

## ***A CROSS-SECTIONAL ANALYSIS BETWEEN THE EFFECT OF RIGHTS ISSUE ANNOUNCEMENTS AND ITS DETERMINANTS***

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### **ABSTRACT**

This study first examines the effect of rights issue announcements by Malaysian listed companies between 1987 to 1996. In contrast to the evidence found in the United States (US), the Malaysian stock market documented a statistically significant positive cumulative average abnormal return (CAAR). In an event study, this finding provides no support for the signalling models, information asymmetry model, price pressure hypothesis (PPH) and perfect substitution hypothesis (PSH). Secondly, a cross-sectional regression analysis was run between cumulative abnormal return (CAR) for each company and percentage change in debt/equity ratio, percentage change in working capital, percentage change in total fixed assets, relative size of rights issues, company size, subscription price discount and book-to-market equity ratio. It shows that the percentage change in debt/equity ratio, relative size of rights issues, subscription price discount and book-to-market equity ratio are found to be significant in explaining the average abnormal share return movement. In contrast to the event study result, the cross-sectional analysis findings lend support to the PPH. An unexpected important issue which has emerged from the study is evidence for information leakage and share return reaction many days before the official announcement.

### **INTRODUCTION**

This research is carried out to see how the Malaysian stock market reacts to rights issue announcements and to check whether there are other factors influencing share return movements at the time of these announcements. Many researchers from various countries have studied the effect of rights issue announcements, but it is a particularly interesting topic to examine in the Malaysian context. This is because most companies that are listed on the Kuala Lumpur Stock Exchange (KLSE) rely heavily on rights issues as a means of equity financing. Between 1973 and July 1996, RM35,738.4

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million was raised through rights issues and this figure accounted for 59% of the total funds mobilised<sup>1</sup> by listed companies on the KLSE.

This research, which is based on an emerging market in the South East Asian region, is a significant contribution to the literature because: (1) it shows evidence of a market reaction to rights offerings which is different from that demonstrated elsewhere eg. in the US, (2) it enriches the small amount of empirical research conducted in this part of the world, (3) it fails to provide evidence to support some of the corporate finance theories in the context of a developing market and (4) it describes the possible determinants of abnormal returns in the circumstances of rights issue announcements.

The organisation of the rest of this paper is as follows. Section I describes the literature review. Section II explains the data and methodology used to calculate abnormal returns as well as the corresponding findings. Section III presents the cross-sectional analysis and its association with the theories. Section IV summarises the findings from this study.

## I. Literature Review

### *A Cross-country Comparison of the Effect of Rights Issue Announcements*

Perusal of the financial literature shows that rights issue announcements have a different impact on stock prices in different studies. Nelson (1965) who examined rights offerings in the US from the period 1946 to 1957 found zero abnormal returns. The stock prices were not significantly different from six months before and six months after the rights offering. Scholes (1972) provides a different result of his analysis of rights issues in the US from the period 1926 to 1966 where the stock prices rise before the issue, drop 0.3% during the month of issue but do not change after the issue. Smith (1977) in the US found similar results to Nelson's study when he examined 853 rights issues on the New York Stock Exchange in the period 1926 to 1975. His analysis shows a small price decline of 1.4% two months before the announcement date, which is followed by a recovery of the same magnitude two months after the announcement. In contrast to these three findings, Hansen (1988), Kothare (1992), Reddy (1992), Singh (1988) and White and Lusztig (1980) found that on the average, rights issue announcements in the US have resulted in statistically significant negative abnormal returns. A similar result is shown in

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<sup>1</sup> Total mobilised funds include all capital raised in the stock market by public listed company. It consists of funds coming from public offerings, rights issues, limited issues, special issues and private placements.



Australia where Dehnert (1993) found significant negative two day abnormal returns on the announcement of 174 rights issues.

In the UK, a study by Merret, Howe and Newbould (1967) of rights issues in 1963 showed abnormal capital gains of 1% over the announcement date and 3% one year after the announcement. This result is consistent with Marsh (1979). He found a large abnormal return that is statistically significant before and after the announcement of 997 rights issues from the period 1962 to end of 1975. Tsangarakis (1996) found a similar outcome in his study of rights issues in Greece from the period 1981 to 1990 which show a significant positive abnormal return on the announcement day. The same evidence has also been found in the Korean stock market. The public views rights issue announcements as favourable news, which on average have resulted in positive abnormal returns. Kang Hyosuk (1990) found that there is an abnormally increasing trend of stock prices before the announcement which flattened after the announcement. By using the market adjusted return model with 89 rights issues from the period 1984 to 1987, he found a statistically significant positive abnormal return on the average which is 5.1% for rights issued at par<sup>2</sup> and 17.8% for rights issued based on market value<sup>3</sup>. Kang further explained that the difference in the finding is possibly due to the Korean investors' association of rights issues based on market value with the company's future earnings prospect. During the period of his study, companies that issued rights based on market value were those with high earnings potential. E. Han Kim and Young Ki Lee (1990) found similar results for 239 seasoned equity offerings from the period January 1984 to October 1986 for Korea. Their test showed a positive 3.2% abnormal return during the announcement month.

In Malaysia, several studies have given mixed results. Phoon Mun Kit (1990) analysed 64 rights issue announcements by employing the mean adjusted return approach to calculate abnormal returns. His findings showed some evidence suggesting that the Malaysian share market deviates from the semi strong market efficiency hypothesis because there exists a statistically significant positive cumulative mean adjusted abnormal return of approximately 2.9% at the end of the event period following the announcement. As for Annuar and Shamsher (1993), they studied 33 rights issues made public from January 1980 to 1991 by using the market model to calculate abnormal returns. Overall, they found a

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<sup>2</sup> Before 1983, the Korean Security Exchange Commission (SEC) enforced a rule where rights offering price was set at the par value of its security that was considerably below the market value of the security.

<sup>3</sup> In 1983, the Korean SEC changed the rule (rights offering price based on the par value) due to several negative effects in using the par value as the offering price such as it limits the source of financing and increases the stock price fluctuation surrounding the rights issues announcement.



negative CAR from day -29 to -4, a short positive from day -3 to day -1 and thereafter CAR drifts downwards again. They conclude that KLSE investors perceived rights issue announcements as unfavourable news. Yip Siew Ping (1994) produced similar results to Annuar and Shamsher by using the market model but with a sample of 52 rights issue announcements. She concluded that if the rights proceeds are being utilised to reduce leverage, there will be a negative impact on stock prices, whereas if it is for expansion the negative price effect is not significant and close to zero.

As can be seen, the effect of rights issue announcements differed in each study. This inconsistency suggests further research is potentially useful to shed more light in this important area.

### *Theoretical Explanation of Market's Reaction to Rights Issue Announcements*

Theories advanced to explain stock market reaction to rights announcements are presented in this section. It is divided into three parts: signalling models, asymmetric information model, and price pressure versus perfect substitution hypothesis.

Three signalling models have been developed to explain the stock price reactions: Leland and Pyle (1977), Miller and Rock (1985) and Ross (1977). However, only the latter two models are covered in this research<sup>4</sup>. Miller and Rock (1985) signalling model suggests that an announcement of outside financing through security offerings signals opposite changes in companies' current earnings and this in turn infers a decreasing expected operating cash flow. This is considered unfavourable news by investors, and produces negative stock price reaction.

The second signalling model by Ross (1977) shows that managers are motivated to signal their inside information regarding the company's true value by undertaking capital structure changes. According to him companies that have higher leverage signal to investors their confidence of the prospects for an increase in asset values and expected cash flows prospects. Investors interpret this signal as favourable news since they realise weaker companies that take this action will have to bear higher expected bankruptcy costs. This model therefore implies that a stock offering which reduces leverage sends a negative signal about the company value and leads to an adverse common stock price reaction.

*Instead of using the par value, the offering price will be based on certain percentage discounted from the market value of the stock price.*

<sup>4</sup> Leland and Pyle (1977) signalling model predicts that the entrepreneur's fraction of ownership in a company provides credible signals to rational investors of the company value. In this study, the variable on percentage change in ownership is not available, thus this model is excluded.



The next theory that could explain the change in stock prices is given by the asymmetric information model by Myers and Majluf (1984). The basic assumptions underlying this model are that management knows more about the company's true value as compared to outside investors and that they always act in the best interest of the existing shareholders. 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, rational investors will not welcome the announcement of new stock offerings. As a result, there will be a negative stock price reaction on such announcement. Under this model, management tends to rely on internal financing rather than external financing. If external source of funds is required, debt is preferable to equity.<sup>5</sup> Scholes (1972) provides another explanation with regard 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 blocks of shares might indicate that the seller possesses adverse information on 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 price. Scholes' argument is based on the absence of close substitutes. 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. The results of this study provide a platform for some commentary on Myers and Majluf and Scholes models. If the models are true, we would expect a negative cumulative abnormal return in the days surrounding the rights issue announcement.

The last theory that could explain the market response towards announcement of certain events in a company is price pressure (PPH) versus perfect substitution (PSH) 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 number of its shares, it has to discount the share price from the existing market price to create demand. The discount will act as an inducement or 'sweetener' for demand creation. The end result will be that the sale of additional shares will bring a negative stock price reaction and on the average, negative abnormal returns will be observed at the time of the issuance and positive abnormal returns subsequent to the

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<sup>5</sup> 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, we include this model in this study.



announcement. PPH predicts that the larger the secondary distribution, the greater will be the discount applied to existing market price to encourage investors to purchase the particular shares.

Perfect substitution hypothesis (PSH) takes a different line. Here, every asset has its substitutes either directly or indirectly. Rational investors will price an asset such that the expected rate of return 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. As a result, the demand curve facing individual shareholders will most likely be horizontal which conforms with the semi strong market efficiency hypothesis.

### *Factors Influencing Abnormal Returns*

The above theories provide some background considerations concerning the factors that are most likely to influence abnormal returns. Some of these factors are: relative size of issue, changes in leverage, company's size, subscription price discount and book-to-market equity ratio.

Many of the theories predict that the stock price reaction is closely related to the relative size of the issues to existing market capitalisation. Miller and Rock's (1985) signalling model suggests that the greater the size of issues, the greater is the shortfall of internally generated funds. Whereas PPH makes a prediction that a larger issue size or distribution will mean a greater price discount to the existing market price of a particular issue. This will in turn give a negative impact on stock price. Empirical evidence provides mixed results as to the relationship between size of issue and abnormal returns. Asquith and Mullins (1986) find that size of issue has a significant negative relationship with company's performance before the announcement of the offering. Masulis and Korwar (1986) come up with mixed results where the percentage change in the shares outstanding has a significant negative relationship in an industrial sample and significant positive relationship in a public utility sample. Other researchers such as Barclay and Litzenberger (1988), Eckbo (1986) and Mikkelsen and Partch (1986) find no such relationship between size of issue and company value in their study. This factor is included in the cross-sectional analysis in this study by regressing relative size of rights issues (RELSIZE) against CAR. Based on PPH argument, it is expected that this factor will have a negative relationship with CAR.



Another factor that could explain the abnormal returns is the change in leverage. Managers are motivated to signal their inside information regarding the company's true value by undertaking capital structure changes. Ross' (1977) signalling model shows an increase in company value when management increased leverage since this action signals to the market that the management is confident about future cash flows. Bhandari (1988), Masulis (1980) and Masulis and Korwar (1986) provide evidence supporting Ross' hypothesis that there exists a positive significant relationship between changes in leverage and changes in stock price. However in Korea, Kang (1990) finds a contradiction to Ross' model. His study of rights offerings shows evidence that on average investors in Korea give greater weight to the possibility of financial distress. Hence, if a company uses the rights issue proceeds to lower its leverage, stock price will tend to increase. In this study, percentage change of debt/equity ratio (DBEQCHG) is used as a proxy to the rights issues induced change in company's leverage. This is one of the determining variables in the cross-sectional analysis.

The third factor, which is an important variable to be considered in event study, is the company's size. Company's size might introduce bias in the conclusion made on market efficiency. According to Beaver (1981), event studies which focus on smaller companies are more likely to show positive abnormal returns and those which concentrate on larger companies will most likely experience negative abnormal returns. Banz (1981) and Fama and French (1992) provide empirical evidence on Beaver's conclusion where they find a significant negative relationship between size and average returns (US data). In multivariate tests, Fama and French (1992) find that the negative relationship between the two parameters is robust within their 50-year study period (1941 to 1990). In using UK companies over the period 1958 to 1982, Levis (1985) also finds a similar result where smaller companies outperform larger companies by a significant 6.5% per year. Strong and Xu's (1994) result provides additional evidence on this issue. They conclude that size could not explain the UK expected stock returns within the year 1973 to 1992; but for a longer period 1960 to 1992, there is a negative correlation between size and returns. In the cross-sectional analysis, company's size (COSIZE) is included as one of the regressors. Based on previous findings, it is expected that COSIZE will have a negative relationship against CAR.

The fourth factor is subscription price discount. In general, rights issue price will always be below the pre announcement market price. Based on the Securities Commission's (SC) Policies and Guidelines existing in 1996 on Issue/Offer of Securities, the issue price would represent a discount of not more than 30% from the theoretical ex-rights price on the basis of the lower of current market price at the time of announcement or the weighted average market price of the shares for the three months before the



announcement. Another explanation is given by PPH (Scholes, 1972). It states that whenever a company decides to issue more shares, a discount from the existing market price has to be given so as to induce existing shareholders to subscribe. The higher the size of the discount, the greater will be the demand for this share. Hence, a negative abnormal return is expected at the time of the issuance because of the discount and a positive abnormal return after the purchase of the issue. Empirical evidence on this variable is lacking. Scholes (1972) in his analysis of 1,200 secondary distributions for the period 1947 to 1964 does not support PPH when he finds a permanent negative price effect 14 days after the distribution. As for Reddy (1992), he concludes that the relationship of subscription price discount and company value could not be determined. This factor (DISC) is taken into consideration in this study when it is regressed against the CAR. If PPH is true, a negative coefficient is expected for DISC.

The sixth factor, which currently is of considerable interest to researchers in capital market research, is the book-to-market equity ratio. Studies done in the US have shown that there is a positive relationship between average returns and a company's book value to market value of common equity ratio (Statman, 1980; Rosenberg, Reid and Lanstein, 1985). Fama and French (1992) in their empirical work using NYSE, AMEX and NASDAQ stocks for the period 1963 to 1990 and subperiod 1963 to 1976 and 1977 to 1990 also show a positive relationship between average return and book-to-market equity ratio. In a study done by Chan, Hamao and Lakonishok (1991) using Japanese stocks, they also find that book-to-market equity significantly explained the average returns on these stocks. Further evidence of similar result has also been found in the UK. Strong and Xu (1994) find that book-to-market equity ratio consistently explains the average return of UK stocks with a t-statistic ranging from 4.2 to 4.7. Their data collected from the year 1973 to 1992 shows a positive relationship between the two variables. The above evidence is tested in this study to see if the book-to-market equity ratio (BKTOMKT) could explain the effect of rights issue announcements in Malaysia.

Another two variables that could explain the abnormal returns, but ones that have not been covered extensively in capital market research are percentage change in total fixed assets and net working capital. Most Malaysian companies state in their abridged prospectus that the rights issue proceeds are utilised for investment purposes or to fulfil their working capital requirements. Hence in order to see whether the purpose of the rights issue announcements might explain the abnormal returns, these two variables are included. This study used total fixed assets (TFA) figure as a measure of investment activities. If a company actually used the rights issue proceeds to acquire or to invest in certain projects, its balance sheet should show an increased figure for total fixed assets. In this context, the



percentage change of total fixed assets (TFACHG) is used as a proxy for investment. The other variable that is the percentage change in net working capital (NWCCHG) is taken as a proxy for the rights issue proceeds used for working capital purposes. As of this date, there is no article written directly discussing this factor<sup>6</sup>.

## II. Description of Data, Methodology and Price Reactions

This section discusses the methodology used in this study. To assess the effect of rights issue announcements on stock prices, an event study is undertaken where the daily closing stock returns and KLSE Composite Index (KLCI) are analysed. From the year 1987 to 1996, there are only 25 companies selected which could meet the following criteria:

- (i) The common stock is listed on the KLSE.
- (ii) The selected rights issues are on stock basis rather than rights issues that are associated with redeemable unsecured loan stock and detachable warrants or rights issues in association with irredeemable convertible unsecured loan stock.
- (iii) There are no other announcements made on the particular event date.<sup>7</sup>

All the data needed are based on secondary data which are taken from the KLSE library, Northern University of Malaysia library, the Extel financial companies service, Datastream and companies involved in issuing rights. The daily closing stock price and the KLCI are taken from Datastream for the period 40 days before and 40 days after a rights issue announcement date.



### Market Adjusted Return

Once all information is collected, an abnormal return model is used to calculate the effect of rights issue announcements. The abnormal return model employed in this study is the market adjusted return (MAR) procedure which compares daily stock returns with the returns of the market index.<sup>8</sup> The difference between the two returns is known as unexpected or abnormal returns. The MAR procedure started out by calculating the daily market adjusted return as follows:

$$MAR_{it} = R_{it} - R_{mt} \quad (1)$$

$MAR_{it}$  = Market adjusted return for stock i on event day t

$R_{it}$  = The percentage change of stock i's price on event day t  $[(P_{i,t} - P_{i,t-1}) / P_{i,t-1}]$

$R_{mt}$  = The percentage change of the market index on event day t  $[(K_t - K_{t-1}) / K_{t-1}]$

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 did not trade on a certain event day, the abnormal returns on that particular day is equal to zero.<sup>9</sup> In other words, the daily return for an individual stock is treated as an average daily return during the suspended or non-trading 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 return of stock i during the suspended period

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

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

$t_{i,s}$  = The number of days during the suspended period of stock i

<sup>8</sup> MAR procedure is used to avoid the misspecification of estimating  $\alpha$  and  $\beta$  in the market model. 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 model will work if securities taken as a group have systematic risk of unity where  $\alpha$ s are assumed to be 0 and all  $\beta$ s are one. In this case, the expected value of the difference between the return on security i and the return on market index is equivalent to 0 in an asset pricing model framework. In order for the average difference to be 0, 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 have an average systematic risk equal to 1. Brown and Warner (1980 and 1985), Dimson and Marsh (1986) and Dyckman, Philbrick and Stephan (1984) find that all the abnormal return models seem to perform equally well in detecting abnormal returns and that using more complicated models will not convey any extra benefits. This was further reinforced by the evidence produced by Fama and French (1992) and Black (1993) which cast doubt on  $\beta$  as used by the CAPM.

<sup>9</sup> This criteria is used by Dennis and McConnell (1986) in their study



The next step is to compute the cross-sectional average daily market adjusted return as:

$$\overline{MAR}_t = \sum_{i=1}^N MAR_{it} / N_t \quad (2)$$

$N_t$  = The number of valid observations on event day t

The last step is to sum the cross-sectional average market adjusted return to yield a cumulative average abnormal return for event day t as

$$CAAR_t = \sum_{i=T}^t \overline{MAR}_i \quad (3)$$

T = Some number of event days prior to day t

In order to test the null hypothesis that the average daily market adjusted return on event day t is equal to zero, a t-statistic is calculated. This test shows whether or not stock prices react to rights issue announcements.

$$t = \overline{MAR}_t / (S_t / \sqrt{N_t}) \quad \text{where} \quad (4)$$

$$S_t = \sqrt{\frac{\sum_{i=1}^N (MAR_{it} - \overline{MAR}_t)^2}{N - 1}} \quad \text{where } i = 1, 2, 3, \dots, N \quad (5)$$

To test the null hypothesis that the CAAR over a period of T days is equal to zero, the t-statistic is calculated as:

$$t_T = \overline{CAAR}_T / (S_T / \sqrt{T}) \quad \text{where} \quad (6)$$

$$S_T = \sqrt{\frac{\sum_{t=1}^T (CAAR_t - \overline{CAAR}_T)^2}{T - 1}} \quad \text{where } t = 1, 2, 3, \dots, T \quad (7)$$

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



### *Stock Price Reaction to Rights Issue Announcements*

Table I (refer to Appendix) presents the average daily MAR and the CAAR over the study period of  $t=-40$  to  $t=+40$ . The table shows a rising trend in stock prices before the announcement of rights issues. This is followed by a random upward and downward movement within a 2% range where it ended up with a CAAR of 7.3684% on the last event day  $t=+40$ . Further examination shows that the average daily market adjusted return on each event day  $t$  is not significantly different from zero except for days  $t=-38$ ,  $t=-36$ ,  $t=-22$  and  $t=+22$ . The result suggests that the stock market anticipates rights issues long before the official announcement date. A sharp rise in the statistically significant abnormal returns observed before the announcement day might be due to the leakage of information. These abnormal returns suggest insider trading activity may have existed in the Malaysian stock market. Investors may have been trading on this private knowledge which moves the stock prices upward.

Figure I shows the CAAR for the overall sample forty days before the rights issue announcements, the announcement day at  $t=0$  and forty days after the announcements. During the study period, all the CAARs carry positive values except at  $t=-40$  (-0.253%) and  $t=-39$  (-1.01%)—refer to Table I in Appendix. From days  $t=-40$  to  $t=0$ , CAAR provides a total return of 9.1099%. This figure stays positive throughout days  $t=+1$  to  $t=+40$  with a slight decline of 1.7415% from day  $t=0$  to 7.3684%. Table II confirms the significance of this finding when a t-test over the different interval is executed. The t-value remains significant at  $\alpha=0.10$  level where CAAR over days  $t=-40$  to  $t=+40$  shows a figure of 27.89234, and where  $t=-40$  to  $t=0$  and  $t=0$  to  $t=+40$  shows a figure of 15.58458 and 47.23692 respectively.

Based on these findings, the null hypothesis of zero abnormal returns over a period of T-days cannot be accepted. Rights issue announcements are associated positively with stock prices in the Malaysian stock market, deviating from the semi-strong form of efficient market hypothesis. The positive CAAR confirms the findings of E. Han and Young (1990), Kang (1990), Marsh (1979), Merret, Howe and Newbould (1967), Phoon (1990) and Tsangarakis (1996). It does not agree with the results reported in the US (Nelson, 1965; Scholes, 1972; Smith, 1977; Hansen, 1988; Kothare, 1992; Reddy, 1992; Singh, 1988; White and Lusztig, 1980), Australia (Dehnert, 1993) as well as some studies done in Malaysia (Annuar and Shamsher, 1993; Yip, 1994).



Figure 1: Cumulative Average Abnormal Return (CAAR)

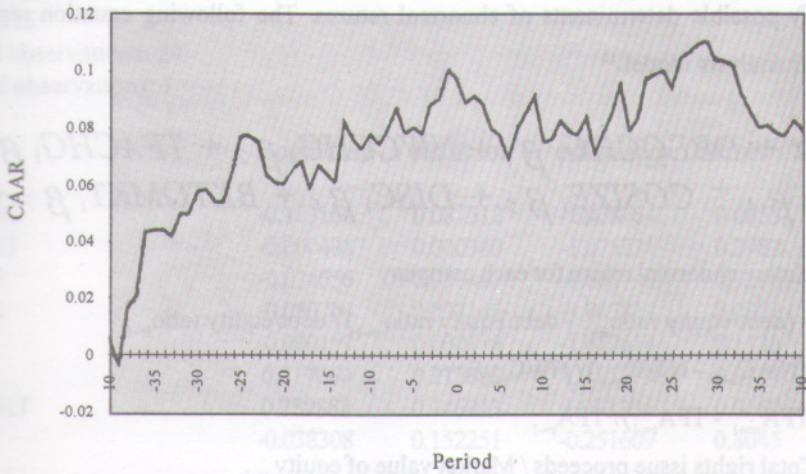


Table II: T-Test Over Different Interval for Cumulative Average Abnormal Return

Interval	T-Test
Days t = -40 to t = +40	27.89234
Days t = -40 to t = 0	15.58458
Days t = 0 to t = +40	47.23692

Furthermore, no evidence can be seen which supports Miller and Rock (1985) and Ross (1977) signalling models and Scholes (1972) information model that an announcement of equity issues will lead to negative common stock price reaction. Nor does it support Myers and Majluf (1984) asymmetric information model that rational investors associate new stocks offering with lower assessment of company's value. What this finding is saying is that rational investors will price a stock based on its expected rate of returns. If a company's prospect is good, it will be reflected in its stock price; and thus, the stock can be sold at a premium. This result again contradicts the perfect substitution hypothesis and the price pressure hypothesis.

III. Cross-sectional Analysis Between CAR and Factors Influencing  
Abnormal Returns

Once the analysis from the previous section is completed, a cross-sectional regression analysis is



executed between cumulative abnormal return (CAR) for each company and factors influencing the abnormal returns. This is done in order to thoroughly analyse the effect of rights issue announcements and to identify possible determinants of abnormal returns. The following equation represents the cross-sectional analysis model.<sup>10</sup>

$$CAR_i = \alpha + DBEQCHG_i \beta_1 + NWCCHG_i \beta_2 + TFACHG_i \beta_3 + RELSIZE_i \beta_4 + COSIZE_i \beta_5 + DISC_i \beta_6 + BKTOMKT_i \beta_7 + U_i$$

$CAR_i$  = Cumulative abnormal return for each company

$DBEQCHG = (\text{debt/equity ratio}_{t+1} - \text{debt/equity ratio}_{t-1}) / \text{debt/equity ratio}_{t-1}$

$NWCCHG = (NWC_{t+1} - NWC_{t-1}) / NWC_{t-1}$

$TFACHG = (TFA_{t+1} - TFA_{t-1}) / TFA_{t-1}$

$RELSIZE = \text{Total rights issue proceeds} / \text{Market value of equity}_{t-1}$

$COSIZE = \text{Market value of equity}_{t-1}$

$DISC = (\text{Stock price}_{t-1} - \text{Subscription price}) / \text{Stock price}_{t-1}$

$BKTOMKT = \text{Shareholders funds} / \text{market value of equity}_{t-1}$

### Cross-sectional Analysis Result

From Table III, it is shown that the explanatory variables explain 47.9629% of the variation in CAR with F-statistic equivalent to 2.106755 confirming the significance at  $\alpha=0.10$ . All the estimated coefficients have an inverse relationship with the dependent variable except for subscription price discount and book-to-market equity ratio. Among the variables, percentage change in debt/equity ratio, relative size of issues, subscription price discount and book-to-market equity ratio are found to be significant at  $\alpha=0.10$  with t-value 1.978764, 1.867834, 1.915778 and 1.973204 respectively.

<sup>10</sup> This method has been used in previous studies such as shown in the work of Fama and French, 1992; Kothare, 1992; Reddy, 1992; Singh, 1988; Strong and Xu, 1994. The degree of multicollinearity problem has been examined where correlation matrix as well as auxiliary regressions are implemented. The result from correlation matrix shows that the pairwise correlations between the explanatory variables are uniformly low (the result is available upon request) for all predictors except DBEQCHG against NWCCHG (-0.812065) and DBEQCHG against BKTOMKT (0.535157). The auxiliary regressions confirmed the degree of multicollinearity problem against the three predictors where the R-squared showed 0.869 for DBEQCHG, 0.793 for NWCCHG and 0.697 for BKTOMKT. The three predictors can be taken out from the model or a stepwise regression, a ridge regression or other remedial measures can be used to address the problem. However, each solution has its own constraints. "There is no surefire remedy; there are only a few rules of thumb" (Gujarati, pg 307, 1992). The results of this analysis stand. Take note that the main objective of this paper is to use the model to predict and if this is the intention the result is fairly accurate even in the presence of multicollinearity (Gujarati, pg 303, 1992).



Table III: Cross Section Regression Analysis of CAR against all determinants

LS//Dependent Variable is CAR

Sample: 125

Included observations: 24

Excluded observations: 1

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DBEQCHG	-0.173166	0.087512	-1.978764	0.0653
NWCCHG	-0.000408	0.000380	-1.075221	0.2982
TFACHG	-0.024656	0.030485	-0.808790	0.4305
RELSIZE	-0.050704	0.027146	-1.867834	0.0802
COSIZE	-0.000197	0.000118	-1.672614	0.1138
DISC	0.417060	0.217697	1.915778	0.0734
BKTOMKT	0.289888	0.146913	1.973204	0.0660
C	-0.038308	0.152251	-0.251609	0.8045
R-squared	0.479629	Mean dependent var		0.065940
Adjusted R-squared	0.251967	S.D. dependent var		0.253281
S.E. of regression	0.219060	Akaike info criterion		-2.775615
Sum squared resid	0.767798	Schwarz criterion		-2.382931
Log likelihood	7.252858	F-statistic		2.106755
Durbin-Watson stat	2.168085	Prob(F-statistic)		0.102899

The coefficient DBEQCHG is negative, which means that higher leverage is associated with a lower CAR. Ross (1977) signalling model cannot explain this finding. Instead, it provides evidence to support Kang's conclusion that on the average, investors give greater weight to a possibility of financial distress. Another significant variable that has inverse relationship with CAR is relative size of issue, which is similar to the results reported by Asquith and Mullins (1986) and Masulis and Korwar (MK 1986).<sup>11</sup> This result is consistent with the PPH prediction that the greater the issues, the lower the company's value, except in this study it gives a lower cumulative abnormal return.

The statistically significant DISC variable has a positive relationship with CAR. This result suggests that the higher the subscription price discount, the more likely that the existing shareholders will experience a higher CAR. It might give a signal to the market that with rights offerings, the more discount the company is giving, the more likely the existing shareholders will subscribe to the issues to maintain their ownership. This will give a positive signal to the market that the company is expecting positive cash flows; otherwise the shareholders will not invest their money. This finding is partly

<sup>11</sup> Take note that for MK's finding, when changes in leverage variable is included in the regression model, the negative relationship between relative size of issue and a two-day announcement period stock return becomes insignificantly different from zero.



The variables NWCCHG, TFACHG and COSIZE are statistically insignificant at  $\alpha=0.10$  level. However, when these variables are taken out from the cross-sectional regression analysis (refer to Table V), the R-squared dropped from 47.9629% to 30.9946% with Prob F = 0.116246. The dramatic change of R-squared could mean that one of the three variables is likely to have contributed to the CAR variation. In referring back to Table III, it is shown that COSIZE t-value = 1.672614 is significant at Prob t = 0.1138. If this variable is included and the variables NWCCHG and TFACHG are excluded from the analysis (refer to Table IV), R-squared decreased to 42.0204% but with a higher overall significance of F-statistic = 2.609077 and Prob F = 0.060661. It can be concluded that COSIZE is an important variable contributing to the variation in CAR. Therefore the results reported by Banz (1981), Beaver (1981), Fama and French (1992), Levis (1985) and part of Strong and Xu (1994) are consistent with the stock market reaction found in Malaysia where COSIZE is associated negatively with CAR. This relationship proves that smaller companies are likely to experience positive abnormal returns and larger companies, negative abnormal returns.



**Table IV: Cross Section Regression Analysis of CAR against all determinants except NWCCHG and TFACHG**

LS// Dependent Variable is CAR

Sample: 125

Included observations: 24

Excluded observations: 1

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DBEQCHG	-0.098703	0.040801	-2.419133	0.0264
RELSIZE	-0.050530	0.026886	-1.879448	0.0765
COSIZE	-0.000211	0.000114	-1.850133	0.0808
DISC	0.354690	0.190526	1.861634	0.0791
BKTOMKT	0.235973	0.114430	2.062156	0.0539
C	-0.013255	0.108448	-0.122223	0.9041
R-squared	0.420204	Mean dependent var		0.065940
Adjusted R-squared	0.259149	S.D. dependent var		0.253281
S.E. of regression	0.218006	Akaike info criterion		-2.834147
Sum squared resid	0.855479	Schwarz criterion		-2.539634
Log likelihood	5.955242	F-statistic		2.609077
Durbin-Watson stat	1.943207	Prob(F-statistic)		0.060661

**Table V: Cross Section Regression Analysis of CAR against all determinants except NWCCHG, TFACHG and COSIZE**

LS// Dependent Variable is CAAR

Sample: 125

Included observations: 24

Excluded observations: 1

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DBEQCHG	-0.104033	0.043216	-2.407273	0.0264
RELSIZE	-0.043772	0.028284	-1.547610	0.1382
DISC	0.385146	0.201553	1.910890	0.0712
BKTOMKT	0.290273	0.117443	2.471609	0.0231
C	-0.125344	0.095510	-1.312368	0.2050
R-squared	0.309946	Mean dependent var		0.065940
Adjusted R-squared	0.164671	S.D. dependent var		0.253281
S.E. of regression	0.231490	Akaike info criterion		-2.743388
Sum squared resid	1.018163	Schwarz criterion		-2.497960
Log likelihood	3.866127	F-statistic		2.133519
Durbin-Watson stat	1.543811	Prob(F-statistic)		0.116246



#### IV. CONCLUSION

The effect of rights issue announcements on share returns has been empirically studied for the KLSE over the period 1987 to 1996. By employing a market adjusted return model to calculate abnormal returns, it is found that the Malaysian stock market reacts favourably to rights offerings. A statistically significant positive cumulative average abnormal return is documented which is an evidence of a deviation from the semi strong market efficiency hypothesis. It indicates that insider trading activity may be present in the Malaysian capital market. Contrary to the evidence found in the US, Australia and some studies done in Malaysia, this finding supports the results reported in the UK, Greece and Korea. It seems Malaysian investors associate rights offerings with positive company prospect and act favourably on the announcement. No evidence is found to support the signalling models of Miller and Rock (1985) or Ross (1977). Neither is there evidence of Myers and Majluf (1984) asymmetric information model, Scholes information model, the price pressure hypothesis or the perfect substitution hypothesis.

In the cross-sectional regression analysis of cumulative abnormal return (CAR) for each company with the determinants, it is found that percentage change in debt/equity ratio, relative size of issues, company's size, subscription price discount and book-to-market equity ratio provide a statistically significant explanation of the variation in CAR. The negative coefficients of percentage change in debt/equity ratio do not support the Ross (1977) signalling model. However, evidence on the relative size of issue partly support the PPH. A positive coefficient of DISC shows that the higher the price discount, the more likely that existing shareholders will experience a higher CAR. Again it confirms part of the PPH explanation that a greater price discount acts as an inducement for subscribers. The evidence failed to provide a statistically significant relationship between the percentage change in total fixed assets and returns and the percentage change in net working capital and returns. These variables do not appear to carry any new message to the stock market beyond that captured in the variable describing reduced borrowing which is represented by percentage change in debt/equity ratio.

In summary, the presence of statistically significant positive cumulative abnormal returns in the event study does not support Miller and Rock (1985) and Ross (1977) signalling models, Myers and Majluf (1984) asymmetric information model, Scholes information model, the PPH nor the PSH. However, the evidence presented by the significant variables from the cross-sectional regression analysis supports part of the explanation given in the PPH.



APPENDIX

Table I: Average Daily Market Adjusted Return and Cumulative Average Abnormal Return

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	<b>1.72134*</b>	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	<b>2.01877*</b>	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	<b>-1.9913*</b>	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	<b>1.92416*</b>	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	-0.5899	0.091099				

(\*Significant at  $\alpha=0.10$ )



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