (N = 35)		Window(days)		
		(-20, -1)	(0, 2)	(0, 20)
CAR	35	-1.411	2.082	1.781
p-value		(0.167)	(0.045)	(0.084)

4.5 Conclusion

Based on the results, the overall CAR for the three event window surrounding share buyback are significantly different from zero. The result has suggested that the management are able to identify the undervaluation of share price and time the market for share buyback. It also showed that share price performances are significantly improved after share buyback. *t*-statistic showed significant different across market size quartile and BTM quartile but there is no significance for buyback volume. However in the cross sectional regression only market size are significantly negatively related to CAR, while BTM ratio and buyback volume has no significant different from zero. Robustness check showed that, CAR (-20, -1) has not significantly different from zero.

Hence by taking consideration of t-statistic and cross sectional regress model performed, the null hypothesis for Hypothesis 2 and 3 are rejected and accepted the alternative hypothesis. Conversely null hypothesis for Hypothesis 1, 4 and 5 cannot be rejected. The following chapter will provide an overview of the study and summarizes the finding of this study. Nevertheless next chapter also provide suggestion for future research.

Chapter 5

SUMMARY AND CONCLUSION

The final chapter presents the conclusion of this study. Firstly, an overview of the study will be presented. It is followed by the summary of the research results and review of research objectives and research questions will also be discussed. Finally this chapter ends with suggestion for further study.

5.1 Overview of the Study

Open-market share buybacks begin to achieve global recognition and prominence at the 90's. Share buyback has been a common mean for companies to signal share undervaluation and stabilize share prices. Besides that, company also uses share buyback to improve their balance sheet for window dressing purposes or act as an investing tool and dividend substitution tool to benefit the shareholders of the companies.

Since 1997 Asian financial crisis, companies in Bursa Malaysia are allowed to repurchase their own share through two share brokers in Bursa Malaysia. Companies shall not repurchase share of exceeding 10% of issued market capital with a premium of less that 15% of average share price over the last five trading days. Prior to the share buyback, management of these companies are required to obtain the authority to repurchase its own share. Open-market share buybacks, where the company repurchase share of its own from the stock exchange, are most commonly practiced in most places. Shares repurchased from open-market share buyback can be treated as treasury shares, or reissue as share options for employees or bonus shares or share dividend for the shareholders. Also the managements may choose to resell the shares in Bursa Malaysia at a later time.

Over the years, researchers have found that several factors are influencing the share price performance surrounding share buyback events. These factors are firm size, book-to-market ratio and share buyback volume, economical condition as well as the motive of share buyback. From previous studies, market response are usually in favor of a smaller (small market capitalization) and value (high BTM) company. This is because the information asymmetry for smaller company and value stock are higher compared to those bigger and glamour company because of the lack of coverage by analyst for the smaller company. Share buyback volume is one of the key determinants in signaling share undervaluation and reinstate confidence of the company management towards the company's future. Small share buyback volume are non-significant in convey a strong message to the shareholders. Besides that, if a company is to stabilize the share prices, small share buyback volume unable to intervene the supply and demand of the share in the stock exchange and hence it will not succeed in controlling the price drop. Among which firm size, book-to-market ratio and share buyback volume is being studied in this research.

5.2 Summary of the Research Results

This study is to investigate the cumulative abnormal return surrounding share buyback event. This study was based on 1056 samples events that performed by companies that listed in FBM Top 100 index from year January 2006 until December 2009. Hypothesis is developed to test the CAR for before, immediate after- and 1 month after- share buyback event as well as to test the relationship between CAR and market capitalization size, book-to-market ratio and share buyback volume. In this study, standard market model was used to estimate the beta coefficient and stock alpha for the calculation of CAR.

5.2.1 A Review of the Research Objectives

Identify the CARs for before, immediate after- and 1 month after- share buyback events.

In regards to the first objectives for this study, the CAR for before, immediate after and 1 month after share buyback event day are -0.44%, 0.26% and 0.53% respectively. The share price performances are statistically significantly different from zero surrounding the share buyback event. Negative sign for the CAR (-20,-1) signifies that the share buyback was initiated when there is significant share underpricing; whereas the positive value of CAR (0, 2) and CAR (0, 20) implies that market reacted positively towards the share buyback event. This result is consistent to the previous study that suggested that share buybacks are usually perform when the share price is undervalued and subsequent from share buyback, the price improved.

Identify the effect of market capitalization size, in CARs for before, during and 1 month after share buyback events.

For the second research objective, the effect of market capitalization size is influencing the CAR surround the share buyback event. Companies of smaller market capitalization size experience higher CAR as compared to the bigger companies. The CAR (0, 2) decreases from 0.50% (smallest size quartile) to -0.15% (biggest size quartile) and similarly CAR (0, 20) also decreases from 2.35% to -1.15% across different size quartile. The regression model also reaffirmed this inverse relationship between market capitalization size and CAR. This result is consistent to

the previous study that demonstrated the effect of market capitalization size and share price performance.

Identify the effect of BTM ratio, in CARs for before, during and 1 month after share buyback events.

In regards to the third research objectives, both CAR (0, 2) and CAR (0, 20) increase across the book-to-market ratio quartile from low BTM (glamour stock) to high BTM (value stock). Market responded positively to BTM ratio. The CAR (0, 2) decreases from 0.05% (lowest BTM quartile) to 0.40% (highest BTM quartile) and similarly CAR (0, 20) also decreases from -0.32% to 1.45% across different BTM quartile. However, CAR (-20, -1) does not show consistent trend with CAR (0, 2) and CAR (0, 20). Despite the fact that the *t*-statistic test on BTM ratio is somewhat significant for certain CARs, the regression model suggested that BTM ratio has no significantly different from zero.

Identify the effect of buyback volume, in CARs for before, during and 1 month after share buyback events.

For research the forth objective, the buyback volume are found to be non consistent in pattern and are mainly non-statistically significant. Similarly in the regression model, share buyback volume showed statistically no significant. This suggested that share buyback volume has not significantly affecting the CARs surrounding the share buyback event.

5.2.2 A Review of the Research Questions

Can the management identify the undervaluation of shares and time for the share buybacks?

The results show that the company management are able to identify the share undervaluation in a day by day basis and able to time the market for share buyback activity. The mean CAR (-20, -1) is -0.44%, with a *p*-value of 0.064. The negative sign implies that the share price is underperforming the market (undervalued) prior to the share buyback event.

Does the share price significantly increases / decreases (different from zero) after share buybacks? If yes, what is the cumulative abnormal return (CARs)?

The results show that the share price performance increases after share buyback. Despite of the small magnitude, both CAR (0, 2) and CAR (0, 20) show positive value and are statistically significant. CAR (0, 20) also show higher cumulative abnormal return compared to CAR (0, 2). This implies that the 1 month CAR is better than CAR of immediate term. The mean CAR (0, 2) is 0.26%, with a *p*-value of 0.009, while mean CAR (0, 20) is 0.53%, with a *p*-value of 0.031. This is consistent to the Zhang (2005) study where the CAR is higher for a 1-month post share buyback compared to the CAR for immediate term.

Is there any difference for the CARs (before, during and after) while the samples are divided into sub-group based on market capitalization?

The results from both *t*-statistic study and regression model supports the hypothesis that CARs is significantly inverse related to the market capitalization size. Market

responded favourably to companies of smaller size. In other word, the smaller companies experience greater CAR than bigger companies. The result is consistent to most of the previous study. This result is consistent to the previous study such as Zhang (2005) and Hackethal and Zdantchouk (2006) that demonstrated the effect of market capitalization size and share price performance.

Is there any difference for the CARs (before, during and after) while the samples are divided into sub-group based on book-to-market (BTM) ratio?

The results from *t*-statistic study show consistent increasing trend across the BTM quartile (from low to high). Market responded favourably to companies of higher BTM ratio (Value stock). In other word, the value stock experience greater CAR than glamour stock. However, the regression model suggested that the null hypothesis for BTM ratio cannot be rejected.

Is there any difference for the CARs (before, during and after) while the samples are divided into sub-group based on share buyback volume?

The results from *t*-statistic study did not show any trend across the share buyback volume quartile (from small to large). Similarly, the regression model also found no significant different for the factor on share buyback volume. This suggested that the null hypothesis for share buyback cannot be rejected. This is somewhat consistent to the study done by Zhang (2005).

5.3 Limitation and Assumption

This study sample is limited only to shares that are listed in FBM Top 100 index from the period starting from January 2006 until December 2009. During the sampling period, the price information of the days whereby the share was not being traded (regardless of due to application of stop trading by the company or purely due to no trades was matched) were treated as similar to the last trading price. In other words, the last price for the day before is used.

The share repurchase events were taken from the Bursa Malaysia announcement of “Form 28A: Notice of Share by a Company” for each company. This presumed that the share buyback period that is reported by the company as one share buyback episode. This is to reduce the overdue weighting of certain shares that made frequent share buyback over a short period of time.

5.4 Suggestion for Future Research

This study only covers the companies that listed in FBM Top 100 in examine the share price performance surrounding an actual share buyback event. However, according to the finding from previous study, share price performances are in favor of the share buyback performed by smaller companies and companies with high book-to-market (BTM) ratio. Hence, companies in FBM small cap index might been interesting to examine. These companies usually are high in information asymmetry due to lack of coverage by analyst and hence the market reaction to share buyback event may be greater in magnitude.

During this sampling period, there are different economical conditions such as pre-economic crisis, global economical crisis and economical recovering period

involved. During different economical conditions, investors may react differently to market information and company activities such as share buyback. Hence the CARs surrounding share buyback event during different economical condition may be different. Gerke *et al.* (2003) documented a +3.7% CAR following share buyback during the bullish market (1998 to 2000), while fantastic +7.1% of CAR at the subsequent bearish market (Hackethal and Zdantchouk, 2006). Seifert and Stehle (2003), on the other hand, rejected the findings and state no significant different between the two period. Hence future study can consider including the external factor of economical condition in the study of share price performance to provide better understanding on the effect of economical condition towards the CAR.

Besides that, the sampling for this study covers only four year period. If the samples are to break into economical condition, the sampling period should be extended to longer time frame to provide more accurate results.

Last but not least, this study only examines the share price performance for 2 days after share buyback event and one calendar month (approximately 21 trading days) after the share buyback. The effect of share buybacks on share price performance at a longer period for instance 6 calendar months are yet to be studied. This can provide more information to the management on the effectiveness of share buyback in lifting the share price over a long run. Besides, this can also provide a guideline to share holders that intended to take advantage of share buyback event for a buy and hold strategy.