AN EMPIRICAL INVESTIGATION OF THE EFFECT OF RIGHTS ISSUE ANNOUNCEMENTS ON SHARE RETURNS AND THE DETERMINANTS OF ABNORMAL RETURNS ON THE KUALA LUMPUR STOCK EXCHANGE

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Synopsis

This thesis examines the effect of rights issue announcements on stock prices by companies listed on the Kuala Lumpur Stock Exchange (KLSE) between 1987 to 1996. The emphasis is to report whether the KLSE is semi strongly efficient with respect to the announcement of rights issues and to check whether the implications of corporate finance theories on the effect of an event can be supported in the context of an *emerging market*. Once the effect is established, potential determinants of abnormal returns identified by previous empirical work and corporate financial theory are analysed. By examining 70 companies making clean rights issue announcements, this thesis will hopefully shed light on some important issues in long term corporate financing.

Event study analysis is used to check on the efficiency of the Malaysian stock market; while cross-sectional regression analysis is executed to identify possible explanators of the rights issue announcements' effect. To ensure the results presented are not contaminated, econometric and statistical issues raised in both analyses have been taken into account. Given the small amount of empirical research conducted in this part of the world, the results of this study will hopefully be of use to investors, security analysts, corporate financial managements, regulators and policy makers as well as those who are interested in capital market based research of an *emerging market*.

It is found that the Malaysian stock market is not semi strongly efficient since there exists a persistent non-zero abnormal return. This finding is not consistent with the hypothesis that security returns adjust rapidly to reflect new information. It may be possible that the result is influenced by the sample, consisting mainly of below average size companies which tend to be thinly traded. Nevertheless, these issues have been addressed. Another important issue which has emerged from the study is that some evidence to suggest that insider trading activity existed in this market. In addition to these findings, when the rights issue announcements' effect is compared to the implications of corporate finance theories in predicting the sign of abnormal returns, the signalling model, asymmetric information model, perfect substitution hypothesis and Scholes' information hypothesis cannot be supported. These theories may be more applicable to a developed exchange than to an *emerging market*. However, it is consistent with the price pressure hypothesis (PPH).

In order to firm up the result, a cross-sectional regression analysis is executed between the effect of rights issue announcements and nine explanatory variables. Only book-to-market equity ratio and company size are found to be statistically significant and have some influence on the cumulative abnormal returns; whereas for variables used to measure the intended use of rights issue proceeds, only fractional change in debt-equity ratio exhibits a significantly negative relationship in a cross-sectional simple regression analysis. This result suggests that Malaysian investors are concerned with the possibility of a company facing financial risk. These results provide no support for Miller and Rock signalling model, PPH, Heinkel and Schwartz information signalling model, and Leland and Pyle signalling model. It is emphasised that the theoretical models appear to be less important to an *emerging market*.

Key Words: Event Study, Stock Market Efficiency, Corporate Finance Theoretical Models, Cross-Sectional Regression Analysis, Emerging Market

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CHAPTER ONE: INTRODUCTION

1.1. Background

Between 1988 and 1996, the Malaysia economy experienced Gross Domestic Product (GDP) growth in excess of 8% per year. It has been transformed from an agricultural to industrial based economy and is now moving on to an information-rich and knowledge-creating economy through the Seventh Malaysia Plan and the Second Industrial Master Plan. Its equity market enjoyed a successful growth with the Kuala Lumpur Composite Index (KLCI) ended 1996 at 1237.96 and total market capitalisation at RM806.8 billion (£201.7 billion[1]). With this market capitalisation, Kuala Lumpur Stock Exchange (KLSE) became the largest exchange in ASEAN (Association of South East Asia Nation), third largest in Asia Pacific and among the top 15 in the world. However, with the recent economic crisis experienced by countries in the South East Asia, this may no longer be true for Malaysia. As of 7 May 1999, a decline in value of listed securities on the KLSE resulted in a contraction of its total market capitalisation to RM435 billion (£108.75 billion). The KLCI closed at 717.58 points on that particular day. Despite the downtrend of the total market capitalisation and the KLCI, KLSE is an important institution in Malaysia.

As of today, there are only a few articles, books and some theses written focusing on any aspect of capital market based research of the KLSE (Allen and Cleary, 1997; Annuar and Shamsher, 1987 and 1993; Barnes, 1986; Dawson, 1981; Fauzias and Muhammad, 1989; Ismail and Othman, 1993; Laurence, 1981 and 1986; Lim, 1981; Nassir, 1983; Neoh, 1986; Nur, 1997; Nur, 1998; Nur and Kamarun, 1996; Phoon, 1990; Salleh, 1986; and Yip, 1994). The slow progress may be caused by the lack of information and databases which are of limited use for carrying out empirical research. On 1 July 1994, the Malaysian Securities Commission (SC) through its Policy and Development Division set up the Securities Industry Development Centre

[1] The exchange rate used throughout the thesis is taken as at end 1996 which is the cut off period of this study. It is approximately £1=RM4.

(SIDC) to promote education and research in the development of the Malaysian capital market. Information Resource Centre (IRC) library, a functional unit of SIDC was established to provide a full range of information in supporting the broader research needs.

The lack of empirical research on the Malaysian capital market and the newly available information in recent years motivates this study to be carried out. Specifically, rights issue announcements are examined. The reason for this focus is because companies that are listed on the KLSE regard rights issue as an important means of raising equity finance. Over the period 1973 to 1996, a total of RM38.311 billion (£9.5778 billion) was raised through rights issues alone. This figure accounted for 33.8271% of the total funds (all capital raised in the equity and debt markets) made available for listed companies by the Malaysian capital market. Within this twenty four year period, rights issue proceeds contributed approximately 45.14% of the total funds mobilised in the Malaysian equity market. In addition, by concentrating on rights issues, this thesis is able to consider three important issues in corporate finance.

1.2. Significance of the Study

The development of Malaysian stock market and the globalisation of the world's financial markets will probably make the KLSE an important player in global and regional investment. With investment managers' growing interest of diversifying their equity portfolios internationally, particularly directing its investment activities to the *emerging markets*, the understanding of the behaviour of *emerging market* stock returns are becoming increasingly important. By examining the experience of Malaysian companies making rights issue announcements over the period 1987 to 1996 and relating this information on some factors influencing stock returns movement at the time of rights issue announcements, this study will hopefully shed light on some important issues in long term corporate financing. Specifically, it intends to examine three major aspects:

(i) to test whether the Kuala Lumpur Stock Exchange is semi strongly efficient with respect to companies announcing rights issues;

(ii) to establish potential determinants of the cumulative abnormal returns surrounding rights issue announcements;

(iii) to examine the appropriateness of various corporate finance theories in explaining the effect of rights issue announcements and its determinants in the context of an *emerging market.*

The above objectives do not only consist of topics which are specific to equity rights issues. Part of the coverage is to look into the efficiency of the Malaysian stock market. This is important to consider whether the market is free from manipulation where there is availability of information to all market participants and a 'fair game' can be played. A market that is pricing efficient will ensure security prices reflect their true value where information about the securities, companies and their prospects for the future have already been accounted for in their current prices. This is essential to the KLSE to attract more investors to participate in the Exchange[2].

With the small amount of empirical research conducted in this part of the world this study will contribute to the archive of such literature that will be of use not only to academicians but to investors, security analysts, corporate financial management, regulators and policy makers and those who are interested in capital market based research of an *emerging market.* Specifically, when the empirical results are linked to the corporate finance theories, they provide useful policy implications to various institutions. For the regulators and policy makers particularly the KLSE and the SC, the statistical evidence presented will assist in improving the existing procedures and practices guidelines. For corporate financial management, it will reveal whether information disclosure to the public is of significant value. Finally to

[2] In this study, KLSE and Exchange refer to the Kuala Lumpur Stock Exchange. It will be used interchangeably.

the retail and institutional investors, the results will hopefully provide them with a better understanding of the degree of efficiency of the Kuala Lumpur Stock Exchange.

1.3. Organisation of the Thesis

The thesis is divided into four sections of eight chapters. Chapter One and Two which represent the first section, provide an introduction and background information on the Kuala Lumpur Stock Exchange and rights issues. Section two is structured to address the issue of semi strong form of efficient market hypothesis (EMH) of the KLSE with respect to rights issue announcements and the importance of corporate financial theory in explaining the effect of these announcements. Three chapters are included in this section. Chapter Three examines the theoretical and empirical literature on event study and market efficiency which have become key topics in capital market based research. Subsequent to the theoretical explanation, Chapter Four introduces the research methodology used in the event study analysis, describes the data used in the current study and examines the distribution characteristics of the average abnormal returns. Chapter Three and Four form the foundation for Chapter Five where an empirical investigation is implemented to see how the stock returns on the KLSE react to rights issue announcements and to check whether the corporate finance theories' implications on the effect of an event can be supported in the context of an *emerging market*. This is followed by Chapter Six and Seven which made up section three of the thesis. A literature review to provide a theoretical background on the explanatory variables is considered in Chapter Six. These variables are then used as the possible determinants to explain the abnormal returns result described in Chapter Five. A cross-sectional regression analysis between the effect of rights issue announcements on share returns and the explanatory variables of abnormal returns are then executed in Chapter Seven. The last section, Chapter Eight, concludes the thesis by summarising the findings from section two and three as well as describing the implications and possible future research.

1.3.1. Introduction and Background

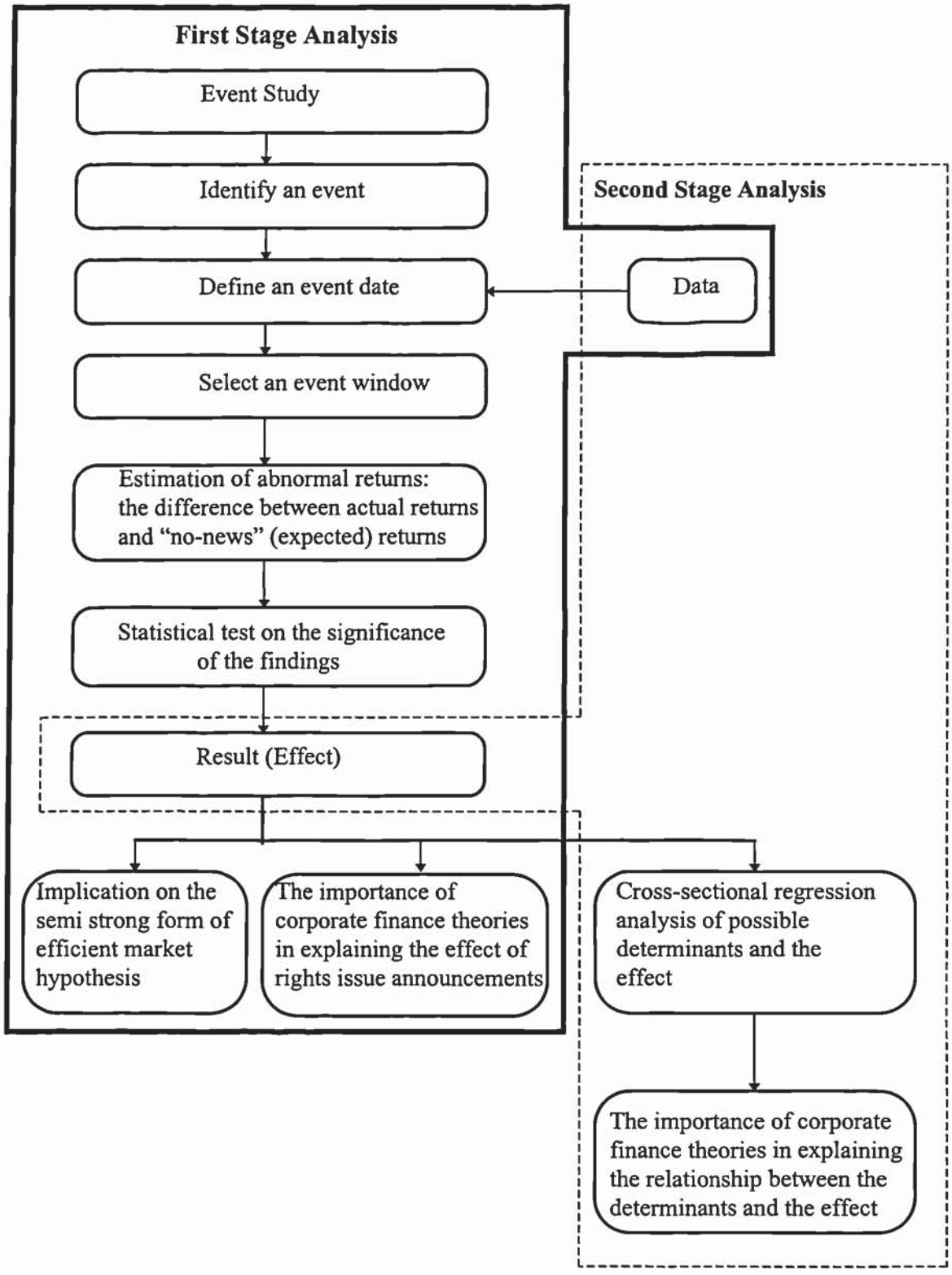
This chapter details what is covered in the current study and its contributory significance to the body of knowledge. As mentioned earlier on, the scant number of studies and the recent availability of a wide range of information about Malaysian capital market have sparked interest for the current research to be carried out. Some of the previous works (Annuar and Shamsher, 1993b; Barnes, 1986; Dawson, 1981; Lim, 1981 and 1993; Phoon, 1990) on market efficiency of the KLSE are very narrow in their scope of coverage. No consideration was made in these studies to link the results with some explanatory variables or to relate them with the corporate finance theory. This study takes additional steps to look into some possible explanators which could explain the variation of rights issue announcements' effect and to examine the importance of corporate finance theoretical models in explaining the relationship between the explanatory variables and the effect surrounding rights issue announcements.

1.3.2. First Stage Analysis

The first stage analysis uses event study to check on the efficiency of the KLSE. Event study analysis focuses on certain types of company specific events which could have an impact on stock prices. Event study and market efficiency have gone beyond the normative theories of what should investment and financing of a company's policy be to positive theories of what might be the effect of such policy to a company's stock price. This shift has provides a far reaching implication to financial managers and advisers, policy makers and investors in their decision making.

The steps involved in an event study are shown in the boxes within the solid line of Figure 1.1. Rights issue announcements are identified to be the event under study due to its significant role as a means of equity financing by Malaysian listed companies. Out of 356 rights issue announcements made over the period 1987 to

Figure 1-1: Research design to see the effect of rights issue announcements on share returns and the determinants of abnormal returns



1996, only 70 were clean announcements. These securities come from seven major industries of trading/services, mining, construction, property and development, industrial products, consumer products and plantations. Based on the announcements, a test for semi strong form of market efficiency of the Kuala Lumpur Stock Exchange is performed. An event window of sixty days surrounding a rights issue announcement is considered to be an appropriate period to detect any unusual movement of the stock returns. This time period is used because evidence from the pilot study, which utilised forty days surrounding a rights issue announcement, showed a steep jump of statistically significant average daily abnormal returns on days t=-38 and t=-36 and so it would be wise to go back a few more days to see if there is a detectable change. It suggests that there exists a leakage of information in this market. It is interesting to know approximately how far back stock prices recognise rights event.

As shown in Figure 1-1, once an event period is selected, the next step is to estimate abnormal returns. Market adjusted return (MAR) model is employed as a benchmark to calculate abnormal returns to test for market efficiency. It is a less problematic approach compared to the mean adjusted return model (MA), single index market model (SIMM), and capital asset pricing model (CAPM)--discussed in more detail in Chapter Three. With MAR, there is no estimation of systematic risk (β) or alpha (α) is required bypassing several problems such as relying solely on β to explain abnormal returns in the CAPM model, or model misspecification arising due to the violation of the underlying statistical assumptions which governed the SIMM model. Nevertheless, a SIMM model is also performed to compare with the MAR's result. In this case, the effect of both approaches, with and without the use of estimated β, can be observed. For the SIMM model, an estimation period of 239 days before the event period is chosen to calculate α and β. This period is selected to reduce instability of beta estimation during and after the announcement of rights issues so as the calculation of abnormal returns during the event period is not misspecified. In

addition, a Scholes-Williams adjustment of thin trading is also used in estimating both the parameters (α and β).

Once the results from both models are produced, the distribution characteristics of abnormal returns are analysed to ensure that the assumptions underpinning a parametric test (i.e. t-test)--that the average abnormal returns are (1) normally distributed, (2) serially uncorrelated and (3) have equal variance--are met. These findings are then used to check whether the KLSE conforms to the semi strong form of efficient market hypothesis and to see whether the corporate finance theoretical models could explain the variation of the rights issue announcement's effect. According to Ross' signalling model, when a company announces a rights issue, it does so because it lacks confidence in the prospect for an increase in its asset values and expected cash flows. It has to rely on the existing shareholders to cover its shortfall. Investors take this as bad news; and as a result, a negative effect is expected to its stock price.

The Miller and Rock asymmetric information model also suggested a similar effect. According to them, an unexpected announcement of equity offerings normally signals an inadequacy of internally generated funds to finance a company's planned investment. This is also the same as inferring a low company's current earning and a decreasing expected future cash flow which in turn depress a company's stock price. They emphasised that such an effect occurs when there is a difference between realised and expected financing. Myers and Majluf asymmetric information model also expects a negative price reaction to the announcement of rights issue announcements. They suggest that management know a lot more of a company's true value as compared to outside investors; and that management will only issue stock when they think that the company's market value exceeds its intrinsic value. Thus, rational investors presume that management will only issue stocks when they believe, based on their superior information, that the stocks are overvalued. This action will, in turn, benefit the existing shareholders. Consequently, sophisticated investors will not welcome the announcement of new stock offerings.

Jensen's free cash flow theory also advanced a negative price effect when rights issues are announced. Jensen suggests that a conflict of interest between shareholders and managers might occur when a company has substantial excess funds after allowing for all positive net present value projects. This is likely to happen since the management has discretion over the use of the excess funds. With the announcement of rights issues, these excess funds will be exaggerated. A possibility for management to misuse the funds for goals other than shareholder wealth maximisation is likely to happen. As a result, investors would give a lower valuation to the company's shares.

Finally, the last theory that might explain the stock market reaction to rights issue announcements is labelled by Scholes (1972) as price pressure (PPH) versus perfect substitution (PSH) hypothesis. Based on PPH, when a company decides to increase the supply of its shares, the share price is likely to experience a temporary setback during the issue period. The reason for the setback may be to compensate investors for the transaction costs of the new shares and to make the shares more tradeable by offering a discount. Subsequent to the issue period, a recovery in prices is expected due to the removal of the inducement or additional quantity of the company's shares which has depressed the price. Scholes information hypothesis does not support that there should be a recovery in prices. He argued that the sale of large block of shares would indicate that the seller has adverse information about a company's prospects. If the market is efficient, the seller's expectations of the company's prospect will be reflected in its stock price and that a permanent price reduction will take place. Hence when a rights issue is announced, a decrease in the stock's price to reflect the expected value of the information contained in the issue is expected. In contrast to the PPH and Scholes information hypothesis, PSH believes that every asset has its substitutes and that a demand curve facing individual investors is likely to be horizontal, implying that a zero price effect is expected when additional shares are sold.

Whether the implications of corporate finance theories in predicting the sign of abnormal returns associated with rights issue announcements can be applied in the Malaysian context, are left to be discovered in this thesis. When two of the research objectives are answered, this concludes the discussion of the first stage analysis.

1.3.3. Second Stage Analysis

Some tentative conclusions can be drawn from the first stage analysis, but these need to be firmed up using a second stage analysis in which a cross-sectional regression is executed between the cumulative abnormal returns (or the rights issue announcements' effect) of each observation with the variables identified in the literature to explain the existence of abnormal returns. As observed by the dotted line in Figure 1-1, the data applied in the first stage analysis will be used here supplemented with additional data. Basically, the result from the earlier stage is carried forward to do the analysis in the second stage. Cumulative abnormal returns (CAR) estimated using a market adjusted returns methodology become the dependent variable to represent the stock market's reaction due to rights issue announcements. Nine potential explanators have been advanced to explain the variation in CAR. The explanators are related to the characteristics of rights issues and company specific variables. First, an explanator that has raised considerable interest among academicians and one which is commonly found to be statistically significant and positively related to explain the variation in stock returns is book-to-market equity ratio (Allen and Cleary, 1997; Elfakhani, Lockwood and Zaher, 1998; Fama and French, 1992; Kim, 1997; Loughran, 1997; Strong and Xu, 1994, 1997). This variable is used to capture the prospects of a company. Second, the most common explanator which is widely tested is company size as measured by the market value of equity. The relationship between this variable and CAR has been shown to be mixed in other studies although majority observed a negative relationship (Allen and Cleary, 1997; Banz, 1981; Beaver, 1981; Berk, 1997; Dimson and Marsh, 1986; Elfakhani et al., 1998; Fama and French, 1992; Garza-Gomez, Hodoshima and Kunimura, 1998; Levis, 1985, 1989).

Next will be three variables associated with the intended use of rights issue proceeds which are: fractional change of debt-equity ratio to represent debt repayment; fractional change of total fixed assets as a measure of investment activities; and fractional change of net working capital for proceeds used to meet working capital requirements. Few other studies have examined the intended use of proceeds resulting from equity announcements. The current study will try to fill this gap by including the above mentioned proxies in the cross-sectional regression analysis. Among the three variables, only debt repayment is linked to one of the corporate finance theoretical models. Ross' signalling model (1977) indicates that managers are motivated to signal their inside information of a company's true value by undertaking capital structure changes. If a company increases its leverage, it signals that management is confident about the prospects of its asset values and future cash flows. Hence a positive relationship is expected between the leverage variable and stock returns. Evidence provided by previous researchers have been mixed from positively related to no correlation depending upon the measurement used as a proxy for this variable. Similar evidence is observed for proceeds used to support investment activities while no study has ever tested on working capital requirements (this is to the author's knowledge).

The sixth and seventh explanators are related to ownership concentration which is identified from the Leland and Pyle signalling model (LP, 1977). According to them, a change in an entrepreneur's (major shareholder) fractional stock ownership influences returns. If major shareholders maintain or increase their ownership when there is an equity offer such as rights issues, the likelihood of the particular shares' price to increase is greater. This is because the market assumes that these shareholders are better informed about a good project's expected return. Hence, a positive relationship is expected between this variable and CAR. Based on the previous work by Bohren, Eckbo and Michalsen (1997), Dowen and Bauman (1997), Han and Suk (1998), Kothare (1997), Reddy (1992), and Wruck (1989), mixed evidence from a positive to a negative relationship have been observed between this variable and CAR.

The eight explanator is relative size of the rights issues. Two theoretical models predict a negative relationship between this variable and stock price. Miller and Rock (1985) associated announcement of equity issues with inadequacies of internally generated funds to finance a company's planned investment. This inferred that a company is expected to experience a decreasing future cash flows to support its investment activities. As a result, it tends to depress the company's stock price. The greater the size of equity issues, the greater is the shortfall of internally generated funds, the more depressed a company's stock price. As a result, a negative CAR is observed. The second theoretical model is explained by PPH which assumes that a company's security is faced with a downward sloping demand curve. Thus an increase in the supply of this security would mean a discount to its price to ensure the security is tradeable. Similar to the above explanator, mixed evidence has been found in other studies on the relationship of this variable to CAR.

Finally, the last variable included in the cross-sectional regression analysis is subscription price discount. PPH states that a discount has to be given to encourage existing shareholders to subscribe. The higher the discount, the greater is the demand for this security. Hence a negative relationship is expected between subscription price discount and CAR. This complies with Heinkel and Schwartz information model (1986). According to them in order to prevent rights issues from failing, a discount has to be offered. However, this discount signals to the market negative information about a stock's true value which may cause a drop to its price. Bohren et al. (1997) and Kothare (1992) provide evidence to support PPH and Heinkel and Schwartz information model but others (Loderer and Zimmermann, 1988; Marsh, 1977; Reddy, 1992) found an insignificant positive relationship.

As shown in Figure 1-1, the cross-sectional regression result is used to check on the importance of corporate finance theories in explaining the relationship between the determinants and the effect of rights issue announcements in the Malaysian context.

1.3.4. Conclusion and Implication

The findings from the first and second stage analysis are brought together to form the final chapter of the thesis. Although previous empirical work by Brown and Warner (BW, 1980, 1985), Dimson and Marsh (1986) and Dyckman, Philbrick and Stephan (1984) suggested that all the models (i.e. MA, MAR and SIMM) seem to perform equally well to detect abnormal returns and the use of more complicated models will not convey any extra benefits, the current study found that this is only true for the pre-announcement period. The stock returns' behaviour after the announcement provide inconsistent results between the MAR and the SIMM models. The reasons behind these may reflect the choice of the estimation period in calculating α and β for the SIMM model. It may also have been caused by the companies in the sample which mainly consist of below average size companies. In the Malaysian stock market, it is common for smaller size companies to experience some suspended period. Hence, the possibility for the MAR result to be contaminated with thin trading problem does exist. Despite the limitations and irrespective of the mixed results during the post-announcement period, the existence of a persistent significant non-zero average abnormal returns and cumulative average abnormal returns for both performance measure models provides evidence that the Malaysian stock market is semi strongly inefficient. This would mean investors could make substantial profits particularly if they have access to inside information. The pre-announcement period result is consistent with the suggestion that insider trading activity existed in this market.

With respect to the corporate finance theoretical models, surprisingly none of the models (signalling model, asymmetric information models, agency model, perfect substitution hypothesis and Scholes' information hypothesis) could explain the positive abnormal returns associated with rights issue announcements in Malaysia. The result is only consistent with the price pressure hypothesis where a temporary fall in price is experienced which is followed by a recovery in price ten days after the announcement. As for the cross-sectional regression analysis, only book-to-market equity ratio (BKTOMKT) and company size (COSIZE) are found to be statistically

significant to have some influence on the CAR if taken individually by holding the remaining explanators constant. This evidence also shows that smaller companies tend to have higher cumulative abnormal returns, justifying the presence of a size effect in the Malaysian stock market. It indicates that the size effect reversal which is found in the developed stock market such as the London Stock Exchange (LSE), New York Stock Exchange (NYSE) and American Stock Exchange (AMEX) in the 1990s has not been encountered in an *emerging market* environment. Furthermore, none of the theoretical models (i.e. Miller and Rock signalling model, PPH, Heinkel and Schwartz information signalling model, Ross signalling model and Leland and Pyle signalling model) have proved themselves to be able to explain returns of Malaysian companies listed on the KLSE. These models may work in a developed stock market, but they appear to be less important to an *emerging market* such as the Kuala Lumpur Stock Exchange. It is likely that these results are influenced by the institutional characteristics of the KLSE. Companies listed on the Exchange are mostly Malaysian-owned companies. There is only limited number of foreign incorporated companies. With a traditional domestically-focused market, KLSE lack the competitiveness which is readily available on a developed exchange such as the LSE. Moreover, its stringent controls of volatility in stock prices may not allow the market to work freely with the standard demand and supply pricing mechanism. Unless the institutional differences are eliminated, the theoretical models may not be applied in this market.

CHAPTER 2: BACKGROUND INFORMATION ON THE KUALA LUMPUR STOCK EXCHANGE AND EQUITY RIGHTS ISSUES IN MALAYSIA

2.1. Introduction

Malaysia is classified as an *emerging market* by the World Bank due to its per capita Gross National Product (GNP) being categorised in the low or middle income range. According to Samuels et al. (1999), those countries which fall into the *emerging market* classification have a number of different development stages. They categorised Malaysia into the third and possibly fourth stages of development where its volume of trading is higher than the first or second stage, its capitalisation is increasing, and risk management and hedging instruments are present. Since not much information could be found in the literature with respect to the Malaysian capital market, this chapter is meant to give a brief description with some statistics of the Kuala Lumpur Stock Exchange (KLSE). The main focus will be on rights issue in Malaysia as a means of equity financing by companies listed on the KLSE. Most of the statistics are for the period until the end of December 1996 which is the cut off point for this study. The main source of the statistics came from the KLSE Annual Companies Handbook. These statistics will help to provide knowledge of the institutional background of the KLSE and rights issues in Malaysia, which will assist understanding of the analytical chapters that follow.

2.2. Kuala Lumpur Stock Exchange

The security industry in Malaysia can be traced back to the booming of rubber and tin industries in the late nineteenth century which lead to the gathering of stockbrokers in areas such as Ipoh, Malacca, Kuala Lumpur and Singapore. The Singapore Stockbrokers'Association was formed on 23 June 1930 and in the year 1938, it registered with a different name, Malayan Sharebrokers Association. On 21 March 1960, the Malayan Stock Exchange was formed, but with the formation of the Federation of Malaysia in 1963, the name changed to Stock Exchange of Malaysia in 1964. In August 1965, Singapore separated from the federation and the Exchange was

renamed the Stock Exchange of Malaysia and Singapore. It has two trading rooms where one is located in Kuala Lumpur and the other is in Singapore.

When the Currency Interchangeability Agreement was terminated between Malaysia and Singapore on 8 May 1973, this Exchange split into the Kuala Lumpur Stock Exchange (KLSE) and the Stock Exchange of Singapore (SES). KLSE is then incorporated as a limited liability company on 2 July 1973 under the Malaysian Securities Industry Act 1973 (later known as the Securities Industry Act 1983). It is regulated by five bodies which are the KLSE, the Capital Issues Committee (CIC)--which is now known as the Securities Commission (SC), the Foreign Investment Committee (FIC), the Registrar of Companies (ROC) and the Panel on Takeovers and Mergers. The KLSE main objective is to provide a marketplace for raising new funds and for trading outstanding shares among buyers and sellers. Its main trading floor is in Kuala Lumpur.

Companies which are listed on the KLSE are grouped into two categories depending on the fulfilment of certain requirements imposed by the Exchange and the SC. These requirements are to ensure only successful and reputable companies with strong growth prospects and management integrity are listed on the Exchange so as to encourage and to promote a strong and healthy securities market and to provide an orderly development of the capital market. To be listed on the Main Board, a company should have an issued and paid-up capital of at least RM40,000,000 (£10,000,000) comprising of ordinary shares of RM1 (£0.25) where 25% of the issued and paid-up capital is in public hands and a minimum percentage of the issued and paid-up capital is in the hands of 500 shareholders who do not hold more than 10,000 shares; a track record of five years average after-tax profit of not less than RM5,000,000 (£1,250,000) per year as well as after-tax profit of at least RM2,000,000 (£500,000) per year for the past five years; and some other factors which could show the financial stability of the company. With the stringent rules, not too many companies could be listed especially for the small and medium sized companies (SMCs) even if they have good growth prospects. Thus, the KLSE established the Second Board in November

1988 to enable SMCs raise funds to finance the expansion of their business. Certain criteria which are imposed on the Main Board became the basis of listing requirements on the Second Board to ensure only reliable and financially robust companies are listed so as to secure investors' confidence.

However, the issued and paid-up capital for the Second Board listing is a minimum of only RM10,000,000 (£2,500,000) ordinary shares of RM1.00 (£0.25) each where 25% but not more than 50% of the issued and paid-up capital is in public hands and 15% in the hands of not less than 500 shareholders who do not hold more than 10,000 shares each and not less than 500 shares each. As for trading record, a company needs to provide evidence of an average after-tax profit of not less than RM2,000,000 (£500,000) per year for three consecutive years with at least RM1,000,000 (£250,000) per year for the past three years[3] .

Table 2-1 summarises the number of listed companies by country of incorporation on the KLSE. As of December 1996, there were 621 companies which were listed on the KLSE as compared to 262 companies listed at the end of 1973. It shows a 137% growth over the 23-year period. Out of the 621 companies, 413 companies were listed on the main board and 208 on the second board. There is also evidence of an increasing trend of Malaysian incorporated companies and a decreasing trend of foreign incorporated companies. The decreasing trend or delisting of foreign companies was largely due to the restructuring of these companies to majority Malaysian-owned companies and the start of a traditional domestically-focused market on the KLSE. As of 1996, there were 410 and 208 Malaysian incorporated companies on the Main Board and Second Board respectively, while there were only three foreign incorporated companies. It was only recently KLSE opened the door to foreign companies listing on the market. On 8 August 1996, KLSE announced its decision to allow foreign companies to be listed on the Exchange so as to increase its competitiveness and to make Malaysia a regional financial centre.

[3] Detailed information can be found in the Kuala Lumpur Stock Exchange Second Board Listing Requirements.

Table 2-1: Number of listed companies on the KLSE

Year	Main Board				Second Board	Grand Total
	Malaysian Inc.	Singapore Inc.	Other	Total		
1973	155	69	38	262	-	262
1974	163	67	34	264	-	264
1975	167	67	34	268	-	268
1976	173	64	27	264	-	264
1977	177	59	20	256	-	256
1978	180	57	16	253	-	253
1979	185	56	12	253	-	253
1980	182	56	12	250	-	250
1981	187	55	11	253	-	253
1982	194	56	11	261	-	261
1983	204	56	11	271	-	271
1984	218	56	8	282	-	282
1985	222	56	6	283	-	283
1986	227	55	6	287	-	287
1987	232	54	5	290	-	290
1988	238	53	4	295	-	295
1989	249	53	3	305	2	307
1990	268	-	3	271	14	285
1991	289	-	3	292	32	324
1992	314	-	3	317	52	369
1993	326	-	3	329	84	413
1994	344	-	3	347	131	478
1995	366	-	3	369	160	529
1996	410	-	3	413	208	621

Source: KLSE Annual Companies Handbook

However, with the current economic crisis, the Malaysian government on 1 September 1998 announced that effective as of 1 October 1998, a temporary foreign exchange control measure in terms of trade and investment is imposed (Singapore Business Times Online, 9 September 1998). The Malaysian Ringgit is fix to RM3.80=US$1 and it is no longer legal tender or convertible outside of Malaysia. This means any Ringgits held outside of Malaysia are, at least temporarily worthless. In terms of foreign owned shares of the KLSE listed securities, the implication is quite substantial. Under the Malaysian Central Bank regulation, a foreign-managed portfolio already invested within the domestic system (i.e. the KLSE) cannot be converted and sent out of Malaysia until one year after 1 September 1998. However,

any profits (i.e. dividends or capital gains) obtained can be transferred before 1 September 1999 with the exception of the principal (Berita Harian, 17 September 1998). Such a move once again obscured the globalisation principle practice by the KLSE and the SC. If this measure is permanent, investors will shun the KLSE.

The KLSE listed companies are categorised into ten industries: Consumer Products, Industrial Products, Construction, Trading/Services, Finance, Hotels, Properties, Plantations, Mining and Unit Trusts. Table 2-2 refers to the total listed companies and market capitalisation of each industry on the Main Board and the Second Board as of 31 December 1997. Trading/Services industry represents 38.25%

Table 2-2: Listed companies and market capitalisation of each industry on the KLSE as of 31 December 1997

Industry	Number of Companies		Total	%	Market Capitalisation (Billion RM)		Total	%
	Main Board	Second Board			Main Board	Second Board		
Consumer Products	57	51	108	15.38	37.08	4.82	41.9	11.79
Industrial Products	94	122	216	30.77	48.08	7.6	55.68	15.66
Construction	27	35	62	8.83	17.73	4.53	22.26	6.26
Trading/Services	75	55	130	18.52	131.66	4.31	136	38.25
Finance	60	1	61	8.69	49.98	0.059	50.04	14.08
Hotels	5	-	5	0.71	1.09	-	1.09	0.31
Properties	69	-	69	9.83	19.43	-	19.43	5.47
Plantations	39	-	39	5.56	27.02	-	27.02	7.60
Mining	8	-	8	1.14	1.85	-	1.85	0.52
Unit Trusts	4	-	4	0.57	0.26	-	0.26	0.07
Total	438	264	702	100.00	334.18	21.319	355.5	100.00

Source: KLSE Annual Companies Handbook

out of the total market capitalisation with 130 companies which is 18.52% out of the total listed companies. For Industrial Products, it shows that it has the highest number of listed companies, that is 216 companies. However, this sector only contributes 15.66% to the total market capitalisation. Whereas the Finance Industry captures 14.08% of the market capitalisation with a lower number of companies. In terms of the ranking of market capitalisation from highest to lowest, this is followed by Consumer Products (11.79%), Plantations (7.60%), Construction (6.26%), Properties (5.47%), Mining (0.52%), Hotels (0.31%) and Unit Trusts (0.07%).

Since its inception, the KLSE has grown rapidly in terms of market capitalisation. Over the 1973 to 1996 period, the market capitalisation has grown at an average annual rate of 25%. Table 2-3 summarises the statistic of market capitalisation and annual trading volume of listed companies on the KLSE for the period 1973 to 1996. As at end 1996, the total market capitalisation on the KLSE reaches RM806.8 billion (£201.7 billion) as compared to RM13.3 billion (£3.325 billion) in 1973. During this period also, we could see both the volume traded and the value traded

Table 2-3: Market capitalisation and annual trading volume of listed companies on the KLSE

Year	Market Capitalisation (Billion RM)		Total	Volume Tradeable (Billion Unit)	Value Tradeable (Billion RM)
	Main Board	Second Board			
1973	13.3	-	13.3	0.5	2
1974	8.1	-	8.1	0.4	0.7
1975	11.7	-	11.7	0.6	1.3
1976	12.7	-	12.7	0.4	1
1977	13.7	-	13.7	0.6	1
1978	18.3	-	18.3	1.1	2.5
1979	24.6	-	24.6	0.6	1.6
1980	43.1	-	43.1	1.5	5.6
1981	55.4	-	55.4	1.6	8.1
1982	52.9	-	52.9	1.1	3.3
1983	80.3	-	80.3	2.3	7.9
1984	69.3	-	69.3	1.9	5.7
1985	58.3	-	58.3	2.9	6.2
1986	64.5	-	64.5	2.3	3.4
1987	73.9	-	73.9	5.3	10.1
1988	98.7	-	98.7	4	6.8
1989	156.0	0.1	156.1	10.2	18.5
1990	131.1	0.6	131.7	13.2	29.5
1991	159.9	1.5	161.4	12.4	30.1
1992	242.9	2.9	245.8	19.3	51.5
1993	606.1	13.5	619.6	107.7	387.2
1994	493	15.9	508.9	60.1	328.1
1995	542.8	22.7	565.5	34	178.9
1996	746	60.8	806.8	66.5	463.3

Source: KLSE Annual Companies Handbook

have increased tremendously. In 1973, there were only 0.5 billion unit shares traded on the KLSE with a value of RM2 billion (£0.5 billion). This figure increased as at

end 1996 when the volume traded was 66.5 billion unit shares while the total trading value was equivalent to RM463.3 billion (£115.825 billion).

With a total market capitalisation of £201.7 billion as at end 1996, KLSE had become the largest exchange in ASEAN (Association of South East Asia Nations), the third largest in Asia Pacific after Japan and Hong Kong, and among the top 15 in the world. However, this is no longer true with the recent economic turbulence in Malaysia. As of 30 June 1998, a sharp decline in value of listed securities on the KLSE resulted in a contraction of its market capitalisation to RM285.88 billion (£71.47 billion) from RM743.78 billion (£185.945 billion) on 1 July 1997. Similarly, the volume traded declined to 61.35 billion units on 30 June 1998 as compared to 70.54 billion units a year earlier. Nevertheless, KLSE is an important institution in Malaysia and by studying this market we can learn more about an *emerging market* stock characteristics generally as well as understanding more about the KLSE.

2.3. Rights Issues

The study of rights issues is a particularly interesting topic to examine in the Malaysian context. This is because companies that are listed on the Kuala Lumpur Stock Exchange rely heavily on rights issue as a means of equity financing. Over the period 1973 to 1996, a total of RM38.311 billion (£9.5778 billion) was raised through rights issue and this figure accounted for 33.8271% of the total funds made available for listed companies by the capital market. Total funds include all capital raised in the equity market (i.e. public issues, rights issues, special issues, private placements, restricted issues and offer for sale) and debt market (i.e. listed and unlisted bonds with warrants, straight bonds, irredeemable convertible unsecured loan stocks and others) by public listed companies.

Table 2-4 provides statistics on the annual total funds raised by Malaysian companies in the equity market. The percentage of rights issue over the grand total of funds accumulated in the equity market from 1973 to 1996 shows that these percentages range from a low of 26.35% to a high of 79.38% with a yearly average of

52.10% of the funds coming from rights issues. Within the twenty four years, rights issue's proceeds contributed approximately 45.14%.

Table 2-4: Total funds accumulated by Malaysian companies in the equity market

Year	Public Issues*	Rights Issues	Special/Private Placement/ Restricted Issue	Sub-Total	Offer for Sale* (Includes Restricted Offer For Sale)	Grand Total	Rights Issues/ Grand Total
			Million RM				
1973	95.7	37.2	8.3	141.2	0	141.2	26.35%
1974	12.4	49.6	4.1	66.1	19.6	85.7	57.88%
1975	13	9.5	0	22.5	5.7	28.2	33.69%
1976	0	22	13.5	35.5	0	35.5	61.97%
1977	0	95.1	2.9	98	21.8	119.8	79.38%
1978	5.4	24.5	22.8	52.7	46.4	99.1	24.72%
1979	1.7	134.3	62.2	198.2	16	214.2	62.70%
1980	2.1	103.2	31.8	137.1	14	151.1	68.30%
1981	103.7	598	200.1	901.8	28.7	930.5	64.27%
1982	182.7	286.8	131.6	601.1	27.7	628.8	45.61%
1983	140.5	638.5	406	1185	25.9	1,210.9	52.73%
1984	174.4	1,347.4	461.4	1,983.2	24.3	2,007.5	67.12%
1985	164.2	357.5	81.8	603.5	0	603.5	59.24%
1986	24	298.4	97	419.4	7.5	426.9	69.90%
1987	95.8	393.7	386.2	875.7	220.5	1,096.2	35.91%
1988	53.3	789.3	136.3	978.9	111.7	1,090.6	72.37%
1989	128.5	1,313.4	166.9	1,608.8	960.2	2,569	51.12%
1990	2,597.1	5,503	389.8	8,489.9	1,440.1	9,930	55.42%
1991	230.3	1,672.6	793.6	2,696.5	1,367.2	4,063.7	41.16%
1992	3,909.6	3,762.5	312.5	7,984.6	2,268.5	10,253	36.70%
1993	171	2,429.1	782	3,382.1	1,149.4	4,531.5	53.60%
1994	373.2	5,448.4	1,364.1	7,185.7	2,931.3	10,117	53.85%
1995	1,155.6	5,594.2	2,436	9,185.8	4,532.7	13,719	40.78%
1996	1,778	7,402.8	8,075.3	17,256.1	3,570.2	20,826	35.55%
Total	11,412.2	38,311	16,366.2	66,089.4	18,789.4	84,879	45.14%

Source: KLSE Annual Companies Handbook

* According to Policies and Guidelines on Issue/Offer of Securities published by the Securities Commission, Public Issue is "an offer to the public for subscription or purchase by, or on behalf of, an issuer of its own securities" (p. 10-01) while Offer for Sale is "an offer to the public by, or on behalf of, the holders or allottees of securities already in issue or agreed to be subscribed" (p. 10-02).

2.3.1. Rights Issues in Malaysia

A rights issue is an invitation offered to the existing shareholders to purchase additional shares in the company through a prescribed ratio at a specified price within certain period of time. In Malaysia, normally shareholders have four weeks (28 days)

between the rights issue abridged prospectus date and the acceptance date. This is to ensure shareholders have sufficient time to consider the offer. Compared to other issues of equity, rights issues give an opportunity to the existing shareholders to maintain their share of interest in the company. If shareholders fail to exercise their rights, their holdings in a company will be substantially diluted. A rights issue's main functions are, generally, to raise finance for a company to support its investment activity, to assist in expanding its production capacity by increasing its working capital or to reduce its borrowing by taking advantage of lower interest costs.

There are two forms of rights issue which are known as renounceable right issue and non-renounceable rights issue. Renounceable rights issue is where existing shareholders are given the right to purchase additional shares in the company in proportion of their holding. In cases where shareholders are not able to subscribe the additional shares, they can renounce their rights in part or in whole in favour of another person. Non-renounceable rights issue is when a right to purchase additional shares of a company is solely in favour of existing shareholders. Although both forms are allowed by the SC, KLSE will only entertain renounceable rights issue.

In Malaysia, the offering of rights issues is governed by both the Securities Commission (SC) which is established under the Securities Commission Act 1993 (replacing the Securities Industry Act 1983) on 1 March 1993, and the KLSE. All public listed companies are required to get SC approval before they undertake any rights offer. KLSE has to be informed if a company decides to have rights issue. Any progress as to its approval or rejection by the SC or any related matter with respect to this issue which might affect the company's stock price will also have to be reported to the KLSE. Upon listing on the Exchange, a company is discouraged from undertaking a rights issue for a period of one year. The same requirement applies to existing listed companies which use rights issue in their last capital-raising activity. The rationale behind this requirement is that SC expects companies which are newly listed or have just gone through a capital-raising activity, would have already made a three years profit forecast that includes their investment plan. Hence, there is no

immediate need of another capital raising activity during this period. In addition, SC will also consider a rights issue based on the merit of each case as long as the previous rights issue's proceeds for the last two years are utilised as approved by the SC. It is to be noted that a rights issue application in Malaysia is to be evaluated on merit basis meaning that an authority (in this case SC and KLSE) assess the feasibility and suitability of a company's proposal. This is in contrast to the disclosure basis applied in a developed market such as the London Stock Exchange.

2.3.2. Application Criteria

The approval of rights issue by the SC depends on several criteria such as a company needs to expand its business activities, to increase its production capacity and profitability, to diversify its business activities, and to reduce its borrowing by taking advantage of lower interest cost. SC will also consider an application if a company faces some losses in the past; thus, if a company is in trouble or in needs of cash, it can turn to its shareholders. Furthermore, the approval of a rights issue will depend on other factors such as the company's debt-equity ratio, the ability to pay its liabilities and the capacity to borrow.

In submitting a rights issue application, information regarding the utilisation of the proceeds coming out of this issue will need to be specified. Generally, SC expects that the proceeds will be used to invest in viable projects, to expand a company's productive capacity (perhaps through acquisition or increasing working capital) and to repay loans. If rights issue's proceeds are used to repay loan, these require documentary evidence from the company once the repayment is settled. If the purpose of the rights issue is to reduce short term loan, SC will only consider circumstances where the company is paying a high interest payment and the proportion of the proceeds used for this purpose is not more than 50% of the total proceeds. A company will be discouraged to issue rights if the proceeds are used to repay borrowing which are on-going such as trade financing facilities. The rationale behind this rule is that SC considers rights issue as a cash call from shareholders to meet a company's long term

financing need; and that it should not be used to fulfill trade financing obligations which are short term in nature.

For successful application, SC through its Surveillance and Compliance Department will then scrutinise this issue closely to ensure that the company does comply to the regulations. A company's annual report and a five page follow-up questionnaire provide information regarding the actual usage of the proceeds, profit performance and changes in shareholding information need to be submitted to the SC within two weeks after a company's Annual General Meeting. If a company breached the purpose stated, SC will either give a Private Reprimand, Public Reprimand or suspension of listing for several months depending on the severity of each case. Based on the information supplied by the Assistant Manager of Securities Issues Department, few companies have been given a Private Reprimand, only one company (Benta Plantations Bhd) was given a Public Reprimand since SC is incorporated in 1993. However with the lack of confidence in the Malaysian economy and its market in the recent downturn, several companies were added to the list. In a relatively small and closely held market, a Public Reprimand imposes reputation costs on a company. When evidence of this wrongdoing becomes public domain, any future transactions in the capital market will be very costly to a company.

Discussions about the purpose of a rights issue raise several questions in terms of its implementation. In practice saying that the funds will be used for a particular purpose to satisfy bureaucrats is different from the actual usage of the proceeds. Although follow-up exercises and penalties are introduced, there might be some loopholes in the system itself. This is important, because, this study is carried out, in part, to establish whether the use to which the rights issue proceeds are put have significant impact on the stock price at the time of the announcement. This will be discussed further in Chapter Six and Seven.

2.3.3. Procedures

Once a rights issue application has been approved by the SC, certain procedures have to be followed in announcing this issue. A public listed company which is incorporated in Malaysia needs to produce an abridged prospectus to be circulated to its shareholders if it is undertaking a renounceable rights issue. A summary of this abridged prospectus has to be advertised in one of the widely-circulated newspaper. However, for a public listed company incorporated outside of Malaysia, only a summary of the abridged prospectus regarding the renounceable rights issue needs to be published in one of the widely-circulated newspaper. As for the issue price of the rights, SC provides certain guidelines for a company to follow. The issue price should not be discounted for more than 30% from the theoretical ex-rights price based on (1) the lower of current market price at the time of announcement or submission to the SC or consideration by the SC or (2) the weighted average market price of the shares for the three months preceding the date of announcement or submission or three months up to the time of consideration. In cases where rights issue are undertaken simultaneously or very close to the timing of a special issue, the price of the rights issue and the special issue must be the same.

In Malaysia, a company normally makes an underwriting arrangement for the rights issue. The SC and KLSE require that a rights issue is accompanied with such arrangement. The underwriters are likely to be one of the reputable merchant bankers, often the financial adviser of the company. There is an exception to the underwriting rule where a direct rights issue is allowed. Such conditions will be (1) if part of the rights issues are to be allocated to certain parties such as Bumiputera investors (native group), directors and employees in accordance with Government directives and the National Development Policy and (2) if substantial shareholders give a written irrevocable undertakings to subscribe to the rights issue.

Table 2-5 presents a typical timetable for a rights issue from the time a company is thinking of having a rights issue to support its activity until the day when the abridged prospectus is sent out to the shareholders. Normally, the Board of

Directors (BOD) will consult with the company's financial advisers as to their investment and financing requirements for the coming months. Its cash flow prospects to support the financial plan will provide a guideline for both parties to analyse and to come up with a decision on whether the company will need additional capital to support its investment and operating activities. A hint of the possibility of a rights issue might come out of this discussion although no mention is made with respect to the terms and conditions as well as the exact timing of the issue.

The discussion is later formalised when a company decides to go ahead with the rights issue (in this study, this is the day considered to be the announcement or impact day which is represented with t=0). At this stage, the financial adviser (i.e. the merchant banker) is usually employed to underwrite the issue. Details of the terms and conditions such as the ratio of the number of old shares required to purchase one new share, the subscription price and the total number of new shares arising from the rights issue together with the purpose and rationale of this issue are agreed upon. The Kuala Lumpur Stock Exchange will be notified of the decision on the same day or a few days later depending on its finalisation. If a company is late in notifying its decision, the KLSE has the right to query and to take action against the company if the company's share price changes dramatically.

A few weeks after the announcement day will be a busy time for the company and underwriter to prepare the rights issue application to be submitted to the Security Commission for approval and to the KLSE to seek its approval for the listing and quotation of the new ordinary shares. The preparation will take about a month or may be earlier if both parties have done their homework. Normally, it takes about five to eight weeks for the SC to grant approval or to reject the application. If the application is approved, some of the terms may be changed by the SC to meet its objectives of being fair and just to all shareholders and investors.

An offering circular to inform and to seek approval from the shareholders for the rights issue resolution which will be proposed at the Extraordinary General Meeting (EGM) is sent out between one to two weeks after the SC's approval.

However, there are companies which post this circulation before an approval is granted by the SC and the KLSE (refer to Table 2-5 on Malaysian Pacific Industries Berhad). They might decide to do this one to two weeks after an application is submitted to the SC. Based on the KLSE requirements, the contents of the offering circular must be comprehensive to reflect a fair picture of the company with respect to its prospects, profit and dividend's forecast as well as the reason for the issue. In addition to this, a declaration of the major shareholders and underwriter undertaking is also made to fulfill the criteria required by the SC. Attached together with the circular is a form of proxy for the EGM.

Three weeks after the circular is posted, an EGM is held for all shareholders to give their consent and to authorise the Board of Directors to issue the rights shares. Five to eight weeks after the EGM, an abridged prospectus and a Provisional Letter of Allotment (which consists of the number of the new ordinary shares for which a shareholder is entitled to subscribe under the rights issue terms) with respect to the rights issue are posted to all registered shareholders on a specific entitlement date.

Table 2-5 provides a brief guideline of the stages a company goes through in order to issue rights shares. However, not all rights issues conform to these stages. Two examples which are used in this study are included in Table 2-5 to clarify the above procedure. As the dates in the table are self explanatory, an overall observation is worth mentioning with respect to the two companies. For Island & Peninsular Berhad, it took about twenty weeks from the announcement date before an abridged prospectus can be sent out whereas it only took Malaysian Pacific Industries Berhad fourteen weeks to go through the same procedure. Some of the dates are left blank as the information is not accessible especially in the discussion stage between the BOD and financial adviser. The time frame of eight to twelve weeks are given based on the analysis implemented in this study. It would be more appropriate to get hold of the BOD or the underwriter to get a real picture of the time frame. However due to geographical and cost constraints, these are left aside.

Table 2-5: Typical timetable of a rights issue

Time relative to the abridged prospectus availability	8 to 12 weeks before t=0	IMPACT DAY Announcement day (t=0)	Official Announcement day Day t=0 to a few days	Weeks 4 to 8	5 to 8 weeks from submission	1 to 2 weeks after approval	3 weeks after Circular	5 to 8 weeks after EGM
Stage	Board of Directors and Financial Adviser review investment and financial plans, addressing possibility of a rights issue.	Decision is made to go ahead with the issue. Details of terms and conditions together with the purpose are agreed upon.	Inform the Kuala Lumpur Stock Exchange.	Submit application to the Securities Commission (SC) and the KLSE.	Approval granted by the SC.	Offering Circular to shareholders posted.	Extraordinary General Meeting (EGM) held.	Abridged Prospectus and Provisional Letter of Allotment posted.
Dates for Island & Peninsular Berhad		3 April 1987			7 July 1987	17 July 1987	10 August 1987	18 September 1987
Malaysian Pacific Industries Berhad		8 March 1994	8 March 1994	5 April 1994	18 May 1994	13 April 1994	5 May 1994	28 June 1994

2.4. Implications for the Current Research

An overview of the Malaysian capital market and some statistics have been presented to provide some institutional background information about the Kuala Lumpur Stock Exchange in general and equity rights issues in particular. In addition, a lengthy discussion about a rights issue application criteria and procedures is also reported. This information allows a better appreciations of the issues covered in this thesis. Without such information, it may be difficult to accept some of the findings reported in the later chapters.

CHAPTER 3: LITERATURE REVIEW OF EVENT STUDY ANALYSIS, MARKET EFFICIENCY AND RIGHTS ISSUE ANNOUNCEMENTS EFFECT TOWARD SHARE RETURNS

3.1. An Overview

This chapter examines the theoretical and empirical literature on event study analysis and market efficiency which have become popular research areas in corporate finance. Event study analysis focuses on certain types of company specific events such as changes in accounting disclosures to market-wide events (e.g. regulatory news) which could have an impact on stock prices. It is associated closely to market efficiency theory where an assessment is made on how quickly and correctly information is reflected in the stock price. If a market is efficient, a company's stock price will always reflect all available information. These topics which are inter-related have gone beyond the normative theories of what should investment and financing of a company's policy be to positive theories of what might be the effect of such policy to a company's stock price. This shift provides far reaching implications for resolving many problems faced by financial managers and advisers, policy makers and investors.

Event study methodology is applied to rights issue announcements by Malaysian companies. Using this information, a test of market efficiency of the Kuala Lumpur Stock Exchange is implemented in the following two chapters. This will prove the usefulness of the points raised by the theoretical considerations and empirical evidence discussed in this chapter. One should realise that there are numerous articles of excellent quality on event study and market efficiency; however, only selected articles considered to be relevant to the topics covered in this thesis are included.

3.2. A Discussion on Methodological and Analytical Techniques in Event Study

3.2.1. Introduction

The early development of event study started in the late sixties (Ball and Brown, 1968; Fama, Fisher, Jensen and Roll, 1969) in the areas of finance, accounting and economics. The classic design of event study usually entails a joint hypothesis between market efficiency and the validity of the methodology used to calculate abnormal returns[4] . In the 80s and 90s, event studies' results (i.e. cumulative average abnormal returns) were used as dependent variables in cross-sectional regression analyses to identify factors that could explain the abnormal returns such as shown by the works of Barclay and Litzenberger (1988), Bohren, Eckbo and Michalsen (1997), Kothare (1992, 1997), Loderer and Zimmermann (1988), Loughran and Ritter (1995), Marsh (1979), Masulis and Korwar (1986), Reddy (1992) and Tsangarakis (1996).

Generally, event studies are related to market efficiency, information content and model evaluation. A study conducted using this approach usually combines these classifications depending on the objectives of the study. Some researchers might be interested in comparing the models used to calculate abnormal returns to test which model(s) can identify the abnormal returns better by involving in simulation or sensitivity analysis works[5]. Others might be more concerned to see the effect of a specific event towards stock prices and the efficiency of a stock exchange or to identify possible determinants which can explain the existence of the abnormal returns[6]. Whichever combination is chosen, event study has endured theoretical and empirical tests in the past 30 years to become one of the most robust research paradigms not only to the finance, accounting and economic circles but also to those

[4] Abnormal returns are also known as excess returns or extra returns which can be defined as the difference between actual returns and predicted or *no-news* returns. This topic is thoroughly discussed in section 3.2.4.

[5] Brown and Warner, 1980 and 1985; Collins and Dent, 1984.

[6] Barclay and Litzenberger, 1988; Bohren, Eckbo and Michalsen, 1997; Kothare, 1992 and 1997; Loderer and Zimmermann, 1988; Loughran and Ritter, 1995; Marsh, 1979; Masulis and Korwar, 1986; Reddy, 1992; and Tsangarakis, 1996.

individuals who are interested in assessing the impact of an event in their organisations or in the market as a whole.

The following sections present the event study research design and problems which might be encountered during the use of this approach, as well as the suggested solutions described in the existing literature. As event study results will depend very much on overcoming these problems, the importance of these issues could not be stressed more.

3.2.2. Event Study Research Design

Event study focuses on certain types of company specific events such as changes in accounting policy disclosures, regulatory or economic news, which could have an impact on security prices. In other words, it is concerned with the information content effect of certain events on the price behaviour of security prices. Perusal of the literature reveals that event study research design always followed a chronological framework in evaluating an event. One of the earliest studies which used this approach was implemented by Fama, Fisher, Jensen and Roll (FFJR, 1969). They examined how rapidly stock prices adjust to new information which comes from announcements of stock splits. FFJR analysis follows the sequence of event study procedures which has then been used by many who adopt this technique. Henderson, Jr. (1990) summarises this process in the following manner:

1. *Define the date upon which the market would have received the news.*
2. *Characterize the returns of the individuals companies in the absence of this news.*
3. *Measure the difference between observed returns and "no-news" returns for each firm--the abnormal returns.*
4. *Aggregate the abnormal returns across companies and across time.*
5. *Statistically test the aggregated returns to determine whether the abnormal returns are significant and, if so, for how long* (p. 284).

Based on the above procedure, there are three basic steps in event study research design as shown in Table 3-1. The first step is to identify an event which is considered to be significant and of interest to ones chosen field of research. Once an

event is selected, an event date will need to be identified so as an event window can be established to test on the new information which is released from the event. The date has to reflect when the public reasonably expected the news. Normally, the official announcement date of a particular event in a major newspaper that will be of interest in this research design. In most event studies, the event date selected will either be one day prior or on the day of the official announcement. In practice, any news announcement from a company will be known by a group of people beforehand or if the news were to be announced in a major newspaper, they will be forwarded at least one day before the official announcement published by the media. Due to the information being known to the market much earlier, the date usually chosen to be the basis for the event window is the day when the news are expected to reach the market. Whether the news is transmitted via a modern electronic device or other conventional means, the earliest date is chosen to be the event date.

Table 3-1: Description of the step involved in an event study analysis

Step One	(i) Identify an event (ii) Define an event date (iii) Select an event window
Step Two	(i) Calculate the abnormal returns for individual stock (ii) Accumulate the abnormal returns across industries (iii) Estimate an average abnormal returns for each day in the event window (iv) Accumulate the average abnormal returns on each day across the event window
Step Three	Perform a statistical test on the average abnormal returns for each day and for the cumulative average abnormal returns across the time interval

The choice of event date is essential if there is a need to establish the impact of a specific event announcement. An event date is not fixed for all the sample used in event studies depending on the type of event selected. If a study involves rights issue announcements, each sample will have a different event date; but if a study is concerned with regulatory or economic news, the event date might be the same for all the samples.

Once the date has been identified, an empirical investigation is then carried out to see the relationship between stock prices and the disclosure of a specific event. Researchers are interested in the price reaction before (t=-1, t=-2, t=-3, etc), during (t=0) and after (t=+1, t=+2, t=+3, etc) a specific event occurs.The event window chosen varies with the data availability and research setting. It might consider monthly, weekly or daily data in the empirical setting. Selecting the event window is not as simple as it may appear. To identify an appropriate timing of a change in the market's expectations is a complicated issue as it deals with human behaviour in the investment decision making. This makes the choice of event windows very subjective.

The second step (Henderson, Jr. divided this step into three which is step 2, 3 and 4) in the event study research design is to choose among the several approaches to calculate abnormal returns. Abnormal returns can be defined as the difference between the actual returns and the expected returns for a particular day, week or month. The most common and popular approaches used in this study are the mean adjusted returns, the market adjusted returns and the market model. Mean adjusted returns approach is the simplest model where it uses historical stock prices to calculate abnormal returns; whereas market adjusted returns approach uses the market returns to estimate the abnormal returns. A more complex approach is the market model where an estimation of α and β is required before abnormal returns can be determined. These approaches are further discussed in section 3.2.4. of this chapter. Once the abnormal returns have been calculated for each sample, they will then be accumulated across industries and across times. An average abnormal return (AAR_t) for all companies in the sample for each event day t is calculated. This is then summed over time to give a cumulative average abnormal returns figure across the event period T ($CAAR_T$).

The final step or step three in Table 3-1 is when a statistical test is carried out to check on the significance of the findings in the previous steps. Average abnormal returns for each event day in the event window are plotted to see their distribution. If the distribution is normal, a parametric test is carried out to check on the significance.

Otherwise, a non-parametric test follows[7]. Graphical presentation on $CAAR_T$ is then executed to show how the stock prices react to a particular event. A significance test is again run across the time interval to show the robustness of the findings.

3.2.3. Problems in Conducting Event Study

Event study research design is a very useful tool to solve real world problems. Its sophisticated design has resulted in demand for scholarly research to adopt event study as a functional device to evaluate financial events. The last twenty years of its use have proved the robustness of its findings under both the perfect and imperfect conditions. As with other research designs, many improvements have been introduced to refine the method and to overcome its shortcomings in more troublesome situations. Some of the common problems discussed in the literature are: the use of daily versus monthly returns, size effect and clustering problem. These shortcomings have to be taken into consideration in event study in order for the validity of the findings to be improved. Solutions to overcome the problems are further discussed as they are analysed in the later chapters of this study.

3.2.3.1. Daily Versus Monthly Returns

In the previous section, it is mentioned that once an event is selected, a date has to be identified when the news was given to the market. It has also been stated that the event period chosen can be based on a daily, weekly or monthly basis depending upon the data availability and research setting. Despite the fact that three choices are given, the point which has been most debated is regards the use of daily versus monthly returns. As the timeliness of weekly and monthly returns involved with an indefinite day of when the news arrived to the market, only monthly returns are discussed for comparison purposes. In contrast to monthly returns, daily returns analysis uses an exact date to identify when an event actually occurs and expected to be revealed to the market.

[7] Detail discussions of parametric and non-parametric testing is presented in the following section.

Some of the studies made in the early 80s found that given a choice of daily versus monthly returns, it is better to use daily returns as they increase the power of statistical tests in identifying abnormal returns (BW, 1980 and 1985; Dyckman et. al, 1984; Morse, 1984). The power mentioned here is referred to minimising the two types of errors when a decision is made about the null hypothesis (H_0). First is Type I error which is rejecting the null hypothesis (H_0) when it is true; and second is Type II error which is accepting the null hypothesis (H_0) when it is false. BW (1985) find that the power of correctly rejecting the null hypothesis of no abnormal returns increases by a factor of approximately three when their tests were based on a daily instead of monthly returns. Furthermore, if the abnormal returns are serially independent, daily returns have a smaller standard deviation which is approximately 1.8% as compared to 7.8% for monthly returns (BW, 1980). These results are consistent with Morse's (1984) analysis of the econometric properties of daily versus monthly returns. He finds that a shorter movement interval is better able to detect information effects except in cases where there exists uncertainty as to the announcement date.

If the use of daily returns provides a researcher with an advantage of using prior information about the specific day on which an event took place and increase the power of the approach used to identify abnormal returns, the uncertainty or misidentification of the announcement date will obscure the issue. For example, Mandelker (1974) could not find a significant effect on shareholder returns when a merger date is used; but when an intention date of a merger is considered, the effect is found to be significant (Asquith, Brunner and Mullins, 1983). This example clearly points out that when daily returns are used in an event study analysis, defining the event date becomes critical where the earliest date of market disclosure has to be identified. Otherwise, the impact could not be seen.

(a) Nonsynchronous and Thin Trading

Basically, the choice of using daily and monthly returns revolves around econometric and statistical issues. The discussion made so far is about increasing the power of the statistical test in identifying abnormal returns. Before this is considered,

a closely related issue arising from the use of daily returns which is known as nonsynchronous trading needs to be addressed. Nonsynchronous trading problem also known as the Fisher effect (Fisher, 1966), exists when a return measured across securities relative to the market index is done over different trading intervals. Almost all share price databases contain security prices which are collected and recorded at a discrete point in time such as at day, week or month-ends. It is likely that the recorded prices correspond to transactions carried out prior to the end of the period. Hence, the return of a security which is used in the abnormal returns calculation that is associated with a given time period is actually a return recorded at some period before the end of the day, week or month. Similarly, the return of the market is also recorded prior to the end of the period. When both the security return and the market return are used to identify abnormal returns, the covariance estimates are likely to be biased downward because the paired returns are taken from two different points in time. If this happens, ordinary least squares estimates of α and β of the market model variables will be biased and inconsistent, a phenomenon which is known as intervaling effect. Schwartz and Whitcomb (1977) associated the intervaling effect as an indicator of a thinly traded security. A security which is being traded infrequently will introduce a downward bias to its β estimate as compared to frequently traded security. Dimson (1979) in his study using a one-in-three random sample of all UK Stock Exchange securities monthly returns from 1955 to 1974 found that for thinly traded securities, the systematic risk (β) will be biased downward whereas for actively traded stocks it is upwardly biased. The bias will be more severe for daily returns than monthly returns (Scholes and Williams, 1977; Dimson, 1979).

The thin trading problem is more common in an *emerging market* such as the KLSE (Mohamed, 1987). To the extent that a market model approach is employed to calculate the abnormal returns, certain remedial measures are suggested to overcome the downward bias of β coefficient. These measures are introduced to make the thinly and thickly traded securities to have closer weight in determining the systematic risk beta. Four main measures are discussed in the literature to assist in estimating β for

thinly traded securities: trade-to-trade (TT), Scholes-Williams (SW), Dimson and Fowler-Rorke (FR).

TT method was introduced by Franks, Broyles and Hecht (FBH, 1977) in a study done in 1977 which uses UK data to find out the profitability of mergers. The way β is calculated in this method is to use the market index figures which have dates and elapsed time corresponding exactly to the security prices when abnormal returns are computed. This method required that each security price is recorded with a transaction date and time which can be matched with a market index that does not suffer from thin trading. Unless this condition is met, TT estimator will not be sufficient to solve thin trading problem. In the same year as FBH study, Scholes and Williams (1977) introduced another method to solve thin trading problem. With their method, β is known as an unbiased estimator which is calculated by taking the sum of slope coefficients from a lagged (β^{-1}), a synchronous (β^{0}) and a leading (β^{+1}) market return which is then divided by one plus twice the first order serial correlation of the market. The unbiased estimator is then used to calculate the abnormal returns in a market model framework. Similar to the problem encountered in TT method, SW requires transaction dates and security prices immediately before and after a trade is executed in order to get the unbiased estimator. However, SW avoided the use of an exact transaction time in a particular day.

Dimson (1979) proposed another alternative to overcome the drawbacks of SW method by introducing aggregated coefficient (AC) method which defines a market model with lags and leads. With this method, systematic risk (β) is measured from a security return instead of a market return. Multiple regression of security returns is run against the lagged, matching and leading market returns. The number of lags and leads is arbitrary, but to reduce the bias in the systematic risk estimation, the aggregated coefficients are expected to have a value of one. In 1983, Fowler and Rorke (FR) compared the Dimson estimator with that of SW in their study and found that Dimson method of estimating systematic risk is not correctly specified. Dimson's beta coefficients 'must be weighted by functions of the observable serial correlation

coefficients for the index [market return]'(FR, 1983, p. 283). Once it is corrected, FR showed that Dimson's method is equivalent to SW method.

Overall whichever method is used to solve the thin trading problem in a market model framework, the estimated betas performed equally well (BW, 1985; Reinganum, 1982; Theobald, 1983). For example, BW found that when 1% abnormal returns are injected in their samples, the rejection rates for both SW and Dimson methods are 46.8% and 47.2% respectively. So long as one of the methods is adopted to correct thin trading problem, there is little threat to event studies' results.

(b) Non-normality or Skewness of Returns Distribution

The use of daily data also raised the non-normality or skewness of return distribution problem. It gives more trouble if it is applied to event studies which use a market model approach to identify abnormal returns. In the US, evidence on the skewness problem for daily data which is not observed in monthly data has been reported by BW (1985), Dyckman, Philbrick and Stephan (1984) and Berry, Gallinger and Henderson (1990)[8]. This problem may affect a test statistic for a hypothesis test to give false inferences regarding the acceptance and rejection of a null hypothesis in an event study. Skewness in the distribution is associated with the bias by which information of a certain event is collected and released to the public. If a tendency to release good news is greater than bad news, there is a likelihood of a negative bias to occur which will cause the skewness of a short time interval to be lower than if the interval was longer (Damodaran, 1985).

Skewness or non-normality of returns distribution reduces the possibility of parametric testing which is normally used in event study analysis. If such a situation occurred, it is likely that non-parametric test is the more appropriate to apply. However, further consideration has to be made with respect to parametric versus non-parametric testing when confronted with this problem. Any conclusion made from an analysis will very much depend on the correct use of the appropriate statistical model.

[8] The data was taken from the Centre for Research in Security Prices (CRSP), University of Chicago.

An empirical analysis does not necessarily means that only inferential statistics can be used for a result to be robust. Although it is more appealing to use a test which is sophisticated and advance, caution must be taken in looking at the assumptions imposed on the statistical test. The choice of using a parametric or non-parametric test in an event study depends on whether the assumptions required in a parametric test can be satisfied.

Most event studies' analyses use a t-test (parametric) to check on the null hypothesis that the average abnormal returns on event period t are equal to zero and the cumulative average abnormal returns over a period are equal to zero[9]. Corrado (1989) finds that this test is inappropriate especially when the data used is not normally distributed. The questions go back to the statistical assumptions underpinning a t-test. If the assumptions are violated, the power of the test will decrease and the result will be questionable. Power in a statistical analysis means that there is a large probability of rejecting a null hypothesis when it is false.

Siegel and Castellan, Jr. (1988) explained that to ensure the t-test is most powerful: (1) the data used must be independent where every observation has the opportunity of being selected; (2) the observations are taken from a normal distribution population; and (3) the populations have equal variance if two groups are analysed. In the case of event study, these assumptions can be associated with the residuals being normally distributed where the mean is equal to zero, they are not serially correlated and they have equal variance (homoscedastic).

Some researchers question whether there exists a need to use non-parametric or distribution-free test statistic in event study especially when daily data is used. Evidence has proved that the use of daily data or short observation intervals may introduce a nonsynchronous trading problem (Scholes and Williams, 1977). Berry et al. (1990) ran a simulation by using daily returns to check which of the two statistical tests are better in identifying abnormal returns and whether the assumptions in

[9] Berry, Gallinger and Henderson, Jr. (1990); Brown and Warner (1980, 1985); Dennis and McConnell (1986); Kang (1990); Marsh (1979); Masulis and Korwar (1986); Phoon (1990); Tsangarakis (1996).

parametric testing can be met. Their results show that the non-parametric statistics such as Wilcoxon signed rank and sign tests are more powerful for detecting abnormal returns than the t-test. However, these tests fail to reject the null hypothesis often enough when no abnormal returns exist. Their result is similar to Brown and Warner (1980). It appears that although non-parametric statistics are more powerful in terms of detecting abnormal returns and in avoiding possible misspecifications of a t-test, they themselves suffer from misspecification problem when they understate the probable Type I error (reject the null hypothesis when it is true).

The recommendation made by Berry et al. (1990) and Brown and Warner (1980) is that a t-test is an appropriate test for event study and they warn against the use of a non-parametric test. If a non-parametric test is still needed, extra caution has to be given in drawing inferences. Furthermore, Berry et al. conclude that although daily data is non-normal, a t-test is still an appropriate method to be used in the analysis. If the recommendation made by these academicians is insufficient, another solution is given to solve the non-normality problem. This is to use continuously compounding returns as compared to holding period returns. Fama (1976b, p. 17-20) confirmed this point when he suggests that continuously compounded returns conform better to normality assumption. However, Thompson (1988) in his study found that transformation of abnormal returns to continuously compounding returns through log transformation will only give marginal improvement in the power of a t-test which in turn will increase Type I error--reject the null hypothesis when it is true. This implies that whether the returns are in their natural or log form is not a major consideration in event study. The central limit theorem assures that if the abnormal returns in the cross-section of securities are independent and identically distributed drawing implemented, the distribution will approach to normality as the number of samples increases. Billingsley (1979), Blattberg and Gonedes (1974) and Hagerman (1978) provide an evidence that the distribution of a cross-sectional daily mean return converges to normal when a large sample is used.

3.2.3.2. Size Effect

Another problem which has to be considered in an event study analysis is the size effect. A size effect can be defined as the difference in average returns between a portfolio which consists of small market capitalisation stocks and a portfolio with large market capitalisation stocks (Reinganum, 1992). In the 1980s and early 1990s, event studies which focused on securities with small market capitalisation are likely to experience positive abnormal returns and one which concentrates on large market capitalisation securities will incline towards negative abnormal returns. This is known by Beaver (1981) and Reinganum (1981) as the size effect where there is a tendency for smaller companies to outperform larger companies. By using the New York Stock Exchange (NYSE) data, Banz (1981) found that there exists a significant negative relationship between security's market capitalisation and security's average returns after taking into account risk adjustment. The null hypothesis of having a size effect coefficient equivalent to zero is rejected where the t-statistic showed a significant result of -2.54 for the 1936 to 1975 period and -1.88 and -1.91 for the 1936 to 1955 and 1956 to 1975 subperiods. He concludes that by holding a portfolio constructed to be long (buying) in small companies and a portfolio of large companies short (selling) produces excess returns of about 20% anually. In the same year, Reinganum used a sample from the NYSE-AMEX (American Stock Exchange) data base found that a strong company size effect also exists in his sample. Reinganum (1981) showed that the average returns for companies in the lowest market-value decile outperformed the companies in the highest decile by more than 0.1 percent a day during the 1964 to 1978 period. Reinganum (1992) conducted another study to check whether the size effect reported in the early 1980s had been arbitraged away due to its wide publicity. He formed a decile portfolios, each with equal number of NYSE stocks which are ranked from the smallest market capitalisation stocks (portfolio 1) to large market capitalisation stocks (portfolio 10) during the period January 1926 to December 1989. It appears that the average annual returns in portfolio 1 outperformed the portfolio of largest stocks by 12.9% per year--evidence that a size effect is present. In addition to this, Reinganum also investigated potential cycles of this size effect based on an

investment horizon of five years. He found that a period in which large companies outperformed small companies is normally succeeded with a period in which small companies' returns lag behind large companies' returns. There seems to be a size effect reversal which is statistically significant.

Banz (1981) and Reinganum (1981) early studies drew a lot of attention among academics and practitioners as evidenced by a vast number of studies which attempt to give further insights on the existence of the size effect (Blume and Stambaugh, 1983; Brown, Kleidon and Marsh, 1983a; Brown, Keim, Kleidon and Marsh, 1983b; Chan, Chen and Hsieh, 1985; Dimson and Marsh, 1986; Gregory, Matatko and Luther, 1997; Kato and Schallheim, 1985; Levis, 1985 and 1989; Roll, 1981; Schwert, 1983).

In searching for the explanation of this phenomenon, Keim (1983) provides additional evidence that nearly 50 percent of the average annual size effect is attributed to the month of January (January effect) and about 25 percent of this effect occurs in the first five trading days of January. This result provides dramatic implications among practitioners until Forbes magazine stated that "Ordinarily, we put little store in the academics' approach to investing. But this time, the professors may be onto something intriguing"[10]. This has become a focal point where academia and practitioners' interests converged.

Discussion of the size anomaly in the US has encouraged researchers in different countries to perform an analysis which take this factor into account. Dimson and Marsh (1986) particularly investigated whether a size effect can distort event study result's by using a sample which consists of newspaper stock recommendations in the United Kingdom (UK). They concluded that if a size effect is present, the inference made on market efficiency might be inappropriate and the results might be distorted. This problem will be worse if event study is conducted (1) using a long event window; (2) the samples chosen differ greatly in size (non-random); (3) the degree of size effect is large; and (4) the Capital Asset Pricing Model (CAPM) is used to measure abnormal returns.

[10] Forbes, 16 January 1984, "The January Effect", p. 3.

By using the London Share Price Database (LSPD) monthly returns file of January 1958 to December 1982, Levis (1985) showed that a smaller companies portfolio outperformed the larger companies portfolio by about 5 percent per year. More surprisingly, his result revealed that smaller companies are less risky than large companies where the ordinary least squares (OLS) betas range from 0.3 for the smaller companies portfolio to 1.0 for its larger counterparts. When adjusted betas are calculated by using a Dimson's method of estimating systematic risk, the β result is only a little bit higher for smaller companies portfolio as compared to larger companies portfolio, confirming that the smaller companies portfolio is less risky. This puzzling result contravenes the long used traditional theory of positive trade-off between risk and return discussed in corporate financial management books as well as empirical evidence provided in other studies. Levis (1985, 1989) concluded that the size effect may not be the only factor in determining stock price behaviour. There may be some other determinants which need further investigation. A recent study in the UK by Gregory, Matatko and Luther (1997) which includes the data from Micropal Unit Trust Database up until 11 December 1995 also provide evidence in support of the size effect existence in explaining time series and cross-sectional returns of UK unit trusts.

Evidence of the size effect could also be seen in Australian Stock Exchange where the smaller companies portfolio earns an average premium of approximately 4 percent per month more than the large companies portfolio (Brown et al., 1983b). The size effect is more pronounced in the months of December-January and July-August which is quite different from the UK and US evidence of a January size effect. When a comparable study utilising Canadian stock returns data is implemented by Berges, McConnell and Schlarbaum (1984), they came up with the same evidence. According to them, a January-size effect is present because the US and Canada markets are well-integrated where the US investors are actively participating in the Canadian market. Similar evidence can also be seen in the Tokyo Stock Exchange. Kato and Schallheim (1985) examined the presence of a January-size effect and found that this anomaly does exist in the exchange. Although Japanese tax law is different in terms of taxation

on capital gain and its companies fiscal year end, the January-size effect is still present. This is again an indication of a well-integrated markets between Japan and the US. In Malaysia, Annuar and Shamsher (1993a) constructed 10 portfolios with six companies in each portfolio to check on the presence of size and January-size effects for the KLSE listed companies. Their results indicated the presence of a size effect which is not statistically significant and the absence of a relationship between the size effect and the January effect.

The empirical findings of the studies done in the US, UK, Canada and Japan produced strong evidence of the importance of size effect. However, none of these studies could find conclusive explanations of this effect and most of them agree that this problem might occur because of misspecification of the capital asset pricing model. More importantly in the mid and late 1990s, the size effect is reversed. The performance of smaller companies' stocks failed to beat the larger companies' stocks. According to Elroy Dimson and Paul Marsh of the London Business School, the Hoare Govett Smaller Companies Index (the smallest one-tenth of stocks) under-performed the FTSE All-Share index by 17.8 percentage points (Coggan, 1999). This situation does not only occurred in the UK market, but similar under-performance of smaller stocks is also experienced by the US and the continental Europe markets according to Peter Oppenheim of HSBC (Investors Chronicle, 13 November 1998, p. 28). Regardless of the cycles of the size effect, explicit consideration has to be given to such problem if the results of event study analyses are to be meaningful (Dimson and Marsh, 1986; Schwert, 1983).

Dimson and Marsh (1986) employed two methods to adjust for the size effect problem. First, a size control portfolio is used as a benchmark to calculate abnormal returns. This portfolio is constructed by assigning companies into decile in accordance with their market capitalisation at the beginning of the year. It includes companies that have approximately the same market capitalisation as in the samples used in the event period. Abnormal returns are then calculated by taking the difference of a stock's return with the return of its size control portfolio. The second method is the size and

risk control portfolio. This approach is almost identical to the first approach except that beta is added as the second variable to be deducted from the stock's return. Finally, the more recent studies to adjust for the size effect problem is to use a multi-factor benchmark approach introduced by Fama, Booth and Sinquefield (1993), Fama and French (FF, 1996) and Loughran and Ritter (1995). For example, FF value-weighted three factor model employed a benchmark which consists a blend of the risk-free rate, risk premium, value weighted return on small companies minus large companies and value-weighted return on high book-to-market (BMV) ratio companies minus low BMV ratio companies.

3.2.3.3. Clustering Problem

Clustered event dates introduce another problem in event study which may be classified under industry or time or both. Industry clustering problem exists if the samples for an empirical investigation are taken from one particular industry which has a higher or lower than average systematic risk; whereas event-date clustering problem refers to events that occur at or near the same time. Bias in size effect will be worst for event study if event dates cluster at the turn of year (Beaver,1981; Jacobs and Levy, 1988). An example of event-date clustering problem might be an announcement of regulatory changes which will affect a number of different securities simultaneously (Foster, 1980). Clustering problem will be compounded if both event dates and industry clustering exist in a study (Strong, 1992). The impact of this problem is to increase the likelihood of the unsystematic returns or residuals to be correlated across securities. Such correlation tends to increase the variance of the performance measures (used to calculate the abnormal returns) which in turn reduce the power of the statistical test (BW, 1980 and 1985; Dyckman et al., 1984) that assumes equal residual variances and zero contemporaneous cross-correlation among the residuals. In such a case, the conventional t-test becomes misspecified and inappropriate for event studies as it tends to overreject a null hypothesis (Chandra and Balachandran, 1990; Collins and Dent, 1984; Dyckman et al., 1984; Kothari and Wasley, 1989; Thompson, 1988). Collins and Dent (1984) suggested that a more

appropriate approach which takes account of the correlation in estimating the variance is to vary the t-test by either using a joint generalised least squares (GLS) or a Jaffe standardised residual (JSR) test. GLS testing procedure allows for a constant multiplicative shift in the variances from the estimation to the test or event period through the use of an adjustment factor. It takes full account of the variance/covariance structure of residual returns and possible changes in residual variances by giving weight on each security's forecast error in inverse proportion to its variance/covariance with other securities in the sample. As for JSR or also known as nongeneralised least squares (NGLS) test, the cross-sectional of sample variance is measured through the residual variance of an equally weighted portfolio of securities over time. NGLS procedure is fully supported by Chandra and Balachandran (1990) as the most appropriate and robust test for event study as it ignores the correlations among abnormal returns when assigning weights to the sample securities. Furthermore, they disagreed to the use of a GLS suggested by Collins and Dent since it is highly sensitive to misspecifications in the abnormal returns model.

Cowan (1993) adds further insight to the t-test discussion. His simulation utilising a standardised market model and a conventional t-test presented that abnormal returns are well specified if an event study uses a shorter event window (i.e. 1 to 11 days); but if it involves longer periods, this test will reject a true null hypothesis more frequently than the nominal significant level. Other researchers (BW, 1980 and 1985; Malatesta, 1986; McDonald, 1987) conclude that there is no measurable gain in using a more elegant test statistic to identify abnormal returns. Their empirical results provide no evidence that a GLS estimator can provide greater precision than a simpler or less sophisticated estimator such as the conventional t-test which uses ordinary least squares (OLS). This result holds true regardless of whether a monthly or daily return is analysed.

Discussion of these shortcomings (daily versus monthly returns, size effect and clustering problem) is important to this study. Overcoming the problems is critical for appropriate conclusions to be drawn from the results. Some of the points raised in this

section may be or may not be a problem to the Malaysian market which is immature and very much protected by the existing local laws and regulations.

3.2.4. Abnormal Return Models

Most of the issues discussed in the previous section focused on econometric and statistical problems which are associated closely with the approach or benchmark used to calculate abnormal returns. The more popular benchmarks used in event study research design are mean adjusted return (MA), market adjusted return (MAR), capital asset pricing model and market model (MM). The most recent approach is a three factor model introduced by Fama and French (FF, 1996). Choosing among these benchmarks is not a simple task in an event study research design as the scale of abnormal returns from a particular event depends greatly on the benchmark (Dimson and Marsh, 1986; Agrawal, Jaffe and Mandelker, 1992; Kennedy and Limmack, 1996; FF, 1996). However, as the objective of this study is not to test the ability of each benchmark to detect abnormal returns nor to search for the most unbiased benchmark, only the first four benchmarks are explained briefly[11]. A comparison among the four benchmarks appears to be necessary to justify why a particular benchmark is utilised for the analysis in the next chapters.

3.2.4.1. Mean Adjusted Return (MA)

MA is the simplest model in event study. It uses historical stock prices to predict the future movement of a security. This model assumes that the ex-ante expected return for security i is a constant (k_i) which can vary across companies and securities. This situation is true if interest rates and risk premium do not change over time.

$$E(R_i) = k_i$$

[11] Anyone who is interested to use the three factor model can refer to the work themselves and to those who are interested to see what others have done with respect to adopting this technique in their studies can refer to the work of Adedeji (1997), Conover (1997) and Gregory (1997).

k_i is computed by taking the average return for a particular security (i.e. security i) during its estimation period, usually before an event took place. Hence, the abnormal returns for MA model will be the difference between the actual return on security i and the estimated return k_i which is a constant:

$$AR_{i,t} = R_{i,t} - E(k_i)$$

This model works under the assumption that a security has constant systematic risk where β is equal to zero and α equal to the average return over the estimation period.

3.2.4.2. Market Adjusted Return (MAR)

MAR model is a convenient benchmark to be used in an event study framework. It avoids the controversy in choosing the appropriate estimation period to calculate α and systematic risk (β). MAR assumes that the ex-ante expected returns are the same for all securities, but it does not have to be constant for a given security. This means that the market portfolio of risky assets is combined linearly for all securities such that the expected return of security i is equivalent to the market return at time t:

$$E(R_{i,t}) = E(R_{m,t}) = k_t \quad \text{for any security i}$$

MAR is the simplest form of residual analysis with an ex post abnormal returns on security i being measured as the difference between the security's individual return and the market return such as shown below.

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

This model will work if securities taken as a group have a systematic risk of unity where αs are assumed to be zero and the average β for all securities in this group equals to one. In other words, it is a linear regression model without an intercept. In this case, the expected value of the difference between the return on security i and the return on market index is equivalent to zero in an asset pricing model framework. In order for the average difference to be zero, all the sample securities do not need to

have an average systematic risk equivalent to 1; but what is required is that a combination of all securities gives an average systematic risk equal to 1 where high systematic risk securities offset those with low systematic risk.

3.2.4.3. Capital Asset Pricing Model (CAPM)

CAPM model of Black (1972), Lintner (1965) and Sharpe (1964) assumes that the expected return of a security can be captured in its β which is the degree of co-movement between a security's return and the return of the market. What it means is that the expected return of a security is a positive linear function of its market which is explained in the equation as the slope in the regression of a security's return on the market's return. This model controls for both the security and market risk. Thus, the ex ante expected return for security i at time t is the summation of the risk-free rate and the average risk premium for a particular security which is shown as:

$$E(R_{i,t}) = R_f + \beta_i(R_{m,t} - R_f)$$

$$E(R_{i,t}) = (1-\beta_i)R_f + \beta_i(R_{m,t})$$

R_f is a return on a risk-free security and usually it will be represented by the return on Treasury Bills; whereas $R_{m,t}$ is the return on the market. β_i is the systematic risk of security i relative to the market index which needs to be estimated. This model assumes that the market beta is sufficient to describe the cross-section of expected return. The estimated abnormal returns will then be the difference between the actual return and the expected return of security i at time t.

$$AR_{i,t} = R_{i,t} - E(R_{i,t})$$

$$AR_{i,t} = R_{i,t} - \{(1-\beta_i)R_f + \beta_i R_{m,t}\}$$

Underlying this model are a few assumptions of a perfect market with no uncertainty such as: (1) investors are risk averse and rational in decision making where higher risks are to be offset with higher returns; (2) transaction costs and taxes are not present; and (3) investors are able to borrow or to lend at the risk-free rate.

3.2.4.4. Single-Index Market Model (SIMM)

SIMM or known as the traditional market model, which is the most popular benchmark, has been rigorously tested and adopted in event studies ever since the 60s until today (FFJR, 1969; BW, 1980 and 1985; Collin and Dent, 1984; Coutts, Mills and Roberts, 1995; Dyckman et al., 1984). SIMM expected return for security i at time t is calculated as follows:

$$E(R_{i,t}) = E(\alpha_i) + E(\beta_i)R_{m,t} + e_{i,t}$$

$E(\alpha_i)$ is an expected return of security i when the expected return of the market ($E[R_{m,t}]$) is zero. While the second term ($E(\beta_i)R_{m,t}$) in the equation is the systematic risk component assumed to have a linear relationship between a company's security return and the return of the market. α and β are normally estimated using a regression model where the parameters are calculated using ordinary least squares (OLS). The estimation period can either be before, during, after or around the event window or test period so long as it does not contaminate the regression model. The third term ($e_{i,t}$) is the unsystematic risk component or the error term (also known as residual) which is supposed to incorporate the impact of a company specific event announcement, assuming that information signal and return of the market are independent. If $e_{i,t}$ is brought to the left of the equation, a measure of abnormal returns is introduced.

$$AR_{i,t} = e_{i,t} = R_{i,t} - E(R_{i,t})$$
$$AR_{i,t} = e_{i,t} = R_{i,t} - E(\alpha_i) - E(\beta_i)R_{m,t}$$

Underlying this model, the residual ($e_{i,t}$) is a random disturbance which is drawn from a probability distribution assumed to be having three properties: (1) it is normally distributed with a zero mean ($E[e_{i,t}]=0$ for i=1,2,...,N; the variance of $e_{i,t}$ must be constant or homoscedastic ($E[(e_{i,t} - E[e_{i,t}])^2]=\sigma^2$) for each observation where i=1,2,...,N; and (3) the covariance between two disturbances associated with two different

observations is equal zero or serially uncorrelated ($E[e_{i,t}e_{j,t}]-E[e_{i,t}]E[e_{j,t}]=0$) where $i \neq j$ (Doran, 1989, p. 12-14).

3.2.4.5. Comparison of Abnormal Return Models

Four benchmarks in deriving abnormal returns are discussed in the above section. It is rational to check on the usefulness and practicality of each benchmark before they are adopted in this study. MA is the least favourable benchmark used in event study. The practicality of using this approach to solve real world problems is questionable. If the world is a perfect place with no uncertainties, where investors always act rationally and the market is in equilibrium all the time, MA works wonderfully. But this is not the case, there are ups and downs in the economy which has great influence in the market. If most of the events occur in a market which is bullish, MA will be producing upwardly biased abnormal returns; and if these events are likely to occur in a bearish market, it tends to exhibit downward biased abnormal returns. This problem will be more severe if clustering problems exist as it introduces serial correlations problem into the picture which tends to reduce the power of a statistical test discussed earlier on.

The second model, MAR, is more sensible and quite popular in event studies which analyse the impact of a company specific event. It avoids problems of estimating systematic risk and choosing an appropriate estimation period encountered by the CAPM or SIMM models where MAR assumes an average systematic risk of unity for securities taken as a group. The convenience of this assumption however creates other problems when abnormal returns are computed by taking the difference between equally weighted security returns and value weighted market returns. This inconsistency will tend to produce security returns which are greater than the returns on the market, therefore increasing the bias of rejecting the null hypothesis too often. BW (1980) empirical result showed that the average βs calculated using value weighted index is greater than 1, that all securities do not have equal weights in the market portfolio and giving equal weight to security returns does not guarantee zero abnormal returns. As for the bias of rejecting the null hypothesis too often, BW

conclude that it is not only contributed by the value weighted index nor the equally weighted security returns but also to other factors such as the sample size and the length of event window.

The third model, the CAPM, has received a lot of attention and criticism from the academic community in recent years either because it can be empirically and statistically tested or it is no longer practical in a more complex and changing environment. Its use as a tool in deriving the opportunity cost of capital for capital budgeting decision making in the commercial world needs to be re-addressed if it is to reflect reality. CAPM emphasis on the use of beta to represent systematic risk and to use it as the only explanator of security's expected returns have raised great concern among the academicians ever since it was first introduced. However, it was not until the year 1992 that CAPM received a major blow over its risk and returns relationship by the publication of Fama and French work (FF, 1992). They produced evidence that beta does not seem to explain the cross-section of average security returns and that this model does not describe the last 50 years of average stock returns. Based on their study from 1941 to 1990 using the NYSE securities' returns, they see that the positive linear relationship between average returns and market beta disappears during the year 1963 to 1990. This relationship is also weak in the year 1941 to 1990. To make matter worst, FF showed that size is a more significant factor explaining the cross-sectional variation in average returns for the period 1941 to 1990 and for post-1962 period. Book-to-market equity ratio also shows to play a role in explaining the variation in stock returns.

FF new insights on beta has helped to stimulate an interesting debate among the academicians in the UK and US. Black (1993) formed ten portfolios from the NYSE listed companies over the period 1931 to 1991 to check whether the point raised by FF is true that beta is not related to returns. He splits his data into two time periods and found that a relationship does exist between beta and returns in the pre-1965 data, but for post-1965 data, this relationship disappears. This finding is quite similar to FF except that FF only observed a weak positive relationship over 1941 to

1990. Black pointed out that FF failure to recognise the relationship during the 1941 to 1990 period may be caused by the sample that they used instead of CAPM itself. In other words, there may be data problems in FF analysis. Further criticism of FF study is also reported in Kothari, Shanken and Sloan work (KSS, 1995). By using the same US data, they argued that (1) beta is associated positively with average returns if annual rather than monthly returns (which was used by FF) are used and (2) the relationship between average returns and book-to-market equity variable (BE/ME) is present because of survivor bias in the COMPUSTAT sample.

KSS argument was counter attacked by FF (1996) and others. According to FF, Chan, Jegadeesh and Lakonishok (1995) and Lakonishok, Shleifer and Vishny (1994), 'survivor bias' does not exists nor does it explains the strong relationship that they found between BE/ME and average returns. It appears that after the year 1968 and most certainly after 1976, securities which are missing from COMPUSTAT were also not found in the Centre for Research in Security Prices (CRSP) database for reasons other than 'survivor bias'. Most of the missing securities are companies which do not have accounting information or ones that have different accounting data which could not be compared with other companies. In this case, 'survivor bias' has nothing to do with the missing securities, but more to COMPUSTAT's policy decisions. In fact, some of the missing COMPUSTAT's securities that appear on the CRSP database were not actually missing but were having different identifiers.

The argument about beta and the CAPM has also elicited a response from the UK academicians. Strong and Xu (1994) repeated FF (1992) study by using London Business School's Risk Measurement Service Share Price Database (LSPD) for the period 1973 to 1992. Their finding is different to that of FF where a significant negative relationship between beta and average returns is present. However, this relationship becomes insignificant once other accounting variables are included in the model. Adedeji (1997) addressed this issue again by using LSPD database for the period 1990 to 1994. His finding corresponds with those reported by FF where beta could not explain average returns and that other variables explained most of the

variations. Further evidence of a similar outcome to FF could also be observed in Elfakhani, Lockwood and Zaher (1998) for stocks listed on the Toronto Stock Exchange and Montreal Stock Exchange between 1975 to 1992. By using 694 Canadian companies, they could not find any significant relationship between average returns and beta.

The debate about CAPM is still ongoing and no premature conclusions could be made out of this issue. The clear fact from the arguments produced by these researchers is that some other factors do contribute to explain the variation of average returns and it is not only beta that needs to be looked into in determining average returns.

The fourth model, SIMM, has been regularly used within event study research design not only as a tool by itself but as a comparison benchmark to justify the results coming from the MA model which assumes a constant systematic risk or the MAR model which assumes an average systematic risk of unity. Similar to other benchmarks, SIMM has its own shortcomings. Not only does the criticism about beta apply to this model but some other problems seem to surface regarding the misspecification of this model in recent years. This misspecification arises due to the violation of the underlying statistical assumptions which govern this model. If one or more of the three assumptions discussed in section 3.2.4.4. are not met, it is likely that an estimation of abnormal returns will be incorrect which in turn will provide erroneous conclusions regarding the effect of a particular event. Coutts, Mills and Roberts (1995) implemented a study to test on the misspecification of SIMM by using 56 companies that have remained in the Financial Times Stock Exchange 100 for at least 10 years, since January 1984. Their test clearly showed evidence of non-normality, serial correlation and heteroscedasticity in the residuals, meaning that all the underlying assumptions of this model are violated. Based on their result, SIMM is not well specified; and if it is to be used in event study, rigorous testing on the misspecification has to be done in order to conform to the statistical assumptions so that a robust result can be achieved.

Further comment on the use of SIMM can also be observed in the estimated α. Based on this model, α takes into account any unusual behaviour during the estimation period. If the estimation period is not appropriately chosen, α will become systematically biased which will create a problem in the calculation of abnormal returns. For example, Schwert (1983) pointed out that if a market model is used in event study, it does not encounter a size effect problem since this model assumes that α encapsulates any size effect. Unfortunately, the use of historical αs in deriving the mean α during the estimation period to predict the expected value in the post event period will introduce bias or distort the market model results. This distortion could exist because of variability in the size effect and exclusion period or because of event date clustering problem.

Kothari and Wasley (1989) elaborate further on the size effect where, based on their study, if the event securities are taken from exclusively small or exclusively large companies and when there is event date clustering, the conventional t-test using market-adjusted or market model will result in excessive rejection of the null hypothesis when it is true (Type 1 error) and thus are misspecified. Dimson and Marsh (1986) supported these misspecifications or bias of performance measures in relation to a volatile size effect. According to them, the bias will be greater if a CAPM instead of a market model is used. This is because the sample in their study coincides with a large size effect (larger companies will usually show negative abnormal returns) whereas CAPM based abnormal returns is biased towards the small companies premium.

When three of the models are compared, BW (1980, 1985) presented evidence that MA, MAR and SIMM work relatively well and produced results of comparable quality to correctly detect abnormal returns for both daily and monthly data in their simulation studies. However, when Dyckman et al. (1984) replicated BW's work, they find that MA, MAR and MM models were unable to reject a false null hypothesis (there are no abnormal returns) accurately if the true level of abnormal returns is low, especially if it involves small portfolio sizes. Their results show that if the abnormal

returns are below 1% and event date uncertainty is minimum, the abnormal returns are often undetected even with relatively large portfolios. Dyckman et al. stated their preference for the market model since it offers a more powerful test to detect abnormal returns than the mean adjusted return and market adjusted return models. Yet, they admit that although the ability of the market model to detect abnormal returns is statistically significant, it does not appear important. Their concluding remarks regarding the three models are the same as BW where they agree that MA, MAR and SIMM have the same ability to correctly detect abnormal returns.

Four approaches in deriving abnormal returns are discussed here. A discussion of the shortcomings of each model is not meant to condemn nor to support any of the models but to give rationale as to why certain models are employed in this study. There is no hard and fast rule of which model is right or wrong. As MacQueen said "...while the model is false, it's not very false, and even a model that is a bit false is a great deal better than no model at all" (1992, p. 77). Based on BW (1980, 1985), Dimson and Marsh (1986) and Dyckman et al. (1984) conclusions, all the models (i.e. MA, MAR and SIMM) seem to perform equally well to detect abnormal returns and the use of more complicated models will not convey any extra benefits. However, after considering the points raised on each model, this study adopted the MAR technique to calculate abnormal returns as it is less problematic than other benchmarks. With the MAR, there is no estimation of systematic risk (β) or alpha is required bypassing several problems such as relying solely on β to explain abnormal returns in the CAPM model, or model misspecification arising due to the violation of the underlying statistical assumptions which governed the SIMM model. Nevertheless, to justify the result from MAR model, SIMM is also used to ensure a valid conclusion is made in this study.

3.3. Efficient Market Hypothesis (EMH)

Efficient Market hypothesis (EMH) is an important concept assumed in event study where a market is efficient with respect to information. What it means is that no investors can make economic profits (risk adjusted returns after taking into

consideration of all costs) by using the available information nor would this information provide any advantages to investors. Hence in an efficient market, securities current prices will reflect their true value where information about the securities, the companies and their prospects for the future have already been accounted for in their current prices. Fama (1976a) model captured this definition in a precise form as:

$$E\left(\tilde{\Re}_{i,t}|\Phi_{t-1}\right) = E^{m}\left(\tilde{\Re}_{i,t}|\Phi^{m}_{t-1}\right)$$

The left side of the equation is the true expected returns of security i at time t given the set of information Φ at time t-1; and the right side is the equilibrium or market evaluated expected returns of security i at time t given the set of information at time t-1. If a market is efficient the true expected returns of security i should be equal to its equilibrium expected returns.

There are several versions of EMH which is differentiated by its definition of the information set (Φ_{t-1}). Roberts (1959) suggested three broad categories of the EMH which are the weak form, semi strong form and strong form. In the weak form, Φ_{t-1} includes past historical prices in the market. For the semi strong form, the information set consists of all publicly available information as well as the historical prices. The last version which is the strong form, Φ_{t-1} takes into account all information publicly and privately available to anyone. Empirical evidence on the weak form and semi strong form of the efficient market hypothesis is voluminous in the UK and the US, but the same could not be true for the strong form. It is an extreme version that "few people have ever treated as anything other than a logical completion of the set of possible hypotheses" (Jensen, 1978, p. 97).

As the main focus of this thesis is not about testing the different versions of EMH using the KLSE listed securities, a short discussion is sufficient to bring out the distinction of the three versions of EMH. Returning to the core issue of event study, it provides a direct test of the semi strong form of market efficiency that concerned with the adjustment of security prices to a specific event announcement which, in this

study, are rights issue announcements by Malaysian listed companies. More formally, it can be expressed in the following manner:

$$E\left(\tilde{e}_{i,t+1}\middle|\Phi_t\right)=0$$

$E(\tilde{e}_{i,\,t+1})$ is the expected abnormal returns of security i at t=+1 and Φ_t is the announcement of rights issue at time t for company i. How the market reacts on the event's announcement, whether it is favourable or unfavourable news, will be reflected in the direction of the price changed. It could either be positive, negative or zero. If the market is efficient, zero abnormal returns are expected which conform to the formal expression in the formula that the market is semi strongly efficient. Clearly the issue of whether a market is efficient or not is an empirical question. Hence, a discussion of some empirical work with respect to the semi strong form of EMH is briefly reviewed in the following section.

3.4. Empirical Evidence of a Cross-Country Comparison of the Effect of Rights Issue Announcements

Perusal of the financial literature shows a vast amount of empirical research on market efficiency, particularly for the US market. However, it is pointless to include most of these studies as they are not directly related to the research at hand. Thus, this study is focused on reviewing literature on the effect of rights issue announcements toward stock returns in different countries, with the intention of relating the findings to the semi strong version of EMH. It is likely that some countries will have longer coverage and some short, depending on the availability and relevancy of the research to the current study.

3.4.1. The US Evidence

Nelson (1965) examined 380 rights issues from securities listed on the NYSE between the period 1946 to 1957. His result indicated a 0.2% negative abnormal returns from six months before the announcement of the rights issues to six months after the close of rights trading. The difference was found to be statistically

insignificant which is to say that a zero abnormal return existed. Although the study does not mention anything about market efficiency, its finding conforms to the definition of semi strong form of EMH, discussed earlier on. However, Nelson's study is subject to two limitations. First, no control of multiple announcements' effect is made. Such control is needed to reduce the errors or noises in the result. Second, it considers date of record as the event month rather than focusing on the announcement date.

Scholes (1972) analysed 696 rights issues from the NYSE listed securities between 1926 to 1966 by using SIMM approach. The conclusions reached were that the security returns rise before the issue, drop 0.3% during the month of issue and do not experience any gain or losses subsequent to the issue. These findings are again in support of the efficient market hypothesis, but caution is needed when interpreting the result as the study still lacks the focus of a specific announcement date. It is unfortunate that Scholes' coverage of rights issue is only briefly explained in one paragraph to complement other points raised in the article or a lot more could be learned out of his study.

Smith (1977) found a similar result to Nelson when he examined 853 rights issues (direct rights offer and underwritten rights offer) from the CRSP monthly return data file in the period 1926 to 1975 using SIMM. His analysis shows significant positive cumulative average abnormal returns (CAAR) progressing from .721% at t=-12 to 7.663% at t=0. According to Smith, the rising trend before the issue month is attributed to 'selection bias' where companies that raised capital were usually those which have been performing well. In the twelve months following the month of issue, the CAAR did not change much and stay at approximately the same level where no abnormal returns could be gain nor loss. Hence, it is sufficient to say that the result presented by Smith provides evidence of an efficient stock market where information regarding the rights offerings are fully incorporated in the security returns after the month of issue that no investors could make an abnormal gain. But then, this evidence is inconclusive as it does not focus on the specific announcement date effect but more

toward offering period effect and there exists possible contamination of multiple announcements' effect on the data.

The evidence presented so far supports the efficiency of US stock market and acknowledges the existence of positive cumulative average abnormal returns prior to rights issue announcements. White and Lusztig (WL, 1980) showed a different result with regard to the point raised on CAAR. They examined 90 rights issues from the CRSP daily tape file between 2 July 1962 and 29 December 1972 via a market model which controlled for multiple announcements (by adding dummy variables in the equation to represent dividend and earning per share announcements). What they saw is that the dummy variable coefficients representing security returns during rights issue announcements day and the day preceding it are negative and statistically significant, which implies that selection bias does not exists as claimed by Scholes (1972). With respect to market efficiency, WL observed that the dummy variable coefficients for the days following the announcement date were not significantly different from zero. Therefore, they conclude that "the null hypothesis that prices [returns] adjust quickly and unbiasedly to the new information cannot be rejected" (WL, 1980, p. 36) conforming to the semi strong form of EMH.

Since WL reported their findings, it appears that most studies provide similar evidence that on the average rights issue announcements in the US have resulted negative abnormal returns prior to the rights issue announcements and insignificantly different from zero abnormal returns subsequent to the announcements corresponding to the semi strong form market efficiency (Kothare, 1992; Reddy, 1992; Singh, 1988). For example, Singh (1988) examined 176 clean rights issue announcements from the NYSE and AMEX listed securities between 1963 and 1985 using a SIMM approach. Basically, there exists average abnormal returns of -0.24% one day prior to the announcement and -0.48% on the announcement day which have a z-statistic of -3.4 and -3.8 respectively supporting WL's result which reject the selection bias issue. The rest of the average abnormal returns from day t=+1 to t=+10 were not significantly

different from zero justifying the conclusion that the US stock market is semi strongly efficient in this regard.

Further evidence of US market efficiency can also be observed in Kothare's (1992) work. She investigated 32 direct rights offerings for industrial and financial companies listed on the NYSE and AMEX during the period 1979 to 1989. By using the SIMM approach and equally weighted market index to estimate α and β, she found that companies were making insignificant cumulative average abnormal losses of -9.93% before the rights issue announcements and -5.17% during the announcement day (t=0). Twenty days following t=0, statistically insignificant positive cumulative average abnormal returns were found carrying a value of 4.5%. Similar evidence was discovered when Kothare used the value weighted market index. However, since none of the CAARs were significant, the result complies with semi strong form of market efficiency. This evidence has to be treated in great care as the sample includes financial companies which might contaminate the result.

3.4.2. The UK Evidence

The test of market efficiency in the UK was completed as early as 1953 by Kendall when he examined the weak form of EMH. However, the progress in this area of research was rather slow due to the absence of security data base which is suitable for academic research. In the year 1967, Merret, Howe and Newbould implemented the first rights issue study when they examined 110 UK rights issues made in 1963. Overall, they showed evidence of abnormal capital gains of 1% on the issue date which is followed by 3% over the year subsequent to the issue date. Indirectly, their findings proved that a violation of the efficiency of the UK market in the semi strong form existed because investors could make a profit out of the issue. But then, this might not be the case as this study did not make any adjustment for risk when a conclusion is made.

It was not until the London Business School Financial Databank was launched that a direct test of semi strong form of market efficiency was implemented on the

London Stock Exchange. Paul Marsh produced a PhD dissertation in the year 1977 and produced published work in 1979 testing the efficiency of the UK stock market with respect to rights issue announcements. He studied 254 rights issue announcements from July 1962 to end 1975 by using three approaches which are the MAR, CAPM and SIMM[12]. All three models presented similar evidence of a sharp increase in abnormal returns preceding the rights issue announcement and during the post-announcement period. However, as this study is focused on testing the semi strong form of market efficiency, it is more concerned with the post-announcement period. On the announcement day, the cumulative average abnormal returns (CAAR) for all the models stay in the 2.0% region. CAAR continues to rise sharply that in the fifth month after the announcement month (t=0), it reaches 9.4%, 10.5% and 9.4% for the MAR, CAPM and SIMM models respectively. One year after the announcement, these figures reached the peak with CAAR approaching 11%. All these figures are statistically significant which showed a clear indication that the UK market is inefficient in the semi strong form sense as there exists abnormal returns after the announcements become publicly available. However, further investigation by Marsh showed that the positive abnormal returns did not exist because of rights issues particularly, but to his failure in controlling for other factors (i.e. company size) which was not incorporated in the market value weighted indexes. Thus, he concludes that the result presented is not a real evidence of UK market inefficiencies and it is only fair that he does not reject that the UK market is efficient when it comes to rights issue announcements.

3.4.3. The Switzerland Evidence

Loderer and Zimmermann (LZ, 1988) analysed 122 rights issue announcements of unregulated industrial companies in Switzerland between 1973 and 1983. They used the SIMM approach to calculate abnormal returns by utilising continously compounded monthly returns and value weighted indexes of Swiss Bank Corporation. Although market efficiency was not discussed directly, their result

[12] Marsh first started to look at 1145 rights issues; but then after going through the screening criteria to ensure a non bias sample is used, he came out with 254.

proved that the Swiss market is consistent with the EMH. Cumulative average abnormal returns showed a value of 4.1% at t=-10 (10 months before the announcement month) to t=-1 and 2% on the month of announcement (t=0) itself. A rebound in the CAAR value subsequent to the announcement month presented a total return of -4.2% at t=+1 to t=+10. All these figures were found not to be statistically different from zero which justified the conclusion that the Stock Exchange of Switzerland is semi strongly efficient.

3.4.4. The Greece Evidence

A study of rights issue announcements by companies listed on the Athens Stock Exchange (ASE) during the period 1981 to 1990 was done by Tsangarakis (1996). ASE is different to the more established exchange such as the NYSE and AMEX in the US and LSE in the UK in terms of its institutional characteristics such as: (1) it does not have an organised nor active secondary market for rights issue during the period of study; (2) most of the companies are state or family owned; (3) its corporate bond market is very small and not active; and (4) financial information disclosure requirements are quite flexible due to light penalties by the ASE and their late introduction in 1985. During the period of his study, Tsangarakis examined 55 rights issue announcements and utilised the MAR model to estimate the abnormal returns by using a data base of Daily Athens Stock Exchange Security Returns. He discovered that the average abnormal returns (AAR) on the announcement day (t=0) is statistically significant with a value of 2.45% and a t-statistic of 5.09. The two day cumulative average abnormal returns were 3.97% which was also found to be significant at the 0.01 level (t=4.12). According to Tsangarakis, the statistically significant positive CAAR observed before t=0 might be due to a leakage of information by the board of directors when a decision is made with respect to the proposed rights issue. After the announcement day, the result showed a statistically insignificant AAR except for days t=+7 and t=+10. The significant abnormal returns were caused by two outliers at t=+7 and four outliers on day t=+10. Tsangarakis concluded that the null hypothesis of zero abnormal returns could be rejected and that

a positive effect on share prices is observed. This would mean that the semi strong form of EMH is violated in the ASE. However, this study would gain more insights if only the outliers were taken out and its impact is re-evaluated for a more conclusive determination of ASE efficiency. Another point which could also be raised is that his findings may not be caused by rights issue announcements per se but by other financial instrument change announcement (i.e. preferred stock) which was associated with the rights issue.

3.4.5. The Norway Evidence

Another study based on European capital market was done on the Oslo Stock Exchange (OSE) which is a closely held market and relatively small in terms of market capitalisation as compared to the US and the UK. Bohren, Eckbo and Michalsen (1997) examined 200 rights issues of which 79 of them are direct rights ("uninsured rights") and 121 are underwritten rights ("standby underwriting") between 1980 to 1993. Out of the 79 direct rights issues and 121 underwritten rights issues, financial institutions account for 37 observations for the former and 25 for the latter. Their analysis using the market model with additional four dummy variables corresponding to the splitting of the event period into four intervals, shows a statistically significant average two-day announcement period abnormal returns of 2.01% (with z=2.85) for nonfinancials direct rights and a statistically insignificant -0.36% (with z=-0.46) for nonfinancials underwritten rights. Over the period after the announcement until one day before the start of the offering day, there exists an insignificant negative average abnormal returns of -0.59% (with z=0.62) and -2.65% (with z=-1.12) for nonfinancials direct rights and underwritten rights respectively. The post-announcement result justified the conclusion of the existence of a semi strongly efficient market in this relatively small exchange.

3.4.6. The Korea Evidence

Similar to the evidence presented in the UK, Greece and Norway, the Koreans associated rights issue announcements with favourable news, which on average have

resulted in positive abnormal returns in the period prior to the announcement. By using the MAR approach with 89 rights issues of which 51 were issued at par and 38 based on the market value between 1984 and 1987, Kang (1990) found that overall there is an abnormally increasing trend of stock returns before the announcement (t=0) which flattened after the announcement. The average abnormal returns during the fifty days prior to the announcement day were not significantly different from zero except for days t=-44, t=-42, t=-40, t=-38, t=-34, t=-13, t=-11 and t=-1. This implies that the Korean stock market anticipates the coming of this information way before its actual announcement "...and in this respect, the Korean stock market is considered to be efficient" (Kang, 1990, p. 274). Further investigation supported this point when none of the average abnormal returns are significantly different from zero after the announcement day (t=0); and the CAAR from t=+1 to t=+30 stay very close to 10% which is the CAAR observed at day t=0.

Kim and Lee (1990) documented similar evidence as Kang with respect to the rising trend of CAAR. Over the period 1984 to 1986, 239 rights issues were selected where 223 were issued at par and 16 were based on the market value. MAR approach was used to calculate the abnormal returns by utilising monthly returns compiled by Korea University's Business Management Research Centre. They discovered that AAR started to drift upward from month t=-4 to t=+1 with a total CAAR of 16%. On the announcement month, AAR shows a negative return of 3.2%. One year after the month of announcement, the CAAR showed 21.41%. Surprisingly, no significant test was implemented in each event month on the AAR and the time interval of CAAR. Furthermore, the rights issue announcements selected were not filtered to take account of other announcements. Hence, no conclusive evidence can be made with respect to the Korean stock market efficiency in this study.

3.4.7. The Malaysia Evidence

In the 80s and early 90s, most of the empirical research on market efficiency was to test on the weak form of EMH (Laurence, 1986; Lim, 1981; Othman, 1993; Nassir, 1983; Neoh, 1986). It was only recently that semi strong form of EMH started

to be examined. As far as rights issues are concerned, three studies have been implemented, by employing different approaches, to measure abnormal returns. They gave mixed results.

Phoon Mun Kit (1990) analysed 64 rights issue announcements over the period 1978 to 1989 by employing the mean adjusted return (MA) approach to calculate abnormal returns. His findings showed some evidence suggesting that the Malaysian stock market deviates from the semi strong market efficiency hypothesis because there exists a statistically significant positive cumulative mean adjusted abnormal returns of approximately 2.9% at the end of the event period following the announcement. There exists a rising trend of security returns from day t=-35 to t=0 and a downward turn during the post-announcement period. The average abnormal returns were significantly different from zero at days t=-27, t=-25, t=-20, t=-11, t=-8, t=-7, t=-3, t=+12, t=+17, t=+23, t=+30 and t=+31. The significant AAR after the announcement day clearly indicated that the Malaysian stock market did not rapidly adjust to the rights issue announcements which had become public information into its stock prices implying a deviation from semi strong form efficiency.

Annuar and Shamsher (1993b) found a contradictory result as compared to Phoon (1990). They studied 33 clean rights issues made public from January 1980 to 1991 by using the market model (SIMM) to calculate abnormal returns. Overall, they found a negative CAAR from day -29 to -4, a short positive from day -3 to day -1 and thereafter CAAR drift downwards again. Investigation on the average abnormal returns before the announcement day show significant results at days t=-13, -6, -4 and -3, but this is followed with AARs which were not significantly different from zero in the post-announcement period implying that the KLSE is semi strongly efficient.

So far, two studies of rights issue announcements produced contradictory evidence with respect to the KLSE efficiency in the semi strong form sense. Nur (1997) analysed 25 clean rights issue announcements between 1987 to 1996 by adopting the MAR model. She found an increasing trend of security returns before the announcement of rights issue. From days t=-40 to t=0, the CAAR provides a

statistically significant total returns of 9.1099% (with t=15.58458). There onwards, the figure slightly declines and by day t=+40, the CAAR drops to 7.3684%. When a t-test is executed over the period t=0 to t=+40, it carried a significant value of 47.23692. Based on this finding, the null hypothesis of zero abnormal returns over a period of 41 days cannot be accepted. Rights issue announcements are associated positively in the pre-announcement period. In the post-announcement period, the returns are negative. The results conform that the Malaysian stock market deviates from the semi strong form of EMH. This is further supported by the examination of the average abnormal returns after the announcement day where there exists a statistically significant non-zero abnormal returns at day t=+22. Her conclusion supported Phoon's finding.

In general, one common conclusion of the three studies is that somehow there is a leakage of information by the board of directors long before this information is announced publicly. Caution is needed in interpreting the result given as each study has its own deficiency. For example, (1) Phoon literally assumed that the event date taken from the Investors Digest is correct without counter check with some other sources such as the Daily Diary or the rights issue announcement's abridged prospectus. It was later found by Nur that sometimes Investors Digest misprinted the date and ocassionally the date which supposed to have a clean rights issue was in fact having some other announcements when the abridged prospectus was referred; (2) Annuar and Shamsher choice of utilising New Strait Times Industrial Index (NSTII) may be unsuitable to represent the market returns as NSTII might be upwardly biased due to its computation which used simple average method and its inability to take account of bonus, rights and splits announcements; and (3) Nur only used 25 observations which might not represent the companies listed on the KLSE. Given the inconsistency, deficiency and limited number of available studies on the Malaysian stock market, the current study is needed.

3.5. Theoretical Explanation of Market's Reaction to Rights Issue Announcements

Theories advanced to explain stock market reaction to equity offers in general and rights issue announcements in particular are presented in this section. The relevant theories are classified into signalling models, asymmetric information models, agency models and price pressure versus perfect substitution hypothesis. Although the models are somewhat dated, they are still widely accepted and quoted in recent studies.

3.5.1. Signalling Models

The underlying principle of signalling models is that the management have a lot more information regarding the true value of the company than outside investors. Normally, the action taken by these group of people might reflect all information which are not publicly available. Hence, this action is used as a signalling device to convey information to the investors indirectly. Ross signalling model (1977) is used to explain the stock market reactions.

According to him, managers are motivated to signal their inside information regarding the company's true value by undertaking capital structure changes particularly by the level of debt used by a company. Companies that have higher leverage signal to investors their confidence of the prospects for an increase in asset values and expected cash flow. Investors interpret this signal as favourable news since weaker companies which undertook similar action will have to bear higher expected bankruptcy costs. This model therefore implies that a debt offering sends a positive signal about the company's value which brings to positive stock price reaction; whereas a stock offering sends a negative signal and leads to a negative stock price reaction. With respect to rights issue, the impact will be exaggerated when the proceeds coming out of the rights offering were utilised to retire the existing debt. This action infers to the market that the company is expecting a lower expected cash flow and the way to cover its shortfall is to raise capital from its main financier, the existing shareholder.

3.5.2. Asymmetric Information Models

The assumption which underlies the asymmetric information models is that there exists information disparity with respect to a company's true value between the management and outside investors. In this case, management's action is regard as a revelation of their expectations of the company's value which helps to close the information gap between the two groups. The two asymmetric information models discussed here are by Miller and Rock (1985) and Myers and Majluf (1984).

Miller and Rock (MR, 1985) model assumes asymmetric information with respect to the magnitude of a company's current internal cash flow, but symmetric information to its level of planned investment and assets' value. They studied the impact of dividend payments. According to them, cash dividends payment is normally associated with a company's operating cash flow assuming the amount of investment and external financing is constant. If a company announced dividend payment which is greater than expected by the market, it reveals an increase of the company's future cashflow which brings an upward movement of its stock price. MR associate this finding with outside financing where they suggest that an unanticipated announcement of outside financing through security offerings signals inadequacy of internally generated funds to finance a company's planned investment. This is also the same as inferring a low company's current earning and a decreasing expected future cash flow which in turn depress a company's stock price. MR emphasised that such an effect will occur if there is a difference between realised and expected financing. Hence, an implication of this model is that the announcement of rights issues, on average, reduces stock price.

The next theory that could explain the change in stock prices is given by Myers and Majluf (1984) asymmetric information model. The basic assumptions underlying this model are that management knows more about the company's true worth than outside investors and that they always act in the best interest of the existing shareholders. If external financing is needed, management tend to issue new equity if they think the company's market value exceeds its intrinsic value. Thus, rational

investors presume that management will only issue stocks when they believe, based on their superior information, that the stocks are overvalued. This action will, in turn, benefit the existing shareholders. Consequently, sophisticated investors will not welcome the announcement of new stock offerings. As a result, there will be a negative stock price reaction on such announcement. "...the larger the potential disparity in information, the greater the revision in expectations and the larger the negative price reaction to the announcement of a new issue" (Smith, 1989, p. 15). Under this model, management tend to rely on internal financing rather than external financing. If an external source of funds is required, debt is preferable than equity.[13]

3.5.3. Agency Model

An agency relationship exists when a person or an agent is hired by a principal or owner to make decisions on behalf of the principal. This relationship is used by Jensen (1986) to propose a theory which is widely known as Jensen's free cash flow theory. According to Jensen, the free cash flow exists in a company when there are excess funds left over after taking into account all positive net present value projects. He argues that the conflict of interest between shareholders and managers over the payout policies of these free cash flows could explain the stock price reaction. The theory predicts that stock prices will increase if there is an unexpected dividend payment or stock repurchase announcement and will decrease if an unexpected increases in demand for funds through equity offering is announced for company experiencing positive free cash flows. The negative impact in stock prices may be due to the likelihood that management may misuse the funds which are under their control. As a result, the market gives a lower valuation of the company's shares. If the Jensen's free cash flow theory is true, it is likely that the effect of rights issue announcements will be negative.

[13] Tsangarakis (1996) excludes this model in his analysis of rights offering based on his assumption that if all existing shareholders exercise their rights, there will not be a transfer of wealth from new to existing shareholders. However, in Malaysia this is not always the case. There will be one or some existing shareholders who will not be exercising their rights. Thus, this model is included in this study.

3.5.4. Price Pressure Versus Perfect Substitution Hypothesis

The last theory that could explain the market response towards an announcement of certain events in a company, particularly increasing the supply of a company shares, is labelled by Scholes (1972) as price pressure (PPH) versus perfect substitution hypothesis. PPH assumes that every asset has unique characteristics and stands apart from other assets in the market. Each asset faces a downward sloping demand curve. Thus, when a company decides to increase the quantity of its shares, it has to discount the share price from the existing market price to create demand as purchasers will be incurring extra costs when they buy the new shares. The discount will act as an inducement or 'sweetener' for the shares to be more liquid or tradeable and also to compensate investors on the transaction costs of the new shares (Barclay and Litzenberger, 1988). In a case where there exists near perfect substitutes of a company's shares, there will be a temporary price pressure effect which is caused by a discount offered to create demand. The end result will be that the sale of additional shares will bring a temporary negative stock price reaction at the time of issuance and a positive reaction subsequent to the issue period. A recovery in prices after the issue period may be caused by a removal of the inducement or additional supply of the company's shares which had depressed the price so as the new shares' true value may take place.

Scholes (1972) provides another explanation with respect to this matter. He suggests that the issuance of additional shares may convey some information to the market regarding the seller's expectations of the company's prospect. The sale of large block of shares might indicate that the seller possesses adverse information of the company's prospects and it is not advantageous to keep holding the company's shares because if the market is efficient, there will be an immediate downward adjustment of the share's price. Hence, if there is an announcement of additional issues for a particular stock in the market, the price of this stock will fall permanently. The decrease in the stock's price reflects the expected value of the information contained in the offering.

An alternative to PPH is perfect substitution hypothesis (PSH) which takes a totally different line. Here, every asset has either direct or indirect substitutes. Rational investors will price an asset such that the expected rate of returns for assets of similar risk will be equal. Hence, if a company issues additional shares, these shares can be sold at their market price. The substitution hypothesis would infer that since assets can be substituted with another asset of equal risk in investor portfolios, the inducement in the form of a price discount to sell additional shares will be close to zero and that the pure price effect of these additional shares will be very close to zero. In such a case, the demand curve facing individual shareholders will most likely be horizontal which conform to semi strong market efficiency.

With respect to rights issue announcements, PPH implies that a negative stock price reaction is expected before and during the announcement and a rebound to positive reaction after the announcement is expected; whereas Scholes information hypothesis infers that a permanent reduction of stock prices is expected with an offering announcement of a company's shares. In contrast to the two hypotheses, PSH provides a different implication where rights issue announcements will not produce any significant impact on the existing price.

3.6. Implications for the Current Research

The discussion and empirical evidence provided in this chapter become the foundation of the first stage analysis of the thesis. A review of the event study methodology and efficient market hypothesis which is put to use in Chapter Six is necessary to answer the first research question in this study, that is to see how the Malaysian companies' stocks react to rights issue announcements and whether such announcements can be captured by the market to reflect the stocks' true value conforming to the semi strong form of EMH. If the Malaysian stock market does not conform to EMH, this will have a great influence on how a company plans its long term financing. Relevant issues such as the timing of an offering, the appropriate subscription price, the terms and conditions of the issue and the importance of this issue have to be considered.

A thorough discussion of the problems while conducting event study is important as the above evidence shows that without resolving the shortfalls, the conclusion derived from this study is questionable. Since the result of an event study depends very much on the approach used to measure abnormal returns, a comparison of the different approaches was included to ensure that the approach adopted (i.e. MAR) to answer the first research question can be justified.

From the review of rights issue announcements' impact in other countries, most of these studies presented evidence of an efficient capital market. However, the evidence in Malaysia is not consistent nor is it conclusive where mixed results were found. It is with these patchy results and the lack of empirical work in this part of the world that the current study will hopefully provide additional insight into this issue. As far as the corporate financial theories are concerned, it is the intention of this study to establish the importance of the signalling models, asymmetric information models, agency model and price pressure versus perfect substitution hypothesis to explain the stock market reaction to rights issue announcements which is partly to answer the third research question.

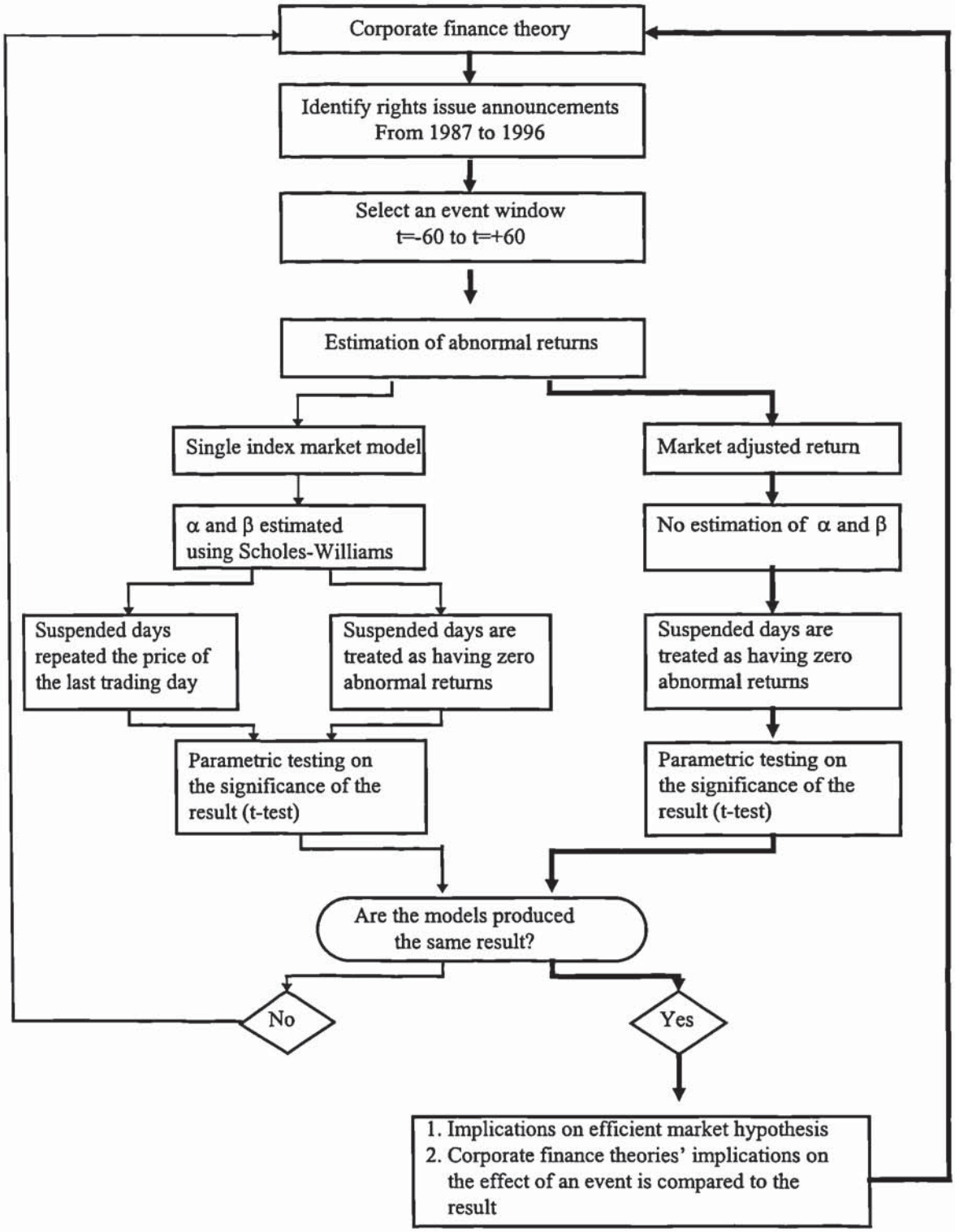
CHAPTER 4: RESEARCH METHODOLOGY--AN EMPIRICAL INVESTIGATION OF RIGHTS ISSUE ANNOUNCEMENTS IN MALAYSIA

4.1. An Overview of the Research Methodology

If Chapter Three provides a theoretical background for an empirical work to be implemented in the subsequent chapters, the issues included in Chapter Four consist of a detailed explanation of the research methodology used in the event study analysis. Its function is to assess the effect of rights issue announcements on stock prices and to make comments on market efficiency in the Malaysian context. This view can be expressed more clearly in Figure 4-1. The schematic diagram shows the core analysis implemented in the first stage analysis of the thesis. It started by searching the corporate finance literature for the theories affecting event study and market efficiency such as the issues which have been included in Chapter Three. An appropriate methodology is chosen and tested to see whether it gives an unbiased and robust result.

Once the theories and issues become crystal clear, the focus turns to identifying clean rights issue announcements from the period 1987 to 1996. The samples are selected based on several criteria to avoid contamination in the result. The reading from the previous stage provide the basis for the criteria. Next, an event window is selected. Sixty days before and after a rights issue announcement is considered appropriate to detect any unusual movement of the stock prices due to the announcement. This time period is used because evidence from the pilot study, which utilised forty days surrounding a rights issue announcement, showed that there is a steep jump of average daily abnormal returns on days t=-38 and t=-36 before the announcement (refer to Appendix I). A sharp rise of the statistically significant abnormal returns observed before the announcement day suggests that there is a leakage of information. It is interesting to know approximately how far back does it takes for the stock prices to recognise such event.

Figure 4-1: Schematic description of the steps involved to analyse the impact of rights issue announcements



Following the selection of an event window, an estimation of abnormal returns is calculated by using two benchmarks. It is intended in this study that the market adjusted return (MAR) model is employed as a basic test of market efficiency. However, analysis based on a single index market model (SIMM) is also performed to justify the MAR's result. A closer look of the two boxes below the MAR and SIMM models in Figure 4-1 show that MAR is a much simpler method where no estimation of the systematic risk is required. It is simplified further when the time series of the suspended days are treated as having a zero return. In contrast to this, the SIMM requires an estimation of α and β before the abnormal returns can be computed. The estimation period for these parameters is 239 days before the event period. To rectify the suspended days or thin trading problem which was mentioned in Section 3.2.3.1., a Scholes-Williams adjustment of thin trading is used in estimating α and β. The suspended days in the SIMM model are treated in two ways. First, is to treat these days as having zero abnormal returns such as the MAR's treatment; and second, is to repeat the price of the last trading day before the suspension until another trading day is observed[14]. The result from the MAR and SIMM models are tested for their significance by using a t-test. If both models produced a similar outcome a conclusion is made with respect to the semi strong form of market efficiency on the KLSE. Finally, theories advanced to explain the stock market reaction to rights issue announcements is compared to the result to see whether these theories can be supported in the context of the Malaysian market.

Furthermore, Chapter Four also includes a discussion on the econometric and statistical issues mentioned in the previous chapter. These issues are covered to ensure that the findings do not give false inferences, as they are later used in the second stage analysis where a cross-sectional regression analysis to find the determining variables of the rights issue announcements' effect is executed. In addition, a description of the rights issues population over the period 1987 to 1996 and the criteria used to select the samples is explained. These samples are used for

[14] Both treatments are used by Maynes and Rumsey (1993, p. 148) in their event study with thinly traded stocks.

both the event study and the cross-sectional regression analysis. It is in this chapter as well that the research assumptions and constraints of the data sources are acknowledged. Although as much effort has been given to increase the validity of the result, some deficiencies which are uncontrollable are bound to exist.

4.2. Estimation of Abnormal Returns

Most of the studies which test for the semi strong form of efficient market hypothesis use either a mean adjusted return, market adjusted return, single index market model, capital asset pricing model or any two or all of the approaches to calculate abnormal returns. However, based on the conclusions of the comparison of approaches discussed in Section 3.2.4.5. of Chapter Three, the abnormal return models employed in this study are the market adjusted return and the single index market model. With the use of MAR, it is assumed that a model of equilibrium expected returns exists where alpha is equal to zero and the average systematic risk is equal to one. This means no estimation of systematic risk or alpha is required bypassing several problems in the SIMM and CAPM approaches. Such simplification contributes to another assumption that the equilibrium expected returns model is correct. If both assumptions are violated, the estimation of abnormal returns will not represent the true picture of the effect of rights issue announcements. The result is then subject to contamination from the use of a single average systematic risk for all securities. Due to the weakness in the MAR model, the SIMM is used as an additional tool to ensure that the estimation of abnormal returns from the MAR model is not biased. Hence, both methodologies are employed for the basic test of market efficiency. However to check on the theoretical implications of the signalling models, asymmetric information models, agency model, price pressure hypothesis and perfect substitution hypothesis, the result from the MAR model is relied upon exclusively. The reason for this is because the MAR model is less problematic in comparison to the SIMM model. With the SIMM, erroneous finding with respect to the effect of a particular event may occur if the underlying statistical assumptions which governed this model are violated. If this happens, the result from the SIMM model might not

reflect the true effect. Hence, the conclusion made on the theoretical implications of the corporate finance theories may likely be wrong. Below is a description of both methodologies.

4.2.1. Market Adjusted Return

The MAR procedure starts out by calculating the daily abnormal returns (AR) by comparing the daily stock returns with the returns of the market. The difference between the two returns is known as unexpected or abnormal returns which can be calculated as follows:

$$AR_{i,t} = R_{i,t} - R_{m,t} \quad (1)$$

$AR_{i,t}$ = Abnormal returns for stock i on event day t

$R_{i,t} = (P_{i,t}-P_{i,t-1})/P_{i,t-1}$ = The fractional change of stock i's adjusted price (P_i) on event day t. This is also known as discrete return by Strong (1992).

$R_{m,t} = (K_t-K_{t-1})/K_{t-1}$ = The fractional change of the market index (K) on event day t or the market's return on event day t.

Trading days prior to the rights issue announcements are numbered event days -1, -2, -3 and so on; trading day on which an announcement is made is numbered event day 0; and event days following the announcement are numbered event days +1, +2, +3 and so on. If a stock is suspended on a certain event day, the abnormal returns on that particular day are equal to zero[15]. This is the same as saying that the daily returns for an individual stock is treated as average daily returns during the suspended period. It is computed as:

$$R_{i,s} = [(P_{i,a} - P_{i,a-1})/ P_{i,a-1}] / t_{i,s}$$

$R_{i,s}$ = Average daily returns of stock i during the suspended period

$P_{i,a-1}$ = Stock i's adjusted price the last trading day before the suspended period

$P_{i,a}$ = Stock i's adjusted price the first trading day after the suspended period

[15] This criteria is used by Dennis and McConnell (1986) in their study.

$t_{i,s}$ = The number of days during the suspended period of stock i plus the first trading day after the suspended period

By using the above computation, a similar effect as to Dennis and McConnell (1986) treatment of the non-trading event day in their study can be observed as long as the same measure is used to calculate the fractional change of the market index. This is documented in Nur (1997) work. The next step is to compute the daily cross-sectional average abnormal returns ($\overline{AAR}$) for a specific day, t, which is shown below. It is done by summing the daily abnormal returns for each observation across companies and dividing this figure with the total observations on that day. This is done for the whole event period or test period.

$$\overline{AAR}_t = \sum_{i=1}^{N} AR_{i,t} / N_t \qquad (2)$$

N_t = The number of valid observations on event day t

The last step is to sum the cross-sectional average abnormal returns to yield a cumulative average abnormal returns (CAAR) for event day t as

$$CAAR_t = \sum_{k=t-T}^{t} \overline{AAR}_k \qquad (3)$$

T = Some number of event days prior to day t

To test the null hypothesis that the daily average abnormal returns on event day t is equal to zero, a t-statistic is calculated. This test determines whether the individual stock returns are statistically different from zero given their distribution about the average. Obviously, some stocks will perform better than the average and some below average. This test will show whether "...there is statistically less than five chances in a hundred that these average returns and the variation about them would have occurred for a group of stocks which did not change in price" (Dawson, 1981, p. 72). This is the same as testing whether there is a significant change in stock prices due to rights issue announcements. In addition it "also provides a test of market efficiency, since persistent non-zero abnormal returns around an event are inconsistent with the

hypothesis that security prices adjust quickly to reflect new information" (Coutts, Mills and Roberts, 1995, p. 164).

$$t = \overline{AAR_t} / s_t / \sqrt{N_t} \qquad \text{where} \qquad (4)$$

$$s_t = \sqrt{\frac{\sum_{i=1}^{N} (AAR_{i,t} - \overline{AAR_t})^2}{N_t - 1}} \qquad \text{where i = 1, 2, 3, ... , } N_t \qquad (5)$$

The exact occurrence of information release involves uncertainties, hence, there is a necessity for a test of the cumulative average abnormal returns (CAAR) on a specified event period to be executed. The null hypothesis that the CAAR over a period of T days is equal to zero is tested by using a t-statistic which is calculated as below. This test can be used to consider whether there has been any market reactions to rights issue announcements.

$$t_T = \overline{CAAR_T} / (s_t / \sqrt{T}) \qquad \text{where} \qquad (6)$$

$$s_t = \sqrt{\frac{\sum_{t=1}^{T} (CAAR_T - \overline{CAAR}_T)^2}{T - 1}} \qquad \text{where t = 1, 2, 3, ... , T} \qquad (7)$$

$CAAR_T$ = Cumulative average abnormal returns over the T-day interval

$\overline{CAAR}_T$ = The summation of CAAR over the T-day interval divided by the number of T-day interval

4.2.2. Single Index Market Model

Generally, the steps involved in estimating abnormal returns are the same for both the MAR and SIMM models which is to take the difference between the actual returns ($R_{i,t}$) and the expected returns ($\hat{R}_{i,t}$) of each security i during the event period t. In the MAR, the expected returns are equivalent to the returns of the market as this model assumes that on the average the securities move concurrently with the market

returns and it is in equilibrium. However in the SIMM model, the expected returns of a security have to be computed based on a simple regression equation of:

$$\hat{R}_{i,t} = \hat{\alpha}_i + \hat{\beta}_i R_{m,t} + e_{i,t}$$

In this formula, $\hat{\alpha}_i$ is the expected returns of security i when the expected returns of the market ($E[R_{m,t}]$) equals zero. $\hat{\beta}_i$ is a systematic risk coefficient of the same security, $R_{m,t}$ is the market returns and $e_{i,t}$ is the unsystematic risk component. The latter term is supposed to incorporate the rights issue announcements' effect assuming that information signals and $R_{m,t}$ is independent. Before a security's expected returns can be established, estimations of the parameters β and α are required.

As thin trading problem is a common phenomenon on the KLSE, a Scholes-Williams (SW, 1977) approach is adopted to estimate β and α. First, beta is computed as:

$$p\lim E[\beta_i] = ({}_2\beta_i^{-1} + {}_2\beta_i^{0} + {}_2\beta_i^{+1}) / (1 + 2\rho_1)$$

With this approach, $E[\beta_i]$ is a sum of the slope coefficients from a lagged (β_i^{-1}), a synchronous (β_i^{0}) and a leading (β_i^{+1}) market returns based on two period returns which is divided by one plus twice the first order serial correlation of the market returns ($1 + 2\rho_1$). In this study, a program is created and run in the minitab software to estimate β and α (a copy of the program is in Appendix II). The estimation period used is 239 days before day t=-60. This period is selected to reduce instability of beta estimation during and after the announcement of rights issues so as the calculation of abnormal returns during the event period is not misspecified. This point is confirm by Coutts, Mills and Roberts (1996). According to them

> *"...if a market model fitted over an estimation period is used to compute benchmark or equilibrium returns, and the same model is used in an event period to compute abnormal returns, then any instability of beta during the*

estimation period must cast doubt on the concept of equilibrium returns which in turn renders the calculation of abnormal returns highly questionable" (p. 85).

To calculate the slope coefficient of a lagged period or the lagged beta (β_i^{-1}), the stock returns are regressed against the market returns from day t=-299 to t=-63; the synchronous or match beta (β_i^{0}) is obtained by regressing the stock returns against the market returns from day t=-298 to t=-62; and the lead beta (β_i^{+1}) is attained when the stock returns are regressed against the market returns from day t=-297 to t=-61. Each beta is then multiplied by two in order to get the ordinary least square (OLS) estimators based on two period returns. These figures are aggregated together before it is divided by one plus twice the first order serial correlation of the market returns. Once the beta calculation is completed, alpha (α) is then calculated by deducting the average market returns which is multiplied with the SW's beta from the average stock returns. The estimation of the two parameters is done for each observation in the samples.

Next the computation of the daily abnormal returns is carried out, that is, its residual or unsystematic risk, which is calculated as shown below.

$$AR_{i,t} = e_{i,t} = R_{i,t} - \hat{R}_{i,t}$$
$$AR_{i,t} = e_{i,t} = R_{i,t} - \hat{\alpha}_i - \hat{\beta}_i R_{m,t}$$

As discussed in Section 3.2.4.4., underlying this model, three assumptions of the residuals ($e_{i,t}$) have to be met in order for the result to give correct inferences. First, $e_{i,t}$ has to be normally distributed with μ mean and σ^2 variance for i=1,2,3,...,N. Second, the variance of $e_{i,t}$ must be homogenous for each observation of i=1,2,3,...,N. Finally, the third assumption of $e_{i,t}$ is that it is not serially correlated.

The rest of the procedures are similar to the MAR approach. The daily abnormal returns on each event day t for all the samples is summed and divided by

the number of observations to give the average abnormal returns for each event day during the event period. This figure is then accumulated across time until the last day of the selected event period. A t-test to check on the significance of the finding is executed on the average abnormal returns for each event day and for the cumulated average abnormal returns over a period of T days. The mathematical notations for all the procedures are similar as the ones used in the MAR model.

4.3. Population and Samples

A total of 356 rights issue announcements were made over the period January 1987 to December 1996. This population was identified from a monthly magazine, the Investors Digest, published by the KLSE in association with Berita Publishing Sdn. Bhd. The issue used to capture all the rights issue announcements from January to December of a particular year is the February issue of the following year. For example to search for the rights issue announcements from January to December 1996, a February 1997 Investors Digest is used under the section of 'Record of Issues' with a subheading of 'Record of Bonus & Scrip Issues, Rights, Capital Changes, Calls (1.1.96 to 31.12.96)'. A simpler way to identify these announcements can be taken from a similar source under the section 'Listing' with a subheading of 'Rights Issue in (year)', but this list is not comprehensive as it appears on a monthly basis.

The total population of 356 rights issue announcements can be classified into two categories which are known as multiple and clean announcements. Multiple rights issue announcements consist of (1) rights issues which are associated with other forms of security issues such as irredeemable convertible unsecured loan stocks (ICULS), detachable warrants etcetra and (2) rights issues proposal which is announced simultaneously with special issues, bonus issues, private placement and other types of announcements. Clean rights issue announcements are rights issues which do not have any links to other announcements made on the same date and they are issued on stock basis. Among the 356 rights issue announcements, 240 issues fall under the category of multiple announcements and 116 issues are grouped into the

clean announcements category. To avoid noise which might arise from the multiple announcements' effect, this study only includes the clean rights issue announcements. Out of the 116 clean issues, only 70 observations are selected to check on the Malaysian market efficiency and to identify possible determinants which could explain the rights issue announcements' impact. These observations are chosen based on the following criteria:

(i) The common stock is listed on the KLSE.

(ii) The issues are not announced by limited companies where their par value is quoted in Singapore dollar. This criteria only applied to rights issue announcements made over the period 1987 to 1989. After this, listed foreign companies were restructured into majority Malaysian-owned companies as mentioned in Chapter Two.

(iii) The rights issues are not announced by financial institutions and trust funds companies. The reason behind this is that companies classified in these sectors usually have a high market capitalisation which might cause a size effect problem. Another reason is that the classification of its accounting variables are very different from those companies listed in other industries.

(iv) The selected rights issues are on stock basis rather than rights issues which are associated with redeemable unsecured loan stock and detachable warrants or rights issues in association with irredeemable convertible unsecured loan stock.

(v) There are no other announcements made on the particular event date.

Criteria (i) and (ii) are included to limit the sample into Malaysian quoted and registered companies so as a true representative is selected; whereas criteria (iii) is to avoid the size effect problem and to ensure a compatible comparison among the industries are implemented. Finally, criteria (iv) and (v) are taken to avoid multiple announcements' effect which makes it impossible for a conclusion to be made

entirely due to rights issue announcements. The formation of this criteria which caused the exclusion of the other types of rights issue announcements were made on an ex-ante basis. Thus, it should not introduce any selection bias on the outcome of this study.

4.3.1. Data and Sources of Information

Almost all information required for this study came from secondary data and only about five percent came from primary data. Both sources are discussed in the next two subsections.

4.3.1.1. Secondary Data

Most of the data needed are based on secondary data which are taken from the KLSE library, Northern University of Malaysia library, companies involved in issuing rights, Extel financial companies service and Datastream. The clean rights issue announcements data which is collected from the Investors Digest is counter checked against the rights issue abridged prospectus which is requested from the company involved in such announcement. If this is not available from the company or the Company's Secretaries and Registrars, a company's file located in the KLSE library is consulted. This file contains the annual report, abridged prospectus relevant to capital issue and dividend announcements, correspondence letters with the KLSE and newspaper cuttings which are of value to attract changes on the stock price of a particular company. Each company listed on the KLSE will have its own file. If an abridged prospectus is missing, the announcement date is counter checked from a Daily Diary newsletter of the KLSE to confirm of the event date and a clean announcement. Unfortunately, the Extel news card and Datastream are not able to reconfirm the information as these databases only carry the official announcement's date as appears in the newspaper. Due to this process of reconfirmation of an exact event date and a clean announcement, the number of samples are reduced from 116 to 70 observations, which is an omission of 46 observations. Among the 46 observations, 2 counters made a clean rights issue announcement. However, they are

still omitted in the final selection because of their messy announcements' nature where prior to the announcement, there were a few revisions made on those issues. For example, Golden Hope Plantation Bhd. announced a clean rights issue on 31 March 1992 replacing a rights issue of irredeemable convertible cumulative preference shares which was announced on 21 August 1991 and approved by the SC (at that time, it was known as CIC) on 17 February 1992. Its board of directors decided to terminate the earlier issue and instead proposed a clean rights issue. If this counter is included in the sample, it is likely that the effect or the changes of the company's stock price might not come from the clean rights issue alone but from a combination of both issues. Discrepancies of a clean announcement occurred frequently which eliminate 44 of the observations or 37.9% of the total clean rights issue announcements listed by the Investors Digest. As for the establishment of the event date, 3 out of 70 observations are wrongly dated. The earliest date is taken as the announcement date since this is the first attempt by a company to reveal its intention of having a rights issue.

The final sample is listed alphabetically in Table 4-1 together with other relevant information such as the announcement date, KLSE listing categories and industry classification. From this table, it is observed that eight companies have made several clean rights issue offerings between the period 1987 to 1996. As long as the announcements were made with one to two years intervals, they should not create bias in the result. Most of the samples are listed on the Main Board of the KLSE except for six counters which are listed on the Second Board. None of these counters belong to any of the companies that make several rights issue announcements.

Furthermore, the samples are classified under seven industries following the KLSE industry classification which are property & development, industrial products, consumer products, plantations, trading/services, mining and construction. Figure 4-2 summarises this information. It can be observed that 13 observations came under property and development and industrial products respectively where each industry contributes to 18.57% of the whole sample. Consumer products made up of 17.14% of

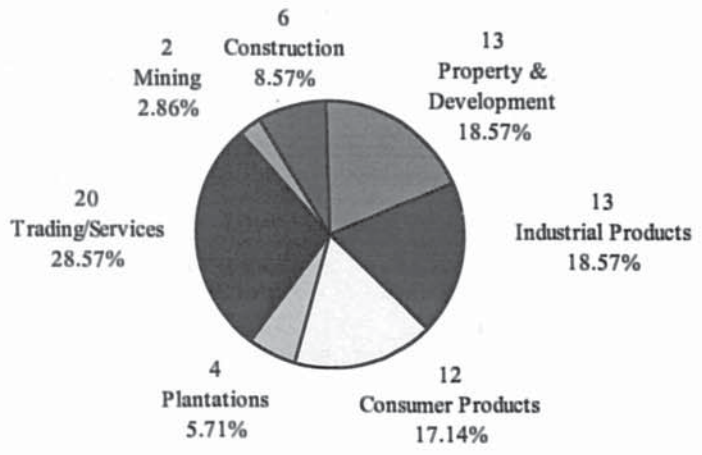
Table 4-1: Sample of the Kuala Lumpur Stock Exchange clean rights issue announcements between January 1987 - December 1996

No	Name of Company (Previous Name / Present Name)	Announce-ment Date	Listing	Industry Classification
1	A & M Realty Bhd	21/3/1996	Main Board	Property & Development
2	Ayer Hitam Tin Dredging (M'sia) Bhd	30/6/1987	Main Board	Property & Development
3	Ayer Hitam Tin Dredging (M'sia) Bhd	13/2/1989	Main Board	Property & Development
4	Amalgamated Industrial Steel Bhd	11/1/1993	Main Board	Industrial Products
5	Amalgamated Industrial Steel Bhd	15/3/1996	Main Board	Industrial Products
6	Angkasa Marketing Bhd	27/9/1994	Main Board	Consumer products
7	Arab-Malaysian Development Bhd	19/1/1988	Main Board	Property & Development
8	Austral Enterprises Bhd	23/10/1989	Main Board	Plantations
9	Berjaya Corporation Bhd / Rekapacific Bhd	31/1/1989	Main Board	Consumer Products
10	Construction and Supplies House Bhd	21/9/1991	Main Board	Industrial Products
11	Corrugated Carton Products Bhd / Eastern Pacific Industrial Corporation Bhd	8/3/1994	Main Board	Trading/Services
12	Cold Storage (M'sia) Bhd	9/2/1987	Main Board	Consumer Products
13	Crest Petroleum Bhd / TH Loy Industries (M) Bhd	6/3/1996	Second Board	Trading/Services
14	Dayapi Industries (M) Bhd / Golden Plus Holdings Bhd	27/11/1989	Main Board	Mining
15	Denko Industries Corporation Bhd	30/5/1994	Second Board	Industrial Products
16	Dragon and Phoenix Bhd / DNP Holdings Bhd	16/8/1988	Main Board	Consumer Products
17	Dragon and Phoenix Bhd / DNP Holdings Bhd	30/3/1992	Main Board	Consumer Products
18	Dragon and Phoenix Bhd / DNP Holdings Bhd	1/8/1995	Main Board	Consumer Products
19	Duff Bhd / Anson Perdana Bhd	13/2/1990	Main Board	Property & Development
20	Far East Asset Bhd / Berjaya Sports Toto Bhd	26/2/1990	Main Board	Trading/Services
21	Fima Metal Box Bhd / Fima Corporation Bhd	18/3/1987	Main Board	Property & Development
22	First Allied Corporation Bhd / FACB Bhd	1/4/1987	Main Board	Property & Development
23	George Town Holdings Bhd	5/10/1988	Main Board	Trading/Services
24	George Town Holdings Bhd	29/5/1995	Main Board	Trading/Services
25	Hil Industries Bhd	13/2/1995	Second Board	Industrial Products
26	Hume Industries (M) Bhd	12/4/1989	Main Board	Industrial Products
27	Island and Peninsular Bhd	3/4/1987	Main Board	Property & Development
28	IJM Corporation Bhd	25/5/1989	Main Board	Construction
29	Juara Perkasa Corporation Bhd / R. J. Reynolds Bhd	16/7/1987	Main Board	Consumer Products
30	Kampong Lanjut Tin Dredging Bhd	23/8/1990	Main Board	Property & Development

No	Name of Company (Previous Name / Present Name)	Announce-ment Date	Listing	Industry Classification
	/ Phileo Land Bhd			
31	Kuala Lumpur Industries Holdings Bhd	12/9/1987	Main Board	Property & Development
32	Kuantan Flour Mills Bhd	31/3/1993	Second Board	Consumer Products
33	Kumpulan Emas Bhd	15/7/1993	Main Board	Trading/Services
34	Larut Tin Fields Bhd / Larut Consolidated Bhd	8/4/1987	Main Board	Property & Development
35	Lien Hoe Corporation Bhd	15/9/1989	Main Board	Property & Development
36	Lingui Developments Bhd	9/12/1989	Main Board	Plantations
37	Malaysian Plantations Bhd	24/10/1989	Main Board	Plantations
38	Malaysia Aica Bhd	7/7/1987	Main Board	Industrial Products
39	Malayawata Steel Product	13/11/1989	Main Board	Industrial Products
40	Maruichi M'sia Steel Tube Bhd	24/2/1989	Main Board	Industrial Products
41	Malaysian Airline System Bhd	28/5/1992	Main Board	Trading/Services
42	Mechmar Corporation (M) Bhd	15/12/1989	Main Board	Trading/Services
43	Metacorp Bhd	9/6/1994	Second Board	Trading/Services
44	Malaysian Helicopter Services Bhd	26/2/1991	Main Board	Trading/Services
45	Malaysia Mining Corporation Bhd	22/5/1987	Main Board	Mining
46	Malaysian Mosaic Bhd	17/5/1990	Main Board	Trading/Services
47	Malaysian Pacific Industries Bhd	19/7/1988	Main Board	Industrial Products
48	Malaysian Pacific Industries Bhd	8/3/1994	Main Board	Industrial Products
49	Malaysian Resources Corporation Bhd	13/8/1987	Main Board	Trading/Services
50	MTD Capital Bhd	6/12/1994	Second Board	Construction
51	Mulpha International Bhd	27/8/1993	Main Board	Trading/Services
52	Mulpha International Bhd	9/8/1996	Main Board	Trading/Services
53	MWE Holdings Bhd	13/4/1988	Main Board	Consumer Products
54	MWE Holdings Bhd	5/3/1990	Main Board	Consumer Products
55	Palmco Holdings Bhd	21/10/1994	Main Board	Industrial Products
56	Pengkalen Industrial Holdings Bhd	12/5/1994	Main Board	Consumer Products
57	Pilecon Engineering Bhd	7/8/1987	Main Board	Construction
58	PJ Development Holdings Bhd	13/7/1990	Main Board	Construction
59	PSC Industries Bhd	10/6/1994	Second Board	Construction
60	Raleigh Bhd / Berjaya Group Bhd	11/5/1988	Main Board	Trading/Services
61	Roxy Electric Industries (M) Bhd / Technology Resources Industries Bhd	12/8/1987	Main Board	Trading/Services
62	Roxy Electric Industries (M) Bhd / Technology Resources Industries Bhd	26/12/1989	Main Board	Trading/Services
63	Technology Resources Industries Bhd	27/2/1991	Main Board	Trading/Services
64	Selangor Dredging Bhd	12/9/1988	Main Board	Property & Development
65	Setron (M) Bhd	21/11/1991	Main Board	Consumer Products
66	South Johore Amalgamated Holdings Bhd	11/9/1995	Main Board	Trading/Services
67	Temerloh Rubber Estates Bhd / Arab Malaysian Corporation Bhd	18/4/1990	Main Board	Plantations/Finance
68	Tenggara Capital Bhd	27/8/1996	Main Board	Industrial Products
69	Time Engineering Bhd	2/10/1987	Main Board	Trading/Services
70	YTL Corporation Bhd	13/10/1989	Main Board	Construction

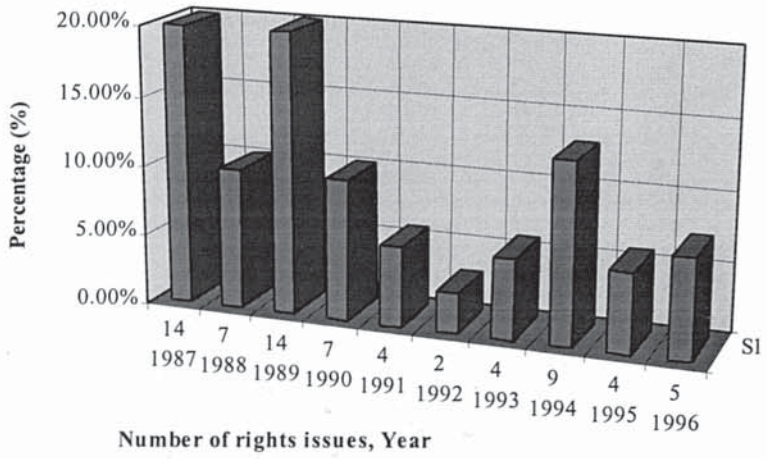
the total samples with 12 observations; whereas only 4 observations coming from plantations are included representing 5.71% of the total samples. The highest number of rights issue announcements used in this study belong to the trading/services industry which made up of 28.57% of the samples. The least represented industry came from mining with 2 observations. Finally, construction consists of 6 observations representing 8.57% of the total samples.

Figure 4-2: Industry classification for clean rights issue announcements between 1987 to 1996



In terms of the samples' distribution during the study period, it is observed from Figure 4-3 that 40% of the samples are taken in the year 1987 and 1989 with 14 counters in each respective year. In the year 1988 and 1990, 7 observations in each year are included which made up of another 20% of the samples. 4 clean rights issue announcements came from each year in 1991, 1993 and 1995 that total up to 17.13% of the whole samples or 5.71% in each consecutive year. The rest of the samples consist of 2 observations in 1992, 9 observations in 1994 and 5 observations in 1996 representing 2.86%, 12.86% and 7.14% of the total samples respectively.

Figure 4-3: Clean rights issue announcements between 1987 to 1996



4.3.1.2. Primary Data

In addition to the secondary data, primary data is also used where an interview with the Securities Commission is conducted. Structured questions were prepared and faxed to the Securities Commission a month before the actual interview. A copy of the list of these questions can be referred to in Appendix III. All of the questions are related to the rights issue guidelines of the Policies and Guidelines on Issue/Offer of Securities published by the SC. A total of fifteen questions were asked. The first ten questions attempt to uncover, or to better understand, the logic behind some of the requirements formulated by the SC. For example, why does SC insist on a lapse of one year between first listing and a rights issue announcement. Four of the questions (Q2, Q3, Q5 and Q6) concentrated on the purpose of the rights issues application, the use of the proceeds coming from these issues and the penalty if the proceeds were used for purposes other than stated in the application. The information is needed to help formulate the proxy for the purpose which is later used in the cross-sectional analysis that forms the second stage analysis of the thesis and to assist in constructing the conclusion chapter. Question 7 specifically asked for the justification of the statement made on ensuring that a rights issue application should not dilute

shareholders' earnings. Unless all shareholders exercise their rights (a case that is rare in Malaysia), this is not likely to be achieved. Q8, Q9 and Q10 are directed more at understanding the types of rights issues and the offering period duration in Malaysia.

The last five questions were more general in nature but they were still linked closely to rights issues. Q11 was asked to see if SC would know in advance of a forthcoming application from a company. Q12 focused on thin trading problem. It is found from the pilot study that almost all the counters experienced suspended or non-trading period. This question tried to reveal the reasons behind such suspension. Q13 is a direct question to check on the efficiency of the secondary market[16] for rights issues. Finally Q14 and Q15 were meant to get further insights on the equity and bond market as well as some statistics on the total funds mobilised by listed companies in Malaysia. This interview is quite fruitful as it helps in providing the background information which form the basis for Chapter Two and in some ways assist in formulating the research implications section of the conclusion chapter of this thesis.

4.3.1.3. Security Returns

To examine the effect of rights issue announcements on the samples, a daily closing adjusted stock price is used. An adjusted stock price takes into consideration all announcements or events happening in a company such as stock splits, bonus issue, mergers and rights issues. No adjustment is made over taxes, commissions and dividends. The effect of using this price is almost the same as using a company's return index where it ensures that the computed abnormal returns reflect the true value of a company. The only difference is that a return index assumes that dividends are reinvested to buy additional units of a stock. In an analysis such as this, a return index would be more appropriate. However, since abnormal returns calculation is measured by taking the difference between a security's return and a market's return, a consistent measure for both is needed. Datastream is able to generate a return index for a

[16] As explained by Samuels, Wilkes and Brayshaw (1999), a secondary market is where transaction of securities following their first issuance is executed among investors which do not necessarily involved the issuing company.

security, but it could not produce a return index for the Kuala Lumpur Stock Exchange Composite Index. Hence, a daily closing adjusted stock price is used.

A verification of the data is executed where both the adjusted stock price and the return index of Ayer Hitam Tin Dredging Bhd (a counter which went ex-dividend on 20 November 1987) were compared. Discrete returns are computed for this counter by looking at the adjusted price and return index on the ex-dividend date and the day after to justify that the use of adjusted price will not produce a significant impact on the result. It is reported in Table 4-2. As observed in this table, the discrete returns for the adjusted stock price which shows a figure of -0.129825 fell close to -0.129703 which is the returns computed using a return index. It is safe to say that whether an adjusted stock price or a return index is utilised, both will give a result with minimum discrepancy. Hence, this study decided to use an adjusted stock price for the whole samples.

Table 4-2: A comparison of discrete returns for data using an adjusted stock price versus a return index

Data for Ayer Hitam Tin Dredging Bhd.	November 20.11.87	23.11.87	Discrete Returns
Adjusted stock price	RM2.85	RM2.48	-0.129825
Return index	101	87.9	-0.129703

One caveat of using Datastream adjusted stock prices for companies listed outside of the UK especially to countries which have different public holidays is that the prices appear consistently as though none of the observations experienced suspended period. This is the same as saying that thin trading problem is not observed in these countries. To overcome this problem, the unit volume of each sample is printed and is counter checked with the adjusted stock prices during the event period. If certain days in the unit volume appeared as N/A, it will either be the counter is suspended or it is a public holiday for Malaysia.

Before the N/A days are classified suspended, public holidays are eliminated from the event period. If it appears that it is not a public holiday, then these days are classified as a suspended period. The public holiday calendars from 1986 to 1997 were obtained from the Office of the Malaysian High Commissioner, London. Getting the public holiday calendars were quite important as Malaysia national public holidays differed every year particularly to the holidays related to the belief of the Malay, Chinese and Indian people. All the 70 observations were checked against the suspended and public holiday period.

Among the 70 observations, one counter (Pengkalen Industrial Holdings Bhd.) was found missing from Datastream. The dead company list for Malaysian company was referred, but no information is found. Hence a different data base is used to get the stock price for this counter. This database which carries adjusted stock price is supplied by a Malaysian company. Software known as Parity is used to extract the stock prices for this particular counter. The effect of using a different database for one observation is found to produce little changes to the outcome of the findings.

4.3.1.4. Market Returns

The proxy used to represent the market returns in this study is the Kuala Lumpur Stock Exchange Composite Index or KLCI. It is a market capitalisation or value weighted index covering some 100 Malaysian companies from all industries. KLCI is considered the most comprehensive index to represent the return of the market as compared to other indices on the KLSE such as the New Straits Times Industrial Index (NSTII), KLSE Emas Index and KLSE Second Board Index. NSTII includes only the industrial counters and its method of computation adopting a simple average approach with no weight given to the counters tends to give an upward bias, and becomes very volatile. The KLSE Emas Index is better than the NSTII where it covers all the shares listed on the Main Board; but again, it does not give any consideration to shares listed on the Second Board. Finally, the KLSE Second Board Index is just the opposite to that of the KLSE Emas Index where it does not take into account of shares listed on the Main Board. All the three indices are just not suitable

for this study as the samples selected cover almost all the industries and they belong to both the Main and Second Board. Hence KLCI is found to be more appropriate to represent the market returns.

The components counters which made up the KLCI are consistently revised to ensure that the KLCI is sensitive to the changes of investors' expectations, the underlying economy and the Malaysian government policy. More specifically, KLCI effectively reflects the performance of the securities listed on the KLSE. This is proven as evidence by a downward adjustment of the KLCI with the collapse of the Malaysian economy in 1997. The scenario looks especially bleak when most economists and financial forecasters in the world announced that the Asia Pacific countries are going into recession. This has caused the KLCI to plunge below the psychological point level of 500 to 262.7 points on 1 September 1998 (Business Times Asia Online, 9 September 1998).

The base year used to calculate the KLCI is 1977 commencing from 2 January 1977. The selection of the component stocks were based on the stratification of the population of listed companies following their contribution to the Gross Domestic Product of the Malaysian economy. Prospective companies that meet the criteria such as their major business activities contribute significantly to the Malaysian economy and they are actively traded on the KLSE are then grouped into four quartiles (refer to Appendix IV for a detailed listing of the criteria[17]). The first quartile to the fourth quartile represent the smallest market capitalisation to the largest market capitalisation. A final component of stocks came from these quartiles where 5% each of the first and fourth quartiles with the balance of 90% came from the second and third quartiles. The reason for the 5% is necessary to avoid having an overly large or small market capitalisation counters in the component stocks. A large market capitalisation will mean the index is likely to follow the direction of the price changes of these stocks whereas a small market capitalisation will mean that it does not have any significant influence on the index.

[17] This information is taken from the KLSE publication entitled the Kuala Lumpur Stock Exchange Composite Index (KLCI) from page 28-31.

The KLCI used to represent the market returns is compiled from Datastream. The index is adjusted for any capital changes incurred by its constituent stocks such as bonus issue, stock split, rights issue, new shares issue (merger, take-over, loan conversion) and capital reduction. As mentioned earlier on, it would be more appropriate to use a return index of the KLCI to measure the market returns, but Datastream is unable to supply this information. With respect to the KLCI data, similar problem as to using a Datastream adjusted stock price is encountered where the Malaysian public holidays showed an unchanged index during those days. To ensure there is consistency with the abnormal returns calculation between the adjusted stock price and the index, all public holidays appeared in 1986 to 1997 are deleted from the KLCI data.

4.4. Sample's Characteristics

As mentioned in the earlier chapter in Section 3.2.3., the use of event study is not without shortcomings. To increase the validity of the findings and to conclude whether the Malaysian capital market is efficient or otherwise, the shortcomings which arise from the sample's characteristics are discussed in the following sections.

4.4.1. Thin Trading

A discussion related to nonsynchronous and thin trading problem in Chapter Three brings forth a point that when a market adjusted return model is used, this issue will not arise as there is no estimation of systematic risk (β) is needed. However, when a market model is employed to corroborate the MAR result, it is only fair that this issue is covered. This is because a security which is being traded infrequently will introduce a downward bias to its β estimate. No test is made on the existence of such a problem in this study as it is not the objective of this research to extensively discuss the econometric issues of the methodology used to calculate abnormal returns. It is accepted that securities listed in an *emerging market* such as the KLSE are likely to experience thinness of trading (Barnes, 1986). In this study, it is found that thin trading is normally caused by counters being suspended either by the company itself

or by the SC or KLSE. Some of the reasons for this suspension are: (1) at a request of a company or company's solicitors; (2) all the shares of a company are acquired by another company or group of companies; (3) pending clarification of affairs within a company; and (4) reorganisation of a company. The most common reason is at a request of a company or company's solicitors.

Table 4-3: Summary of suspended days for the samples during the test period t=-60 to t=+60

Suspended days	Number of samples	Percentage
0	25	35.71%
1 to 5	23	32.86%
6 to 10	3	4.29%
11 to 15	2	2.86%
16 to 20	3	4.29%
21 to 25	3	4.29%
26 to 30	1	1.43%
31 to 35	3	4.29%
36 to 40	1	1.43%
41 to 45	1	1.43%
46 to 50	2	2.86%
51 to 55	1	1.43%
56 to 60	0	0.00%
61 to 65	1	1.43%
66 to 70	0	0.00%
71 to 75	1	1.43%
Total	70	100.00%

With respect to the samples used in this study during the test period, out of the 70 observations, there are 25 counters which have complete trading days. This is shown in Table 4-3 where the figure represents 35.71% of the whole samples. The other 45 observations or 64.29% of the samples experienced some suspended days but the degree of thinness differed for each observation. 23 out of 45 observations have suspended days that last between one to five days which represent 32.86% of the samples. There are at least 12 observations distributed equally which fall under the suspended days of 6 to 10 days, 16 to 20 days, 21 to 25 days and 31 to 35 days. In addition, 4 observations experienced suspended days between 11 to 15 days and 46 to 50 days. While the suspended days of 26 to 30 days, 36 to 40 days, 41 to 45 days, 51

to 55 days, 61 to 65 days and 71 to 75 days have one observation in each range respectively. The frequency of suspended days in the samples is by itself an evidence of thin trading problem with listed securities on the KLSE.

4.4.2. Company Size

Section 3.2.3.2. provides evidence that small market capitalisation stocks generally outperform stocks with large market capitalisation in the 1980s and early 1990s; but in the mid and late 1990s, the size effect tends to reverse where large market capitalisation stocks consistently beat the small market capitalisation stocks. Having this in mind, it is important to analyse the size of each company which made up the samples in this study. A company size is measured by looking at the market capitalisation (i.e. price per share multiplied by the number of shares outstanding) of each observation one day prior to the announcement of the rights issues. During the period 1987 to 1996, the samples exhibit an average company size of RM296.92 million. If the figure is used as a benchmark to split the samples into two groups where one group consists of observations having market capitalisation greater than the average in the market and the second group included observations that are below the average market capitalisation, it is found that 21 observations belong to the earlier group and 49 observations made up the below average group. In other words, 30% of the samples are securities with above average size and 70% are those classified as below average size. The smallest market capitalisation security was RM15.77 million in 1987 while the largest market capitalisation security was RM2240 million in 1992.

The approach used to split the samples into these two categories might be unfair as it does not take into account of the time when the rights issue announcements actually occurred. Practically, it is expected that observations which belong to the year 1987 will have a lower market capitalisation as compared to the

Table 4-4: Market capitalisation on samples' companies based on the rights issue announcement's year

	Company	Announcement year	Company size (RM1,000,000)	Above average size	Below average size
1	AH TIN	87	51.24		*
2	COLD	87	124.55		*
3	FIMA	87	82.58		*
5	FIRST	87	59.69		*
4	I&P	87	278.97	*	
6	JUARA	87	21.71		*
7	KLIH	87	115.34		*
8	LARUT	87	15.77		*
9	MAICA	87	71.2		*
10	MMINING	87	1358.7	*	
11	MRESOURC	87	135.1		*
12	PILECON	87	86.45		*
13	ROXY	87	303.85	*	
14	TIME	87	29.57		*
	Average size/No. Observations		195.34	3	11
	Percentage			21.43%	78.57%
1	ARABDEV	88	562.13	*	
2	DNP	88	147.62		*
3	GEORGETOWN	88	21.29		*
4	MPI	88	142.86		*
5	MWE	88	35.63		*
6	RALEIGH	88	115.26		*
7	S'GOR DRED	88	87.04		*
	Average size/No. Observations		158.83	1	6
	Percentage			14.29%	85.71%
1	AHTIN	89	96.62		*
2	AUSTRAL ENT	89	258.37	*	
3	BERJAYA	89	368.63	*	
4	DAYAPI	89	84.7		*
5	HUME	89	536.16	*	
6	IJM	89	141.5		*
7	LIEN HOE	89	179.72		*
8	LINGUI	89	79.36		*
9	M.PLANTATION	89	121.8		*
10	MAL/WATA	89	333.29	*	
11	MARUICHI	89	166.14		*
12	MECHMAR	89	78.9		*
13	ROXY	89	189.9		*
14	YTL	89	315.44	*	
	Average size/No. Observations		210.75	5	9
	Percentage			35.71%	64.29%
1	DUFF	90	65.52		*
2	FAREAST	90	58.09		*
3	KG LANJUT	90	45.9		*
4	MMOSAIC	90	310.08	*	

	Company	Announcement year	Company size (RM1,000,000)	Above average size	Below average size
5	MWE	90	156.6	*	
6	PJDEV	90	139.65	*	
7	TEMERLOH	90	70.77		*
	Average size/No. Observations		120.94	3	4
	Percentage			42.86%	57.14%
1	CASH	91	112.36		*
2	MHS	91	565		*
3	SETRON	91	91.23		*
4	TRI	91	523.59	*	
	Average size/No. Observations		323.05	1	3
	Percentage			25.00%	75.00%
1	DNP	92	131.33		*
2	MAS	92	2240	*	
	Average size/No. Observations		1185.67	1	1
	Percentage			50.00%	50.00%
1	AMALGAM	93	167.2		*
2	KUANTAN	93	49.8		*
3	KUMP EMAS	93	324.79		*
4	MULPHA	93	797.2	*	
	Average size/No. Observations		334.75	1	3
	Percentage			25.00%	75.00%
1	ANGKASA	94	252.06		*
2	CCP	94	121.6		*
3	DENKO	94	59.4		*
4	METACORP	94	775.28	*	
5	MPI	94	814.58	*	
6	MTD CAP	94	287.1		*
7	PALMCO	94	762.55	*	
8	PIH	94	336.31		*
9	PSCI	94	262.44		*
	Average size/No. Observations		407.92	3	6
	Percentage			33.33%	66.67%
1	DNP	95	418.66	*	
2	GRGT	95	266.17	*	
3	HIL	95	85.18		*
4	SJOHOR	95	128.89		*
	Average size/No. Observations		224.73	2	2
	Percentage			50.00%	50.00%
1	A&M	96	300.8		*
2	AMAL	96	1097.58	*	
3	CREST	96	267.33		*
4	MULPHA	96	1633.86	*	
5	TENGGARA	96	268.11		*
	Average size/No. Observations		713.54	2	3
	Percentage			40.00%	60.00%

ones appearing in 1992 due to inflation rise in market values and time value of money consideration. Hence a stratification of the samples based on the announcement year is first executed before an average size is established in each year during the study period for a classification to be made on the observations on a yearly basis. This is shown in Table 4-4.

It appears that in the years 1992 and 1995, the observations are distributed evenly between the above and below average size company. Other than these two years, the rest of the period under study showed that most of the observations fell into the category of below average size company. The stratification of the samples based on its yearly average size also provide evidence that the majority of the samples are companies with below average size. They formed 68.57% of the total samples with 48 observations. The remaining 22 observations are classified as above average size companies which form 31.43% of the whole observations.

4.4.3. Distribution Characteristics of Abnormal Returns

The use of daily data to determine how fast the stock prices react to rights issue announcements raises a number of methodological problems such as those discussed in Section 3.2.3.1. As in most analyses, this study uses a t-test to check on the non-existence of abnormal returns. Corrado (1989) finds that it is inappropriate to use this test especially when the data is not normally distributed. His statement is not without support. Berry et al. (1990), BW (1985) and Coutts, Mills and Roberts (1995, 1996) agreed that a violation of the normal distribution property would mean an incompatible test is employed to make inferences. These researchers also emphasised that if the abnormal returns or residuals deviate from the serial correlation and equal variance (homoscedasticity) assumptions underpinning the statistical analysis in the event study method, the conclusion about the effect of an event on stock returns may be erroneous. In contrast to the point made by those authors with respect to the result, Rumsey (1996) argued that the violations of the underlying assumptions may not make a big difference in the result. He stressed that

Although it is logically true that conclusions based on false premises cannot be defended, it is relevant to ask whether the violations of the assumptions make an important difference in the results of traditional event studies. Mapmakers frequently assume the world to be flat, but this rarely leads to serious navigational difficulties (1996, p. 79).

Despite Rumsey's comment, most event studies (e.g. Bohren, Eckbo and Michalsen, 1997; Eckbo and Masulis, 1992; Kang, 1990) believed that the assumptions underpinning a t-test have to be met; however, no direct test is usually carried out as they assumed that with a large sample size these assumptions will be satisfied. This study goes an extra mile to test all the t-test assumptions for both the MAR and SIMM approaches which are discussed in the following section. It is a belief of this study that a parametric test has to meet the assumptions underlying its use in order for the inferences not to be misspecified; and that by assuming an assumption is met is not the same as testing it directly on the data.

4.4.3.1. Non-normality

Graphical presentations and a Jarque-Bera (JB) test of normality are executed for the daily stock return distribution for the whole samples which use the market adjusted return approach to calculate abnormal returns. Based on JB test, a normal distribution is determined by looking at the skewness, kurtosis and the JB probability of each observation. An observation is considered normal if the shape of probability distribution is mesokurtic. Normally, this situation is denoted as $X \sim N(\mu,\sigma^2)$ which is the same as saying X is distributed as normal distribution with mean μ and variance σ^2. The JB statistic in this situation would have a kurtosis, or the tallness or flatness, with a value equal to 3 and the JB probability greater than 0.05. If the JB probability is less than 0.05, the hypothesis that the abnormal returns are normally distributed is rejected. A JB test is run on the individual security daily returns of the MAR approach for the 70 observations. The result from this test revealed substantial departures from normality. This is similar to the result found by Berry et al. (1990) and Coutts et al. (1995). Only three out of 70 observations displayed evidence of

normality at a very minimum significance levels. Generally, the evidence suggests that the daily stock returns' distributions are significantly skewed and leptokurtic or slim-tailed except for one case which is platykurtic or fat-tailed.

The JB test is also performed on the average abnormal returns or average residuals to ensure that the distributional property of the least squares estimates is not undermined and the power of the test is increased (which is discussed in Section 3.2.3.1 (b)). Figure 4-4 exhibits that the average abnormal returns' distribution using the MAR approach is skewed to the right with a kurtosis of 14.18188. The JB probability of 0.000 reject the null hypothesis that the average abnormal returns are normally distributed. Instead it may accept the fact that the distribution is significantly slim-tailed. However, further analysis is needed to make sure that the distribution is not caused by an unusual movement in the observations. Hence, a visual examination of the average abnormal returns against the event period of sixty days surrounding the announcement date (t=0) is plotted. The scatterplots in Figure 4-5 reveal an obvious outlier after the announcement day. Inspection of each observation showed that Juara Perkasa Corporation Bhd came up with 163.41% cumulative average abnormal returns (CAAR). When its daily stock return is analysed, this counter exhibited a return of 213.39% on day t=+15. Further investigation showed that Juara was suspended for a long period which is 29 days before t=+15 and 44 days after this day. What actually causing the tremendous jump in the daily stock return is that this counter was traded at RM10 when the suspension was lifted on day t=+15 as compared to its last traded price of RM3.18 on day t=+6. On day t=+16, once again this counter was suspended until day t=+48 when it was trading with a more reasonable price which was closed at RM2.50. A point worthy to be mentioned here is that Juara announced its rights issue on 16 July 1987 and the stock market crashed in October 1987. This incident may have an impact to the performance of this counter. Once the outlier is corrected by assuming that Juara stock on day t=+15 is suspended, it neutralised the CAAR to 3.63%. Thus, it is only fair that the outlier is adjusted so as the result of this study is not biased by the influence of one extreme observation. When the average abnormal returns using the

Figure 4-4: Distribution of average abnormal returns for 70 observations during the 121 days event period using the MAR approach.

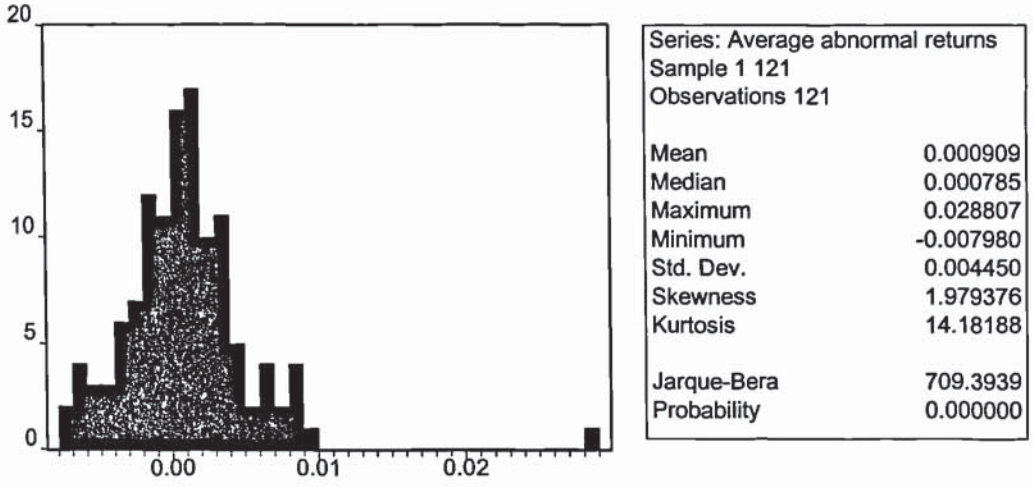
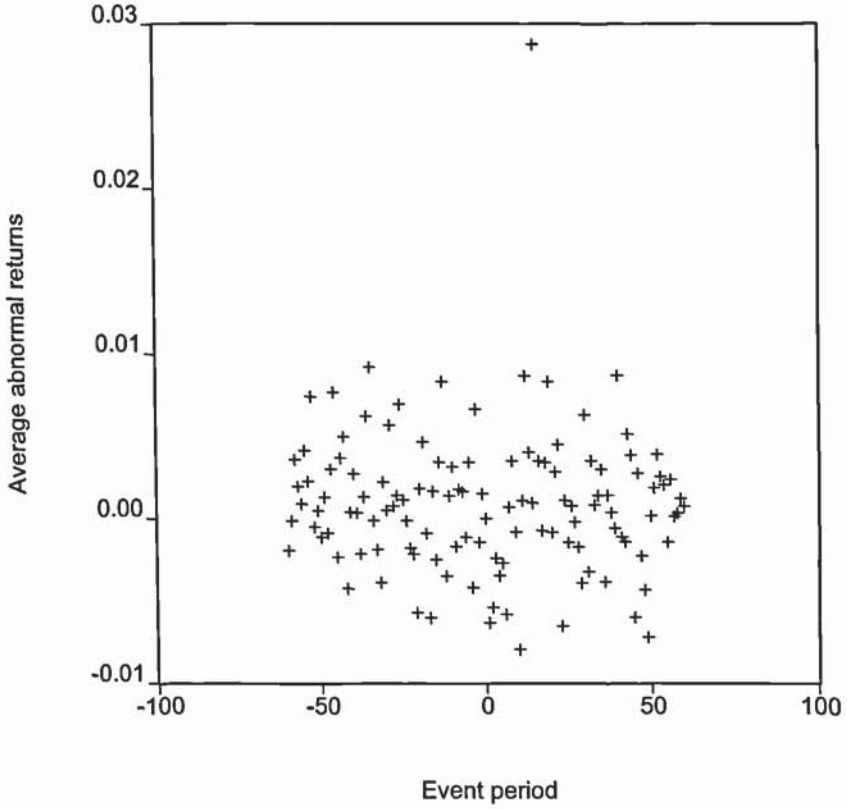
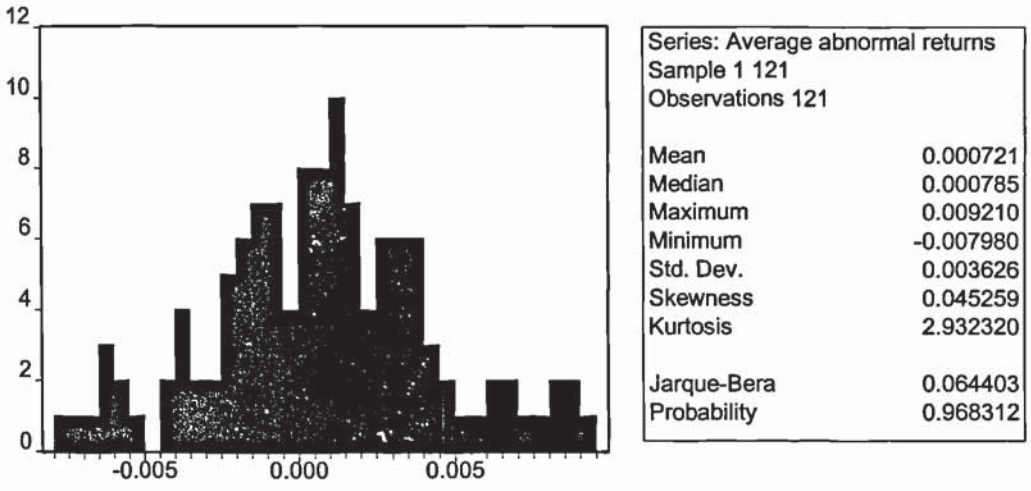


Figure 4-5: Serial correlation test of average abnormal returns against time for MAR approach with no adjustment of outlier



MAR approach is graphed and the JB test is performed in Econometric Views (EVIEWS), it can be observed that the distribution is more normal and symmetrical. This is presented in Figure 4-6. The skewness is equal to 0.045259 and the kurtosis is equal to 2.932320 inferring that it is not a perfect mesokurtic. However, with a JB probability of 0.968312 which is greater than the level of significance of 0.05, the hypothesis that the average abnormal returns are normally distributed is accepted.

Figure 4-6: Distribution of average abnormal returns for 70 observations during the 121 days event period using the MAR approach and correcting for the outlier

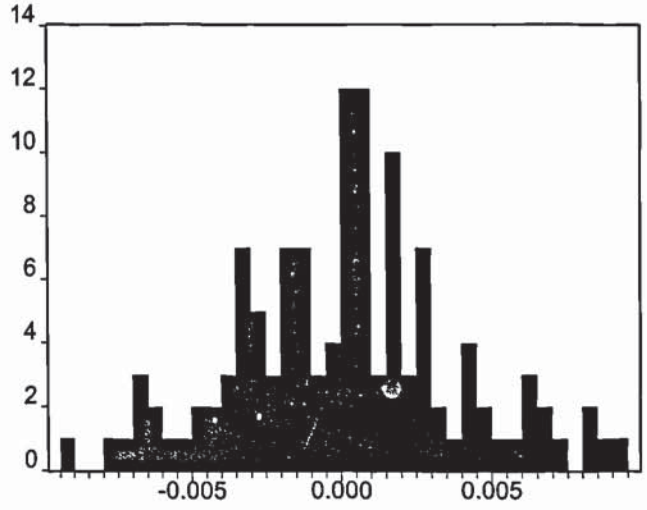


The same test is also performed on the average abnormal returns or residuals for the SIMM approach. In the over view of this chapter, it is stated that α and β are estimated by using the Scholes-Williams adjustment of thin trading method. In addition, the suspended period are treated in two different ways. First, it repeats the price of the last trading day before the suspension. This is done so as the estimation period and the event period have the same measure for consistency purposes. Second, the suspended days are treated as having zero abnormal returns which is a similar treatment executed in the MAR approach. It is only fair that both results are reported to justify the validity of the MAR result.

Figure 4-7 presented the distribution of the average abnormal returns when the suspended period repeated the last traded price. At the 95 percent significance level,

the skewness and kurtosis exhibit a value of 0.089234 and 2.960238 respectively. These figures are not far from the normal distribution of zero skewness and kurtosis of three. With a JB probability of 0.919177 which is much greater than 0.05, this result suggests that the average abnormal returns are normally distributed. The second treatment of suspended period is then tested and the result is generated in Figure 4-8. As expected, the graph exhibits a symmetrical distribution. The JB statistic of 0.045245 and 2.926927 representing the skewness and kurtosis of the distribution further support the graphical analysis. With a JB probability of 0.966473 which is almost similar to the MAR approach, again the hypothesis of the average abnormal returns' normality could not be rejected.

Figure 4-7: Distribution of average abnormal returns for 70 observations during the 121 days event period using the SIMM approach. Scholes-Williams adjustment of α and β has been adopted and suspended period are treated as having a repetition of the price of the previous trading day.

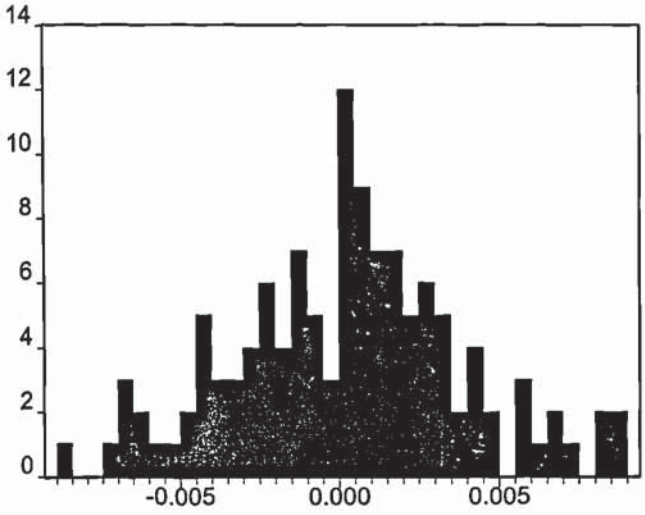


Series: Average abnormal returns	
Sample 1 121	
Observations 121	
Mean	0.000137
Median	0.000354
Maximum	0.009250
Minimum	-0.009020
Std. Dev.	0.003698
Skewness	0.089234
Kurtosis	2.960238
Jarque-Bera	0.168553
Probability	0.919177

As all evidence by the MAR and SIMM models provide similar results of normality in the average abnormal returns' distribution, it would mean that one of the main assumptions in a parametric testing is met in the samples used in this study. Therefore, a compatible test is justified to make inferences on the findings. This evidence contradicts to that found by Berry et al. (1990) and Coutts et al. (1996) where non-normality is more apparent in their event study using the SIMM approach with

US data in the earlier study and UK data in the later study. Whether normality is a common phenomenon in the distribution of average abnormal returns on the KLSE remains to be answered by future research in this part of the world.

Figure 4-8: Distribution of average abnormal returns for 70 observations during the 121 days event period using the SIMM approach. Scholes-Williams adjustment of α and β has been adopted and suspended period are treated as having zero abnormal returns.



Series: Average abnormal returns	
Sample 1 121	
Observations 121	
Mean	0.000258
Median	0.000486
Maximum	0.008975
Minimum	-0.008930
Std. Dev.	0.003634
Skewness	0.045245
Kurtosis	2.926927
Jarque-Bera	0.068205
Probability	0.966473

4.4.3.2. Serial Correlation or Autocorrelation

The second assumption underpinning the parametric testing particularly a t-test is that the average abnormal returns or residuals are not serially correlated or autocorrelated. Symbolically, it can be noted as $E[e_{i,t}e_{j,t}]=0$ where $i \neq j$. The term autocorrelation is defined by Kendall and Buckland (cited in Gujarati, 1992, p. 352) as "correlation between members of series of observations ordered in time [as in time series data] or space [as in cross-sectional data]" (1971, p. 8). In this study the terms autocorrelation and serial correlation are treated synonymously although for some authors they would prefer to distinguish between the two. Given the above definition, the presence of serial correlation in event study would either mean: (1) the average abnormal returns in period t is correlated to the returns in period t-1 or in other words, the average abnormal returns of tomorrow are influenced by todays average abnormal returns or (2) an increase or decrease of a security's return for company i will have an

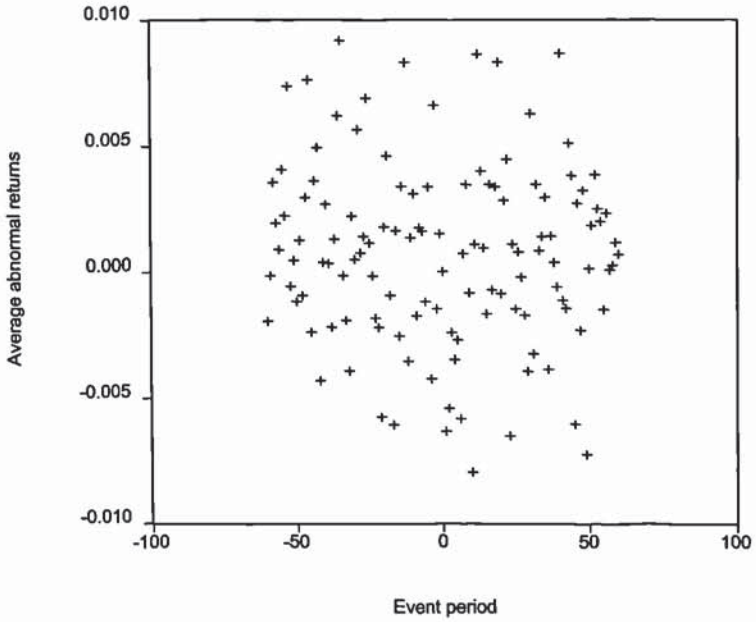
effect on the security's return of company j. If such situations occur, the OLS estimator is no longer having the best linear unbiased estimator as its variance is not the least minimum. In event study, serial correlation problem also implies that the weak form of efficient market hypothesis is violated in the sense that the knowledge of yesterday return can be arbitraged the next day. This problem is exacerbated if the data is traded nonsynchronously.

To detect serial correlation, a visual examination of the average abnormal returns is implemented. It provides a clue to the presence of such problem. By using EVIEWS, a scatter diagram of average abnormal returns against event period is plotted. Since a graphical presentation is highly subjective in nature, a Durbin-Watson (DW) d test is also employed as a supplement to the qualitative approach. In cases where there is no association between the average abnormal returns, the d statistic will be around 2. If the d statistic is less than 2, a positive serial correlation is expected. While if it falls somewhere between 2 and 4, a negative serial correlation is indicated. Underlying this test is an assumption that a regression model includes an intercept parameter. In a regression model such as the MAR where the intercept is assumed to be zero (α=0) that it goes through the origin, this test cannot determine the existence of autocorrelation (Gujarati, 1992, p. 361). However, Farebrother (1980) has calculated d values in the absence of an intercept and his Durbin-Watson table is referred for the MAR approach.

First, an analysis is made on the average abnormal returns of the MAR approach which is not adjusted for the outlier. The scatter diagram is shown in Figure 4-5. By looking at the scatterplots, a pattern could not be observed which suggests the non-existence of serial correlation. To ensure that this situation persists, a DW test is executed. An estimated d for this sample is 1.822424 (refer to Table 4-5) which lies in between the lower and the upper limit of the Farebrother (1980, p. 1558-1561) critical values of d_L=1.634 and d_U=2.286 at the 95% confidence level. Based on DW decision rules, no conclusive evidence regarding the absence of positive serial correlation can be made since the estimated d falls under the *indecisive zone* of $d_L \leq d \leq d_U$.

Following this, the average abnormal returns of the MAR approach in which the outlier has been corrected are also plotted and shown in Figure 4-9. When Table 4-5 is referred, the DW d statistic of 1.989056 also lies within the same *indecisive zone* as the earlier sample. Since no decision can be concluded based on DW statistics, a non-parametric runs test for large number of observations is implemented. A run is defined as "an uninterrupted sequence of one symbol or attribute, such as + or -" (Gujarati, 1992, p. 359). If the number of runs (k) lies between $E(k) \pm 1.96\sigma_k$, it is accepted that the average abnormal returns or residuals are randomly distributed with 95% confidence level and that no serial correlation is observed (Gujarati, 1995, p. 420). When the number of runs is computed for the MAR approach with and without an adjustment of the outlier, the figures equal to k=64 and k=60 respectively. Since both figures lie in between $48.64 \leq k \leq 68.189$, the null hypothesis of no serial correlation is accepted.

Figure 4-9: Serial correlation test of average abnormal returns against time for MAR approach with a correction of the outlier



Furthermore, when the average abnormal returns of the SIMM approach that has been corrected for the outlier and where suspended period are treated as (1) repeating the price of the previous trading day or (2) having zero abnormal returns,

similar evidence of no serial correlation is still observed. Figure 4-10 and Figure 4-11 presented both scenarios. The pictures obtained from both data revealed that the average abnormal returns are randomly distributed suggesting that the average abnormal returns of yesterday could not predict the average abnormal returns of today. To enhance the validity of the visual examination, the DW d statistic is executed in both samples. At 95 percent significance level, the SIMM approach which repeats the price of the previous trading day during the suspended period came up with 2.025335 and the SIMM approach which treated the suspended period as having zero abnormal returns exhibit 2.049957. These two figures are included in Table 4-5. As compared to the DW critical values, it is concluded that both samples do not reject the null hypothesis of no serial correlation. Overall, whether the MAR or the SIMM performance measure is used, the second assumption of no serial correlation among the average abnormal returns is not a problem to this study. This evidence contradicts the UK study by Coutts et al. (1995), but is consistent with the US study by Berry et al. (1990).

Figure 4-10: Serial correlation test of average abnormal returns against time for SIMM approach with a correction of the outlier and suspended period are treated as repeating the price of the previous trading day before the suspension.

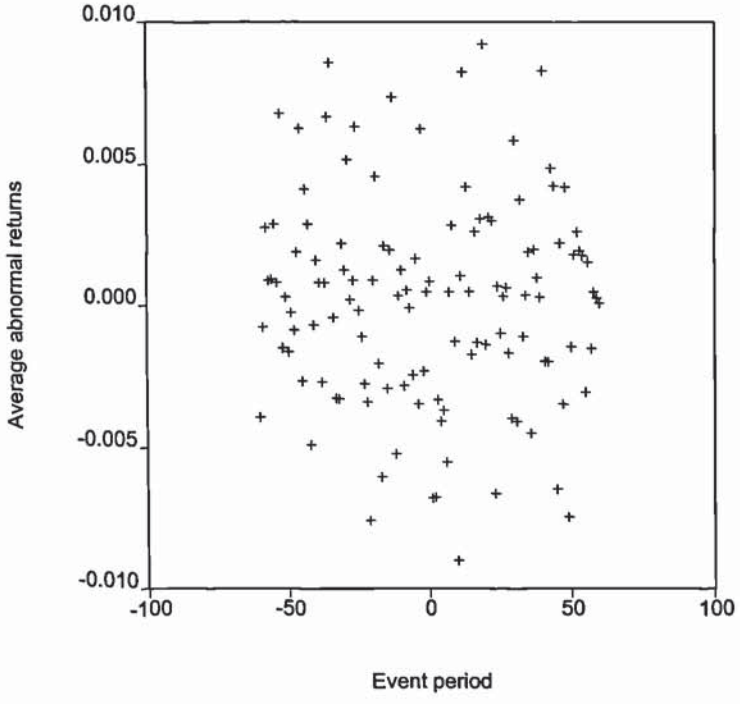


Figure 4-11: Serial correlation test of average abnormal returns against time for SIMM approach with a correction of the outlier and suspended period are treated as having zero abnormal returns.

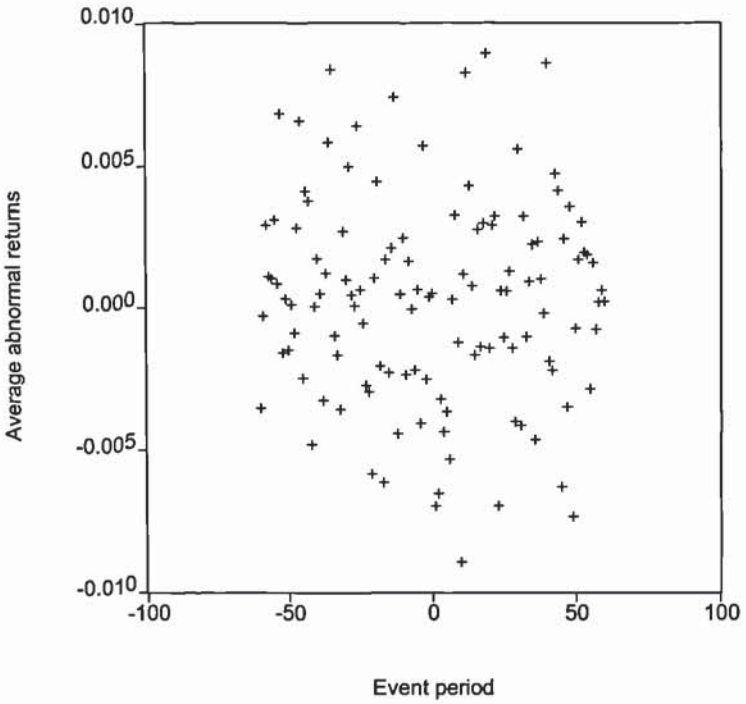


Table 4-5: Statistical characteristics of average abnormal returns for 70 observations during the 121 days event period

Performance Measure	Durbin-Watson Serial Correlation Statistical (d)	Levene Heteroscedasticity Levene F	Levene Heteroscedasticity Probability (p)
MAR (no adjustment of outlier)	1.822424	0.148177	0.700971
MAR (outlier corrected)	1.989056	2.429385	0.092486
SIMM (SW adjustment of α and β. Suspended period repeat the price of the last trading day before the suspension)	2.025335	1.960690	0.145320
SIMM (SW adjustment of α and β. Suspended period are having zero abnormal returns)	2.049957	2.049983	0.133297

4.4.3.3. Heteroscedasticity

The third assumption underlying a parametric testing which is later used to see the effect of rights issue announcements is equal variance or homogeneity of the residuals' variance or average abnormal returns' variance. What is meant by this is that the variance of the average abnormal returns for each observation is the same for all 70 observations ($[E(e_{i,t}-E[e_{i,t}])^2)]=\sigma^2$). If the randomly distributed residuals' variances are not homogenous, the parameters (α and β) estimated by OLS approach are inefficient (Collins and Dent, 1984; Coutts et al., 1995; Giaccotto and Ali, 1982); and these parameters are no longer having the minimum variance within the entire class of all linear unbiased estimators (Coutts et al., 1995; Fisher and Kamin, 1985; Giacotto and Ali, 1982; Gujarati, 1995, p. 324). As a result, the likelihood of drawing misleading inferences may occur out of the hypothesis testing and the conclusion no longer gives an adequate representation of reality.

As in the previous section, to detect whether heteroscedasticity is present, a graphical examination of the residual variance or average abnormal returns' variance against time is executed to see if there exists any systematic pattern. A scatter diagram is plotted in Excel for both the MAR and SIMM approaches which is generated in Figure 4-12 to Figure 4-15. Visual inspection of each scattergram with or without the adjustment of the outlier or whether suspended period are treated as repeating the last trading day before suspension or having zero abnormal returns, exhibits no systematic pattern among the residual variance during the event period. This is suggesting that perhaps no heteroscedasticity is present in the data.

To validate the result, a statistical test for equality of variances of the residuals using Levene test in EVIEWS is implemented. This test is computed by taking the absolute difference between the value of each residual variance and the residual variances' mean. It then performs a one-way analysis of variance on the differences. The null hypothesis to be tested is that the residual variances are equal where H_o: $[E(e_{i,t}-E[e_{i,t}])^2)]=\sigma^2$ for all i and t. If the Levene test computed F-value is greater than

Figure 4-12: Scattergram of residual variance against time for MAR approach with no adjustment of outlier

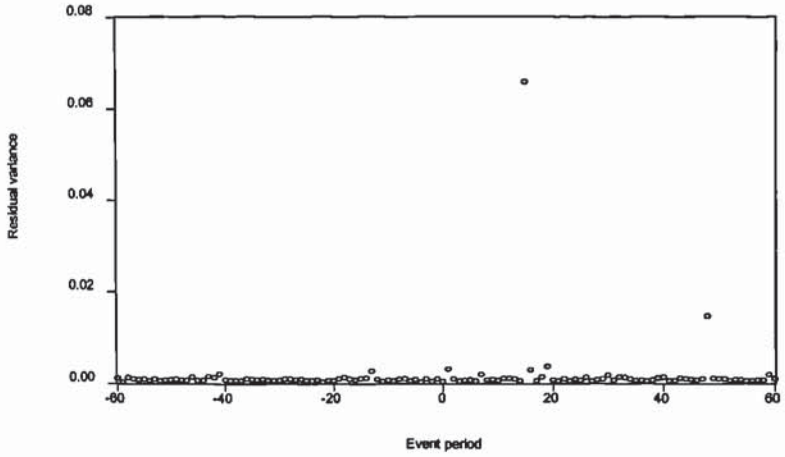


Figure 4-13: Scattergram of residual variance against time for MAR approach with a correction of the outlier

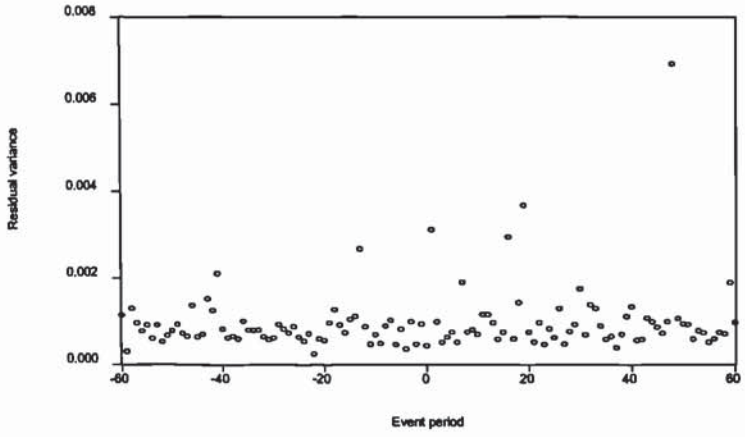


Figure 4-14: Scattergram of residual variance against time for SIMM approach with a correction of the outlier and suspended period treated as repeating the price of the previous trading day before suspension

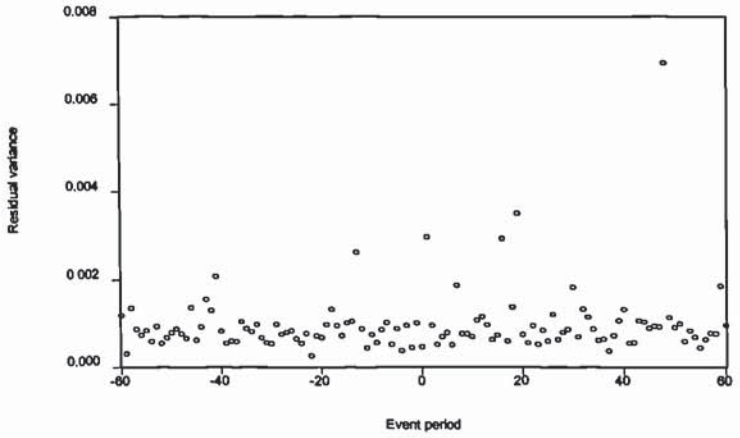
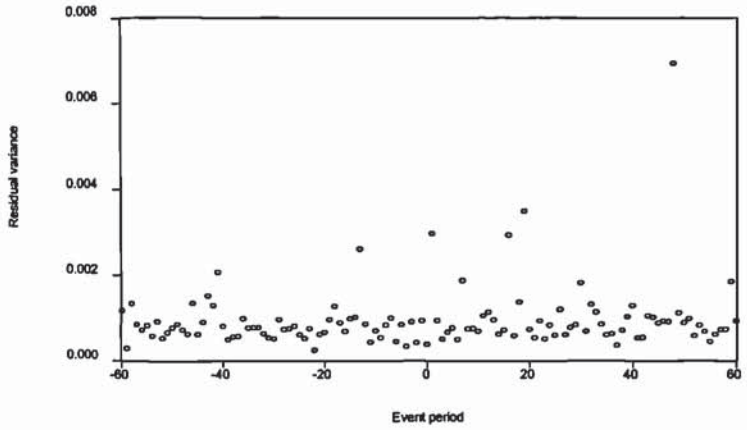


Figure 4-15: Scattergram of residual variance against time for SIMM approach with a correction of the outlier and suspended period treated as having zero abnormal returns



the critical F-value from F-distribution with k-1 numerator degrees of freedom and n-k denominator degrees of freedom, the null hypothesis is rejected. This situation shows evidence of the presence of heteroscedasticity in the data. In the absence of heteroscedasticity, the computed Levene F-value will be lower than the critical F-value and the Levene probability (p) will be sufficiently high. This test is run for the MAR and SIMM approach and the result is generated in Table 4-5.

The MAR approach which includes the outlier exhibited a very low Levene F value of 0.148177 with a probability of 0.700971. Once the outlier is corrected, the Levene F value increases to 2.429385 but still lower than the critical F value of 3.07. Its Levene p shows a value of 0.092486 which is higher than 0.05 suggesting that heteroscedasticity does not appear to be a problem to the residuals. Similar evidence is presented in the SIMM performance measure. Whether the suspended period repeat the price of the previous trading day before the suspension or having zero abnormal returns, the Levene F statistic revealed equal variances among the observations which is statistically significant in the 95 percent confidence level with a figure of 1.960690 and 2.049983 respectively. Since the critical F value of 3.07 exceeded the estimated F Levene values and the Levene p values greater than the 0.05 level of significance, the null hypothesis of homogeneity among the residual variances is acceptable. This

finding is consistent to Berry et al. (1990) but contradicts to those reported in Coutts et al. (1995) and Giaccotto and Ali (1982).

4.5. Summary

The research methodology used in the first half of the thesis which is later employed in the cross-sectional analysis of subsequent chapters is discussed thoroughly. 70 clean rights issue announcements are finally selected among the total population of 356 rights issue announcements on the KLSE listed securities between 1987 to 1996. This sample includes securities which are categorised by the KLSE into seven major industries of trading/services, mining, construction, property and development, industrial products, consumer products and plantations. Financial institutions and trust funds companies are excluded as companies in these sectors are normally those with high market capitalisation and the classification of their accounting variables are very different from other companies. A daily closing adjusted stock price and the KLCI which represents the market returns are collected for each observation. In addition, an analysis of the sample's characteristics provide evidence that the data is suffering from thin trading and in favour of below average size companies.

An emphasis of this chapter has been on the performance measures of the MAR and the SIMM models which are adopted to test on the efficiency of the KLSE in the next chapter. Since both models used a t-test to check on the non-existence of abnormal returns, the distribution characteristics of the average abnormal returns or residuals are examined. It is found that the residuals are normally distributed, serially uncorrelated and have equal variances unlike to the UK and US evidence. Since all the statistical assumptions underpinning a parametric test are met, this study continues to use the traditional test of event study, which is the t-test. The following chapter reports the result of this test with respect to rights issue announcements' impact and market efficiency of the KLSE.

CHAPTER 5: THE EFFECT OF RIGHTS ISSUE ANNOUNCEMENTS ON STOCK RETURNS FOR SECURITIES LISTED ON THE KUALA LUMPUR STOCK EXCHANGE

5.1. Introduction

The previous two chapters included a lengthy discussion on the literature review and the research design adopted in this study to see the effect of rights issue announcements in Malaysia. Since all the econometric and statistical issues have been discussed in the last chapter, the emphasis in this chapter is to report whether the Kuala Lumpur Stock Exchange is semi strongly efficient with respect to the announcement of rights issues and to check whether the corporate finance theories' implications on the effect of an event can be supported in the context of an *emerging market*. Basically, it is answering two research questions of the thesis which are:

(i) the efficiency of the Kuala Lumpur Stock Exchange with respect to companies announcing rights issues; and

(ii) the importance of corporate finance theories in explaining rights issue announcements' effects in a third world situation.

5.2. Stock Returns' Behaviour Before Announcement

The daily average abnormal returns (AARs) and a t-test to determine whether the stock returns associated with rights issue announcements are statistically different from zero as well as the cumulative average abnormal returns (CAARs) are reported in Table 5-1 to Table 5-3. Table 5-1 presents the results when the MAR approach is employed. Table 5-2 and Table 5-3 reported the results using a SIMM approach where a suspended period is treated as having zero abnormal returns for the former or repeating the price of the last trading day before the suspension for the latter. Furthermore, α and β are estimated utilising a Scholes-Williams (SW) adjustment of thin trading for the SIMM model. The results generated for both the MAR and the

SIMM performance measures have already been corrected for the outlier mentioned in the last chapter.

As observed in Table 5-1, there is a positive trend of abnormal stock returns before the announcement of rights issues or during the pre-announcement period which is day t=-60 to day t=-1. The daily average abnormal returns (AARs) on each event day t are not significantly different from zero except for days t=-53, t=-35 and t=-21 with a t-value of 2.05125 , 2.73517 and -2.0003. It is also observed that there is a significant gain in value of 6.7908% (t-value = 15.55035). These results suggest that the stock market anticipated rights issues long before the official announcement date. A sharp rise of the statistically significant abnormal returns before the announcement day might be due to the leakage of inside information. These abnormal returns may suggest insider trading activity existed in the Malaysian stock market, but more evidence would be required to support that interpretation. Investors may be trading on private knowledge which moves the stock prices upward. This is consistent to the conclusion reported by Phoon (1990) in the same market and by Kang (1990) in the Korean stock market.

Another possible explanation for the increasing trend of abnormal stock returns may come from the buying pattern of those individuals who are close to the company. This is an indirect form of insider trading activity. Instead of informing their close families or collaborators of this information, they start to purchase the relevant shares. In this case, the buying pattern of these group of people may convey a message to the public indirectly of some factors that may have a positive effect on the stock prices. As a result, investors will start demanding for these shares. This rationale would imply that a demand pattern has pushed the share price upward. How true is the justification in the Malaysian context however is left to be investigated in future research.

Table 5-1: Daily average abnormal returns surrounding the announcement of rights issues for 70 observations (1987-1996) using the MAR approach. Suspended period are treated as having zero abnormal returns.

Day	AAR	AAR t-test	CAAR	Day	AAR	AAR t-test	CAAR
-60	-0.00198	-0.49135	-0.00198	0	2.71E-05	0.011038	0.067935
-59	-0.00016	-0.08119	-0.00215	+1	-0.00636	-0.95314	0.061577
-58	0.003586	0.833267	0.00144	+2	-0.00544	-1.45478	0.056136
-57	0.001933	0.524332	0.003373	+3	-0.00243	-0.90831	0.053708
-56	0.000876	0.264886	0.004249	+4	-0.00349	-1.17414	0.050214
-55	0.0041	1.141618	0.008349	+5	-0.00273	-0.838	0.047484
-54	0.002235	0.768477	0.010584	+6	-0.00586	*** -2.1939**	0.04162
-53	0.007404	*** 2.05125**	0.017988	+7	0.000706	0.135529	0.042327
-52	-0.00054	-0.19788	0.017453	+8	0.003496	1.075871	0.045822
-51	0.000465	0.15143	0.017917	+9	-0.00084	-0.24909	0.044985
-50	-0.00116	-0.3484	0.016756	+10	-0.00798	*** -2.5468**	0.037006
-49	0.001249	0.343789	0.018005	+11	0.001085	0.267655	0.038092
-48	-0.00091	-0.28585	0.017091	+12	0.008672	*** 2.14425**	0.046763
-47	0.002983	0.982217	0.020074	+13	0.004033	1.092294	0.050797
-46	0.007651	1.72787	0.027725	+14	0.000937	0.328483	0.051734
-45	-0.00239	-0.79371	0.025338	+15	-0.00168	-0.51678	0.050055
-44	0.003662	1.163302	0.028999	+16	0.003512	0.54114	0.053567
-43	0.00497	1.065154	0.03397	+17	-0.00072	-0.24989	0.052846
-42	-0.0043	-1.01554	0.029672	+18	0.00341	0.75572	0.056256
-41	0.000393	0.071663	0.030065	+19	0.008353	1.152627	0.064609
-40	0.002702	0.790622	0.032767	+20	-0.00086	-0.26615	0.063747
-39	0.000348	0.118256	0.033115	+21	0.002841	1.054362	0.066588
-38	-0.00219	-0.7209	0.030929	+22	0.00449	1.21535	0.071078
-37	0.001295	0.448474	0.032223	+23	-0.00655	*** -2.5847**	0.064532
-36	0.006237	1.6582	0.03846	+24	0.001092	0.32058	0.065623
-35	0.00921	*** 2.73517**	0.047671	+25	-0.00148	-0.5038	0.064143
-34	-0.00013	-0.03944	0.047539	+26	0.000785	0.182624	0.064928
-33	-0.00191	-0.56816	0.045629	+27	-0.0002	-0.07907	0.064726
-32	-0.00391	-1.29815	0.041717	+28	-0.00173	-0.53001	0.062994
-31	0.002218	0.777305	0.043935	+29	-0.00396	-1.09935	0.059031
-30	0.000508	0.173052	0.044443	+30	0.006305	1.262575	0.065336
-29	0.005696	1.571356	0.050139	+31	-0.00327	-1.05547	0.062065
-28	0.000763	0.224148	0.050903	+32	0.003509	0.79168	0.065573
-27	0.001411	0.440126	0.052314	+33	0.000841	0.195708	0.066414
-26	0.006933	1.97248	0.059247	+34	0.001385	0.38977	0.067799
-25	0.001137	0.381192	0.060384	+35	0.002976	1.042532	0.070776
-24	-0.00015	-0.05612	0.06023	+36	-0.00388	-1.28769	0.066898
-23	-0.00184	-0.58078	0.058393	+37	0.001412	0.612926	0.06831
-22	-0.00221	-1.21012	0.056187	+38	0.00037	0.118735	0.068681
-21	-0.00576	*** -2.0003**	0.05043	+39	-0.00059	-0.15001	0.068086
-20	0.00179	0.642119	0.052221	+40	0.008704	*** 1.9986**	0.07679
-19	0.004637	1.259756	0.056857	+41	-0.00114	-0.40642	0.075655
-18	-0.00092	-0.21682	0.055938	+42	-0.00147	-0.51418	0.074183
-17	-0.00607	-1.6924	0.049867	+43	0.005136	1.316969	0.079319
-16	0.00163	0.506761	0.051497	+44	0.003851	1.029732	0.083171
-15	-0.00256	-0.66642	0.048939	+45	-0.00605	-1.7357	0.077118
-14	0.003418	0.860669	0.052357	+46	0.002743	0.857525	0.079862
-13	0.008332	1.34937	0.060689	+47	-0.00231	-0.61406	0.077555
-12	-0.00353	-1.00634	0.057162	+48	0.003272	0.328755	0.080827
-11	0.001345	0.529191	0.058507	+49	-0.00726	-1.8679	0.073562
-10	0.00312	1.003932	0.061626	+50	0.000152	0.04155	0.073714
-9	-0.00174	-0.67093	0.059883	+51	0.001855	0.512206	0.075569
-8	0.001758	0.497933	0.061641	+52	0.003904	1.357852	0.079473
-7	0.001616	0.42555	0.063257	+53	0.002541	0.764361	0.082013
-6	-0.00119	-0.47208	0.062062	+54	0.002023	0.627238	0.084036
-5	0.003399	0.996687	0.065462	+55	-0.00148	-0.5515	0.082555
-4	-0.00424	-1.8974	0.06122	+56	0.002356	0.814311	0.08491
-3	0.006639	1.76666	0.067858	+57	0.000107	0.033287	0.085018
-2	-0.00147	-0.57343	0.066392	+58	0.000293	0.092308	0.08531
-1	0.001516	0.416418	0.067908	+59	0.001183	0.226802	0.086493
				+60	0.000714	0.192026	0.087207

*significant at α=0.05

Table 5-2 and Table 5-3 also provide similar evidence of a rising trend of stock returns during the pre-announcement period. These tables are produced from the SIMM model where suspended period have zero abnormal returns for Table 5-2 [model (a)] and where suspended period repeat the price of the last trading day before suspension for Table 5-3 [model(b)]. As can be seen, the CAAR slowly rise from a value of -0.353% and -0.395% on day t=-60 to a positive gain of 3.2851% and 2.2509% on day t=-1 for the respective model (a) and model (b). The result is highly significant where the t-test over days t=-60 to t=-1 produced a value of 15.01926 for model (a) and 13.87086 for model (b). Further examination of the average abnormal returns for each event day before the rights issue announcements shows that, on day t=-35 for model (a) and days t=-35 and t=-21 for model (b), the AARs are statistically different from zero at α=0.05 level of significance with a t-value of 2.52733 for model (a) and 2.43045 and -2.3938 on the respective days t=-35 and -21 for model (b).

These results support the findings of the MAR model. Reassuringly, the results are not sensitive to the different performance measures, the variation in treating the suspended period or the treatment of thin trading adopted in this study. Hence, the results comply the conclusion reported by BW (1980, 1985), Dimson and Marsh (1986), Dyckman et al. (1984) and Marsh (1977) that all models perform equally well and little extra benefits could be gained by using a more complicated model. The overall pattern of cumulative average abnormal returns which is shown in Figure 5-1 do not differ enormously except that the SIMM approach gives a lower CAAR which may reflect the choice of the estimation period in calculating α and β. As mentioned earlier, α and β of the SIMM models are estimated by using OLS in the linear regression model (LRM). Hence it is necessary to make an underlying assumption that the expected abnormal returns or residuals are equal to zero ($E[e_{i,t}]=0$) during the estimation period (in the current study, it is 239 days before the event period). If this is the case, most probably the assumption will not hold in the current study as there are abnormal returns observed 60 days prior to the rights issue announcements. This trend

Table 5-2: Daily average abnormal returns surrounding the announcement of rights issues for 70 observations (1987-1996) using the SIMM approach. Scholes-Williams adjustment of thin trading to estimate α and β has been adopted and suspended period are treated as having zero abnormal returns. Model (a).

Day	AAR	AAR t-test	CAAR	Day	AAR	AAR t-test	CAAR
-60	-0.00353	-0.86034	-0.00353	0	0.000498	0.214307	0.033349
-59	-0.00029	-0.14061	-0.00382	+1	-0.00696	-1.06835	0.026386
-58	0.002908	0.66456	-0.00091	+2	-0.00653	-1.7821	0.019857
-57	0.00111	0.318397	0.000202	+3	-0.00322	-1.19763	0.016637
-56	0.00104	0.323067	0.001242	+4	-0.00436	-1.40605	0.012273
-55	0.003105	0.904331	0.004348	+5	-0.00366	-1.10068	0.008608
-54	0.000845	0.293879	0.005193	+6	-0.00534	*** -2.0008**	0.003267
-53	0.00683	1.88429	0.012022	+7	0.000279	0.053879	0.003546
-52	-0.00157	-0.57233	0.01045	+8	0.003267	1.00432	0.006813
-51	0.000329	0.107026	0.010779	+9	-0.00122	-0.37189	0.005596
-50	-0.00148	-0.44677	0.009299	+10	-0.00893	*** -2.8411**	-0.00333
-49	0.000104	0.029844	0.009403	+11	0.00118	0.303519	-0.00215
-48	-0.00088	-0.27374	0.008519	+12	0.008279	*** 2.04885**	0.006129
-47	0.00282	0.940783	0.011339	+13	0.004306	1.167602	0.010435
-46	0.00657	1.497099	0.017909	+14	0.000775	0.259966	0.01121
-45	-0.00248	-0.83592	0.015424	+15	-0.00165	-0.51648	0.009558
-44	0.004113	1.144661	0.019537	+16	0.002763	0.426123	0.012321
-43	0.003773	0.810591	0.02331	+17	-0.00137	-0.47468	0.010951
-42	-0.00482	-1.11931	0.018488	+18	0.002987	0.675033	0.013938
-41	4.64E-05	0.008524	0.018534	+19	0.008975	1.268345	0.022913
-40	0.001747	0.513087	0.020282	+20	-0.00142	-0.43736	0.021497
-39	0.000495	0.186516	0.020776	+21	0.002928	1.059024	0.024425
-38	-0.00327	-1.15982	0.017505	+22	0.003236	0.888477	0.02766
-37	0.001222	0.427064	0.018726	+23	-0.00696	*** -2.5906**	0.020702
-36	0.005828	1.548535	0.024554	+24	0.000602	0.17518	0.021304
-35	0.00839	*** 2.52733**	0.032944	+25	-0.00104	-0.359	0.02026
-34	-0.00099	-0.29649	0.031955	+26	0.000592	0.14352	0.020852
-33	-0.00167	-0.49896	0.030289	+27	0.001291	0.439225	0.022143
-32	-0.00358	-1.18534	0.026705	+28	-0.00142	-0.42758	0.020718
-31	0.002697	0.970523	0.029402	+29	-0.00401	-1.15639	0.016712
-30	0.000992	0.36553	0.030394	+30	0.005604	1.098752	0.022316
-29	0.004976	1.339672	0.035369	+31	-0.00414	-1.32051	0.018176
-28	0.000444	0.13657	0.035813	+32	0.003225	0.743597	0.021401
-27	5.60E-05	0.017041	0.035869	+33	-0.00103	-0.25484	0.020373
-26	0.006384	1.87185	0.042252	+34	0.000914	0.262526	0.021287
-25	0.000619	0.209021	0.042872	+35	0.002225	0.757669	0.023512
-24	-0.00055	-0.1991	0.042326	+36	-0.00465	-1.55302	0.018861
-23	-0.00274	-0.83521	0.039585	+37	0.002318	1.024344	0.021179
-22	-0.00295	-1.58011	0.036637	+38	0.001011	0.317851	0.02219
-21	-0.00585	-1.9688	0.030787	+39	-0.0002	-0.05335	0.021985
-20	0.001056	0.341827	0.031844	+40	0.008627	*** 2.00645**	0.030612
-19	0.00446	1.199061	0.036304	+41	-0.00188	-0.67705	0.028733
-18	-0.00204	-0.47895	0.034261	+42	-0.0022	-0.78478	0.026534
-17	-0.00614	-1.7207	0.028119	+43	0.004719	1.217229	0.031253
-16	0.001718	0.542636	0.029837	+44	0.004132	1.084861	0.035385
-15	-0.00228	-0.60538	0.027558	+45	-0.0063	-1.7765	0.029082
-14	0.00212	0.554369	0.029678	+46	0.002433	0.667883	0.031516
-13	0.007425	1.215912	0.037103	+47	-0.00349	-0.96395	0.028026
-12	-0.00442	-1.26026	0.032686	+48	0.003564	0.357502	0.03159
-11	0.000486	0.195534	0.033173	+49	-0.00732	-1.8305	0.024268
-10	0.002471	0.780235	0.035644	+50	-0.00072	-0.20177	0.023548
-9	-0.00236	-0.85631	0.033283	+51	0.001706	0.455629	0.025254
-8	0.001646	0.479105	0.034928	+52	0.003032	1.053802	0.028286
-7	-4.50E-05	-0.01184	0.034884	+53	0.00196	0.571414	0.030247
-6	-0.00219	-0.87386	0.032691	+54	0.001874	0.600543	0.032121
-5	0.000652	0.187365	0.033343	+55	-0.00286	-1.14092	0.029265
-4	-0.00407	-1.8712	0.029276	+56	0.001597	0.539684	0.030862
-3	0.005718	1.580598	0.034994	+57	-0.00076	-0.23406	0.030106
-2	-0.00252	-1.03571	0.032472	+58	0.000207	0.063886	0.030313
-1	0.000379	0.103634	0.032851	+59	0.000622	0.121043	0.030935
				+60	0.000224	0.061378	0.03116

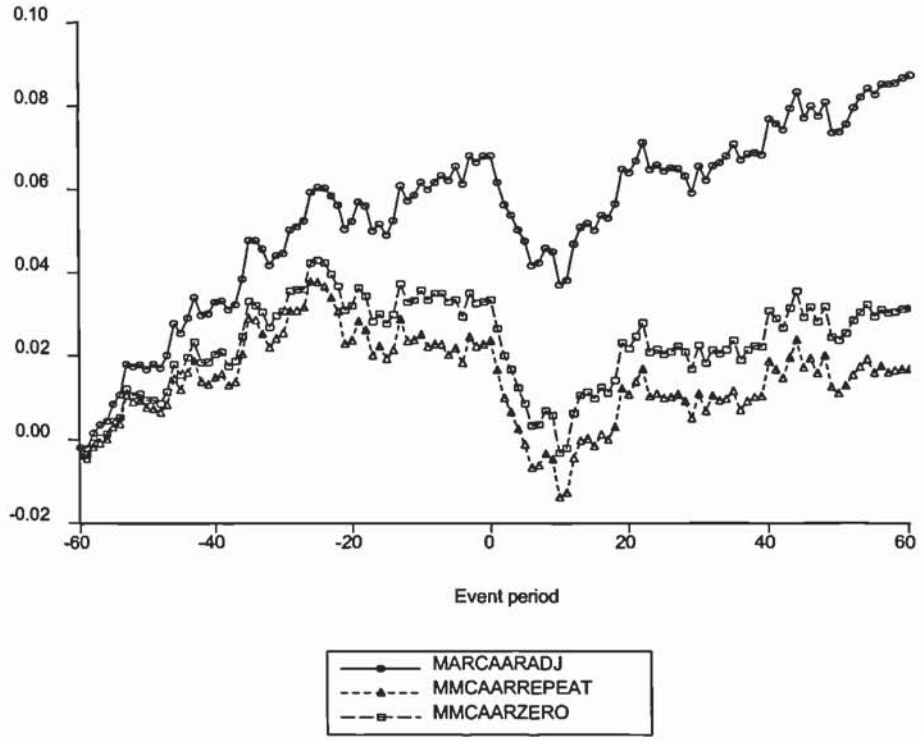
* Significant at α=0.05

Table 5-3: Daily average abnormal returns surrounding the announcement of rights issues for 70 observations (1987-1996) using the SIMM approach. Scholes-Williams adjustment of thin trading to estimate α and β has been adopted and suspended period are treated as repeating the price of the last trading day before suspension. Model (b).

Day	AAR	AAR t-test	CAAR	Day	AAR	AAR t-test	CAAR
-60	-0.00395	-0.96218	-0.00395	0	0.000847	0.333004	0.023356
-59	-0.00077	-0.36841	-0.00472	+1	-0.00681	-1.04472	0.016542
-58	0.002735	0.624511	-0.00199	+2	-0.00677	-1.8478	0.009775
-57	0.000885	0.253811	-0.0011	+3	-0.00334	-1.24207	0.006435
-56	0.00093	0.288668	-0.00017	+4	-0.00411	-1.31871	0.002325
-55	0.002873	0.835365	0.0027	+5	-0.00372	-1.11814	-0.0014
-54	0.000818	0.28401	0.003519	+6	-0.00553	*** -2.069**	-0.00692
-53	0.006812	1.87879	0.010331	+7	0.000482	0.093078	-0.00644
-52	-0.00151	-0.54915	0.00882	+8	0.002801	0.856173	-0.00364
-51	0.000283	0.092136	0.009103	+9	-0.00129	-0.39243	-0.00493
-50	-0.00164	-0.49037	0.007465	+10	-0.00902	*** -2.8739**	-0.01395
-49	-0.00028	-0.08002	0.007184	+11	0.001048	0.269408	-0.0129
-48	-0.00088	-0.26714	0.006308	+12	0.008267	*** 2.04423**	-0.00464
-47	0.001874	0.614281	0.008182	+13	0.004191	1.135303	-0.00044
-46	0.00627	1.424032	0.014452	+14	0.000491	0.164491	4.67E-05
-45	-0.00267	-0.89808	0.01178	+15	-0.00173	-0.53972	-0.00168
-44	0.004104	1.137533	0.015884	+16	0.002601	0.400984	0.00092
-43	0.002845	0.60351	0.018729	+17	-0.00133	-0.46086	-0.00041
-42	-0.00493	-1.14422	0.013795	+18	0.003061	0.691662	0.002649
-41	-0.00071	-0.12912	0.013089	+19	0.00925	1.307676	0.011899
-40	0.001593	0.467098	0.014682	+20	-0.00139	-0.42888	0.010509
-39	0.000808	0.290439	0.01549	+21	0.003116	1.119756	0.013625
-38	-0.00272	-0.93606	0.012768	+22	0.002982	0.81708	0.016607
-37	0.000791	0.27492	0.013559	+23	-0.00666	*** -2.4547**	0.009948
-36	0.006684	1.73987	0.020243	+24	0.000665	0.193291	0.010613
-35	0.008591	*** 2.43045**	0.028833	+25	-0.00101	-0.34593	0.009607
-34	-0.00046	-0.13481	0.028376	+26	0.000303	0.07349	0.009911
-33	-0.00328	-0.88277	0.025094	+27	0.000632	0.213111	0.010543
-32	-0.00331	-1.07568	0.021782	+28	-0.00169	-0.50535	0.008854
-31	0.002172	0.774767	0.023954	+29	-0.004	-1.15122	0.004858
-30	0.001251	0.455456	0.025205	+30	0.005844	1.141619	0.010702
-29	0.005155	1.386795	0.030361	+31	-0.00413	-1.31626	0.006575
-28	0.00018	0.055147	0.03054	+32	0.003727	0.857549	0.010301
-27	0.000881	0.263478	0.031421	+33	-0.00112	-0.27824	0.009179
-26	0.006358	1.85419	0.037778	+34	0.000354	0.101054	0.009533
-25	-0.00019	-0.06133	0.037593	+35	0.001877	0.635717	0.01141
-24	-0.00111	-0.40252	0.036483	+36	-0.00453	-1.50758	0.006884
-23	-0.00277	-0.84289	0.033716	+37	0.001965	0.860551	0.008849
-22	-0.00343	-1.80218	0.030286	+38	0.00097	0.303608	0.009819
-21	-0.00761	*** -2.3938**	0.022678	+39	0.000267	0.068851	0.010086
-20	0.000881	0.284693	0.023559	+40	0.008323	1.92425	0.018408
-19	0.004557	1.225181	0.028116	+41	-0.00198	-0.71291	0.016423
-18	-0.00206	-0.47399	0.026055	+42	-0.00199	-0.70921	0.014429
-17	-0.00606	-1.6452	0.019998	+43	0.004856	1.25262	0.019285
-16	0.002095	0.652934	0.022093	+44	0.004213	1.101519	0.023497
-15	-0.00294	-0.77618	0.019154	+45	-0.0065	-1.8323	0.016993
-14	0.001938	0.504766	0.021093	+46	0.002179	0.596542	0.019172
-13	0.007386	1.206495	0.028479	+47	-0.0035	-0.96663	0.015671
-12	-0.00524	-1.48375	0.023239	+48	0.004174	0.418506	0.019845
-11	0.000323	0.128844	0.023562	+49	-0.00748	-1.8645	0.012364
-10	0.001257	0.386867	0.024819	+50	-0.00148	-0.41262	0.010884
-9	-0.00284	-1.00892	0.021983	+51	0.001781	0.474758	0.012665
-8	0.00053	0.152263	0.022513	+52	0.002578	0.888976	0.015243
-7	-9.90E-05	-0.02611	0.022413	+53	0.00191	0.555693	0.017153
-6	-0.00246	-0.91138	0.019948	+54	0.001752	0.560289	0.018905
-5	0.001645	0.468217	0.021594	+55	-0.00307	-1.22611	0.01583
-4	-0.00349	-1.50916	0.018101	+56	0.001523	0.510865	0.017353
-3	0.006267	1.71245	0.024368	+57	-0.00155	-0.47099	0.0158
-2	-0.00233	-0.93219	0.022036	+58	0.000468	0.143016	0.016268
-1	0.000473	0.125367	0.022509	+59	0.000242	0.047006	0.01651
				+60	4.14E-05	0.011291	0.016551

* Significant at α=0.05

Figure 5-1: Cumulative average abnormal returns surrounding the announcement of rights issues for 70 observations (1987-1996) using the MAR and SIMM models where suspended period are treated as having zero abnormal returns for the MAR (MARCAARADJ). The same treatment is executed for the SIMM model (a) (MMCAARZERO); whereas for the SIMM model (b) (MMCAARREPEAT), suspended period are treated as repeating the price of the last trading day before suspension. The SIMM approach adopted a Scholes-Williams technique to adjust for thin trading.



may have occur long before t=-60. According to Marsh (1977) and Scholes (1972) when a period where shares are performing well is included in the estimation period, α calculation will be upwardly biased. Hence, when this parameter is used to calculate abnormal returns, an understated figure may be observed. The magnitude of the bias will depend on the performance of the shares' returns during the estimation period. The higher the shares' returns, the greater the potential bias. This may have occurred with the current study. MAR model which does not involved with parameters estimation produced a CAAR of 6.7908% at t=-1; while both the SIMM model (a) and model (b) came up with 3.2851% and 2.2509% respectively when estimated α and β are used in the abnormal returns calculation. These results indicate that the choice of estimation period is important if a SIMM model is utilised. More importantly, it

supports Ball's (1972) finding that the choice of exclusion period (period where the expected residuals are not equal zero) produced substantial difference in his study of accounting changes. This serves to justify the concern raised in Chapter Three of the shortcomings with the use of SIMM.

5.3. Stock Returns' Behaviour After Announcement

Section 3.3. of Chapter Three described the efficient market hypothesis (EMH) and its association with event study. Basically when a rights issue announcement is considered, it provides a direct test of the semi strong form of market efficiency. Since the concern of this study is to test whether the Malaysian stock market is efficient or otherwise with respect to rights issue announcements, the focus is confined to the stock returns' behaviour in the post-announcement period of day t=0 to t=+60. Obviously, if the Malaysian stock market is efficient in the semi strong form sense, zero abnormal returns are expected once the news of the rights issue become publicly available. Figure 5-1 gives a graphical presentation of the cumulative average abnormal returns 60 days prior to the rights issue announcements to 60 days subsequent to the announcements for the MAR and the SIMM model (a) and model (b) with their respective legend of MARCAARADJ, MMCAARZERO and MMCAARREPEAT. Once again Table 5-1 to Table 5-3 are referred to check whether there is a significant change in stock returns due to these announcements.

On the day of the rights issue announcements which is day t=0, the MAR and the SIMM model (a) and model (b) exhibit an insignificant positive average abnormal return (AAR) of 0.00271%, 0.0498% and 0.0847% respectively. The t-test shows a minimum value of 0.011038 for the MAR approach, 0.214307 for the SIMM model (a) and 0.333004 for the SIMM model (b). This result implies that there is no significant change in stock returns due to rights issue announcements on this particular day. Further analysis of the average abnormal returns of each event day t=+1 to t=+60 for the different models also exhibit a similar evidence of an insignificantly different from zero result with the exceptions of days t=+6, t=+10, t=+12, t=+23 and t=+40. These five days reveal that the average abnormal returns are statistically different from

zero at the 95% confidence level for the MAR model with a t-value of -2.1939, -2.5468, 2.14425, -2.5847 and 1.9986 for the respective days (refer to Table 5-1). Further confirmation of this is provided in Table 5-2 and Table 5-3 by the SIMM model (a) and model (b). A t-value of -2.0008, -2.8411, 2.04885, -2.5906 and 2.00645 for model (a) are observed during those days; whereas for model (b), the significant result can only be observed in four of the five days which are t=+6 (t-value=-2.069), t=+10 (t-value=-2.8739), t=+12 (t-value=2.04423) and t=+23 (t-value=2.4547). It is clear that the results are largely unaffected by the choice of the methodology used to measure the abnormal return. This fact reassures the current study to further use the MAR result to determine the factors which could explain the effect of rights issue announcements in Chapter Seven.

Based on a discussion in Section 4.2.1., the above findings would imply that the Malaysian stock market is semi strongly inefficient since persistent non-zero abnormal returns are not consistent to the hypothesis that security returns adjust rapidly to reflect new information. This point is further enhanced with the pattern of cumulative average abnormal returns shown in Figure 5-1 and Table 5-1 to Table 5-3. After the announcement day, the CAARs fall for six consecutive days with a total return on day t=+6 equals to 4.162%, 0.3267%, -0.692% from a CAAR of 6.7935%, 3.33349% and 2.3356% on day t=0 for the respective MAR approach and the SIMM model (a) and model (b). The drop in values are statistically significant at the 95% and 99% confidence level for the MAR and the SIMM model (a) where the t-test over the six days exhibit a value of 18.20487 and 4.30603 (refer to Table 5-4). Surprisingly, this result is found to be statistically insignificant for the SIMM model (b) which treated the suspended period as repeating the price of the last trading day before the suspension. After day t=+6, the CAAR start to rise; but this only lasted for two days. By day t=+10, the CAAR reaches its lowest returns of 3.7006% (MAR), -0.333% [SIMM model (a)] and -1.395% [SIMM model (b)]. When a t-value is calculated over the ten days interval after the rights issue announcement day, it is found that the MAR and the SIMM model (a) presented a significant value of 20.48873 and 3.545455 respectively. However, this is not supported by the SIMM model (b) where the t-value

shows a minimum of -0.07674. Starting from day t=+11 and thereafter until t=+60, the downtrend reversed where the CAAR slowly moved upward to 8.7207%, 3.116% and 1.6551% on day t=+60 for the MAR approach, the SIMM model (a) and model (b). During this period, the calculated t-value of each model presented a statistically significant value of 42.59145 for the MAR, 20.90733 for the SIMM model (a) and 10.78245 for the SIMM model (b). If a comparison is made between the CAAR on day t=0 and day t=+60, it is observed that the MAR model ended with a gain of 1.9272%. Surprisingly, the SIMM model (a) and model (b) exhibited a loss of -0.21749% and -0.6806%. These results are found to be statistically significant with a t-value of 38.40528 for the MAR, 17.5801 and 8.387992 for the SIMM model (a) and model (b). The fact that the result of the benchmarks differed can be explained by the exclusion period argument in estimating α and β of the SIMM model which was discussed in the previous section. The selection of 239 days before the event period may have overstated the estimation of α. Most probably the shares' returns of the sample during the estimation period are performing well which resulted with an upwardly biased α. It is shown in Marsh (1977) and Scholes (1972) studies that companies issuing rights tend to be those whose shares have been performing well during the period prior to the issue. Thus when abnormal returns are calculated based on an overstated α, the figures tend to be understated which in the current study shows a loss for both the SIMM model (a) and model (b). Although a sensitivity analysis of exclusion period toward the changes of α and β estimation and its effect on abnormal returns has not been tested in this study, Marsh (1977) has proven in his equity rights issue analysis that the choice of exclusion period does play a significant role in estimating abnormal returns. According to his analysis with different estimation periods, he found that

> *Excluding four years' data before the announcement gave a mean abnormal return estimate of 5.2% over the two year post-announcement period, while the exclusion of all pre-issue data increased this figure to 8.3%. These results confirm the view that the Market Model [SIMM] gives lower abnormal return*

estimates than the other two models [CAPM and MAR] in Table 8-2 because of the choice of exclusion period (1977, p. 354).

Table 5-4: t-test over different intervals of cumulative average abnormal returns (CAARs)

Interval	t-test		
	MAR	SIMM model (a)	SIMM model (b)
Days t=-60 to t=-1	15.55035*	15.01926*	13.87086*
Days t=+1 to t=+6	18.20487*	4.306028*	1.312164
Days t=+1 to t=+10	20.48873*	3.545455*	-0.07674
Days t=+11 to t=+60	42.59145*	20.90733*	10.78245*
Days t=0 to t=+60	38.40528*	17.5801*	8.387992*

*Significant at α=0.05 level of significance

The t-test results for the CAAR over the different interval are summarised in Table 5-4. Although it is observed that the CAAR result over the first ten days after the rights issue announcements are not consistent among the three models, a conclusion can still be made with respect to the efficiency of the Malaysian stock market. As can be seen, a t-test during day t=+11 to t=+60 once again exhibits a consistent result for all models where it is found that the CAARs during this interval are statistically different from zero. Obviously if the post-announcement stock returns' behaviour can be relied upon to persist, this would indicate that the Malaysian stock market is not efficient in the semi strong form sense and that the null hypothesis of zero abnormal returns over a period of T-days cannot be accepted. This is consistent with the findings reported in the analysis of the average abnormal returns.

5.3.1. Cross-Country Comparison of Market Efficiency

Section 3.4. of Chapter Three discussed the impact of rights issue announcements in other countries with respect to the semi strong form of market efficiency which is summarised in Table 5-5. In the US, from Nelson (1965) to Kothare (1992) study, the evidence revealed supports the view that the US market conforms to the semi strong form of market efficiency. These studies found that there were no significant gains or losses after the announcement of a rights issue. However in the UK, two contradictory results are presented. Merret et al. (1967) study of 110

Table 5-5: Summary of previous rights issue announcements' studies in different countries (all the results after the announcement day or month are interpreted as insignificantly different from zero by the author/s unless otherwise stated)

Study and Sample	Event Period	Abnormal Returns (AR)	Market Efficiency
US			
Nelson (1965) 380 rights issues from NYSE securities between 1946 to 1957.		The difference between 6 months before the announcement to 6 months after the close of rights trading showed -0.2%.	Conform
Scholes (1972) 696 rights issues between 1926 to 1966 using SIMM.	Monthly	Rise before issue; drop 0.3% month of issue; no gain/loss after issue.	Conform
Smith (1977) 853 rights issues (direct and underwritten) from CRSP between 1926 to 1975 using SIMM.	Monthly	CAAR equals 0.721% at t=-12 to 7.663% at t=0; 12 months after issue, no gain/loss.	Conform
White and Lusztig (1980) 90 rights issues between 1962 to 1972 using market model (2 dummy variables included in equation).	Daily	Negative dummy variable coefficients representing security returns at t=-1 and t=0 days; after t=0, coefficients remained insignificantly different from zero.	Conform
Singh (1988) 176 rights issues from NYSE and AMEX securities between 1963 to 1985 using SIMM.	Daily	At t=-1, CAAR=-0.24%; t=0, CAAR=-0.48%; t=+1 to t=+10, CAARs not significantly different from zero.	Conform
Kothare (1992) 32 direct rights issues (financial companies included) from NYSE and AMEX securities between 1963 to 1985 using SIMM.	Daily	Before issue, CAAR=-9.93%; t=0, CAAR=-5.17%; t=+20, CAAR=4.5%. None is statistically significant.	Conform
UK			
Merrett, Howe and Newbould (1967) 110 rights issues in 1963.		Issue date, abnormal capital gain (ACG)=1%; after issue date ACG=3%.	Violate
Marsh (1977, 1979) 254 rights issues from LSE securities between 1962 to 1975 using MAR, CAPM and SIMM.	Monthly	All models show sharp increase before issue; CAAR=2.0% region at t=0; continue to rise after t=0 which is statistically significant.	Violate but further analysis conform.
Switzerland			
Loderer and Zimmermann (1988) 122 rights issues between 1973 to 1983 using SIMM.	Monthly	At t=-10 to t=-1, CAAR=4.1%; t=0, CAAR=2%; t=+1 to t=+10, CAAR=-4.2%. All results are not significant.	Conform
Greece			

Study and Sample	Event Period	Abnormal Returns (AR)	Market Efficiency
Tsangarakis (1996) 59 rights issues from ASE securities between 1981 to 1990 using MAR.	Daily	At t=-1 to t=0, CAAR=3.97%; t=0, AAR=2.45%; after t=0, result statistically insignificant except at t=+7 and t=+10.	Violate
Norway			
Bohren, Eckbo and Michalsen (1997) 138 rights issues (direct and underwritten) from OSE securities between 1980 to 1993 using market model with 4 dummy variables.	Daily	t=-1 to t=0, significantly positive abnormal returns = 2.01% for direct and insignificantly positive abnormal returns = 0.36% for underwritten; after the announcement to start of offering day, insignificant negative abnormal returns of 0.59% for direct and -2.65% for underwritten.	Conform
Korea			
Kang (1990) 89 rights issues between 1984 to 1987 using MAR.	Daily	Before announcement day, rise; t=0, CAAR=10%; after announcement, no gain/loss.	Conform
Kim and Lee (1990) 239 rights issues between 1984 to 1986 using MAR.	Monthly	No significant movement of AAR until month t=-4 to t=+1 where AARs show large positive figures; 1 year after announcement, CAAR=21.41%. (No statistical test is executed).	Inconclusive
Malaysia			
Phoon (1990) 64 rights issues from KLSE between 1978 to 1989 using MA.	Daily	t=-35 to t=0, rise; after issue, decrease; t=+35, CAAR=2.9%. All results are statistically significant.	Violate
Annuar and Shamsher (1993) 33 clean rights issues from KLSE between 1980 to 1991 using SIMM.	Daily	Before t=0, CAAR showed negative; after t=0, AARs insignificantly different from zero.	Conform
Nur (1997, 1998) 25 clean rights issues from KLSE between 1987 to 1996 using MAR.	Daily	t=-40 to t=0, CAAR=9.1099%; t=+40, CAAR=7.3684%; All results are statistically significant.	Violate

rights issues in 1963 indicated that the UK stock market is not semi strongly efficient; whereas Marsh (1977, 1979) reported that it is efficient when he analysed 254 rights issues. At first glance, Marsh's finding is in accordance to Merret et al., but later reversed his result when further examination was made. A study in Switzerland by Loderer and Zimmermann (1988), in Norway by Bohren et al. (1997) and in Korea by Kang (1990) also came up with similar evidence to the US. The stock markets in the

three countries are found to be efficient since no gain or losses could be made with respect to rights issue announcements.

In contrast to the reported findings thus far except for Merret et al. result, a study executed in the Athens Stock Exchange presented a violation of the efficient market hypothesis (EMH) in the semi strong form sense. Tsangarakis (1996) found a significant AAR of 2.45% on the announcement day that he concluded a null hypothesis of zero abnormal returns could not be accepted. This is in agreement with the results reported in Malaysia by Nur (1997, 1998) and Phoon (1990) but in contradiction of Annuar and Shamsher (1993b). Based on the current finding of this study, rights issues are associated with non-zero abnormal returns in the Malaysian stock market inferring a deviation from the semi strong form of efficient market hypothesis. Thus, the existence of statistically significant movements in CAAR concurs with the findings presented by Merret et al. and Tsangarakis. It does not agree to the results reported in the US (Kothare, 1992; Nelson, 1965; Scholes, 1972; Singh, 1988; Smith, 1977; White and Lusztig, 1980), Switzerland (Loderer and Zimmermann, 1988), Norway (Bohren et al., 1997), Korea (Kang, 1990) and one study in Malaysia (Annuar and Shamsher, 1993b).

5.3.2. Discussion on the Limitation of the Result

Given the results of the current finding, it is possible for skilled investors to find undervalued stocks on the KLSE. Unfortunately, with a majority of the previous studies supporting the semi strong form of EMH, certainly further investigation of the result is in order. There is a likelihood that the result is influenced by a few outliers in the sample. Obviously if these outliers are not corrected for, the CAAR will tend to be very sensitive to large positive abnormal returns since it is computed by using arithmetic average. Section 4.4.3.1. has already identified one outlier which occurred during the post-announcement period contributed by Juara Perkasa Corporation Berhad (CAAR=163.41%). This counter exhibited a return of 213.39% on day t=+15. On this particular day, the stock price jumps to RM10 from its last traded price of

RM3.18 on day t=+6. One day subsequent to day t=+15, it was again suspended for a long period. To neutralise the sudden jump, a corrective measure is then taken by assuming that Juara stock price on day t=+15 never occurs. This action has tremendously reduced Juara CAAR to 3.63%. The result of the current finding has already been adjusted for this outlier. Thus, it is not likely that the current finding is attributable to the effect of an outlying observation.

Before drawing a final conclusion of the Malaysian stock market efficiency, it is worth mentioning that the sample in this study appears to be weighted in favour of small market capitalisation companies. A thorough discussion with respect to the company size of the samples used in this study can be referred in Section 4.4.2. of Chapter Four. A majority of the companies in the sample are below average size (68.57% of the total samples with 48 observations). While the remaining 22 observations are made up of above average size companies. Some studies in the 1980s and early 1990s have shown that small market capitalisation stocks are likely to outperform stocks with large market capitalisation (Banz, 1981; Beaver, 1981; Blume and Stambaugh, 1983; Brown, Kleidon and Marsh, 1983a; Chan, Chen and Hsieh, 1985; Reinganum, 1981, 1992; Roll, 1981). In relation to the current study, if the pre and post-announcement period are considered, the evidence tallies to the one reported in the 1980s and early 1990s. It appears that a size effect still exists in the Malaysian stock market. This is in contrast to the recent evidence reported by Elroy Dimson and Paul Marsh in the UK market (Coggan, 1999) and Peter Oppenheimer in the US and the Continental Europe markets (Investors Chronicle, 13 November 1998, p. 28). They found that in the mid and late 1990s, the size effect is reversed where small companies' returns under-performed large companies' returns. In this sense, the Malaysian stock market still lags behind the developed countries market. Size effect reversal might occur in this market probably in later years. Certainly, this issue is not raised for the SIMM model (a) and model (b) if only the post-announcement period is considered. Both the SIMM models exhibited a significant loss in value of -0.21749% and -0.6806%, which means that on the average, smaller companies are associated with negative abnormal returns. This is in contrast to the MAR model result. In the

post-announcement period, it still exhibited a positive abnormal return. Hence based on the MAR model, it is possible that the current result is suffering from a size effect problem where the presence of positive abnormal returns can be associated with the size of a company. But if the result is to be interpreted in the view of the SIMM models assuming the abnormal returns' calculation is not contaminated, this possibility can be dismissed.

A word of caution pertaining to the contradictory results is in order. As mentioned in the earlier sections, the SIMM model may be contaminated with an upwardly biased α which resulted with lower abnormal returns. In the current study, a significant negative abnormal return is observed for both the SIMM models during the post-announcement period. It is likely that the estimation period selected to calculate α and β happened during a period where shares' returns were doing well as evidenced by Marsh (1977) and Scholes (1972).

Another possible explanation for the contradictory results between the MAR and the SIMM models may be caused by the securities in the samples being thinly traded. As elaborated in Section 4.4.1., 45 of the 70 observations in the sample experienced some suspended days during the test period. It is a common phenomenon in the Malaysian stock market that smaller size companies will most likely experience some suspended period as shown in this study. According to Dimson (1979) and Schwartz and Whitcomb (1977), security which is being traded infrequently will introduce a downward bias to β estimate. As a result, a positive abnormal return should be observed if no corrective measure is taken to control such problem. With the current research, the SIMM models have adopted a Scholes-Williams adjustment of thin trading to solve this problem. Hence, this issue is deemed irrelevant for this model. However with the MAR model, this problem is not considered at all because it assumes that β for all securities taken as a group will give an average of unity or one where high systematic risk securities offset those with low systematic risk. Whether this assumption has been met becomes another avenue to be investigated in the near

future. A possibility of the MAR result being contaminated with thin trading problem could not be ignored.

Having established this limitation, it is far more difficult to interpret the current results and to reach a conclusion on Malaysian stock market semi strong efficiency. An inconsistent result during the post-announcement period for both the MAR and the SIMM models further complicate the issue at hand. If the result during the whole event period is considered, it is fair to conclude that a size effect plays a major role in explaining the positive CAARs for all methodologies and no definite conclusion can be made about market efficiency. However, when a post-announcement period revealed a mixed result of a positive gain for the MAR and a loss in the SIMM models, a size effect is brought into doubt. The contradictory results may have been caused by the choice of exclusion period and thin trading problem. Nevertheless, the existence of a persistent significant non-zero cumulative average abnormal return for the various methodologies certainly could not unequivocally support the semi strong form of EMH.

5.4. Implication For the Market

The evidence presented in the last two sections of this chapter leans toward the view that the Malaysian stock market is not efficient in a semi strong form sense. Sixty days after the announcement of rights issues, a non-zero CAAR is observed for the MAR and the SIMM models. In an efficient market, this is not likely to happen since competition to take advantage of undervalued or overvalued stocks would ensure that the current price of a stock is the best estimate of its true value. So what does it mean for the market participants in the Malaysian stock market or the KLSE?

For investors, the implication is that they can benefit through this by selling shares of companies undertaking a rights issue on the announcement day. Take profit on the selling and wait until day t=+10 to repurchase the same share when the price hits the lowest point during the post-announcement period. Fifty days later at t=+60, they could again go short on this share to gain on the price appreciation of similar

stock. The profit will be greater for investors who have access to inside information. At least 60 days before an announcement of a rights issue is declared to the public, investors could include this particular stock into their portfolio. Once the announcement becomes public knowledge, they should then start to sell this stock. A few words of caution are in order. Obviously, the high returns could only be gained if investors undertake these actions as a large sample since not all stocks move in the same direction. The recommendation made here is based on 70 observations.

For security analysts, an inefficient market would mean more opportunities to extend their consultation service to others. Their technical expertise would provide them with an advantage in identifying and recommending undervalued or overvalued stocks that might outperform the market (thus, ironically helping to reduce the inefficiency). For corporate financial management, it would mean that a release of rights issue announcements or basically a release of information will be of limited value. In a market which is not efficient, the release of information does not guarantee a correct valuation of a company's stock by investors. It would infer that a timing of information release to the public may not be reflected. Therefore whether a company discloses any information or otherwise, it will have an inaccurate effect on the performance of its share price. Finally to the regulators and policy makers particularly the KLSE and the SC, the result of the current study suggests room for improvement to its current policy. The suggestion that insider trading activity is one possible explanation, raises the possibility (subject to the limitations of the research methodology) of a failure to meet the KLSE and the SC objectives of transparency and a full disclosure environment, as well as investor protection. It would mean, efforts from both offices need to be redoubled to develop an exchange where the stock prices are close to their true values. In order to have such a market, additional steps have to be undertaken to enhance the accuracy, timeliness and availability of information to all market participants. A market in which every action has been taken to demonstrate that it is fair and free from manipulation will be more attractive to investors. After all, they are the people who cause stock prices to move closer to their true value from their competition for information to seek for good buys.

5.5. Comparison of Market's Reaction to Rights Issue Announcements with Corporate Finance Theories

In Section 3.5. of Chapter Three, theories advanced to explain stock market reaction to equity offers were presented. These are summarised in Table 5-6 of this chapter. The implications of the corporate finance theories with respect to the effect of rights issue announcements are compared to the main benchmark used in the current study which is the MAR result. During the event period from t=-60 to t=+60, a CAAR of 8.7207% is observed. A t-test of 27.65384 over the 121 days period showed that this return is highly significant. It is then considered in the light of the signalling model, asymmetric information models, agency models and price pressure versus perfect substitution hypothesis.

Table 5-6: Implications of corporate finance theories in predicting the sign of abnormal returns associated with rights issue announcements

Theory	Expected price effect
Signalling model	
Ross	Negative price effect (if debt leverage declines)
Asymmetric information models	
Miller and Rock	Negative price effect (a signal of inadequate internal finance)
Myers and Majluf	Negative price effect (a signal of share over-valuation)
Agency model	
Jensen free cash flow	Negative price effect (misuse of funds)
Price pressure hypothesis	Negative price effect before and during issue period; positive price effect after issue period (downward sloping demand curve)
Information hypothesis	Negative price effect (managers have adverse information)
Perfect substitution hypothesis	Zero price effect (every asset has perfect substitutes)

5.5.1. Signalling Models

The presence of a positive CAAR in the Malaysian stock market contradicts Ross' signalling model (1977). According to him, whenever a company changes its capital structure, it is supposed to provide a signal with respect to a company's true value. This model implies that if a company announced a rights issue or raised capital

through another form of equity offering, it lacks confidence of the prospects for an increase in its asset values and expected cash flows. It has to rely on the existing shareholders to cover its shortfall. Investors take this as bad news; and as a result, they downgrade the company's stock price. Ross' model may be true in a well developed market as evidence by a number of researchers (e.g. Bhandari, 1988; Masulis, 1980; Masulis and Korwar, 1986). However, it may not be applicable in the Malaysian context. Investors on the KLSE seem to associate rights issue announcements as good news and react positively which brings the appreciation of the share prices.

5.5.2. Asymmetric Information Models

Two asymmetric information models which are covered in Section 3.5.2. are Miller and Rock (MR, 1985) and Myers and Majluf (MM, 1984) models. MR suggests that an unexpected announcement of equity offerings normally signals an inadequacy of internally generated funds to finance a company's planned investment. This reveals an estimated decrease of a company's future cashflow which also inferred an opposite changes of a company's current earning. As a result of the difference between realisation and expected financing, it brings a downward movement of the company's stock price. Since rights issue is another form of equity financing, a similar result is expected when it is announced. Regardless of MR explanation, this theory could not be supported in the Malaysian stock market.

The presence of a positive CAAR in the current result is also inconsistent with the MM asymmetric information model which expects a negative price reaction to the announcement of a new equity offering which in this case a rights issue announcement. Its rationale that management only issue stock when their shares are overvalued could not be confirmed by the reaction shown by the KLSE investors. The results suggest that the fact that management knows a lot more about a company's true value as compared to outside investors does play an insignificant role in influencing the performance of a company's stock price. Furthermore, in a developing market such as this, a reliance on equity financing is more appealing than internal or debt financing suggested by MM.

5.5.3. Agency Models

Jensen suggests that a conflict of interest between shareholders and managers might occur when a company has substantial excess funds after allowing for all positive net present value projects. This is likely to happen since the management has discretion over the use of the excess funds. With the announcement of rights issues, these excess funds will be increased. The potential for management to misuse the funds for goals other than shareholder wealth maximisation is likely to happen. As a result, investors would give a lower valuation of the company's shares. Surprisingly, no evidence is found to support Jensen's free cash flow theory in the Malaysian stock market.

5.5.4. Price Pressure Versus Perfect Substitution Hypothesis

The last theory that is considered in this study to explain the stock market reaction to rights issue announcements is the price pressure (PPH) versus perfect substitution hypothesis (PSH). Under PPH, when a company decides to increase the supply of its shares, the share price is likely to experience a temporary setback during the issue period. The reason for the setback may be to compensate investors on the transaction costs of the new shares and to make the shares more tradeable by offering a discount. Subsequent to the issue period, a recovery in prices is expected due to the removal of the inducement or additional quantity of the company's shares which has depressed the price. When this hypothesis is compared to the result of rights issue announcements in the current study, they are consistent with one another. Table 5-1 shows that within ten days after the announcement of rights issues, a significant loss in value of 3.0929% is observed. Thereafter, the CAAR starts to rise so that fifty days later (t=+60), it reaches 8.7207% which is a gain of 1.9272% from the announcement day or 5.6278% from day t=+10. This finding fully support the PPH. However, the temporary price pressure effect after the announcement of rights could not be associated with a discount or transaction costs explanation. There is no official buying and selling of shares for rights issue announcements at this stage (refer to Table 2-5). Hence, it is likely that the negative reaction is caused by the uncertainties with respect

to the use of the rights issue proceeds. No simple explanation can be put forward without further analysis of the contributing factors to the abnormal returns which is covered in the following two chapters.

With respect to Scholes (1972) information hypothesis, the sale of a large block of shares would indicate that the seller has adverse information on a company's prospects. If the market is efficient, the seller's expectations of the company's prospect will be reflected in its stock price and that a permanent price reduction will take place. Hence when a rights issue is announced, a decrease in the stock's price to reflect the expected value of the information contained in the issue is expected. However the positive CAAR exhibited in Table 5-1 do not support Scholes explanation.

Perfect substitution hypothesis (PSH) believes that every asset has perfect substitutes and that a demand curve facing individual investors is likely to be horizontal, implying that a zero price effect is expected when additional shares are sold. The evidence presented in the current study does not support the PSH explanation as there exists a significant CAAR following rights issue announcements.

5.6. Summary

The current study exhibits a significant positive CAAR during the event period. When the post-announcement period is analysed to check for semi strong market efficiency with respect to rights issue announcements, a persistent non-zero abnormal returns is observed. This finding is not consistent with the hypothesis that security returns adjust rapidly to reflect new information which implies that the KLSE is not semi strongly efficient. However, this evidence contradicts the results presented in the US, UK, Switzerland, Norway and Korea, but it is in line with the finding in Athens Stock Exchange, Greece and one study in the UK. Since the majority of the previous studies support the semi strong form of EMH, a test was performed to see if the result in the current study is influenced by some outliers or is suffering from a size effect or thin trading problem. Obviously, there is an outlier contributed by Juara

Perkasa Corporation Berhad but it has already been corrected before the results are presented. Hence, the effect could not be explained away in terms of outlier. Further analysis reveals that the sample used in this study mainly consists of below average size companies. In the Malaysian stock market, normally companies which are small in size will most likely experience some suspended period and that thin trading problem is a common phenomenon. Could it be that the positive CAAR came from the below average size companies? If the whole event period is considered, this study would definitely support the suggestion that a size effect plays a major role in explaining the positive CAAR and that no conclusive evidence can be presented on market efficiency. However, a major concern of this study is on the post-announcement period that is when the rights issue is revealed to the public. Since there exist mixed results of positive and negative CAAR for the MAR and the SIMM models during this period, a size effect may not be the only cause. One possible explanation may come from a thin trading problem experienced by 64.29% (45 observations) of the sample. However this problem has been solved in the SIMM model by using a SW adjustment of thin trading. Irrespective of the mixed results during the post-announcement period, the existence of a persistent significant non-zero AAR and CAAR for all performance measure models is an evidence that the Malaysian stock market is semi strongly inefficient. This inefficiency answers the first research question of the current study.

With the view that the Malaysian stock market is not efficient in a semi strong form sense, investors could make substantial profits particularly if they have access to inside information. Evidence has been presented that suggests insider trading activity may have existed in this market as one possible cause for the absence of semi strong form efficiency. Those who are able to trade on the private knowledge may have a windfall. Nevertheless for investors who rely on public information, they can still gain abnormal returns by going long on stocks which made a rights issue announcement on day t=+10 when the price hits the lowest point. They could hold these stocks in their portfolio for 50 days and go short to take profit. A few words of caution with respect

to this recommendation is that this result is obtainable for a large sample of rights issues. Individual issues may produce poor results.

The results provided so far are then discussed in the context of corporate finance theories in predicting the sign of abnormal returns which is partly to answer the last research question. None of the signalling model, asymmetric information models, agency model, perfect substitution hypothesis and Scholes' information hypothesis could explain the positive abnormal returns associated with rights issue announcements in Malaysia. These theories may be applicable to a developed exchange such as the LSE and NYSE, but are, perhaps, less useful in an *emerging market* situation. However, the results are consistent with the price pressure hypothesis (PPH) where a temporary fall in price is experienced which is followed by a recovery in price ten days after the announcement. Nevertheless, PPH explanation of the temporary price pressure effect could not be associated with a discount or transaction costs factor since there is no official buying and selling of shares at this stage. Some tentative conclusions from the work so far can be drawn but these need to be firmed up using the second stage of analysis in which a cross-sectional regression is executed between the cumulative abnormal returns of each observation with the variables suggested in the literature to explain the existence of abnormal returns. This is covered in the following Chapter Six and Seven.

CHAPTER 6: A LITERATURE REVIEW OF A CROSS-SECTIONAL REGRESSION ANALYSIS BETWEEN THE EFFECT OF RIGHTS ISSUE ANNOUNCEMENTS ON SHARE RETURNS AND THE DETERMINANTS OF ABNORMAL RETURNS

6.1. Introduction

The first stage analysis revealed the presence of a non-zero abnormal return when rights issues are announced. This finding could not be explained by the corporate finance theories except for price pressure hypothesis. Nevertheless, these theories do provide some background considerations of the factors that are most likely to influence the abnormal returns which form the basis for the second stage analysis in this study. A cross-sectional regression analysis is used to examine a number of potential explanators that have been advanced in the corporate finance theories as well as in the empirical literature to explain the abnormal returns. This chapter is designed to identify the explanatory variables and to establish their relationship with stock market returns. The regression results are reported in the next chapter.

6.2. Theoretical Background on Characteristics of the Rights Issues

Some of the corporate finance theories (Miller and Rock signalling model, 1985; Ross signalling model, 1977; and price pressure hypothesis) covered in Section 3.5. presented a few variables that might explain the stock market reaction to rights issue announcements. These theories associated some of the characteristics of the rights issues such as relative size of issue, subscription price discount and changes in leverage with the performance of a company's share price. In addition to the existing theories, two theoretical models are introduced here which are the Leland and Pyle signalling model (1977) and Heinkel and Schwartz information signalling model (1986). The first model is associated closely to the ownership concentration variable whereas the second model is related to subscription price discount. In this section, the

effect of the characteristics of the rights issues on the cumulative abnormal returns (CAR) as suggested by the theoretical models are discussed.

6.2.1. Relative Size of Issue

Two of the theories predict that the stock price reaction is closely related to the relative size of the issues to existing market capitalisation. First, Miller and Rock (MR, 1985) signalling model assumes asymmetric information with respect to the magnitude of a company's current internal cash flow, but symmetric information to its level of planned investment and assets' value. According to them, an unanticipated announcement of outside equity financing signals an inadequacy of internally generated funds to finance a company's planned investment. This is also the same as inferring a low company's current earning and a decreasing expected future cash flow which tend to depress a company's stock price. The greater the size of equity issues, the greater is the shortfall of internally generated funds, the more depressed a company's stock price. As a result, a negative CAR is observed. Based on this explanation, it would mean that a negative relationship is expected between relative size of issue and CAR. The second theoretical model to explain this variable is price pressure hypothesis (PPH). PPH assumes that there is no perfect substitute for a company's share and that a downward sloping demand curve exists. Thus when a company decides to increase the supply of its shares, it has to discount the share price from the existing market price to create demand and to make the shares more tradeable. PPH predicts that a larger issue size will mean a greater price discount to the existing market price of a particular issue which in turn will give a negative relationship with CAR.

6.2.2. Subscription Price Discount

As mentioned in the above section, PPH states that whenever a company decides to issue more shares, a discount from the existing market price has to be given to induce existing shareholders to subscribe. PPH predicts that subscription price discount is negatively related to the abnormal returns because its assumption of a

downward sloping demand curve for a security would mean that the greater the discount, the lower the price. Indirectly, a lower price would suggest a lower abnormal return. Heinkel and Schwartz information signalling model (HS, 1986) also predicts the same relationship between these variables. According to them, rights issue failure for uninsured rights offer (direct rights or non-underwritten) is very costly in terms of: opportunity costs when positive net present value investments are foregone; costs of the failure to satisfy commitments; or the costs of getting emergency temporary financing. In order to prevent rights issue from failing, a discount has to be offered on the current market price. However, the discount signals to the market negative information about a stock's true value which is likely to cause a drop in price. The greater the discount, the larger downward adjustments in a stock's price is expected. Therefore, an inverse relationship is likely to occur between the subscription price discount and abnormal returns.

6.2.3. Changes in Leverage

Managers are motivated to signal their inside information regarding a company's true value by undertaking capital structure changes. According to Ross signalling model (1977) when a company increases leverage, it would signal to investors that management is confident with the prospects for an increase in asset values and future cash flows. Otherwise, it would not take similar action since the failure to meet its obligations will lead to higher expected bankruptcy costs. With respect to rights issue in the Malaysian context, it is a common practice for a company to use the rights issue proceeds to retire the existing debt. An analysis of the intended utilisation of rights issue proceeds which is discussed in the next chapter showed that 67.14% of the total sample in the current study declared that the proceeds are used partly to reduce debt. Based on Ross model, this action would signal to the market that a company does not have sufficient future cash flows to pay off its debt that it relies on the existing shareholders to cover its shortfall. Investors would take this as unfavourable news. Hence if the intended use of the rights issue proceeds is to pay off current debts, a lower abnormal return is expected.

6.2.4. Ownership Concentration

Leland and Pyle signalling model (LP, 1977) is put forward to explain the presence of abnormal returns in terms of ownership concentration. They predict that an entrepreneur's fractional ownership of a company provides a credible signal to rational investors of a company's true value. This model assumes that an entrepreneur is better informed about a project's expected return than outside investors. It is beneficial for him to convey this information to the market so as investors could distinguish between a good and a bad quality project. One way of communicating a good quality project is to increase an entrepreneur's investment in the project. This could be done by holding a significant fraction of the company shares. This action serves as a signal to investors of the superior quality of the project because from a diversification standpoint, it is very costly to invest all the money into one project. The greater the entrepreneur's fractional stock ownership, the greater the project quality perceived and the more investors are willing to pay for these particular shares; whereas a decrease in the entrepreneur's stock ownership through equity issued to outside investors will infer a negative signal about a company value. LP model predicts that if major shareholders maintain or increase their percentage of ownership when there is an increase in outstanding shares such as in a rights offer, the likelihood of the particular share's price to increase is greater. It would mean that higher ownership concentration is associated with higher abnormal returns. Hence, it is expected that a positive relationship exists between ownership concentration and abnormal returns.

6.3. Empirical Evidence on Factors Influencing Abnormal Returns

Based on the theoretical models in the above section, there are only four explanators that could be linked closely to the presence of abnormal returns. These factors have been tested in other studies and their findings are discussed in the following section. It is found that some of these studies did not only include the four explanators, but they include other characteristics which might explain part of the variation in the abnormal returns. Among them are book-to-market equity ratio,

company size, fractional change of total fixed assets and fractional change of net working capital. The last two variables complement the changes in leverage variable in Section 6.2.3. (it will be discussed further in the later section) which are proxies to represent the intended utilisation of the rights issue proceeds for Malaysian companies. The empirical evidence presented do not necessarily cover rights issues but some of them referred to equity issues in general. Nevertheless, they are important to assist in identifying possible explanators. Since the last research question to be answered in the current study is to find the determinants of the rights issue announcement's effect, the coverage will hopefully shed light to this issue.

6.3.1. Relative size of issue

Empirical evidence provides mixed results as to the relationship between size of issue and abnormal returns. Asquith and Mullins (1986) analyse 121 industrial primary offerings on the American Stock Exchange (AMEX) and the New York Stock Exchange (NYSE) over the period 1963 to 1981. They found that the two-day announcement period abnormal returns (t=-1 and t=0) is inversely related to the size of equity issue (measured with the planned primary issue proceeds divided by a company's market value of equity before the announcement) in their multiple regression which include a pre-announcement return as a second explanator. The size coefficient is significant at α=0.10 level. The result implies that when the size of a primary equity issue is increased by US$100 million, the company value is reduced by US$8.675 million during the two-day announcement period. Their finding is not consistent to the finding reported by Barclay and Litzenberger (BL, 1988). BL did a cross-sectional regression of a 90-minute stock returns on 139 announcements of new issues of seasoned equity by industrial companies listed on the AMEX and NYSE over the period 1981 to 1983 on the log of the absolute size of the issue and the log of the companies relative size of the issue (number of new shares divided by number of shares outstanding) using a maximum likelihood procedure. Both of the size variables coefficients produced an opposite sign to each other which are not statistically

significant. No relationship can be establised among the size of issue variables with the stock returns.

Bohren, Eckbo and Masulis (BEM, 1997) presented similar evidence as to BL in their study of 114 announcements of underwritten rights issues from non-financial companies listed on the Oslo Stock Exchange, Norway between 1980 to 1993. By using a natural log of gross rights issue proceeds and percentage change in shares outstanding due to the offer to represent size of issue, BEM found that both coefficients are not significant to explain the two-day announcement period abnormal returns. Again as in BL finding, these coefficients exhibit an opposite sign where the earlier coefficient has an inverse relationship while the latter coefficient showed a positive relationship with the dependent variable. No further explanation is given on the presence of these differences in both BL and BEM studies. This result is achieved by using a maximum-likelihood estimate of parameter in a non-linear cross-sectional regression with six other variables[18]. Masulis and Korwar (MK, 1986) came up with evidence which contradicts to BL and BEM findings but consistent to Asquith and Mullins finding. MK analysed 388 announcements of industrial primary stock offering on the AMEX and NYSE over the period 1963 to 1980. They run a linear regression between a two-day announcement period stock return with the percentage change in the shares of common stock outstanding (to represent the size of issue--ΔSHR) and seven other variables[19]. The ΔSHR coefficient is found to be negatively related to the two-day announcement stock returns and statistically significant when an offering induced leverage change (ΔLEV) is excluded. However, when the ΔLEV variable is

[18] The other six variables are: rights subscription price relative to the market price one day before announcement, abnormal stock returns forty days before announcement, proportion of common stock held by the twenty largest shareholders at the beginning of the announcement year, proportion of common stock held by members of the Board of Directors (BODs) and the CEO at the beginning of the announcement year, a dummy variable of rights offer for partially underwritten and uninsured rights and a dummy variable of fully underwritten rights versus uninsured rights.

[19] The seven variables are: offering induced leverage change; cumulative stock returns over the 60 days before announcement date; cumulative market returns over the 60 days before announcement; stock return variance over the 60 days after announcement; dummy variable for combination offerings involving sale of shares by management; dummy variable for companies making one or more stock offerings one year before announcement; and dummy variable for companies with a higher leverage ratio at the end of fiscal year before the offering compared to the average leverage ratio for four fiscal year ends before the offering.

included, ΔSHR becomes insignificant. The likely explanation for the difference in the result is that both of these variables are highly correlated where the inclusion of both may caused multicollinearity problem to be present. A fifth study is carried out by Reddy (1992) on 32 direct rights issue announcements made by industrial and financial companies listed on the AMEX and NYSE between 1979 to 1989. He executed a cross-sectional regression analysis by adding an independent variable one at a time based on the contribution of each variable to the explanatory power in a Pearson correlation result. A variable which has the most explanatory power is reported first. Among the six issue related variables, size of issue (RISBS) which is measured by the ratio of issue size to shares outstanding has the highest correlation with a two-day announcement CAAR. When it is regressed with the dependent variable, its coefficient is positively related to CAAR at the α=0.10 level of significance. The R-square showed that RISBS could only explain 10.9% of the variation in the two-day CAAR with an F-value of 3.650. However with the addition of five other variables (proportion of issue value to number of shareholders, a dummy variable of 1 for high ownership concentration company, subscription price discount, a dummy variable of one for the presence of oversubscription privilege and the number of offering days), RISBS is no longer significant although the sign remains positively related with the CAAR.

Five studies have been considered to check on prior evidence of the relative size of issue to explain the variation on the abnormal returns. Among the five, two studies came up with a negative relationship, another two studies found this variable to be insignificant while one study reported a positive relationship. All these studies were conducted on a developed exchange except for BEM study which is executed in a smaller capital market such as Malaysia. It would be interesting to see whether this variable plays a role in explaining the existence of abnormal returns on the KLSE and the relationship it has on the abnormal returns.

6.3.2. Subscription Price Discount

Six studies are discussed with respect to the subscription price discount (SUBPRDISC) variable: Bohren et al. (1997), Kothare (1992), Loderer and Zimmermann (1988), Marsh (1977), Reddy (1992) and Tsangarakis (1996). As covered in the last section, Bohren et al. (1997) also tested on the subscription price discount variable in their non-linear cross-sectional regression analysis of companies listed on the Oslo Stock Exchange. They used a discount in the rights subscription price relative to its market price one day before the announcement as a proxy for SUBPRDISC. BEM found that the SUBPRDISC coefficient value is negatively related with the two-day announcement period abnormal returns, but its p-value of 0.22 showed that this variable is not significant to explain the variation. A negative sign of SUBPRDISC coefficient is also observed in Kothare (1992) analysis of 79 underwritten and direct rights issue announcements made by companies listed on the NYSE and AMEX during the period 1970 to 1987. She regressed the CAARs over different intervals ranging from one day before the announcement up to 20 days after the announcement against the SUBPRDISC which is measured by taking the difference of subscription price from the stock price one day before the announcement and dividing this value with the latter term. When a two-day abnormal return (t=-1 and t=0) is regressed on SUBPRDISC, a coefficient of -0.03129 is observed but its t-value of -1.366 showed that it is not statistically significant. However when a larger event period is used to measure CAAR, the result is found to be significant with the coefficient having a similar sign. For example, with a CAAR from one day before the announcement to 20 days after, a coefficient of -0.3184 and a t-value of -6.125 are observed. The greater the subscription price discount, the more adverse is the movement of the stock price.

A third study which considers this variable is by Loderer and Zimmermann (LZ, 1988). LZ analyses 122 primary rights issues by 56 unregulated ,industrial companies listed on the Swiss Stock Exchange between 1973 to 1983. They did a cross-sectional analysis between abnormal returns (AR) and SUBPRDISC together

with three other variables[20]. Since a monthly stock returns database is used, AR is measured either with an annualised two-month abnormal return ending with the announcement month (ARA) if an announcement date can be identified or an annualised four-month abnormal return prior to ex-rights month (ARI) when an announcement date could not be identified. While SUBPRDISC variable is computed by dividing offer price with end of the month closing market price a month before the announcement month or four months before the ex-rights month. LZ results produced little evidence of a significant relationship between ARA and SUBPRDISC when a theoretical instead of an actual value of a preemptive right is used in the regression model. However when ARI is utilised to represent the dependent variable, SUBPRDISC is found to be statistically significant to explain the variation in ARI. It stays significant throughout the use of different types of measurement for the other three independent variables. According to LZ, the difference in the result may be attributed to a post-announcement information disclosure as ARI estimated its abnormal return by including two pre-announcement months and the first two post-announcement months whereas ARA only includes the pre-announcement together with the announcement month and exlude the post-announcement effect. Nevertheless, SUBPRDISC coefficient reveals a positive relationship with either ARA or ARI as the dependent variable. This shows that the Swiss management are motivated to get a higher offer price when they think that the company's stock price is set below than what it is really worth.

A fourth study is implemented in the UK for 203 rights issue announcements over the period 1962 to 1975. By using ordinary least squares, Marsh (1977) estimated the relationship between the abnormal returns during the announcement month and the ratio of the offer price on the day before the announcement as a proxy for SUBPRDISC. His result shows that SUBPRDISC is positively related to the abnormal returns. However with a relatively low $\overline{R}^2 = 0.001$, no evidence of a relationship between the two variables can be established. A fifth study by Reddy (1992) found a

[20] The other three variables are: value of preemptive right as a fraction of company i's stock price, new issue volume and stock market's performance measure.

similar outcome as LZ with respect to the SUBPRDISC coefficient. With 32 direct rights issue announcements made on the AMEX and NYSE during 1979 to 1989, he found a positive relationship between a two-day announcement period CAAR and the SUBPRDISC. SUBPRDISC is measured by dividing the issue price discount from a pre-announcement price. Nonetheless, its t-value of 1.081 showed that this variable failed to explain the variation in CAAR which contradicts to the LZ finding.

Finally, the sixth study is implemented in an *emerging market* environment by Tsangarakis (1996). He performed a cross-sectional analysis between an eleven-day (t=-10 to t=0) cumulative average abnormal return (CAAR) and ten variables for 59 rights issue announcements by companies listed on the Athens Stock Exchange (ASE) during the period 1981 to 1990. The variables tested are: ratio of new equity issue divided by equity capital outstanding a month before announcement; log for the product of the number of shares outstanding times share price one month before announcement; daily common stock return variance over days t=-200 to t=-51; ratio of the offer price to the closing market price a month before announcement; dummy variable on debt-to-assets ratio; number of shareholders before offering; ratio of average daily trading volume a year before offering divided by the number of shares outstanding over corresponding period; cumulative average return of stock market index over days t=-50 to t=-1; dummy variable between state-owned companies (0) and non-state-owned companies (1); and dummy variable separating registered shares (0) from bearer shares (1). Based on Tsangarakis analysis, SUBPRDISC (which is measured by dividing the offer price from the closing market price a month before the announcement day) is negatively related to CAAR but its t-value of -0.696 shows that this variable is not statistically significant to explain the variation in the dependent variable. His result implies that shareholders on the ASE are indifferent to the level of subscription price of a rights issue.

Six studies have been presented to check on the relationship between stock market's reaction to rights issue and subscription price discount. The first two studies found a negative relationship between abnormal returns and SUBPRDISC which

contradicts to LZ study that came up with a positive relationship. While the last three studies provide no relationship evidence between the two variables. The mixed result provide an opportunity for the SUBPRDISC variable to be tested in the Malaysian context.

6.3.3. Changes in Leverage

Five studies are covered in this section to check on the relationship of changes in leverage and stock returns. Two studies (Kang, 1990; Tsangarakis, 1996) are implemented based on rights issue announcements, one study (Masulis and Korwar, 1986) on primary stock offerings while another two (Fama and French, 1992; Strong and Xu, 1994, 1997) on all listed non-financial securities.

Fama and French (FF, 1992) did a cross-sectional analysis between average returns with β, size, leverage, book-to-market equity (BE/ME) and earnings-price ratio. They used all non-financial companies listed on the NYSE, AMEX and NASDAQ (National Association of Securities Dealers Automated Quotation System) over the period July 1963 to December 1990. With respect to leverage, FF used the log of book assets to market equity ratio (A/ME) and the log of book assets to book equity ratio (A/BE) as proxies for this variable. A/ME will measure the market leverage and A/BE will measure the book leverage. Their result shows that market leverage and book leverage could significantly explain the average returns but with opposite sign. If there is a higher market leverage, there will be higher average returns; but if there is a higher book leverage, there will be lower average returns. FF further explained that although the coefficients have different sign, their absolute value is very close. Hence according to them, the difference between the two leverage variables helps to explain the average returns. In addition, they also provide evidence that the difference or the product of ln (A/ME) minus ln (A/BE) is equivalent to ln (BE/ME) or book-to-market equity ratio. Therefore, if a company has a high book-to-market equity ratio where its market leverage is greater relative to its book leverage, the

market associates this with poor prospects and discounts the stock price relative to book value. FF evidence suggests that BE/ME captures the relative distress effect.

Kang (1990) analyses 89 rights issue announcements by securities listed on the Korean Stock Exchange between 1984 to 1987. He executed a cross-sectional regression between 50 days prior to announcements cumulative abnormal returns (CAR) against the changes in financial leverage, the ratio of market price to the offering price of new issues, the number of new shares against each existing share, return on equity and a dummy variable to represent the par (0) and the market value (1) issues. Kang found that CAR is positively related to the changes in financial leverage which is measured by equity-to-debt ratio. A t-value of 1.989 showed that this result is statistically significant at α=0.05 level. According to him, Korean investors on the average are more concerned with financial distress. Hence if a company lowered its financial leverage, it is favourably accepted by investors which tend to increase its stock price. Kang conclusion contradicts to the result reported by Masulis and Korwar (MK, 1986). By using industrial securities from AMEX and NYSE (refer to Section 6.3.1.), they found a positive relationship between a two-day announcement period stock return and offering induced leverage change (ΔLEV); but a low t-value suggests that ΔLEV could not significantly explain the variation in the stock returns. MK used a pre-offering leverage ratio relative to the mean leverage ratio four years before the offering as an indicator for ΔLEV.

Strong and Xu (SX, 1994, 1997) replicated FF work by employing a UK data set from the London Share Price Database (LSPD) for the period 1973 to 1992. A total of 1337 industrial companies which exclude financial and property companies are used to explain the cross-section of expected stock returns. By implementing a similar Fama-MacBeth cross-sectional regression of average stock returns on β, size, leverage, BE/ME and earnings-price ratio, SX found a similar outcome to FF with respect to leverage variables. The average stock returns are positively related to market leverage (A/ME) and negatively related to book leverage (A/BE) with a t-value of 3.59 and -2.34 respectively (SX, 1997). This result would mean that as a company

market leverage exceeded its book leverage, investors would expect it to be having financial difficulty and require a higher expected return. SX provide further support of FF finding that in log form, the difference between the two leverage variables produced a book-to-market equity ratio. This is evident when the magnitudes of market and book leverage coefficients correspond to the BE/ME coefficient.

So far only Kang study is related to rights issues. He produced a statistically significant positive relationship between CAR and the change in equity-to-debt ratio. Another study looking at rights issue announcements implemented by Tsangarakis (1996) on the Athens Stock Exchange produced a contradictory evidence. He looked at a dummy variable based on the debt-to-assets ratio (DTOA) where companies with a ratio below the sample median debt-to-assets ratio carry a '0' and those with above the median carry a '1'. Based on a cross-sectional analysis between CAR and ten explanators, DTOA is found to be negatively related to CAR but it is not statistically significant to explain the variation in the dependent variable.

6.3.4. Book-to-Market Equity Ratio

A variable which is closely related to the change in leverage and has been briefly discussed in the above section is the book-to-market equity ratio (BE/ME). This explanator has received a lot of attention by the academics during recent years. Earlier studies by Stattman (1980) and Rosenberg, Reid and Lanstein (1985) have shown that there exists a positive relationship between average returns and book-to-market equity ratio. However it was FF (1992) study which sparked considerable interest by researchers in the capital market research to analyse this variable. FF empirical work of the US stocks for the period 1963 to 1990 reports a powerful relation between average returns and BE/ME. Its positive coefficient of 0.33 and a t-value of 4.46 captures the cross-sectional variation in average returns which is not found in β as the explanator. This news shocked academicians and practitioners who rely heavily on β to explain the variation in stock returns. FF provide two explanations for the results. First, book-to-market equity captures the prospects of a company. A high BE/ME implies that a company has poor prospects and it might be facing

financial problem. It will also mean a low stock price relative to book value. Therefore, investors would require a higher expected return. Second, BE/ME may be explained by the market overreaction to relatively poor prospects for a company. If overreaction is corrected, a high BE/ME would simply mean higher prices and returns are predicted in the future. Similar results have also been found in the UK. As covered in Section 6.3.3., a replication of FF work by Strong and Xu (1994, 1997) exhibits a positive relationship between average stock returns and BE/ME for UK industrial securities. A t-value of 4.13 (SX, 1997) shows that book-to-market equity is significant in explaining the cross-section of UK average stock returns. Basically, SX agree that BE/ME reflects a company's prospect and a market overreaction to the recent news of a company as explained by FF (1992).

Allen and Cleary (AC, 1997) tested this variable by using Malaysian frequently traded stock taken from a PACAP Database provided by the Pacific Basin Finance Research Centre at the University of Rhode Island. Over the period 1978 to 1992, AC observed that book-to-market equity persistently explained the variation in stock returns. The positive relationship between BE/ME and stock returns implies that the higher the BE/ME, the greater the expected returns. AC result once again supports the FF finding. Further evidence of a similar result has also been found by Kim (1997). Since FF reported their findings, a number of empirical works have been produced to check on the validity of their work. Two controversial issues came out of this checking which are selection bias in COMPUSTAT (Breen and Korajczyk, 1994; Chan, Jegadeesh and Lakonishok, 1995; Davis, 1994; Kothari, Shanken and Sloan, 1995) and errors-in-variables (Kim, 1995; Shanken, 1992). KSS (1995) explained that COMPUSTAT database practices 'back-filling in' procedure where companies that failed to produce financial statements because of thin trading or financial distress are excluded whereas those which recovered from the problems are included in the database and companies that have high BE/ME but low returns are excluded. As a result, an upward bias of the cross-sectional regression coefficient of the BE/ME variable and a significant explanatory power are observed due to the selection bias (Breen and Korajczyk, 1994; KSS, 1995). The second problem, errors-in-variables

(EIV), exists when an understatement of beta occurred because of adopting estimated instead of true betas (which normally could not be observed). According to Handa, Kothari and Wasley (1989) and Kim (1995), this problem leads to an underestimation of the price of beta risk and an overestimation of the explanators' coefficients. The higher the correlation between estimated beta and the explanators, the greater the downward bias in the price of beta risk and the more exaggeration in the significance of the explanators occurred. Kim (1997) corrected both problems when he analysed all companies listed on the NYSE and AMEX between 1963 to 1993. The data were obtained from COMPUSTAT and Moody's Manuals. His analysis showed that book-to-market equity still has significant explanatory power for average stock returns, even after the selection and EIV bias are corrected. With a BE/ME coefficient of 0.197% per month and a t-statistic of 3.52, this variable proves to be robust in explaining the returns' variation.

Thus far, all these studies agreed that companies with high BE/ME have greater returns than those with low BE/ME. However evidence provided by Malkiel (1995) reported that the realized returns made by money managers investing in high BE/ME companies do not differ much to those who invest in low BE/ME companies. During 1982 to 1991, high BE/ME companies earned .16% per year more than low BE/ME companies where the former companies have an average annual return of 15.97% while the latter companies have an average annual return of 15.81%. It seems there exists a conflict between the finance literature and actual returns made by money manager when BE/ME is concerned. To reconcile the conflicting results, Loughran (1997) did an exhaustive exploration of book-to-market across company size, exchange listing and calendar seasonality of all NYSE, AMEX and NASDAQ operating companies during 1963 to 1995. He found that BE/ME results are driven by small newly-listed growth companies that tend to have low BE/ME. In particular, Loughran analysis shows that BE/ME is significant to explain average returns for growth stocks (usually listed on the AMEX and NASDAQ) outside of January and value stocks (high BE/ME--normally companies listed on the NYSE) in January. As a matter of fact, BE/ME coefficient is positive for both the growth and value stocks

during those period. Beyond those periods, BE/ME has no meaningful power to explain the cross-sectional variation in average stock returns. In addition, Loughran also found that BE/ME for companies in the largest size quintile has no power to explain the average returns during 1963 to 1995. Hence, the conflicting results between finance literature and practitioners can possibly be explained in terms of funds being invested in large companies where there is no significant relation between BE/ME and realised returns. Loughran suggested that to exploit the difference between high and low BE/ME stocks, one have to form portfolios consisting of small quintile companies. The most recent evidence of a positive relationship between book-to-market equity and average returns is documented by Elfakhani, Lockwood and Zaher (ELZ, 1998) for Canadian stocks during 1975 to 1992. Due to the limited availability of data, only 600 companies are used to test for this variable. It appears that the positive relationship observed by ELZ is strong after 1985, even after a company size is considered.

The overall impression of the evidence presented in the above studies reported a strong positive relationship between book-to-market equity and average stock returns. Chan, Hamao and Lakonishok (1991), Davis (1994), FF (1992), Kothari and Shanken (1995) and Rosenberg, Reid and Lanstein (1985) as well as the studies covered in this section all agreed that companies which have a high book-to-market equity earn a greater return. Whether this evidence is consistent with the securities listed on the KLSE will be answered in the next chapter.

6.3.5. Company Size

The previous section touched on company size which is going to be discussed in this section. Part of the information and the importance of this variable has been covered in the first stage analysis in Section 3.2.3.2. which covered the size effect. In financial literature, company size is generally measured by the market value of equity (MVE). This has a significant explanatory power to explain the cross-section of stock returns. It also agreed that a size effect, the difference in average returns between a small market capitalisation stocks portfolio and a large market capitalisation stocks'

portfolio, exists. However a point of disagreement occurred regarding the relationship between average returns and company size. Evidence presented in the 80s by Banz (1981), Beaver (1981), Berges et al. (1984), Brown et al. (1983a), Dimson and Marsh (1986), Levis (1985, 1989) and Reinganum (1981) showed that smaller companies tend to outperform larger companies. Most of these studies gave various explanations of this occurrence such as it is seasonal where the effect is stronger in January than the rest of the year (Berges et al., 1984; Brown et al., 1983b; Elfakhani, Lockwood and Zaher, 1998; Kato and Schallheim, 1985) or it is explained by transaction costs (Hull and Kerchner, 1996; Hull, Mazachek and Ockree, 1998; Schultz, 1983; Stoll and Whaley, 1983) or its presence is due to information effect (Barry and Brown, 1984). None of these studies could provide conclusive explanations for the effect. It still remains an anomaly. As Berk noted "Ever since its discovery by Banz (1981), the size effect has remained an enigma" (1997, p. 12). More recent evidence complicates this issue. In the mid and late 1990s, the size effect is reversed where smaller companies' stocks underperformed larger companies' stocks. Elroy Dimson and Paul Marsh found that the Hoare Govett Smaller Companies Index failed to beat the FTSE All-Share index by 17.8 percentage points (Coggan, 1999). Similar evidence is also observed in the US and the Continental Europe markets as reported by Peter Oppenheimer of HSBC (Investors Chronicle, 13 November 1998, p. 28). In this section further empirical evidence is produced to check on the relationship between stock returns and company size.

Elfakhani et al. (1998) executed a cross-sectional test between average returns and company size measured by the market value of equity (stock price times the number of common shares outstanding) and beta for 694 companies listed on the Montreal Stock Exchange and Toronto Stock Exchange over the period 1975 to 1992. Their results showed a strong negative relationship between company size and average stock returns where all the t-statistics over different time interval which includes 1975 to 1984, 1985 to 1992, January and non-January months are found to be significantly different from zero. This indicates that average returns increase as company size decreases, suggesting a size effect exists in the Canadian stocks. The size effect is

found to be significant in both the January and non-January months in both periods (1975 to 1984 and 1985 to 1992), but it is noticeably stronger in January than in non-January. Contradictory to Elfakhani et al. (1998) finding, Hull et al. (1998) produced a significant positive relationship between company size (measured by the market value of equity) and a two-day cumulative abnormal returns at the α=0.01 level of significance. Their analysis is based on 725 announcements of common stock offerings that reduce non-convertible debt by companies listed on the Over-the-Counter (OTC) market, AMEX and NYSE between the period 1970 to 1989. According to Hull et al., the reported positive relationship is in accordance to the differential information theory explanation that due to investors lack of information about small companies, a more negative stock return is likely to occur when a negative event (common stock offering proceeds are used to retire existing debt) is released to the public.

Going back to the cross-section of stock returns studies (Allen and Cleary, 1997; FF, 1992; Kim, 1997; Loughran, 1997; SX, 1994, 1997; Trangarakis, 1996) discussed in the previous sections, further evidence of the relationship between stock returns and company size (measured by market value of equity) can be observed. AC (1997) analysis of Malaysian securities revealed an inverse relationship between the two variables; but when volatility (measured by the use of estimated own-variance) is controlled, the negative relationship becomes insignificant. Whereas FF (1992) reported a significant negative coefficient of MVE with a t-value of -2.47 for the NYSE, AMEX and NASDAQ stocks over the period 1963 to 1990. Their result showed that company size plays an important role capturing the cross-sectional variation in average stock returns in their regression analysis with size, earnings price, BE/ME and leverage. When Kim (1997) replicated FF (1992) work using the same setting but after correcting for the selection bias and error-in-variables problems, he found that company size is still inversely related to average stock returns; but its t-values showed that this variable is barely significant to explain the variation in monthly returns and for quarterly returns, company size has no significant power to explain the variation in the dependent variable. Loughran (1997) revealed a different

finding to those reported by FF where company size could not explain the cross-sectional variation in returns for the three largest size portfolios of NYSE, AMEX and NASDAQ operating companies over the period 1963 to 1995 when January return is excluded. Although the relationship is inversely related between company size and stock returns, it is not significant except for the month of February to December which revealed a January effect took place. When FF study is repeated in the UK by Strong and Xu (1997), they observed a significant negative coefficient for company size against average stock returns during 1955 to 1992 period, dominating β in explaining the dependent variable. However, when either BE/ME or leverage variables are included between the period 1973 to 1992, company size could no longer explain the variation although its sign remained negative. Contrary to the evidence presented thus far except for Hull et al. (1998), Tsangarakis (1996) found a positive relationship between CAR and company size (MVE) with a coefficient of 0.0224 at the Athens Stock Exchange. Nonetheless with a t-statistic of 0.588, this variable has no power to explain the variation in CAR.

Mixed evidence and justifications have been given about company size; but none is satisfactory to provide solid explanation with respect to this variable, particularly to its inverse relationship with stock returns or the existence of the size effect phenomenon. To find a solution to this enigma, Berk (1997) examined all NYSE stocks from 1967 to 1987 by using the CRSP and Compustat database. He looked at the relationship among returns, expected cash flows and market value. Book value of assets and sales volume which are proxies for expected cash flows are used to measure physical size. When portfolios are formed based on these two measures, no relationship between company physical size and returns is observed although the smallest decile portfolio outperformed the largest decile portfolio. However, when Berk sorted five portfolios into companies of similar physical size from the smallest 20 percent to the largest 20 percent, the relationship showed that a portfolio with low MVE has a higher return whereas a portfolio with high MVE earns lower returns. When Berk sorted the companies by MVE and checked the effect of physical size and returns, no evidence of a size effect exists. Berk concluded that the "size enigma"

actually occurred because of the proxy used to represent company size. According to him, market value of equity is not only measuring a company size, but it is more towards measuring a company's discount rate. Companies that have riskier cash flows normally have lower market values and are likely to have higher discount rates. Thus, these companies on the average must have a higher return. Berk firmly stressed that the explanatory power of MVE comes from the risk information contains in MVE but not at the physical size itself.

Garza-Gomez, Hodoshima and Kunimura (GHK, 1998) found Berk's (1997) work has some limitations where expected instead of actual cash flows are used and no evidence is presented to support his statement that companies with low-MVE are riskier than those with high-MVE. They expanded his work by correcting the limitations where (1) direct proxies are used for expected cash flows to measure physical size and (2) introduced measures of cash flow risk to provide proof that companies with riskier cash flows normally have a lower MVE and higher returns. GHK analysed all non-financial companies listed on the Tokyo Stock Exchange between 1957 to 1994. By using six variables (realized cash flows defined as net income plus depreciation, five-year weighted-average cash flows, sales volume, number of employees, book value of assets and book value of plant, property and equipment) to represent expected cash flows, they found a similar outcome to Berk (1997). A strong negative relationship is observed between returns and MVE which is related to cash flow risk; and a positive relationship[21] between all proxies of physical size and returns is documented in their multivariate regressions. Their results fully support Berk's argument that MVE captures information about risk where among companies of similar size (cash flows), those with low market value of equity (small companies) normally have higher risk and returns. This is true even after market beta is considered.

The inconsistent results as to the relationship between company size and stock returns produced in the above studies clearly show that investigation is certainly

[21] The relationship is significantly different from zero for sales, book value of assets and number of employees.

required in this area. This issue is analysed in the following chapter. It is hoped that the current study could shed light on this matter in the context of a developing market.

6.3.6. Ownership Concentration

Another variable which has received a lot of attention among the academicians is stock ownership concentration. Leland and Pyle signalling model (1977) states that the fraction of ownership by entrepreneur or major shareholders provides a good indication of a company's value. If major shareholders maintain or increase their ownership when there is an increase in outstanding shares, the likelihood of the particular shares' price to increase is greater. The reason for this is because the market assumes that management knows of the superior quality of a project. Based on this model, a positive relationship is expected between ownership concentration and stock performance. To check whether such relationship exists, six studies are presented here: Bohren et al. (1997), Dowen and Bauman (1997), Han and Suk (1998), Kothare (1997), Reddy (1992) and Wruck (1989).

It is mentioned earlier on that Bohren et al. (BEM, 1997) also included ownership structure variables in their non-linear cross-sectional regression for underwritten rights issue announcements on the Oslo Stock Exchange. They used two proxies to represent the ownership variable which are (1) the proportion of common stock held by the 20 largest shareholders (LARGE20) and (2) the proportion of common stock held by members of the BOD and the CEO (INSIDE) at the beginning of the year before the announcement. Among the two variables, only the latter is statistically significant to explain the two-day announcement period abnormal returns. Its positive coefficient implies that investors react favourably to rights issue announcements if the BOD and CEO increase their ownership. As for LARGE20, this variable does not have any significant power to explain the variation in the dependent variable. It is likely that LARGE20 and INSIDE are highly correlated that the exclusion of one variable is necessary to avoid collinearity problem.

Dowen and Bauman (DB, 1997) also presented a positive relationship as Bohren et al. except that they examined insider ownership by splitting the sample into large (Fortune 1000) and small companies (non-Fortune 1000) listed on the NYSE, AMEX and NASDAQ over the period 1987 to 1992. Insider ownership is defined as the product of the number of shares held by BOD and officers divided by the number of shares outstanding. Three proxies are used to represent insider ownership which are: OWN05 (ownership is 5% or less), OWN25 (ownership is more than 5% but less than 25%) and OWN100 (ownership is more than 25%). When the variables are regressed against a twelve-month holding period CAR, only one proxy is found to be significant at α=0.05. For large companies, OWN100 is found to be positively related but with an adjusted R^2 = 0.00, it could not explain the variation in CAR. Similar evidence is observed for small companies where OWN25 is found to be negatively related but with an adjusted R^2 of 0.01, this regression is not significant. However when three control variables (research concentration ratio, size and earnings yield) are included, the result becomes significant where the regressions for large and small companies exhibit an F-values of 37.68 and 4.04 and adjusted R-squares of 0.08 and 0.02 respectively. For large companies, if the insider ownership is between 5% to 25%, abnormal returns decrease by .27% if there is a 1% increase of ownership. Whereas if there is a 1% increase in the above 25% insider ownership variable, the abnormal returns will increase .23%. This evidence is also observed for small companies. An increase between 5% to 25% ownership will caused a decrease in abnormal returns; while a 1% increase in the above 25% ownership causes the abnormal returns to rise by .43%. Hence DB conclude that their results provide proof of a non-linear relationship between abnormal returns and insider ownership.

The most recent study which examines the relationship between ownership concentration and abnormal returns is by Han and Suk (HS, 1998). They analysed 262 stock split announcements for securities listed on the NYSE and AMEX from 1983 to 1990. To test whether insider ownership (defined as common equity shares held by officers, directors and other insiders) has an explanatory power on the dependent variable, a cross-sectional analysis between two-day (t=0, t=+1) announcement period

returns (CAR) and insider ownership (INSIDE) before the split announcement is run. To ensure that the relationship is not influenced by other confounding effects, factors such as company size (FIRM), share price one day before the announcement (PRICE), target share price (TARGET), pre-announcement CARs from t=-15 to t=-1 (PRIOR) and proportion of shares held by institutions (INST) are controlled. The regression result shows that insider ownership is positively related with CAR where 0.024% increase is expected for the announcement period returns if there is a 1% increase in insider ownership. Furthermore when the sample is divided into five quintiles based on the level of insider ownership, the average two-day abnormal returns are greater for the highest ownership as compared to the lowest ownership with a figure of 4.2% versus 0.9%; whereas when they split the sample based on three different sizes[22] (small, medium and large), the positive and significant relation prevails for small companies, but non-existent for large companies. The non-existent relationship indicates that information about the level of insider ownership becomes less important as information asymmetry diminishes.

A study closely related to the current research which could explain the ownership concentration is given by Kothare (1997). She uses 85 rights issues from NASDAQ for the period 1973 to 1986. Three ownership concentration measurements used in her study are: insider ownership which consists of shares owned by directors and senior management (INSIDE); beneficial or block ownership which includes shares owned by major shareholders who own 5% or more of the company's outstanding shares (BLOCK); and the absolute number of shareholders (NUMBER). Her analysis resulted with an increase of insider ownership from 23.54% before a rights issue to 26.93% after the issue and from 36.49% before the issue to 40.41% subsequent to the issue for block ownership. Nevertheless, the increase in both measurements are not significantly different from zero. As for the third measurement, no significant changes in the number of shareholders is observed. Further investigation of the changes in ownership and other trading characteristics shows that the correlation between changes in INSIDE and NUMBER are positively correlated with

[22] Assuming company size is a reasonable proxy to measure information aymmetry.

changes in price but only the latter measurement is significant to explain the change in stock price. Changes in BLOCK is negatively correlated with change in stock price but it is not significantly different from zero.

The most relevant study which has been mentioned in Section 6.3.1. is presented by Reddy (1992) in his PhD dissertation analysing 32 direct rights issue announcements by industrial and financial companies listed on the AMEX and NYSE between 1979 to 1989. He defined high ownership concentration (HOC) as companies having more than 33% of its common shares owned by blockholders (investors who own at least 5% of the company shares). On the other hand, if less than 33% of a company shares is owned by blockholders, it is classified as low ownership concentration (LOC). When Reddy runs a cross-sectional regression analysis of a two-day cumulative average abnormal return (CAAR) against six explanators which include a dummy variable of '1' for HOC companies and '0' for LOC companies, he found a statistically significant negative coefficient for this variable. It reveals that HOC companies are associated with a lower CAAR. This indicates that there exists a wider asymmetric information gap for HOC companies relative to their counterpart which create a conflict of interests between blockholders and shareholders of the company.

Finally, Wruck (1989) analyses 48 observations of NYSE and AMEX making private equity offering between 1979 to 1985. Her cross-sectional regression result indicates that the change in ownership concentration (defined as the changes in total holdings of the six largest blockholders) and the company value is significant and positively related if the level of concentration is low (0% to 5%) or high (more than 25%). However, if the range of ownership concentration is between 5% to 25%, the association is negative. Wruck attributed the negative effect to be company specific, but she did not elaborate further on this issue.

The above studies provide a background explanation and a basis to quantify the ownership concentration variable used in the current research. They also provide

some indication of the correlation between these variables. As the evidence provides mixed results, there is room for further research to be carried out.

6.3.7. Intended Use of Proceeds

Another possible variable that could explain the abnormal returns might come from the intended use of proceeds coming from an equity issue. It is logical to assume that the market would probably assess the reason behind the issuance and react to this information. Referring back to Chapter Two in Section 2.3.2., it is mentioned that part of the criteria to submit a rights issue application to the Security Commission is for companies to declare information regarding the intended utilisation of the rights issue proceeds. Based on Nur (1997, 1998) pilot study, most Malaysian companies stated in their rights offering circular and abridged prospectus that the rights issue proceeds are utilised for investment purposes, working capital requirements and debt repayments. To check whether the intended use of the proceeds have any significant bearing on the abnormal returns, a proxy for each purpose needs to be identified. For debt repayments, a discussion at Section 6.3.3. of this chapter has already provide several suggestions of its measurement and expected relationship; but for investment purposes and working capital requirements, they are discussed below.

6.3.7.1. Investment

A number of studies related to equity issues in general have been identified which consider how the proceeds of new issues are used for investment spending. Barclay and Litzenberger (BL, 1988) analysed the market reaction of 139 new equity announcements of industrial companies listed on the NYSE and AMEX between 1981 to 1983. They tested whether the estimated profitability of new investment projects financed by new issues' proceeds could explain the market reaction to this new issue announcement. A continuous time maximum likelihood technique is used to regress a 90-minute stock return surrounding the announcement with seven explanators. Three of the explanators are proxies used for investment purposes. The first proxy related to the intended use of the proceeds where a dummy variable (USE) is set to '1' for

offering used solely for changes in capital structure and '0' for new investment spending. A second proxy is Tobin's Q ratio[23] to measure the present value generated per dollar of new investment for announcements associated with new investment spending; and the third proxy is a marginal Q ratio for an incremental project which measures the gross change of a company value for every dollar invested in a project. BL regression result shows that none of the proxies used to measure investment spending are significant to explain the variation of the announcement's effect.

In the case of Denis (1994), he grouped the proxy of investment opportunities into ex ante and ex post measures. Basically, all the proxies are in ratio form. Market value to book value (MB), Tobin's Q (Q), dividend yield (YLD), research and development expenditure to sales (R&D) and return on equity (ROE) are classified as ex ante measure; whereas annual growth rates in total assets, sales, equity value, net operating income and the average ratio of capital expenditures to total assets are included in the ex post measure. The difference between the two groups is the period used to calculate the ratios that is whether they are calculated before or after the equity offering announcement. Irrespective of the difference, all the ratios measure growth opportunities with respect to the expected profitability brought by new investment which may be the closest proxy to represent investment purposes. The most common measures used by researchers are market-to-book ratio and Tobin's Q (BL, 1988; Denis, 1994; Dierkens, 1991; Pilotte, 1992; Smith and Watts, 1992) [24]. These ratios depend on the profitability of the company's assets and expected investment opportunities. "...if new investment opportunities are expected to be profitable then the firm's assets in place must also be profitable and the market/book ratio and Tobin's Q will be high" (Denis, 1994, p. 162). Denis tested all the ex ante and ex post measures of investment opportunity against a two-day announcement period return for 435 primary public offerings of common stock issued by industrial companies listed on the NYSE and AMEX between 1977 to 1990. He found a significant positive correlation

[23] The sum of market value of common stock, preferred stock, publicly traded long term debt and book value of non-traded debt divided by replacement cost which is the book value of assets adjusted for inflation.

[24] They use variations of these measures.

for three of the ex ante proxies (MB, Q and R&D), a significant negative correlation for YLD and a statistically insignificant correlation for ROE against the announcement period returns. With respect to Tobin's Q, Denis' results contradict the BL finding of an insignificant positive relationship between Tobin's Q and the 90-minute stock returns. As for the ex post proxies, none of the variables are found to be significant indicating that the ex post growth measures are poor proxies for investment opportunities. Denis further investigation of the ex ante proxies produced other evidence that ex ante proxies are only significant for high growth companies when the value of growth opportunities is greater than the value of existing assets. This means investment opportunities appear to be important if the profitability of the opportunities is extremely high, suggesting that the ex ante proxies play a minor role in explaining the announcement's effect.

In contrast to the two studies presented so far, Marsh (1977) suggested that the market's reaction to rights issue announcements in the UK depends on the intended use of the issue proceeds. By partitioning rights issues made by securities listed on the London Stock Exchange between 1962 to 1975 into intended uses category and comparing the average abnormal returns (AAR) over the announcement month, he found that if the proceeds are used for new investment where no reduction of debt and injected of funds for existing activities are observed, the AAR carried a 2.1% returns. However, if the proceeds are used for new investment which include "capital expenditure on specific projects, modernisation and replacement expenditures and both general and specific expansion schemes" (Marsh, 1977, p. 392), the AAR reduced to 0.7%.

6.7.3.2. Working Capital Requirement

As of this date, there is only one study which looks at the intended use of equity issue proceeds for working capital requirement[25]. This was done by Marsh (1977) in his doctoral dissertation. However, his analysis is not thorough as it was done in a "naive categorisations" (p. 394) where the purpose is just to provide

[25] This is to the author's knowledge.

additional support to the main finding of his thesis. As discussed in the above section, Marsh splits the rights issue announcements between 1962 to 1975 into six categories based on the purpose of the issues specified by the companies. The category used to represent working capital requirement falls under 'additional finance for existing activities'[26] category. When he compares the AAR over the announcement month for this category, he could only observed a return of 0.1%. This result indicates that working capital requirement is associated with positive AAR but the returns are very marginal.

6.3.7.3. Summary of Intended Use of Proceeds

The intended use of equity issue proceeds has received little attention in previous empirical studies. No conclusive comments can be made with respect to the relationship of investment spending and abnormal returns. Whereas for working capital requirement, its coverage is only limited to one study. Hence, it is apparent that further research is necessary to shed light into this issue.

6.4. Implications for the Current Research

Seven theoretical models are presented in this chapter which associate some of the characteristics of rights issues with the performance of stock returns. Miller and Rock signalling model and PPH predict a negative relationship for relative size of issue; Heinkel and Schwartz information signalling model and PPH presented a negative relationship for subscription price discount; and similar sign also observed for Ross signalling model with changes in leverage. Whereas Leland and Pyle signalling model expected a positive relationship for ownership concentration. When these characteristics are analysed in the previous empirical studies, no consistent evidence of a relationship exists which could fully support the theoretical models. Most of the empirical work discussed in this chapter provide mixed results and inconclusive evidence of each variable. Furthermore, additional variables other than

[26]This category also includes proceeds which are used 'to assist company in financial distress', 'to finance losses', 'to survive' or 'for liquidity'.

the four dealt in the theoretical models are introduced to form a basis for the next chapter.

Another obvious deficiency which is unveiled in the literature is that a lot of these studies were conducted in western countries, especially the US. There were only a number of studies performed in an *emerging market* environment which gives another reason for the current research. Furthermore, it is also discovered that work in the area describing the intended use of proceeds resulting from equity issue announcements is lacking. Hence, the current study will try to fill this gap by including proxies used to represent the purpose of rights issue announcements in the cross-sectional regression analysis against cumulative abnormal returns.

CHAPTER 7: RESEARCH DESIGN AND TEST RESULT ON THE CROSS-SECTIONAL REGRESSION ANALYSIS OF CUMULATIVE ABNORMAL RETURNS AGAINST THEIR POTENTIAL DETERMINANTS IN THE MALAYSIAN CONTEXT

7.1. Introduction

The last chapter provided a foundation for the analytical tests to be described in this chapter. Variables covered in the empirical work are examined to identify a number of potential determinants to explain the abnormal returns observed in Chapter Five. Some of these proxies are used without any adjustment; an alteration is needed for some to fulfill the objective of this thesis. Once these proxies are identified, a cross-sectional regression analysis between cumulative abnormal returns and the proxies is performed to answer the second and the third research questions which were disclosed in Chapter One. These are:

(i) to establish possible determinants of cumulative abnormal returns surrounding rights issue announcements;

(ii) to examine the importance of corporate finance theories in explaining the relationship between the determinants and cumulative abnormal returns.

7.2. Research Design

Basically, the coverage in the second stage analysis of the thesis is a follow up to the findings reported in Chapter Five. It is observed that the effect of rights issue announcements gave non-zero abnormal returns which could not be fully explained by the signalling model, asymmetric information models, agency model, information hypothesis nor perfect substitution hypothesis except for price pressure hypothesis. The variation in the abnormal returns may be explained by other explanators. Hence the exploration of these explanators to determine the variation may provide additional insights into the effect of rights issue announcements in Malaysia. A replication of the

methodology used by Fama and French (1992), Kang (1990), Loderer and Zimmermann (1988), Reddy (1992), Strong and Xu (1994, 1997) and Tsangarakis (1996) is adopted to analyse these explanators.

7.2.1. Data and Source of Information

The same observations employed in the first half of the thesis are carried forward to do the analysis in the second half of the thesis. Out of 116 clean rights issue announcements reported between 1987 to 1996, only 70 observations are selected where: (i) the companies are listed on the KLSE; (ii) the companies are not quoted in Singapore dollars; (iii) the companies are not financial institutions and trust funds; (iv) the rights issues are on stock basis; and (v) there are no other significant announcements made on the particular event date. Almost all observations are listed on the Main Board of the KLSE except for six companies which are listed on the Second Board. These observations are selected from seven industries: property and development (13), industrial products (13), consumer products (12), plantations (4), trading/services (20), mining (2) and construction (6).

The data used for a cross-sectional regression analysis is secondary data. The cumulative abnormal returns are derived from the market adjusted returns model. Basically, the adjusted stock price and the market index which are used to calculate the abnormal returns were taken from Datastream. Whereas information to calculate the explanatory variables, mainly ratios, are taken from each company's rights issue abridged prospectus and financial statements. The financial statements are derived from the company's annual report. First, the researcher corresponded with 23 companies directly through fax requesting for a copy of the abridged prospectus and the annual reports one year before and after a specific rights issue announcement. The letter is accompanied with the researcher's supervisor letter to ensure a high response rate is received from the respondents. It is the Malaysian companies' practice to have a letter with the letterhead of the organisation to be formally signed and endorsed with an organisation's stamp from an individual holding certain title or position in an organisation. A copy of both letters are included in Appendix V and VI. Of the 23

letters faxed, 15 companies responded (which is equivalent to 47.83% of the total) but only 11 companies sent the appropriate annual reports and abridged prospectus which are useable to calculate the variables for the cross-sectional regression analysis. Another 4 companies which did respond sent their most current annual report which is irrelevant to the current study. This means there are 8 companies that totally ignored the request.

Due to cost constraints, the rest of the letters were sent through regular mail. 61 letters went out; but only 25 companies responded (about 40.98%) and 28 companies made no contact while 2 companies asked for postage handling costs to be sent to them. Six letters were returned as companies have left their premises. Among the 25 companies, 9 of them sent information which could not be used to calculate the variables. Therefore in total only 16 companies that sent the right materials which are fully useable in the current analysis, meaning that the useable response rate is only 26.22% which is lower than the first batch of letters that were sent through fax.

There were 84 letters sent through fax and regular mail whereas the sample selected for the current research is only 70. It was through the response from this letter that the researcher found some of the companies did not meet the criteria listed in Section 4.3. of Chapter Four. It was then that the sample reduced to 70 observations. The rest of the abridged prospectuses and annual reports were collected personally from the KLSE library, Northern University of Malaysia library, Extel financial companies service and Datastream. The last two sources are employed only to extract the financial statements for the most current rights issue announcements. These databases could only provide financial statements for the past five years. They are not able to provide balance sheet and profit and loss information beyond the past five years.

7.2.2. Test Methodology

Discussions in Chapter Three and Six identified nine explanators or determinants which might have great influence on the variation in the cumulative

abnormal returns. Based on Fama and French (1992), Kang (1990), Loderer and Zimmermann (1988), Reddy (1992), Strong and Xu (1994, 1997) and Tsangarakis (1996) works, a cross-sectional analysis is performed by estimating a linear regression of:

$$CAR_i = \alpha + \beta_1 BKTOMKT_i + \beta_2 COSIZE_i + \beta_3 DBEQCHG_i + \beta_4 INVCHG_i + \beta_5 NWCCHG_i + \beta_6 OC_i + \beta_7 OCCHG_i + \beta_8 RELSIZE_i + \beta_9 SUBPRDISC_i + U_i \quad (7\text{-}1)$$

where

CAR_i	= Stock market's reaction due to rights issue announcements over the period 1987 to 1996
BKTOMKT	= Value of shareholders fund preceding to rights issue announcements as a function to the market value of equity one day prior to the announcement
COSIZE	= Company size before rights issue is announced
DBEQCHG	= Changes in leverage due to rights issue announcements
INVCHG	= Changes in investment due to rights issue announcements
NWCCHG	= Changes in working capital following rights issue announcements
OC	= Ownership concentration
OCCHG	= Changes in ownership concentration
RELSIZE	= Value of the rights issue as a ratio to the market value of the total shares outstanding
SUBPRDISC	= Rights issue price discount relative to pre-announcement market price

An ordinary least squares method is employed to estimate the parameters of the explanators in the above equation. Proxies for each of the variables in the equation are described in the following section.

7.2.3. Proxies for Variables

Proxies for four of the variables (i.e. CAR, DBEQCHG, INVCHG and NWCCHG) are derived originally from the current study to meet its objectives. Almost all of the independent variables are manually computed except for market value of equity (MVE). MVE is available on Datastream. However for the rest of the

explanators, Datastream and Extel financial companies service could only provide some basic ratios such as book-to-market, return on equity, debt-to-equity, return on assets, return of capital employed, price earnings and others which are not useable for the current research. Certainly some of the basic ratios could be used but they are not sufficient to cover all the period under study. Even if the numbers are available, further computation is needed as the current research takes into consideration the changes in both the ex ante and ex post variables which were mentioned in Denis (1994). Most of the work discussed in the previous chapter did not look at these variables in such manner. This may be due to the time consuming and tedious process of compiling and calculating those variables, especially if the empirical work involves hundreds of observations. Although expressions (equations formulated by one self) can be created to calculate the required ratios, it is still time consuming to type the mnemonic (code) for each observation and each variable in Datastream.

7.2.3.1. Proxy for Cumulative Abnormal Returns (CAR)

CAR is a dependent variable to represent cumulative abnormal returns for each observation which is calculated using a market adjusted returns methodology. The abnormal returns for each of the 70 observations from Chapter Five is summed from sixty days before (t=-60) to sixty days after (t=+60) the rights issue announcement day (t=0). This measure allows consideration of issue-related information that might reach the market long before and after the announcement. Sixty days before the announcement are included to capture information leakage that might have been incurred. It has been observed in the first stage analysis in Section 5.2. that stock prices for companies involved in rights issue announcements experienced a positive trend of abnormal stock returns. Whereas sixty days after the announcement is also included to ensure issue-related information with respect to the intended utilisation of the rights issue proceeds is captured in the abnormal returns.

7.2.3.2. Proxy for Book-to-Market Equity Ratio (BKTOMKT)

An explanator that has raised considerable interest among academicians, and one which is found to be statistically significant to explain the variation in stock returns is book-to-market equity ratio (BE/ME). The measurement used to represent this variable is similar to those reported in Allen and Cleary (1997), Elfakhani et al. (1998), FF (1992), Kim (1997), Loughran (1997) and Strong and Xu (1994, 1997) which is the shareholders funds (book equity) divided by the market value of equity at a specified period. FF (1992) and Strong and Xu (1994, 1997) used end of the month figure where the former utilised the month of June at a particular year and the latter employed the month of December of year t-1 or the beginning of year t. With the current study, book equity is measured by the shareholders funds at a fiscal year end preceding to the rights issue announcements. While the denominator is measured by the market value of equity one day before the announcement. Since fiscal year end of the 70 observations differed among companies from either end of January, March, June or December, it is decided that the best estimator for the market value of equity is taken a day just before the rights issues. Although there is an inconsistency of measuring shareholders funds which used a yearly figure versus market value of equity measured in terms of daily figure, it is not likely to change the result of the cross-sectional analysis. This variable is included to check whether it is an important determinant to explain the CAR as claimed by researchers in the developed stock market.

7.2.3.3. Proxy for Company Size (COSIZE)

The most common explanator which has been discussed in the first and second stage analysis is company size. Company size as measured by the market value of equity (stock price multiplies with the number of common shares outstanding) has potentially significant explanatory power to explain the cross-section of stock returns. However the relationship between these variables has been mixed although majority of the studies observed a negative relationship. Those that came up with a positive sign (Hull et al., 1998; Tsangarakis, 1996) only briefly discussed their result especially

when the relationship is found to be statistically insignificant. It is hoped that the establishment of this variable in the current study contributes to the existing literature in explaining the stock returns. A proxy used to measure company size is the market value of equity one day before the rights issue announcement's day.

7.2.3.4. Proxy for Intended Utilisation of Rights Issue Proceeds

Section 6.3.3. and 6.3.7. of Chapter Six discussed that the intended use of the proceeds obtained from rights issues may have some influence on a company stock's return. Table 7-1 provides a summary of the stated reasons behind the issuance. It is observed that 22 observations, about 31.43% of the total sample, stated that the rights proceeds are for investment purposes (I), working capital requirements (WC) and debt repayments (L). None of the rights issue proceeds are used solely to meet the working capital requirement whereas only one company reported that the proceeds are totally to reduce debt. The rest of the figures are self explanatory. The purpose of the rights issue is taken from a statement declared when a company decides to issue rights. It may not be the actual usage of the rights issue proceeds. Hence, the purposes are split into three variables which are debt repayment, investment and working capital requirement. Each of this variable is discussed next.

Table 7-1: Summary of intended utilisation of rights issue proceeds among 70 observations

Intended Utilisation of Rights Issue Proceeds	Number of Observations	% Relative to Total Observations	Abbreviation
I	6	8.57%	*I = Investment*
WC	0	0	*WC = Working Capital*
L	1	1.43%	*L = Debt*
I, WC	16	22.86%	
WC, L	18	25.71%	
I, L	6	8.57%	
I, WC, L	22	31.43%	
Missing	1	1.43%	
Total	70	100%	

(a) Proxy for Debt Repayment (DBEQCHG)

According to Ross' signalling model (1977), managers are motivated to signal their inside information of a company's true value by undertaking capital structure changes. If a company increases its leverage, it signals that management is confident with the prospect of its asset values and future cash flows. Hence a positive relationship is expected between the leverage variable and stock returns. Evidence provided by researchers have also been mixed from positively related to no correlation depending upon the measurement used as a proxy for this variable. The current research used a fractional change of debt-to-equity ratio to represent debt repayment. It is estimated by taking the difference between debt-to-equity ratio at the end of a fiscal year after the announcement with that observed at the end of a fiscal year before the announcement and divides the product with the latter. Debt includes both short term and long term liabilities whereas equity is represented by the total shareholders funds.

(b) Proxy for Investment (TFACHG)

Few studies have looked into this variable. Barclay and Litzenberger (BL, 1988) and Denis (1994) employed Tobin's Q which is the sum of market value of common stock, preferred stock, publicly traded long term debt and book value of non-traded debt divided by replacement costs. This ratio looks at whether the new investment opportunities bring profit to a company. If they do, then Tobin's Q for this company will be high. BL could not find any significant power in this proxy; whereas Denis found it could only explain the variation for investment opportunities which are associated with an extremely high profitability. Other proxies such as ROE, sales, dividend yield, net operating income and annual growth in total assets also do not have any explanatory power to explain the variation of stock returns. Hence to overcome these weaknesses, the current study used a fractional change of total fixed asset as a measure of investment activities. Malaysian companies which declared that the rights proceeds are intended for investment purposes normally associated them with expanding business activities or increasing production capacity. In other words if

the rights issue is successful, an increase in total fixed asset may be observed. This variable is computed by subtracting total fixed asset which appeared at the end of a fiscal year before the announcement from the total fixed asset at the end of a fiscal year following the announcement. The difference is then divided by the earlier term.

(c) Proxy for Working Capital Requirement (NWCCHG)

Only one study was found which briefly discussed this variable. Marsh (1977) analysed rights issue and looked at the intended use of the proceeds. However, he did not execute any further analysis except to compare the average abnormal returns (AAR) over the announcement month with a category of 'additional finance for existing activities'. His result indicates that this variable is associated positively with AAR but the returns are slight. The current study analysed this variable by looking at the fractional change in net working capital before and after the announcement. This is to ensure a consistent measure is implemented throughout the proxies used for the intended utilisation of the rights issue proceeds. Net working capital is estimated by taking the difference between current asset and current liability. It is computed prior and after the rights issue announcement and the difference is divided by the net working capital at the end of a fiscal year preceding the announcement.

7.2.3.5. Proxy for Ownership Concentration (OC and OCCHG)

Leland and Pyle signalling model (1977) assumes that an entrepreneur's fractional stock ownership provides a good indication of a company's true value. If major shareholders maintain or increase their ownership when there is an increase in outstanding shares, the likelihood of the particular shares' price to increase is greater. The reason for this is because the market assumes that these shareholders know of the superior quality of a project. Two measurements are used to represent this variable. First, a dummy variable is introduced to represent the ownership concentration where it is based on the percentage of equity owned by major shareholders. If major shareholders own more than 50% of the total equity, a company is classified as high ownership concentration (HOC). Otherwise, it is classified as low ownership

concentration (LOC) company. It is stated in Section 69D of Malaysian Companies Act 1965 that major shareholders are those investors who own at least 5% of the company[27]. Since the theory predicts that high ownership concentration is positively related to share price, HOC will be carrying a value of '1' and low ownership concentration (LOC) will be carrying a value of '0'. The second variable used to measure ownership concentration is the fractional change in substantial shareholdings. This variable is calculated by taking the difference of substantial shareholdings at the end of a fiscal year before and after the rights issue announcements. The product is then divided with the substantial shareholdings at the fiscal year end before the announcement.

7.2.3.6. Proxy for Size of Issue (RELSIZE)

Two theories predict a negative relationship between size of issue and stock price. Miller and Rock (1985) associated announcement of equity issues with inadequacies of internally generated funds to finance a company's planned investment. This inferred that a company is expected to experience a decreasing future cash flows to support its investment activities. As a result, it tends to depress the company's stock price. The greater the size of equity issues, the greater is the shortfall of internally generated funds, the more depressed a company's stock price. The second theoretical model is explained by price pressure hypothesis (PPH) which assumes that a company's security does not have a perfect substitute and that it is faced with a downward sloping demand curve. Thus an increase in the supply of this security would mean a discount to its price to ensure the security is tradeable. In the literature, two measures are used to represent this variable. One is to use the absolute size of the issues and the other is to use the relative size. No significant relationship is found for the first measurement in BL (1988) and Bohren et al. (1997) studies. While the second measurement produced a statistically significant relationship. The current research

[27] The exact word from Section 69D (1) of the Malaysian Companies Act 1965 is "...a person has a substantial shareholding in a company if he has an interest or interests in one or more voting shares in the company and the nominal amount of that share, or the aggregate of the nominal amounts of those shares, is not less than five per centum of the aggregate of the nominal amounts of all voting shares in the company" p. 67.

adopted the relative size of issue where the total rights issue proceeds when it was first announced (the number of new ordinary shares multiply with the issue price) is divided with the market value of equity one day before the announcement.

7.2.3.7. Proxy for Subscription Price Discount (SUBPRDISC)

Finally, the last variable covered in the current research is subscription price discount. As mentioned above, PPH states that a discount has to be given in order to induce existing shareholders to subscribe. The higher the discount, the greater is the demand for this security. Whereas Heinkel and Schwartz information model (1986) associated this variable with opportunity costs if a rights issue is not successful. According to them, in order to prevent rights issue from failing, a discount has to be offered. This discount signals to the market negative information about a stock's true value which is likely to cause a drop in price. A proxy used by Bohren et al. (1997), Kothare (1992) and Reddy (1992) is employed to measure this variable. It is computed by subtracting the rights subscription price from the stock price one day prior to the announcement. The product is later divided by the pre-announcement price.

7.3. Test of Multicollinearity Problem

Before a cross-sectional regression analysis is run to determine the variables which are likely to explain some of the variations in the cumulative abnormal returns, a correlation matrix is executed using an Econometric Views (EVIEWS) application to check for multicollinearity problem. Multicollinearity exists when two or more explanators are highly linearly related. If such a situation occurs, it is difficult to assess the individual contribution of each variable on the dependent variable. A cross-sectional regression consists of several explanatory variables, the slope coefficient of each explanator is known as partial regression coefficient. This means it measures the effect of a particular explanator toward the dependent variable by holding other determining variables constant. When multicollinearity is near perfect, the standard error of one or more coefficients tend to be large which reduce their t-values. As a

result, some of these variables are found to be statistically insignificant even though theory says that all are important. Hence, a misleading conclusion is derived.

Table 7-2 presented a matrix correlation among the explanatory variables. It is observed that the pairwise correlations among the predictors are uniformly low in the range of 0.01 to 0.38 except for INVCHG and NWCCHG. The degree of collinearity for the two variables is almost perfect with a 0.935305. This means when INVCHG moves, NWCCHG moves with it almost perfectly. In such a case, it is futile to assess the contribution of each explanator to the overall variation in the dependent variable. The remedial measure might be to drop one of the collinear variables. However before this action is undertaken, it is best to re-evaluate the existing method whether it is a suitable approach to be used with more than two explanatory variables. According to Gujarati (1992), if a regression includes several explanators, pairwise correlations such as those shown in Table 7-2 may not be a good indicator of multicollinearity (p. 299). He recommended the use of subsidiary auxiliary regressions to identify which explanator is highly collinear with other independent variables. This is done by regressing each explanator with the remaining explanatory variables and obtain its coefficient of determination (R^2). The procedure continues for all explanators. If a variable is highly correlated with the other explanatory variables, its R^2 is high and the F-value will be statistically significant.

Table 7-2: Correlation matrix between the explanatory variables

	BKTOMKT	COSIZE	DBEQCHG	INVCHG	NWCCHG	OC	OCCHG	RELSIZE	SUBPRDISC
BKTOMKT	1.000000	-0.107679	0.381935	-0.232862	-0.253897	-0.137460	0.021023	0.005316	0.016624
COSIZE	-0.107679	1.000000	-0.078317	-0.109701	-0.079457	0.207223	0.054701	-0.137331	0.165164
DBEQCHG	0.381935	-0.078317	1.000000	-0.092587	-0.178604	-0.175804	0.080644	-0.018354	0.174086
INVCHG	-0.232862	-0.109701	-0.092587	1.000000	0.935305	0.063924	-0.084821	0.103472	-0.157557
NWCCHG	-0.253897	-0.079457	-0.178604	0.935305	1.000000	0.095514	-0.103076	0.055755	-0.188823
OC	-0.137460	0.207223	-0.175804	0.063924	0.095514	1.000000	-0.355049	0.078986	-0.075599
OCCHG	0.021023	0.054701	0.080644	-0.084821	-0.103076	-0.355049	1.000000	0.052627	0.108581
RELSIZE	0.005316	-0 137331	-0.018354	0.103472	0.055755	0.078986	0.052627	1.000000	0.030601
SUBPRDISC	0.016624	0.165164	0.174086	-0.157557	-0.188823	-0.075599	0.108581	0.030601	1.000000

To confirm that the degree of collinearity between the two explanatory variables identified in the correlation matrix is near perfect, auxiliary regressions are computed. The result is produced in Table 7-3. As shown in this table, the variables

DBEQCHG, INVCHG and NWCCHG appear to be collinear with the other explanatory variables. The degree of collinearity as measured by R^2 is extremely high for INVCHG and NWCCHG with a value of 0.88 and 0.89. With an F-value of 53.71 for INVCHG and 54.61 for NWCCHG, the result supports the existence of collinearity problem for both variables. In addition, this approach also identified DBEQCHG to be statistically significantly collinear with other explanators although its R^2 is quite low which is 0.23. However, this variable introduced little threat to the finding of the cross-sectional analysis if it is included as its degree of collinearity is not extremely high.

Table 7-3: Testing for collinearity among the explanatory variables by employing auxiliary regressions

Auxiliary Regression	Value of R^2	F-value	Probability	Is F significant?
BKTOMKT on remaining explanators	0.20	1.79	0.09	No
COSIZE on remaining explanators	0.14	1.11	0.37	No
DBEQCHG on remaining explanators	0.23	2.08	0.05	Yes*
INVCHG on remaining explanators	0.88	53.71	0.00	Yes**
NWCCHG on remaining explanators	0.89	54.61	0.00	Yes**
OC on remaining explanators	0.22	1.97	0.07	No
OCCHG on remaining explanators	0.16	1.34	0.24	No
RELSIZE on remaining explanators	0.07	0.52	0.83	No
SUBPRDISC on remaining explanators	0.10	0.79	0.62	No

* Significant at α=0.05
**Significant at α=0.01

7.4. Test Results of the Cross-Sectional Regression Analysis

The previous section identified two explanatory variables which are collinear with the other explanators showing that multicollinearity problem exists in the proposed regression model. These variables can simply be dropped from the regression, "but this remedy can be worse than the disease (multicollinearity)" (Gujarati, 1992, p. 307). This is because formulation of the regression model is based on some empirical works previously carried out in related area. For example, INVCHG has been identified from previous works such as Denis (1994), Dierkens (1991), Pilotte (1992) and Smith and Watts (1992) to play a role in explaining announcement period returns. The most likely variable to be taken out from the model is NWCCHG since it has never been tested in other studies nor was it directly covered in the corporate finance theoretical models. Nevertheless before these variables are

dropped, it is worth running a cross-sectional regression of cumulative abnormal returns on all explanators. The result is generated in Table 7-4. It appears that the explanatory variables could only explain 18.79% of the variation in the cumulative abnormal returns; but with an F-value of 1.414145 and a probability of 0.204816, the overall significance of the estimated regression is not significantly different from zero implying collectively, the explanatory variables have no significant impact on CAR. However, if each explanatory variable is examined individually while holding the remaining predictors constant, it showed that BKTOMKT and COSIZE are statistically significant to explain the variation in CAR. It is observed that a 1% increase in the book-to-market equity ratio will be followed by a .263856% decrease in cumulative abnormal returns. This is true at α=0.10 level of significance. Whereas for COSIZE, cumulative abnormal returns will increase by .000217% if there is a 1% contraction in company size. Its t-value of -2.023259 indicates that COSIZE is significantly different from zero at 95% confidence level. Other than the two explanators, the remaining variables do not have any significant explanatory power on the dependent variable.

Table 7-4: Cross-sectional regression estimates of cumulative abnormal returns (adopting market adjusted return model) on rights issue related variables

Dependent Variable is CAR Sample: 1 70 Included observations: 65 Excluded observations: 5				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
BKTOMKT	-0.263856	0.139280	-1.894428*	0.0634
COSIZE	-0.000217	0.000107	-2.023259**	0.0479
DBEQCHG	-0.025371	0.026072	-0.973119	0.3348
INVCHG	-0.012312	0.014176	-0.868539	0.3889
NWCCHG	0.000461	0.000118	0.390655	0.6976
OC	0.112593	0.081178	1.386986	0.1710
OCCHG	0.073889	0.133662	0.552804	0.5826
RELSIZE	-0.009441	0.035220	-0.268069	0.7896
SUBPRDISC	0.029625	0.096650	0.306518	0.7604
C	0.249659	0.094337	2.646446	0.0106
R-squared	0.187920	F-statistic		1.414145
Adjusted R-squared	0.055034	Prob(F-statistic)		0.204816

* Significant at α=0.10
** Significant at α=0.05

It is likely that the overall insignificant result of the regression may be caused by the presence of multicollinearity problem which is associated with a high collinearity of INVCHG and NWCCHG with the other explanatory variables. Table 7-5 produced a cross-sectional regression estimates when both variables are excluded from model 7-1. R^2 declines to 15.65% from 18.79%, while its F-value increased slightly to 1.51123; but it is still statistically insignificantly different from zero. Collectively, none of the variables could explain the variation in abnormal returns. Individually, an exclusion of the near perfect collinear variables resulted with only one signficant variable left to explain the dependent variable which is company size (COSIZE). It seems an increase of 1% in COSIZE will caused cumulative abnormal returns to decline approximately 0.000201%. This is significant at the α=0.10 level of significance. BKTOMKT is no longer found to be statistically significant to explain the variation in CAR. As for the rest of the explanatory variables, their low t-values prove that none of the coefficients are significantly different from zero.

Table 7-5: Cross-sectional regression estimates of cumulative abnormal returns (adopting market adjusted return model) on rights issue related variables excluding INVCHG and NWCCHG

Dependent Variable is CAR Sample: 1 70 Included observations: 65 Excluded observations: 5				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
BKTOMKT	-0.218188	0.135536	-1.609811	0.1130
COSIZE	-0.000201	0.000107	-1.883977*	0.0647
DBEQCHG	-0.028548	0.025463	-1.121171	0.2669
OC	0.112472	0.081172	1.385613	0.1713
OCCHG	0.084061	0.133548	0.629443	0.5316
RELSIZE	-0.015977	0.034845	-0.458505	0.6483
SUBPRDISC	0.045464	0.095560	0.475769	0.6361
C	0.204102	0.088672	2.301754	0.0250
R-squared	0.156538	F-statistic		1.511230
Adjusted R-squared	0.052955	Prob(F-statistic)		0.181990

* Significant at α=0.10

As mentioned earlier on, dropping those variables which are highly collinear with the other predictors may not be the best solution to solve for the multicollinearity problem. A suggestion was made by one of the referees, who evaluated the pilot study's paper (Nur, 1997), to run a stepwise regression instead of a cross-sectional regression on the data. According to Neter and Wasserman (1974), stepwise regression is probably the most popular method to find the best set of explanatory variables and one that requires least computation (p. 382). This method calculated a sequence of regression equations by simply adding or deleting an explanatory variable depending upon its F-value at each step. The variable that has the highest F-value which exceeds a pre-determined level that is not already in the equation is entered. The step continues to identify which explanator is the next candidate to be included and whether any of the explanators already in the model should be eliminated if its F-value falls below a pre-determined level and it could no longer help in explaining the dependent variable in conjunction with other explanators added at a later stage. The computation terminates when there are no more explanatory variables that are eligible to be included or deleted. When this approach is run in the SPSS application, it is found that only BKTOMKT is found to be statistically significant at α=0.05 level of significance to explain the variation in CAR. The result is reported in Table 7-6. BKTOMKT is the first variable to be included on Step Number 1 where the overall significance of this variable is statistically different from zero with an F-value = 4.89755 and probability F = 0.0305. This variable could explain about 7.213% of the variation in CAR. The computation terminates when there are no more explanatory variables that can be added to the model since all of the remaining variables are having a low t-value which is not sufficient to reach the pre-determined limit of α=0.05.

So far, two remedial measures (eliminating highly collinear variables and stepwise regression) are utilised to address mutlicollinearity problem. However, each solution has its own limitations. Eliminating or dropping variables which are based on some theoretical consideration may caused model specification error, meaning that parameters estimated by the reduced model may turn out to be biased. While the search for the best set of independent variables in a stepwise regression may sometimes came up with an unreasonable set especially if the independent variables

Table 7-6: Stepwise regression estimates of cumulative abnormal returns (adopting market adjusted return model) on rights issue related variables

****** MULTIPLE REGRESSION ******

Listwise Deletion of Missing Data

Equation Number 1 Dependent Variable.. CAR

Block Number 1. Method: Stepwise Criteria PIN .0500 POUT .1000
BKTOMKT COSIZE DBEQCHG INVCHG NWCCHG OC OCCHG RELSIZE
SUBPRDIS

Variable(s) Entered on Step Number
1.. BKTOMKT

Multiple	.26857
R Square	.07213
Adjusted R Square	.05740
Standard Error	.28783

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	1	.40574	.40574
Residual	63	5.21926	.08285

F = 4.89755 Signif F = .0305

---------- Variables in the Equation ----------

Variable	B	SE B	Beta	T	Sig T
BKTOMKT	-.274614	.124089	-.268573	-2.213	.0305
(Constant)	.213018	.065538		3.250	.0019

---------- Variables not in the Equation ----------

Variable	Beta In	Partial	Min Toler	T	Sig T
COSIZE	-.179769	-.185541	.988405	-1.487	.1421
DBEQCHG	-.148047	-.142042	.854126	-1.130	.2629
INVCHG	-.151983	-.153442	.945775	-1.223	.2261
NWCCHG	-.113406	-.113874	.935536	-.903	.3703
OC	.122407	.125869	.981105	.999	.3217
OCCHG	-.005202	-.005399	.999558	-.043	.9662
RELSIZE	9.308E-04	.000966	.999972	.008	.9940
SUBPRDIS	-.012819	-.013307	.999724	-.105	.9169

End Block Number 1 PIN = .050 Limits reached.

are highly correlated (Neter and Wasserman, 1974, p. 385). "There is no surefire remedy; there are only a few rules of thumb" (Gujarati, 1992, p. 307). Hence the results from the cross-sectional regression analysis inclusive of all explanatory variables are used (1) to establish possible determinants of cumulative abnormal returns surrounding rights issue announcements and (ii) to examine the importance of corporate finance theory in explaining the relationship between the determinants and the CAR, basically answering the remaining research questions.

7.4.1. Possible Determinants of Cumulative Abnormal Returns Surrounding Rights Issue Announcements

From the previous discussion about the cross-sectional regression result produced in Table 7-4, it is observed that none of the explanatory variables have a significant impact on the CAR if taken collectively. However, if each variable is examined individually while holding the remaining determinants constant, two variables are found to be statistically significant to explain the variation in the CAR surrounding rights issue announcements in the Malaysian context. The evidence provided by the previous studies (Allen and Cleary, 1997; Elfakhani et al., 1998; Fama and French, 1992; Kim, 1997; Loughran, 1997; Strong and Xu, 1992) about the significance of book-to-market equity ratio in explaining average stock returns is fully supported by the current finding. BKTOMKT is found to be significant at the α=0.10 level of significance in the cross-sectional analysis (refer to Table 7-4) and α=0.05 level of significance in the stepwise regression (refer to Table 7-6) and the cross-sectional simple regression analysis of CAR against each explanator (refer to Table 7-7). However, its inverse relationship with CAR contradicts the positive relationship reported in those studies (summarised in Table 7-8). FF (1992) explanation of a high BKTOMKT is associated with higher returns is not applicable for securities listed on the KLSE. Although the current finding is consistent with their explanation that this variable captures the prospect of a company, it does not agree to FF justification that the market overreact to a company's relatively poor prospects. The more likely explanation of the significant negative relationship observed in the current finding is that Malaysian investors associated a low BKTOMKT with small growth companies

(such as presented by Loughran, 1997). These companies have the potential to prosper in the future but they also carry higher risks in terms of greater volatility of earnings when there is a change in the economic cycle. To take these risks, investors would require higher returns.

Table 7-7: Cross-sectional simple regression estimates of cumulative abnormal returns (adopting market adjusted return model) on each rights issue related variables taken individually

Model: CAR = f {Individual rights issue related variables}					
Determinant	Intercept	Coefficient	R^2	Adj R^2	F-value
BKTOMKT	0.219398	-0.291582**	0.077994	0.064435	5.752260
	(3.349660)	(-2.398387)			
COSIZE	0.124621	-0.000126	0.025314	0.010981	1.766080
	(2.708909)	(-1.328939)			
DBEQCHG	0.099575	-0.039691	0.045090	0.030622	3.116456
	(2.700914)	(-1.765349)*			
INVCHG	0.086954	-0.002750	0.004647	-0.010434	0.308137
	(2.306244)	(-0.555101)			
NWCCHG	0.081768	-0.000112	0.001127	-0.014008	0.074459
	(2.254056)	(-0.272872)			
OC	0.046210	0.085223	0.019518	0.004884	1.333750
	(0.866945)	(1.154881)			
OCCHG	0.097127	0.007940	0.000060	-0.015091	0.003943
	(2.589967)	(0.062796)			
RELSIZE	0.085361	0.004033	0.000182	-0.014741	0.012195
	(1.935537)	(0.110429)			
SUBPRDISC	0.096706	-0.060644	0.006111	-0.008505	0.418110
	(2.444018)	(-0.646614)			

* Significant at α=0.10
**Significant at α=0.05

The second variable which is identified as having significant explanatory power on CAR is company size (COSIZE). This result is observed in Table 7-4 where the t-value of -2.023259 showed that COSIZE is significant at α=0.05 level of significance. Surprisingly in both the stepwise and the simple cross-sectional regression, this variable is found to be insignificant. Nonetheless considering that the majority of the sample companies are below average size, the result of the cross-sectional regression stands. Consistent to the evidence presented by Banz (1981), Beaver (1981), Berges et al. (1984), Berk (1997), Brown et al. (1983a), Dimson and Marsh (1986), Elfakhani et al. (1998), FF (1992), Levis (1985, 1989), Reinganum (1981) and Strong and Xu (1994, 1997) but contradictory to those reported by Elroy

Table 7-8: Summary of empirical evidence on factors influencing abnormal returns (all the results are interpreted as significantly different from zero at α=0.10 level by the author/s unless otherwise stated)

Study and sample	Characteristic of rights issue	Relationship between the characteristic and returns
	Size of issue	
Asquith and Mullins (1986) 121 announcements of industrial primary equity issues on AMEX and NYSE during 1963 to 1981.	Relative size of issue	Negatively related
Barclay and Litzenberger (1988) 139 announcements of new issues of seasoned equity by industrial companies listed on AMEX and NYSE during 1981 to 1983.	(i) Absolute size of issue (ii)Relative size of issue	(i) Negatively related* (ii) Positively related* (*insignificant)
Bohren, Eckbo and Masulis (1997) 114 announcements of underwritten rights issues by non-financial companies listed on the Oslo Stock Exchange between 1980 to 1993.	(i) Gross rights issue proceeds (ii) Percentage change in shares outstanding due to rights offer	(i) Negatively related* (ii) Positively related* (*insignificant)
Masulis and Korwar (1986) 388 announcements of primary stock offering by industrial companies listed on AMEX and NYSE during 1963 to 1980.	Percentage change in shares outstanding	Negatively related (significant) but when ΔLEV variable is included, relationship is insignificant.
Reddy (1992) 32 direct rights issue announcements by industrial and financial companies listed on AMEX and NYSE between 1979 to 1989.	Ratio of issue size to shares outstanding	Positively related (significant); once other variables are included, relationship is insignificant.
	Subscription price discount	
Bohren et al. (1997) Sample as above	A discount in the rights subscription price relative to market price one day before announcement	Negatively related (insignificant)
Kothare (1992) 79 underwritten and direct rights issue announcements by listed companies on NYSE and AMEX during 1970 to 1987.	(Stock price day t=-1 less subscription price) / stock price day t=-1	Negatively related
Loderer and Zimmermann (1988) 122 primary rights issues by 56 unregulated industrial companies listed on Swiss Stock Exchange between 1973 to 1983.	Subscription price divided by end of month price: (i) a month before announcement month or (ii) 4 months before ex-rights month	(i) Positively related but insignificant; (ii) positively related and statistically significant.
Marsh (1977) 203 rights issue announcements for securities on the LSE over 1962 to 1975.	Subscription price divided by stock price day t=-1	Positively related (insignificant)
Reddy (1992) Sample as above	Issue price discount divided by pre-announcement price	Positively related (insignificant)
Tsangarakis (1996) 59 rights issue announcements by listed	Subscription price divided by the closing market price one	Negatively related (insignificant)

Study and sample	Characteristic of rights issue	Relationship between the characteristic and returns
companies on Athens Stock Exchange between 1981 to 1990.	month before announcement	
	Changes in leverage	
Fama and French (1992) All non-financial companies listed on NYSE, AMEX and NASDAQ between 1963 to 1990.	(i) Book assets to market equity (A/ME); (ii) Book assets to book equity (A/BE)	(i) Positively related (ii) Negatively related
Kang (1990) 89 rights issue announcements by companies listed on Korean Stock Exchange between 1984 to 1987.	Changes in equity to debt ratio	Positively related
Masulis and Korwar (1986) Sample as above	Pre-offering leverage ratio a year before relative to the mean leverage ratio 4 years before offering	Positively related (insignificant)
Strong and Xu (1994, 1997) 1337 industrial companies listed on the LSE between 1973 to 1992.	(i) A/ME (ii) A/BE	(i) Positively related (ii) Negatively related
	Book-to-market equity	
Allen and Cleary (1997) Malaysian frequently traded stocks between 1978 to 1992.	Book equity / Market equity (BE/ME)	Positively related
Elfakhani et al. (1998) 600 securities listed on the Toronto and Montreal Stock Exchange during 1975 to 1989.	BE/ME	Positively related
Fama and French (1992) Sample as above	BE/ME	Positively related
Kim (1997) All companies listed on NYSE and AMEX between 1963 to 1993.	BE/ME	Positively related
Loughran (1997) All operating companies listed on NYSE, AMEX and NASDAQ between 1963 to 1995.	BE/ME	Positively related
Strong and Xu (1994, 1997) Sample as above	BE/ME	Positively related
	Company size	
Allen and Cleary (1997) Sample as above	Market value of equity (MVE)= stock price times number of common shares outstanding	Negatively related but when volatility is controlled, relationship is insignificant
Banz (1981), Beaver (1981), Berges et al. (1984), Brown et al. (1983), Dimson and Marsh (1986), Levis (1985, 1989) and Reinganum (1981). Refer to Section 3.2.3.2.	MVE	Negatively related

Study and sample	Characteristic of rights issue	Relationship between the characteristic and returns
Berk (1997) All NYSE stocks from 1967 to 1987	(i) MVE (associate MVE with risk) (ii) Book value of assets (iii) Sales volume	(i) Negatively related (ii) No correlation (iii) No correlation
Elfakhani et al. (1998) 694 companies listed on the Montreal and Toronto Stock Exchange over the period 1975 to 1992.	MVE	Negatively related
Fama and French (1992) Sample as above	MVE	Negatively related
Garza-Gomez, Hodoshima and Kunimura (1998) All nonfinancial companies listed on the Tokyo Stock Exchange between 1957 to 1994.	MVE	Negatively related
Hull et al. (1998) 725 announcements of common stock offerings that reduce debt by companies listed on the OTC, AMEX and NYSE between 1970 to 1989.	MVE	Positively related
Kim (1997) Sample as above	MVE	Negatively related (barely significant for monthly returns and insignificant for quarterly returns).
Loughran (1997) Sample as above	MVE	Negatively related (significant for January but insignificant for non-January).
Strong and Xu (1997) Securities listed on the LSE during 1973 to 1992.	MVE	Negatively related (significant if β is included but when BE/ME or leverage variables are included, relationship is insignificant).
Tsangarakis (1996) Sample as above	MVE	Positively related (insignificant)
	Ownership Concentration	
Bohren et al. (1997) Sample as above	(i) Percentage held by 20 largest shareholders at beginning of year before announcement (ii)Percentage held BOD and CEO at beginning of year before announcement	(i)Negatively related but insignificant; (ii) Positively related
Dowen and Bauman (1997) Small (Non-Fortune 1000) and large (Fortune 1000) companies listed on NYSE, AMEX and NASDAQ between 1987 to 1992.	Common stock held by BOD and officers divided by number of shares outstanding	Non-linear positive relationship
Han and Suk (1998) 262 stock split announcements for securities	Percentage of stock held by officers, directors and insiders	Positively related

Study and sample	Characteristic of rights issue	Relationship between the characteristic and returns
listed on the NYSE and AMEX from 1983 to 1990.	before the announcement	
Kothare (1997) Rights and public issues on NASDAQ from 1973 to 1986.	(i) Percentage change of shares owned by directors and senior management (ii) Percentage change of shares owned by blockholders (iii) Percentage change of number of shareholders	(i) Positively related* (ii) Negatively related* (iii) Positively related (*insignificant)
Reddy (1992) Sample as above	High ownership concentration (shares owned by blockholders exceed 33%)	Negatively related
Wruck (1989)	Total holdings of six largest blockholders for level of concentration: (i) 0% to 5% (ii) 5% to 25% (iii) More than 25%	(i) Positively related (ii) Negatively related (iii) Positively related
	Intended Use of Proceeds **Investment**	
Barclay and Litzenberger (1988) Sample as above	(i) a dummy variable: '1'=proceeds solely for changes in capital structure '0'=proceeds solely for new investment spending (ii) Tobin's Q ratio (iii) Marginal Q ratio	(i) Negatively related* (ii) Positively related* (iii) Positively related* (*insignificant)
Denis (1994) 435 primary public offerings of common stock by industrial companies listed on NYSE and AMEX between 1977 to 1990.	Ex ante variables: (i) Market value to book value (ii) Tobin's Q (iii) Dividend Yield (iv) R&D expenditure to sales (v) ROE Ex post variables: (vi) Annual growth in total assets (vii) Sales (viii) Equity value (ix) Net operating income (x) Average ratio of capital expenditures to total assets	(i), (ii) and (iv) positively related; (iii) negatively related; (v) no correlation; (vi) to (x) no correlation. Further analysis concludes the ex ante variables play a minor role to explain returns.
Marsh (1977)	(i) Proceeds solely for new investment (ii) Proceeds for new investment, modernisation & replacement expenditures, expansion projects Working capital requirement (iii) Proceeds for additional finance for existing activities	AAR over announcement month (i) 2.1%, (ii) 0.7% and (iii) 0.1%

Dimson and Paul Marsh (Coggan, 1999), Hull et al. (1998) and Peter Oppenheimer (Investors Chronicle, 13 November 1998, p. 28), the current finding observed a significantly negative relationship between COSIZE and CAR when the remaining determinants are held constant. This means smaller companies (measured by market value of equity--MVE) have higher cumulative abnormal returns, which also means that a size effect is present in the Malaysian stock market. Berk's (1997) and GHK's (1998) justification that market value of equity is not only measuring a company size but more towards measuring a company's risk (reflected in its discount rate) could not be refuted. Normally, companies that have riskier cash flows are those with lower MVE and higher discount rates. On the average, these companies may have higher returns. Hull et al. (1998) argument with respect to differential information theory does not apply in the context of the Malaysian stock market. Investors' lack of information about small companies does not lead to negative stock returns when a negative event is released to the market.

As for the other variables used to measure the intended use of rights issue proceeds (DBEQCHG, INVCHG and NWCCHG), none of them are found to be significantly different from zero in the cross-sectional regression analysis which is consistent to those reported by Barclay and Litzenberger (1988) and Denis (1994) which can be referred in Table 7-8. It appears that an early declaration of the purpose of the rights issue do not carry any significant meaning to the KLSE investors. When these variables are examined individually by implementing a cross-sectional simple regression (refer to Table 7-7) between CAR and each variable, INVCHG and NWCCHG are still found to be statistically insignificant. However, DBEQCHG exhibits a significantly different from zero result at α=0.10 level of significance. Its coefficient of -0.039691 meant that every 1% increased in the fractional change of debt-to-equity ratio is followed by a reduction of 0.039691% of CAR. The negative relationship is consistent to that reported by Kang (1990) on the Korean Stock Exchange.

The remaining explanatory variables (i.e. OC, OCCHG, RELSIZE and SUBPRDISC) are proven to have no significant role to explain the variation in CAR for both the cross-sectional regression (Table 7-4) and cross-sectional simple regression (Table 7-7) analyses. Two proxies used to measure ownership concentration--OC and OCCHG--have positive relationship with the dependent variable implying that higher ownerships are associated with higher returns. For example based on the cross-sectional regression (Table 7-4), OC which is a dummy variable shows a coefficient of 0.112593. This result implies that high ownership companies (HOC) experience a higher CAR by 0.112593 percentage points as compared to low ownership companies (LOC). However since it is not statistically different from zero, it means there is no difference in the CAR for both groups of companies. With respect to relative size of rights issues (RELSIZE), the current finding observed a different sign from the positive relationship reported by Barclay and Litzenberger (1988) and Bohren et al. (1997). Nevertheless, the results are consistent in terms of no relationship can be established between RELSIZE and CAR. Finally, the last explanator covered in the model is subscription price discount. An insignificant relationship of this variable to explain the variation in CAR is consistent to those reported by Marsh (1977) and Reddy (1992) but contradicts to Bohren et al. (1997) and Kothare (1992) results.

7.4.2. Comparison of the Implications Stated in the Theoretical Background on the Relationship Between Characteristics of Rights Issues and Cumulative Abnormal Returns

Section 6.2. of Chapter Six identified four characteristics of rights issues which are closely related to company's stock returns as identified by the corporate finance theories. A summary of the implications of corporate finance theoretical models on the relationship between these characteristics and cumulative abnormal returns is presented in Table 7-9.

7.4.2.1. Relative Size of Issue

Miller and Rock signalling model claimed that announcement of equity issues, in this case rights issues, was normally followed by a decline in stock price. This is because such announcement signals to the market that a company does not have significant internally generated funds to finance its planned investment. It may also meant that a company is expected a decrease in its future cash flows. This news tend to depress its stock price. The greater the size of equity issues, the greater is the decline in the stock price, inferring an inverse relationship is expected between size of issue and cumulative abnormal returns in the current study. When this is compared to the cross-sectional result discussed in the previous section, it is true that a negative relationship is observed between the two variables. However, an extremely low t-value = 0.268069 of this variable suggests that size of issue does not have any significant impact on the variation of CAR. Thus, MR signalling model could not be applied to the companies listed on the KLSE. The insignificant relationship also provides no support to price pressure hypothesis which assumes that an increase in the supply of a particular share shall be accompanied by a discount to create demand for this share. Its prediction that a larger issue size is associated with greater discount of the existing market price of an issue which in turn will give a lower CAR does not work for Malaysian companies.

Table 7-9: Summary of the implications of corporate finance theoretical models on the relationship between characteristics of a rights issue and abnormal returns

Theoretical models	Characteristic of rights issue	Implication on the relationship between characteristic and abnormal returns
Miller and Rock signalling model	Relative size of issue	Negative relationship
Price Pressure Hypothesis (PPH)	Relative size of issue	Negative relationship
Price Pressure Hypothesis (PPH)	Subscription price discount	Negative relationship
Heinkel and Schwartz information signalling model	Subscription price discount	Negative relationship
Ross signalling model	Changes in leverage	Positive relationship
Leland and Pyle signalling model	Ownership concentration	Positive relationship

7.4.2.2. Subscription Price Discount

Based on the result of the cross-section between subscription price discount and CAR, a positive relationship is observed where higher subscription price discounts of rights issues produce higher cumulative abnormal returns. Without even looking at the t-value, it is clear that the established relationship does not agree to the PPH prediction that a higher discount would mean a lower CAR due to the temporary pressure on the stock price. It also provides no support to Heinkel and Schwartz information signalling model (1986) that a discount to prevent rights issue failure signals to the market of a negative information about a stock's true value which cause a decline in its price. No evidence is discovered to support the theoretical models' implication of the relationship between subscription price discount and cumulative abnormal returns for Malaysian companies.

7.4.2.3. Changes in Leverage

67.14% (refer to Table 7-1) of the sample declared that part of the rights issue proceeds are used to retire existing debts. According to Ross signalling model (1977), this action would signal to investors that the company does not have confidence with the prospects for an increase in asset values and future cash flows--they rely on the existing shareholders to cover obligations which fall due. Investors would take this as unfavourable news and discount the companies' share prices. Certainly in Malaysia, things do not work this way. On the average, perhaps Malaysian investors are like the Korean investors (Kang, 1990) where they give greater weight to a possibility of financial distress. Thus, a reduction of existing debt is most welcome meaning that lower leverage is associated with higher cumulative abnormal returns. This relationship is observed in Table 7-4 and Table 7-7. Table 7-4 showed that although the fractional change in debt-to-equity ratio (DBEQCHG) is inversely related to CAR, it is not significantly different from zero if taken collectively. However, if this variable is regressed individually against CAR such as shown in Table 7-7, a 1% reduction of DBEQCHG will increase 0.039691 percentage point of CAR. This variable could significantly explain 4.5090% of the variation in CAR. Hence, it is concluded that no

evidence is found to support Ross signalling model in the context of the Malaysian stock market.

7.4.2.4. Ownership Concentration

Leland and Pyle signalling model (1977) assumes that an entrepreneur's fraction of ownership conveys information about a project's expected return. When an entrepreneur increases his stock ownership, a project is perceived to be of superior quality. It would encourage investors to purchase the particular share. The greater the entrepreneur's fractional stock ownership, the more investors are willing to pay for these shares. This is exactly what appears to happen in Malaysia where both proxies used to measure ownership concentration have a positive relationship with CAR. Although the relationship is consistent to the Leland and Pyle signalling model, the variables low t-values imply one cannot state categorically that they have some influence to affect the CAR variation.

7.5. Summary

This chapter is meant to complement the finding from Chapter Five by identifying whether the positive cumulative average abnormal returns can be explained by some variables other than the rights issue announcements. Its main objectives are (1) to establish possible determinants of cumulative abnormal returns identified from the corporate finance theories and previous empirical works by executing a cross-sectional regression analysis and (2) to examine the importance of corporate finance theory in explaining the relationship between the variables and the cumulative abnormal returns surrounding rights issue announcements by comparing the result from the current study with the implications stated in the theoretical background.

Among the variables tested, only book-to-market equity ratio (BKTOMKT) and company size are found to be statistically significant to have some influence on the CAR if taken individually by holding the remaining explanatory variables constant. The finding is consistent with past empirical studies such as Elfakhani et al.

(1998), FF (1992) and Strong and Xu (1994, 1997). However, it differs in terms of the sign observed in the BKTOMKT relationship with CAR. Malaysian investors may associate a low BKTOMKT with small growth companies which have the potential to prosper in the future but carry with them higher risks as observed by Loughran (1997) for operating companies listed on the NYSE, AMEX and NASDAQ. Hence a negative relationship is expected where investors would require higher returns from low BKTOMKT companies which are more volatile to changes in the economic cycle. This is in line with the negative relationship observed in company size. Smaller companies tend to have higher cumulative abnormal returns, justifying the presence of a size effect in the Malaysian stock market.

As for the variables used to measure the intended use of rights issue proceeds, only fractional change in debt-to-equity ratio exhibits a significantly negative relationship in a cross-sectional simple regression analysis. This result indicates Malaysian investors are concerned with the possibility of a company facing financial problem. As to proceeds used for investment and working capital purposes, none of them are found to be statistically significant. This may be due to their near perfect collinearity with the other explanatory variables. The most surprising result is that most of the variables (relative size of issue, subscription price discount and ownership concentration) established from the theoretical models could not explain the variation in CAR. Furthermore, none of the theoretical models (i.e.Miller and Rock signalling model, PPH, Heinkel and Schwartz information signalling model, Ross signalling model and Leland and Pyle signalling model) have shown themselves to be significant for Malaysian companies listed on the KLSE. These model may work in a developed stock market such as the LSE, NYSE and AMEX; but they appear to be less important to an *emerging market* such as the Kuala Lumpur Stock Exchange.

CHAPTER 8: CONCLUSION

8.1. Restatement of Objectives

Over the period 1973 to 1996, a total of RM38.311 billion (£9.5778 billion) was raised through rights issue by companies listed on the Kuala Lumpur Stock Exchange. This figure accounted for 33.8271% of the total funds (all capital raised in the equity and debt markets) made available for these companies by the Malaysian capital market. Within the twenty four years, rights issue proceeds contributed approximately 45.14% which is almost half of the total funds mobilised in the Malaysian equity market. Due to its significance as a means of equity financing, rights issue announcements have been selected as events to examine three important issues:

(i) to test for the semi strong form of the Malaysian stock market efficiency;
(ii) to establish potential explanators of the rights issue announcement effect;
(iii) to check on the importance of corporate finance theoretical models to explain the effect and its determinants.

It is hoped that this study will be a contribution to the limited empirical research output on capital markets produced from this part of the world.

This chapter is meant to bring together some of the major findings which were found in the earlier chapters. The explanation will be kept brief since thorough discussions and summarisations of the findings have already been provided in Chapter Five and Seven. Following this, the implications of the findings to investors, security analysts, corporate financial managements, regulators and policy makers and those who are interested in capital market based research are considered. The chapter ends with a number of suggestions for future research.

8.2. Summary of the Findings

Two benchmarks were used to calculate abnormal returns due to rights issue announcements, the market adjusted return (MAR) and the single index market model (SIMM). For the SIMM approach, a suspended period is treated as (i) having zero abnormal returns (model a) and (ii) repeating the price of the last trading day before the suspension (model b). Treatment (i) is similar to the MAR's approach in adjusting for suspended period while treatment (ii) is executed to ensure consistent measures are used throughout the estimation and the event period. During the pre-announcement period, there is a positive trend of abnormal stock returns observed in the MAR and SIMM models. There is a significant gain in value of 6.7908%, 3.2851% and 2.2509% for the MAR and SIMM model (a) and model (b). The t-test over the period t=-60 to t=-1 produced a value of 15.55035 for the MAR, 15.01926 for the SIMM model (a) and 13.87086 for the SIMM model (b). The rising trend of statistically significant abnormal returns observed before the announcement day might be due to a leakage of inside information possibly by the BOD or the underwriters when a meeting is held to propose the rights issues. These abnormal returns may suggest insider trading activity existed in the Malaysian stock market. It is concluded that since the results are consistent for both benchmarks, they may be insensitive to the different performance measures, the variation in treating the suspended period or the treatment of thin trading adopted in this study during the pre-announcement period.

However, when the overall pattern of cumulative average abnormal returns (CAAR) is considered, the SIMM approach gives a lower CAAR which may reflect the choice of the 'exclusion period' in calculating α and β. The selection of 239 days before the event period may have overstated the estimation of α. Most probably the shares' returns of the sample during the estimation period are performing well which resulted with an upwardly biased α. Thus, when abnormal returns are calculated based on the overstated α, the abnormal returns figure tend to be understated. In the current study, the SIMM model (a) and model (b) exhibited a loss of -0.21749% and -0.6806% respectively when days t=0 to t=+60 are taken into account; whereas the

MAR model ended with a gain of 1.9272%. Further examination of the post-announcement result revealed that the contradictory results may also be caused by the sample which appears to be weighted in favour of small market capitalisation companies. In the Malaysian stock market, it is common for smaller size companies to experience some suspended period as observed in the current study. The MAR result may be contaminated with thin trading problem.

Having established the post-announcement results, it is far more difficult to reach a conclusion on whether the Malaysian stock market is efficient or otherwise with respect to rights issue announcements. As mentioned previously, stock market efficiency test is confined to the stock returns' behaviour in the post-announcement period of day t=0 to t=+60. Inconsistent results of a positive gain for the MAR and a loss in the SIMM models as evidenced in the above discussion confirmed the existence of a persistent significant non-zero cumulative average abnormal return. Obviously, zero abnormal returns assumed in an efficient market hypothesis (EMH) is violated. In the context of rights issues, the Malaysian stock market deviates from the semi strong form of EMH. This finding supports the evidence presented by Merret et al. (1967) and Tsangarakis (1996). It does not agree with the results reported in the US (Kothare, 1992; Nelson, 1965; Scholes, 1972; Singh, 1988; Smith, 1977; White and Lusztig, 1980), Switzerland (LZ, 1988), Norway (Bohren et al., 1997), Korea (Kang, 1990) and one study in Malaysia (Annuar and Shamsher, 1993b).

As far as the implications of the corporate finance theories with respect to the effect of rights issue announcements are concerned, none of the signalling model, asymmetric information models, agency model, perfect substitution hypothesis (PSH) and Scholes' information hypothesis could be supported in the context of the Malaysian stock market. All of the models except for PSH, expected a negative price effect, but the evidence presented in the MAR approach (the main benchmark used in the current study) produced a positive gain. These theories may be applicable to a developed exchange such as the LSE and NYSE, but are perhaps less relevant to an *emerging market* environment. A likely explanation to this may be due to the different

institutional characteristics observed in companies listed on the KLSE. It is a traditional domestically-focused market with stringent controls of volatility in stock prices. Such characteristics do not appear in a developed exchange. Nevertheless, the results are consistent with the price pressure hypothesis. Share returns experienced a temporary setback during the announcement period which is followed by a recovery ten days after the announcement. However, the temporary price pressure effect after the announcement of rights could not be associated with a discount or transaction costs factor since there is no official buying and selling of shares for rights issue announcements at this particular stage.

Some tentative conclusions from the work so far are drawn but these need to be firmed up by implementing a cross-sectional regression analysis between the cumulative abnormal returns (CAR) of each observation with nine explanators. Six of the explanatory variables are suggested in the literature and corporate finance theories and three explanators (related to intended utilisation of rights issue proceeds) are derived originally for the current study to add more insight. Among the nine variables (book-to-market equity ratio--BKTOMKT; company size--COSIZE; fractional change of debt-to-equity ratio--DBEQCHG; fractional change of total fixed assets--TFACHG; fractional change of net working capital--NWCCHG; a dummy variable of high versus low ownership concentration--OC; fractional change of substantial shareholdings--OCCHG; relative size of issue--RELSIZE; subscription price discount--SUBPRDISC), none of them have a significant impact on the CAR if taken collectively. However, if each variable is examined individually while holding the remaining explanators constant, BKTOMKT and COSIZE are found to be statistically significant to explain the variation in CAR surrounding rights issue announcements.

The above finding is consistent with past empirical studies such as Allen and Cleary (1997), Elfakhani et al. (1998), Fama and French (1992) and Strong and Xu (1994, 1997). Nevertheless, it differs in terms of the sign observed in the BKTOMKT relationship with CAR. Malaysian investors apparently associated a low BKTOMKT with small growth companies which have the potential to prosper in the future but

carry with them higher risks in terms of greater volatility of earnings when there is a change in the economic cycle. To accept these risks, investors would require higher returns. This is in line with the negative relationship observed in COSIZE against CAR. Smaller companies tend to have higher cumulative abnormal returns, which means that a size effect is present in the Malaysian stock market. This is consistent to the evidence presented by Banz (1981), Beaver (1981), Berges et al. (1984), Berk (1997), Brown et al. (1983a), Dimson and Marsh (1986), Elfakhani et al. (1998), FF (1992), Levis (1985, 1989), Reinganum (1981) and Strong and Xu (1994, 1997) but contradictory to those reported by Elroy Dimson and Paul Marsh (Coggan, 1999), Hull et al. (1998) and Peter Oppenheimer (Investors Chronicle, 13 November 1998, p. 28).

As for the variables used to measure the intended utilisation of rights issue proceeds, only fractional change in debt-to-equity ratio exhibits a significantly negative relationship in a cross-sectional simple regression analysis. This result indicates Malaysian investors are concerned with the possibility of a company facing financial problems. As to proceeds used for investment and working capital purposes, none of them are found to be statistically significant. This may be due to their near perfect collinearity with the other explanatory variables. The most surprising result is that most of the variables (relative size of issue, subscription price discount and ownership concentration) established from the theoretical models could not explain the variation in CAR. Furthermore, none of the theoretical models (i.e. Miller and Rock signalling model, PPH, Heinkel and Schwartz information signalling model, Ross signalling model and Leland and Pyle signalling model) have shown themselves to be significant for Malaysian companies listed on the KLSE.

8.3. Implications of the Findings

Given the results of an existence of a persistent significant non-zero cumulative average abnormal return for the MAR and the SIMM models, it is concluded that the Malaysian stock market is not efficient in a semi strong form sense. In an efficient market, this is not likely to happen since competition to take advantage of undervalued or overvalued stocks would ensure that the current price of a stock is

the best estimate of its true value. With a view that the semi strong form of EMH is violated, investors could make substantial profits particularly if they have access to inside information. Evidence has been presented that suggests insider trading activity may have been one possible explanation. Those who are able to trade on the private knowledge may have a windfall. For others who do not have this advantage, they can still gain abnormal returns by selling shares of companies undertaking a rights issue on the announcement day. Take profit on the selling and go long on the same share at day t=+10 when the price hits the lowest point. Further returns can be made by holding this stock in their portfolio for about 50 days and go short to take profit. A few words of caution with respect to this recommendation are in order. This result could only be gained if investors undertake these actions as a large sample (approximately 70 observations that announced rights issues) since not all stocks move in the same direction. Investing on individual issue may produce poor results. Also, the data on which this conclusion is based is historic and may be peculiar to that time period.

For security analysts, an inefficient market would mean more opportunities to extend their consultation service to others. Their technical expertise would provide them with an advantage of identifying and recommending stocks that might outperform the market, thus, ironically helping to reduce the inefficiency. For corporate financial management, it would mean that a release of rights issue announcement or basically a release of information will be of limited value. In a market which is not efficient, the release of information does not guarantee a correct valuation of a company's stock by investors. It would infer that a timing of information release to the public may not be reflected. Therefore whether a company discloses any information or otherwise, it will have an inaccurate effect on the performance of its share price. Finally to the regulators and policy makers particularly the KLSE and the SC, the result of the current study suggests room to improve its current policy. The revelation that insiders trading activity might be one possible explanator for absence of semi strong form efficiency, raises the possibility of a failure to meet the KLSE and the SC objectives of transparency and a full disclosure

environment, as well as investor protection. It would mean, efforts from both offices need to be redoubled to develop an exchange where the stock prices are close to their true values. In order to have such a market, additional steps have to be undertaken to enhance the accuracy, timeliness and availability of information to all market participants. A market that is fair and free from manipulation will be more attractive to investors. After all, they are the people who cause stock prices to move closer to their true value from their competition for information to seek for good buys.

As far as the significance of corporate finance theories to explain the rights issue announcement's effect and its determinants in the context of the Malaysian stock market are concerned, none of them appear to be useful except for price pressure hypothesis (PPH). PPH could only explain the announcement's effect but its arguments of price pressure effect due to a discount given to create demand could not be accepted. The signalling models, asymmetric information models, agency model and perfect substitution hypothesis as well as Scholes' information hypothesis may work in a developed exchange such as the LSE, NYSE and AMEX; but they are less important to an *emerging market* such as the Kuala Lumpur Stock Exchange (KLSE). Hence, it is possible that if such models were used to try to beat the market, the outcome may be disappointing. Furthermore, evidence on the findings of the current study also inferred that information such as ownership of the largest shareholders, size of rights issues, discount provided to subscribers and intended use of rights issue proceeds for investment and working capital do not appear to have significant value to influence the performance of a company's share. It is likely that Malaysian investors are more concerned with the potential prosperity (book-to-market equity ratio and company size) and the possibility of financial distress (debt-to-equity ratio) in a company. Obviously, investing in this market would require an understanding of different sets of information than those used in a developed market. This evidence would also mean that for those who teach corporate finance and portfolio investment, it is worth mentioning the practicality of the corporate finance theoretical models with respect to rights issue announcements in the context of an *emerging market*.

8.4. Future Research Direction

The current study was designed to be thorough in investigating rights issue announcements on the Kuala Lumpur Stock Exchange. However, it is only fair to admit that there is always room to improve some of the issues covered. In an empirical research, the results rely heavily on the methodology used to analyse the data. This is perhaps the main area which needs to be probed into for further research.

It is observed in Chapter Five that the MAR and the SIMM model (a) and model (b) appear to produce inconsistent results during the post-announcement period. The MAR came up with a gain while the SIMM models produced a loss when days t=0 to t=+60 are considered. No simple explanation can be provided of the differences without really going in depth into the analysis. It is likely that the SIMM's results are influenced by the 'exclusion period' phenomenon. This occurs when the estimation period selected to determine the α and β parameters is surrounded with well performing stocks'. When α is estimated using these stocks, it will be upwardly biased. As a result, the use of an overstated α will caused an understatement of abnormal returns figure. Depending on the magnitude of the performance of the share returns during the estimation period, the potential bias could be substantial such as observed in the negative abnormal returns of the SIMM models. It is recommended for future research that if a SIMM model is adopted, the estimation period should exclude periods where the share returns are performing well. It may be appropriate to implement a sensitivity analysis of 'exclusion period' to check its effect towards abnormal returns.

Another possibility of the inconsistent results may have also been caused by the securities in the samples being thinly traded. It is common for securities listed on the KLSE to have suspended period as shown here where 45 of the 70 observations experienced some suspended days during the event period. Normally, security which are being traded infrequently will introduce a downward bias β. The use of this β will

produce a positive abnormal return if no corrective measure is taken to control such problem. Hence, it is necessary to adjust for thin trading. There are a few ways to do it which are trade-to-trade, Scholes and Williams, Dimson and Fowler and Rorke adjustment of thin trading. Since there is still a lack of empirical work on thin trading in the Malaysian stock market, it seems worthy of further investigation. This issue is deemed irrelevant to the SIMM model in the current study as a Scholes-Williams method has been adopted to solve this problem. However with the MAR model, this problem is not considered at all because it assumes that βs for all securities taken as a group will gives an average of one or unity where high systematic risk's securities offset those with low systematic risk. Whether this assumption is met becomes another avenue to be investigated in the near future.

Other methodological issues which can be undertaken are: (1) to compare the use of logarithmic returns (Log $P_{i,t}$- Log $P_{i,\,t-1}$) instead of discrete returns ([$P_{i,t}$- $P_{i,\,t-1}$]/ $P_{i,\,t-1}$) in calculating abnormal returns and to check on the differences or similarities of the effect; (2) to construct a size control portfolio as a benchmark to represent the returns of the market (instead of using a market capitalisation weighted index such as the KLCI) when calculating abnormal returns for samples with size effect problem; and (3) to consider the effect of a non-parametric versus a parametric testing of the significance of daily average abnormal returns and cumulative average abnormal returns. A few studies might have already looked into these issues in a developed market environment; but they are still quite new to an *emerging market* environment.

In addition, an intraday market response to announcement of rights issue may be looked into if an intraday stock prices data file such as those supplied by Francis Emory Fitch, Inc. in the US is available (Barclay and Litzenberger, 1988, p. 81) for companies listed on the KLSE. Intraday data can provide a more accurate information on the impact of an event on stock returns. As discussed in Chapter Three and Four, an issue of variance shift which raised heteroscedasticity problem may be present if a longer event period is used. If such a situation exists, the power of the statistical tests will be reduced. As a result, the interpretation of the impact of a particular event may

be distorted. Furthermore, measuring abnormal returns over longer intervals increases the sources of variability coming from other factors which are not related to the event under study. Thus, if an opportunity arises where intraday data file can be found in this market, future research can be directed into producing a more accurate result on the impact of rights issue announcements.

With respect to the cross-sectional regression analysis, future research may be directed towards considering a non-linear relationship between the explanatory variables and the dependent variable. The insignificant relationship in most of the variables may be due to the wrong functional form is used in the regression. Perhaps if the explanators are transformed in log form, some of them may have significant influence on the dependent variable. But of course to do this, it is better for the dependent variable (i.e. cumulative abnormal returns) to be estimated by using logarithmic returns so as a consistent measure is maintained. Furthermore, a closer look at the relationship between company size and book-to-market equity ratio (BE/ME) variables may be needed. By adding earnings price ratio (E/P) as suggested by Chen and Zhang (CZ, 1998) in future research may provide more insights into explaining the abnormal returns. The interaction of the three variables could probably produce evidence whether value stocks (small companies with high BE/ME and big companies with low BE/ME) play a significant role in explaining the variation in CAR. Normally, these stocks have higher returns because they are likely to be companies in financial distress that have high debt-to-equity ratio and have substantial earnings uncertainty in the future (CZ, 1998).

Finally, the most recent development on the KLSE where a new Islamic index called the KLSE Syariah Index (KLSE SI) launched on 17 April 1999 introduced another area for future research. It is a weighted-average index with its components made up of all 276 companies listed on the Main Board designated as Syariah approved securities[28] by the Syariah Advisory Council of the SC. A study to compare the effect of rights issue announcements towards the abnormal returns using the two

[28] Securities by companies whose activities are within the scope of Islamic law.

indices (e.g. the value weighted Kuala Lumpur Composite Index versus the weighted average KLSE Syariah Index) is another avenue for future research.

While the current study has contributed to the growing body of empirical evidence in the Malaysian stock market, there are many other aspects as suggested above which merit detailed research. It is obvious that studies in this part of the world are somewhat deficient and that further research is necessary. The current findings will hopefully provide a foundation for future research.

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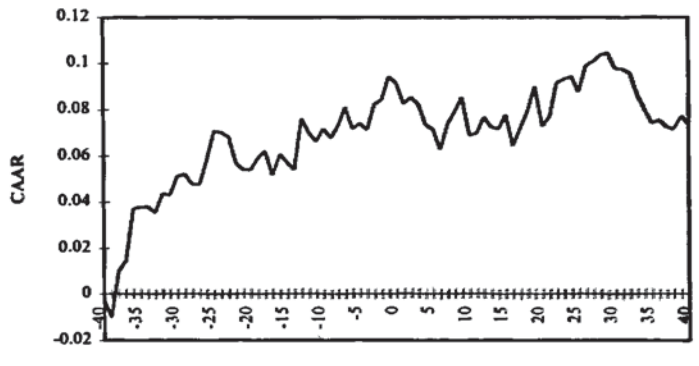
Appendix I: Pilot study result

DAY	MAR	TTEST(MAR)	CAAR	DAY	MAR	TTEST(MAR)	CAAR
-40	-0.00253	-0.22636	-0.00253	+1	-0.00855	-1.02463	0.082554
-39	-0.00757	-0.5085	-0.0101	+2	0.002563	0.342157	0.085117
-38	0.020294	**1.72134 ***	0.010193	+3	-0.00295	-0.4928	0.082164
-37	0.004316	0.336249	0.014509	+4	-0.00869	-1.7043	0.073478
-36	0.022343	**2.01877 ***	0.036853	+5	-0.00214	-0.2347	0.071337
-35	0.000764	0.085059	0.037616	+6	-0.00856	-1.0359	0.062779
-34	0.000211	0.025438	0.037827	+7	0.01081	1.494382	0.073589
-33	-0.00245	-0.31492	0.035374	+8	0.005479	0.765924	0.079068
-32	0.008105	1.309681	0.04348	+9	0.005885	0.84845	0.084953
-31	-0.00029	-0.05707	0.043187	+10	-0.01594	-2.028	0.069015
-30	0.007987	1.21732	0.051174	+11	0.00064	0.098503	0.069655
-29	0.000833	0.112541	0.052007	+12	0.006825	0.832535	0.07648
-28	-0.00421	-0.49646	0.047802	+13	-0.00404	-1.03769	0.072438
-27	-0.00042	-0.0486	0.047377	+14	-0.00085	-0.1648	0.071583
-26	0.010568	1.647636	0.057946	+15	0.006088	0.605063	0.077671
-25	0.012396	1.67993	0.070342	+16	-0.01318	-1.63524	0.06449
-24	-0.00019	-0.02297	0.070157	+17	0.007753	1.157557	0.072243
-23	-0.00204	-0.51016	0.068114	+18	0.006902	1.519514	0.079145
-22	-0.01128	**-1.9913 ***	0.056836	+19	0.010476	1.448232	0.089622
-21	-0.0026	-0.3947	0.054238	+20	-0.01674	-1.61069	0.072882
-20	-0.00021	-0.05488	0.05403	+21	0.004343	0.508117	0.077225
-19	0.005072	0.839744	0.059102	+22	0.014155	**1.92416 ***	0.09138
-18	0.002802	0.66193	0.061904	+23	0.001493	0.200296	0.092873
-17	-0.00994	-1.24657	0.051963	+24	0.001131	0.189847	0.094003
-16	0.00877	1.142456	0.060733	+25	-0.00654	-0.74534	0.087468
-15	-0.00351	-0.63658	0.057222	+26	0.010993	1.49427	0.09846
-14	-0.003	-0.56552	0.054217	+27	0.001953	0.369019	0.100413
-13	0.021691	1.289293	0.075908	+28	0.002925	0.529453	0.103338
-12	-0.00623	-0.85114	0.069681	+29	0.00104	0.122371	0.104378
-11	-0.00349	-0.65743	0.066194	+30	-0.00685	-0.84546	0.097531
-10	0.005405	1.001934	0.071599	+31	-0.00014	-0.01743	0.097389
-9	-0.0038	-0.94504	0.067802	+32	-0.00184	-0.30472	0.095549
-8	0.004989	0.736916	0.072792	+33	-0.00931	-0.92833	0 086235
-7	0.008023	0.935946	0.080814	+34	-0.00653	-1.25403	0.0797
-6	-0.00901	-1.45542	0.071802	+35	-0.00547	-0.79289	0.074228
-5	0.00224	0.330786	0.074042	+36	0.001147	0.240461	0.075375
-4	-0.0026	-0.53095	0.07144	+37	-0.00293	-0.87318	0.072444
-3	0.010735	1.539286	0.082175	+38	-0.00099	-0.16125	0.07145
-2	0.001775	0.309153	0.08395	+39	0.005476	0.910181	0.076926
-1	0.010085	1.26322	0.094035	+40	-0.00324	-0.98039	0.073684
0	-0.00294	-0.58992	0.091099				

(*Significant at α=0.10)

Figure I: Cumulative Average Abnormal Return (CAAR)



Appendix II: Scholes-Williams α and β calculation program

```
ERASE C1

LET K1=1
COPY C2 INTO C4;
USE ROWS 1:239.
COPY C3 INTO C5;
USE ROWS 1:239.
LET C6=(C4-LAG(C4))/LAG(C4)
LET C7=(C5-LAG(C5))/LAG(C5)
NAME C6='RTNFIRM' C7='RTNMKT' C1='DAY'
SET C1
1:239.

COPY 'RTNFIRM' INTO C8;
USE 'DAY' 2:238.
NAME C8='ESTRTN'

COPY 'RTNMKT' INTO C9;
USE 'DAY' 2:238.
NAME C9='MATCHRTN'

COPY 'RTNMKT' INTO C10;
USE 'DAY' 1:237.
NAME C10='LAGRTN'

COPY 'RTNMKT' INTO C11;
USE 'DAY' 3:239.
NAME C11='LEADRTN'

REGRESS 'ESTRTN' ON 1 PREDICTOR 'LAGRTN';
COEFFICIENTS PUT INTO C12.
REGRESS 'ESTRTN' ON 1 PREDICTOR 'MATCHRTN';
COEFFICIENTS PUT INTO C13.
REGRESS 'ESTRTN' ON 1 PREDICTOR 'LEADRTN';
COEFFICIENTS PUT INTO C14.
LET K2=C12(2)+C13(2)+C14(2)

ACF 1 'MATCHRTN' PUT INTO C15

LET K3=C15(1)
LET K4=K2/(1+(K3*2))

#K4 IS SCHOLES WILLIAM BETA

MEAN 'ESTRTN' PUT INTO K5
MEAN 'MATCHRTN' PUT INTO K6
LET K7=K5-(K4*K6)

#K7 IS ALPHA ESTIMATE

OUTFILE 'MMSWBETA.DAT'
PRINT K4 K7

END
```

Appendix III: Structured questions on an interview conducted with the Securities Commission

Questions regarding rights issues:

1. In the rights issues guidelines, it is stated by Security Commission (SC)that a company is discouraged from undertaking rights issues for a period of one year after it is first listed in the KLSE. What is the logic behind this rule?

2. SC will consider rights issues applications based on the merit of each case as long as the previous rights issues' proceeds for the last two years are utilised as approved by SC. What sort of action is taken by SC to ensure that the rights issues proceeds are used for its purposes stated in the abridged prospectus?

3. In general most companies which issue rights will state that the proceeds will be used for three purposes (as stated in the rights issues guidelines): investment (to expand business activities may be by acquisition), working capital (to expand productive capacity may be by increasing working capital) and reducing debt. What kind of proxy is SC used to measure each of this purpose?

4. SC will also consider a rights issue application if a company faces some losses in the past. What is the rationale behind this consideration?

5. The approval of a rights issues application will also depend on the company's debt-to-equity ratio, the ability to pay its liability and the capacity to borrow. Does this rule complement the purpose of the rights issues or is it a possible route to gain approval?

6. It is stated that SC will scrutinise closely if the rights issues proceeds are used to repay loan. A documentary evidence from the company is needed once the repayment is settled. This regulation is implemented to ensure that the company's performance improves substantially. What will happen to the company if the performance expectation does not improve after the event?

What kind of penalties are available for such incidence? Has SC ever imposed any penalty on such case?

7. It is SC intention to ensure that rights issues applications by companies shall not dilute shareholders' earnings. However, evidence showed that rights issues will somehow dilute shareholders' earnings. What is SC rational/justification of having this statement in the guideline? Why doesn't SC permits freedom of managers to act in the shareholder's best interest?

8. Does SC permit companies to issue direct rights issues without using merchant bankers as underwriter? If yes, what is the statistic of direct rights offers against underwriting rights issues from the year 1987 to 1997?

9. In reference to Question 8, most companies which issued rights (on stock basis) from the year 1987 to 1996 were using renounceable (rights issues for existing shareholders and the underwriter is responsible to take the balance). Did SC receive any application for non-renounceable (mainly for existing shareholders) during the period mentioned?

10. In the US, the offering duration for existing shareholders to exercise their rights is usually between 2 to 10 weeks. What about in Malaysia, how long is the duration? Who sets the offering period, is it the Company Board of Directors, the Underwriter or SC?

11. Does SC have to be informed in advance of the likelihood of a rights issue application coming from a company before it is discussed in an extraordinary general meeting of that particular company?

12. From my pilot study analysing 25 companies which have done rights issues on a stock basis, most of their shares will experience some sort of suspended or non trading period. If this situation occurs, who is responsible to suspend the company's stock of being traded in the KLSE? Can the company or SC

suspend the stock from being traded if there is just reason for doing so? What are the reasons usually stated for this suspension?

13. Is there an organised secondary market for rights issues and how active is it?

14. Based on the speech delivered by Datuk Mohd Salleh Majid at School of Management, University Utara Malaysia on 17 July 1996, rights issues represent about 59% (in ringgit, it is about RM35,462.4 billion) of the total funds mobilised by Malaysian companies in the KLSE as of 12/7/96. The total funds only considered proceeds coming from the equity market such as public offerings, rights issues, limited/special issues and private placements. What about other sources of financing such as debt securities, preferred stocks, warrants, convertibles, call warrants and bank loan? Does SC has information for these sources of financing and is it possible for me to have the statistic to be included in my thesis?

15. Does SC make a comparative analysis between the equity and bond market? How active is the bond market in Malaysia? Are there any corporate bond listed on the KLSE? If there is a statistic going back from 1973 to recent year regarding this matter, I would appreciate very much if I could have a copy of it.

Appendix IV: Criteria for selecting the Kuala Lumpur Stock Exchange Composite Index (KLCI) components

2.4 CRITERIA FOR SELECTING THE KLSE CI COMPONENTS

A rigorous screening process has been used to select the KLSE CI components. In general, the choice of component stocks must be consistent with the broad objectives of setting up the KLSE CI as explained earlier.

Recognizing that the stock market reflects the dynamic interplay of changes in the maturation and structural diversification of the rapidly changing Malaysian economy, the contents of the list of component stocks are continually reviewed.

Six criteria are used to identify potential component stocks:

i) Companies listed on the KLSE, regardless of domicile, will be considered for inclusion so long as their major business activities contribute significantly to the Malaysian economy. In particular, because of the historical development of the Malaysian and Singapore stock markets, there are Singapore companies listed on the KLSE which have no or insignificant business activity in Malaysia. A stock index that ignores this would give a distorted short term perspective and a misleading guide to the long term view of the Malaysian economy.

   This criterion ensures that movements of the KLSE CI is generally reflective of changes in the Malaysian economy.

ii) Companies whose shares are not traded for more than three consecutive months, regardless of suspension or inactivity, will be excluded except when suitable alternatives to maintain adequate sector representation are not available.

iii) Companies whose shares are traded at less than 1,000 lots a calendar year will be excluded except when suitable alternatives to maintain adequate sector representation are not available.

The above two criteria relate to the exclusion of companies on the basis of market inactivity which are not due to normal transitory market phenomena. They are established to avoid a major weakness inherent in existing indices like the KLSE Industrial Index, that is, distortion in the changes of the index due to inactivity of certain component stocks.

Exclusion of certain components on the ground of inactivity should however not lead to distortion in sectoral representativeness.This explains why substitute component stocks are always considered whenever one or more are excluded because of market inactivity.

iv) Companies experiencing substantial and complex changes in their capital structure during the base year of 1977 were excluded in the first round of selection. They are eligible for consideration in subsequent years.

This criterion applies only to the base year 1977 and is established with a view to minimize the distortion impact of complex and substantial capital changes on the index in its base year.

v) Newly-listed companies will only be considered for inclusion after a minimum period of 3 months in order to eliminate the volatility of price speculation distorting the index.

The purpose of this criterion is to allow the prices of these companies to stabilize. A working guideline of a minimum period of three months is used for companies in sectors that are inadequately represented in the KLSE CI, and a minimum of six months for others.

vi) Companies which are more than 50 percent owned by any KLSE CI component company and which in fact are defined as subsidiaries by Malaysian Companies Act are excluded.

This criterion is used to minimize, and as far as possible, avoid double-counting or weight distortion in the index. However, associated companies should not be excluded as this would substantially reduce the number of potential component stocks available for selection.

Appendix V: Letter sent to companies

Nur Adiana Hiau Abdullah
Doctoral Programme
11th Floor S. Wing
Aston Business School
Aston University
Aston Triangle
Birmingham B4 7ET
UNITED KINGDOM

18 September 1997

The Company Secretary
A&M Realty Berhad
c/o PHK Management Services, 36A, Lrg Gelugor
Off Persiaran Sultan Ibrahim
41300 Klang, Selangor
MALAYSIA

Dear Sir

REQUESTING A COPY OF THE ABRIDGED PROSPECTUS AND ANNUAL REPORT

My name is Nur Adiana Hiau Abdullah. I am attached to the School of Management, Universiti Utara Malaysia and currently, a doctoral student in Aston University. My research area concentrates on the effect of rights issues announcement by listed corporations in the Kuala Lumpur Stock Exchange. The provisional title of my thesis is 'An Empirical Investigation of Rights Offerings in Malaysia'.

As I need to discover some variables which will have significant impact in my studies, I would appreciate very much if you could provide me a copy of your initial abridged prospectus of the rights issues announcement dated 30 May 1994. In addition to this, I also need some assistance from your company to send me a copy of the annual report for the year 1993 and 1995 since I need to use the balance sheet and shareholdings information from these annual reports.

My study depends very much on this information and I would be very grateful if it could be supplied to me. I had exhaust all means in the United Kingdom to get this information; thus, you would be doing me a great favour by sending to me the required abridged prospectus and annual reports. I can assure you that it will be kept confidential and solely for the purpose of my research. You could get hold of me at the above address or fax to me at 00 44 121 333 5620 whichever is convenient for you.

Thanking you in advance for your co-operation.

Yours faithfully

NUR ADIANA HIAU ABDULLAH

Enc.

Appendix VI: Supporting letter from supervisor accompanying letter sent to companies

ASTON
BUSINESS SCHOOL

Aston University
Aston Triangle
Birmingham B4 7ET
United Kingdom
Tel +44 (0)121 359 3611
FAX +44 (0)121 333 5620
email d.m.burgundy@aston.ac.uk

12 September 1997

TO WHOM IT MAY CONCERN

This is to confirm that Nur Adiana Hiau Abdullah is a full time research student registered for a PhD degree at Aston Business School, Aston University as of 1 October 1996. The provisional title of her research is "An Empirical Investigation of Rights Offerings in Malaysia". I have granted approval for her to proceed to the next stage of data collection in her research work. As her research heavily depend on these data, I would appreciate very much if you could give her your full co-operation. I assure you that all the information given will be treated in the strictest and most confident manner to fulfill the purpose of her research.

Thanking you in advance for your co-operation.

Yours faithfully

Dr. Glen Arnold
Supervisor