

RESEARCH METHODOLOGY

3.1 HYPOTHESES

Hypothesis 1

$$H_0 = R_{\text{LMECs Before Crisis}} = R_{\text{LMECs During Crisis}}$$

$$H_1 = R_{\text{LMECs Before crisis}} \neq R_{\text{LMECs During crisis}}$$

The number of Local Majority Equity Companies (LMECs) has increased during the period of 1995 – 1996. A lot of LMECs companies were listed in KLSE during that time. There were 559 companies listed on the KLSE Board in 1995 and only 33 companies were classified as foreign companies. The number was increased to 665 companies in 1997 of which 382 companies were in the main board while 283 were in the second board. From the 1997 figures, almost 602 companies or 90.5 percent are local companies having a majority stake and the additional 63 companies or 9.47 percent owned by foreign companies. This indication showed the proportion of local shareholders were managed a big stake in term of share and controlling in KLSE. However, many companies were affected when the Malaysian's economy was hit by the financial crisis in July 1997. Yusman (1998) reported that the KLSE composite index was losing more than half of its value for the year end 1997.

This observation yields the first hypothesis. The null hypothesis (H_0) : the return of Local Majority Equity Companies (LMECs) before financial crisis is equal to the return of LMECs during the crisis, and the alternative hypothesis (H_1) : the return of LMECs companies before the financial crisis is not equal to the return of LMECs companies during the crisis. The study expected that the

stock return of the Local Majority Equity Companies (LMECs) before crisis is not equal to the stock return of the LMECs during the crisis.

Hence, in order to analyze the effect of the crisis on LMECs, the return of the stocks from the LMECs samples before and during the crisis were calculated. The return then was tested in order to see whether the financial crisis gives an impact. If there is any significant difference or the significant level is less than or 0.05, the null hypothesis (H_0) will be rejected.

Hypothesis 2

$$H_0 = R_{\text{FMECs Before Crisis}} = R_{\text{FMECs During Crisis}}$$

$$H_1 = R_{\text{FMECs Before crisis}} \neq R_{\text{FMECs During Crisis}}$$

This study also analyzed the impact of the financial crisis towards Foreign Majority Equity Companies (FMECs). The expected result from this study is the stock return of FMECs before the crisis is equal to the stock return of FMECs during the crisis. Economic Report 1999/2000 supported this expected result that the contract approvals to foreign investors raised by 3.9 percent to RM7, 503.9 million during the first eight months of 1999. Thus, it leads to the second hypothesis.

The null hypothesis (H_0) is the return of Foreign Majority Equity Companies (FMECs) before financial crisis is equal to the return of FMECs during the crisis, and the alternative hypothesis (H_1) is the return of FMECs before the financial crisis is not equal to the return of FMECs during the crisis.

The stock return of FMECs before and during the crisis was also tested by using the T-test assuming equal variances in order to see any significance difference before and during the crisis.

Hypothesis 3

$$H_0 = R_{\text{LMECs Before Crisis}} = R_{\text{FMECs Before Crisis}}$$

$$H_1 = R_{\text{LMECs Before crisis}} \neq R_{\text{FMECs Before Crisis}}$$

In order to compare the return performance between LMECs and FMECs before the crisis, the third hypothesis was developed. The null hypothesis (Ho): the return on LMECs is equal to the return on FMECs before the crisis, and the alternative hypothesis (H1): the return on LMECs is not equal to the return on FMECs before the crisis. The expected result of the study is that the LMECs and FMECs show unequal performance before the crisis. The FMECs should perform better than LMECs. This is due to foreign companies had linkages with parent company and bigger sources of capital as noted in Fong (1990) and Phang (1998).

Hypothesis 4

$$H_0 = R_{\text{LMECs During Crisis}} = R_{\text{FMECs During Crisis}}$$

$$H_1 = R_{\text{LMECs During crisis}} \neq R_{\text{FMECs During Crisis}}$$

Hypothesis 4 was developed for the purpose of comparing the return performance between LMECs and FMECs during the crisis. The null hypothesis (Ho): the return on LMECs is equal to the return on FMECs during the crisis, and the alternative hypothesis (H1): the return on LMECs is not equal to the return on FMECs during the crisis. The expected result of the study is that the FMECs show better performance than LMECs during the crisis. As supported by Nor Azizan (2000) the local companies were suffered during the crisis due to the debt problems.

Hypothesis 5

$$H_0 = R_{\text{LMECs During - LMECs Before Crisis}} = R_{\text{FMECs During - FMECs Before Crisis}}$$

$$H_1 = R_{\text{LMECs During - LMECs Before Crisis}} \neq R_{\text{FMECs During - FMECs Before Crisis}}$$

The hypothesis 5 was developed in order to compare the return performance between LMECs and FMECs due to the financial crisis. The null hypothesis (Ho): the return on LMECs is equal to the return on FMECs due to the crisis, and the alternative hypothesis (H1): the return on LMECs is not equal to the return on FMECs due to the crisis. The expected result of the study is the FMECs should show better performance as compared to LMECs due to the crisis. This is because majority of the foreign companies had unlimited sources of capital as noted in Phang (1998).

The other reason why the FMECs should show a better performance is the deregulation of government policy. Malaysian government recognized the important contribution of foreign long-term investment and further liberalized by permitting foreign ownership of up to 100 percent in the manufacturing sector irrespective of the level of exports, for all applications received between July 31 1998 and December 31, 2000. In telecommunication sector, the limit on foreign equity holdings was raised to 49 percent. This is reported in *'The Guide to Malaysia'*, published with the EuroMoney Magazine. These arguments contributed to the derivations of the hypothesis 5.

Another purpose of this study is to examine the wealth impact of financial crisis between the Local Majority Equity Companies (LMECs) and Foreign Majority Equity Companies (FMECs). It can be expected that the financial crisis affected both groups. However, as discussion earlier, the study also expected that the LMECs would be badly affected as compared to FMECs due to the crisis.

3.2 METHOD OF THE INVESTIGATION

3.2.1 SAMPLE

This study classified the samples into two categories. The first category is Local Majority Equity Companies (LMECs) and the second is Foreign Majority Equity Companies (FMECs).

The samples were collected from KLSE Main Board and Second Board. The samples were selected based on the following criteria:

1. All sample companies should have existed on the KLSE throughout the sample period, which is January 1995 to December 1999, in order to provide comparable data.
2. The foreign equity exceeds 50 percent as at December 1995 and December 1998. These samples were categorized as Foreign Majority Equity Companies (FMECs).
3. The Local Majority Equity Companies (LMECs) were chosen based on the sectors, activities in the sector and size of market capitalization of the FMECs samples. The purpose of this selection is to match the LMECs and FMECs samples, so as to provide accurate comparison.
4. Any companies that changed their status from FMECs to LMECs or vice versa during the period of study were omitted from this research.

In 1995, there were a total of 559 companies listed on the KLSE. 379 companies were on the main board and 180 companies on the second board. Firstly, the study identified 33 Foreign Majority Equity Companies (FMECs) in KLSE. To fulfil criteria of sample selection, eight companies were eliminated due to their status changed from FMECs to LMECs. Another four companies were also eliminated because their historical price data were not available.

The final sample comprised 21 FMECs, which were from sectors such as food, beverage and tobacco, consumer products, building materials, plantations, trading and industrial products. The details of the FMECs samples regarding the sector, percentage of foreign equity and the size of market capitalization is as shown in Appendix 1.

In relation to the 21 FMECs companies, 21 companies from Local Majority Equity Companies (LMECs) were selected. Since a lot of companies listed on the KLSE were in the LMECs group, the selection was done by looking at their market capitalization, major activities and group of industries they were included. The details of LMECs samples were presented in Appendix 2. The LMECs samples then were each matched according to their sector and size of market capitalization with the FMECs samples respectively. This step is very important in order to provide a matching sample between 21 samples of LMECs and 21 samples of FMECs.

3.2.2 SOURCES OF DATA

The major sources of data were collected from the Investor Digest (various issues) and KLSE Corporate Handbook published by the KLSE, which contains market capitalization, major activities, date of listing and other information regarding the LMECs and FMECs samples.

Both monthly and daily data for the stock prices at KLSE were used in this study. The stock prices data during the trading period of January 1995 to December 1999 were downloaded from the Bloomberg database. The bonus and rights issues data were obtained from the Investor Digest.

3.2.3 METHOD OF ANALYSIS

The monthly closing prices of the LMECs and FMECs for the period January 1995 to December 1999 were used in the study. In view of the relatively long data series, monthly data were used to compute the stock returns.

This study used KLCI as the market benchmark to enable the comparison between the performance of LMECs and FMECs. This was adopted from Kok and Khoo (1995) and Shamser and Anuar (1995) who also used the KLCI as a benchmark of the market performance in their study. In addition, Lombard, Roulet and Sol'nik (1999) set out to quantify the relative importance of domestic market factors in explaining the returns on company's stock price. The return on the national stock index is used to represent the domestic factor. This is because the national index is an average for all listed companies, its already reflects the average impact of global factors on national companies.

To measure the performance of the LMECs and FMECs, this study looks at the companies' stock returns. Therefore, the monthly closing price was used to calculate the raw returns. Larry Y. Dann (1980) analyzed the returns of common stock repurchase to bondholders and stockholders. The author used the raw returns rather than market or risk adjusted returns. According to him, the average raw return was informative for interpreting the economic importance of the event. In addition, the magnitude of normal daily returns is on average sufficiently small so that complicated market does not really alter the results.

The return of the stock j for month t was computed by using the formula:

$$R_{jt} = \frac{P_{jt} - P_{j(t-1)}}{P_{j(t-1)}} \times 100$$

Where;

$$\begin{aligned} R_{jt} &= \text{Return of stock j at month t} \\ P_{jt} &= \text{Price of stock j at end of month t} \\ P_{j(t-1)} &= \text{Price of stock j at end of month t - 1} \end{aligned}$$

Cash dividends were excluded from the return computation because of its part of the elements in stock return. Mansor (1997) in his study also did not adjust return for dividend yield, as dividend is a component of stock return.

However, closing prices of stocks were adjusted for capital changes such as bonus issues or rights issues. This is because on the ex-bonus and ex-rights date, there is a fall in stock prices and thus returns. The companies involved in this adjustment are as shown in Appendix 3. To make the adjustments, this study adopted the formulae used by Lee (1998). The formulae are as follows;

$$R_{jt} = \frac{K_{jt} P_{jt} - P_{j(t-1)}}{P_{j(t-1)}} \times 100$$

Where;

$$K_{jt} = \frac{C(n_1 + n_2)}{Cn_1 + En_2}$$

C = Closing price of stock

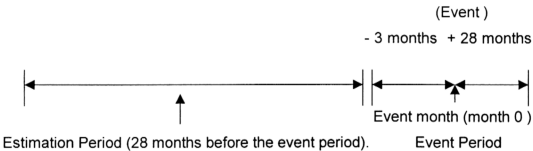
E = subscription price

n₁ = number of old shares required to be entitled to n₂, new shares.

The study calculated the average return before the crisis and during the crisis for both portfolios in order to see if there is significance difference between these two groups. If the significance level were less than 0.05, the null hypothesis would be rejected. The study is expected that the financial crisis give more impact to the LMECs compared with the FMECs. It means that FMECs had better performance compared to the LMECs.

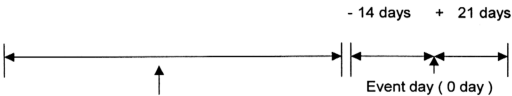
3.2.4 THE EVENT STUDY METHOD

The study also attempted to measure the performance of the LMECs and FMECs before and during the crisis by using event study method. This event study was adopted to address the issues of wealth impact to the both portfolios due to financial crisis. The issues were regarding any abnormal price behavior on the crisis date and whether the LMECs stock prices were more affected than FMECs stock prices or vice-versa.



The ends of monthly prices from January 1995 to December 1999 were collected to determine the abnormal stock returns. The estimation period was 28 months before the event period. While event period was 32 months around the event month. The August 1997 was identified as the event month. This was due to the KLCI dropped by 20.6 percent; the sharpest fall in 1997.

At the beginning of the process, the end of monthly prices was used to calculate the stock return of each company in the LMECs and FMECs. Both groups then were compared with KLCI monthly return.



Estimation Period (358 days before the event period). Event Period

The daily prices from 1 March 1996 to 10 September 1997 were used to calculate the abnormal return and cumulative abnormal return. This study chose 11 August 1997 as the event day. On the day, the Ringgit started declining against US Dollar from 2.5 to 2.7. This date was adopted from the Meera and Hassanuddeen (1999) who considered the 11 August 1997 as the crisis date. Furthermore, Nor Azizan (2000) also chose this date in her study because of the majority of the listed companies experienced a greater drop in their return rather than on previous days.

At the beginning of the process, the daily closing price was used to calculate the stock return of each company in the LMECs and FMECs. Both groups then were compared with KLCI daily return. The return of the stock *i* for day "*t*" was computed by using the formula:

$$R_{it} = \frac{P_{it} - P_{i(t-1)}}{P_{i(t-1)}} \times 100$$

Where;

- R_{it} = Return of stock *i* at time *t*
- P_{it} = Price of stock *i* at today's price.
- $P_{i(t-1)}$ = Price of stock *i* at yesterday's price

In evaluating abnormal price behaviour on the crisis date, the study used the standard cumulative abnormal returns : CAR methodology. Bacha and Meera (1996) used this methodology for the purpose of identifying the abnormal price behaviour around bonus announcement date. For each portfolio (LMECs and FMECs), the CAR is computed for the window period around the event day. The window period being ± 36 days. This is also called as the announcement period, which is defined as $t = -14$ to $t = 21$.

Daily CAR is computed as :

$$CAR_{i,t} = \sum_{t=1}^t AR_{i,t} \qquad i = 1, \dots, N.$$

Cumulative Abnormal Return (CAR) is the total of daily abnormal return.

Where the daily abnormal return on day t for the stock i is determined as :

$$AR_{i,t} = R_{i,t} - \check{R}_{i,t}$$

The abnormal return $AR_{i,t}$ is the difference of day t 's actual return $R_{i,t}$ less than the expected return $\check{R}_{i,t}$. Where the expected return is given by ;

$$\check{R}_{i,t} = \alpha + \beta_i R_{m,t}$$

$R_{m,t}$ being the returns of the KLCI (the return on market).

The regression analysis was performed between the daily return of LMECs companies and KLSE CI (independent variable) and between the daily return of FMECs and KLSE CI. The regression analysis was conducted over the estimation period for each LMECs and FMECs to give some preliminary measures regarding the performance and volatility of each portfolio. The study also computed the KLCI mean return only for the period before window period.

In order to see whether there was abnormal and cumulative abnormal returns during the event, this study adopted Nor Azizan (2000) by using the OLSEVNT2 program. It is a special program for the event study research. The regression results were used as important data to run this OLSEVNT2 in order to calculate the abnormal return and cumulative abnormal return. This program can be run through the Microsoft Quick Basic.

This study only looks at 14 days before and 21 days after the event to capture any abnormalities in return due to the crisis. In testing for significance, the study used the standard Z- test, where the Z score is computed as ;

$$Z_t = \frac{AR}{\sqrt{VAR(AR_t)}} \quad t = 1, \dots, N$$

$$Z_t = \frac{CAR}{\sqrt{VAR(CAR_t)}} \quad t = 1, \dots, N$$

By using the Z-test, the study then tests the null hypothesis that;

Since financial crisis affected all the companies there should be no abnormal returns around the event day.

The alternative hypothesis would assume that there would be abnormal return around the event day. This study would expect to reject the null hypothesis.

3.2.5 PERIOD OF STUDY

In the empirical research, the monthly returns from February 1995 to December 1999 were used. The period covered by this study was divided into two different major phases of a complete cycle such as the period of stability

(February 1995 - June 1997) and the period of decline (July 1997 – December 1999). The first period was considered as the period "before the crisis" and the second period was the period "during the crisis". The choice of the time period was dictated by the availability of data.

In this study, July 1997 was identified as the beginning of financial crisis in Malaysia. The stock prices in most sectors started to have a downward trend as the KLCI fell as low as 262.7 points from 1,092.4 in end of June 1997. According to Patel and Sarkar (1998), the beginning of crisis is defined as the month when the index reached its historical maximum prior to the month when the crash was triggered. The month of July 1997 was being used to differentiate between two sub periods.

For the event study, both monthly and daily returns were used. The ends of monthly prices from January 1995 to December 1999 were collected to determine the abnormal stock returns. The estimation period was 28 months before the event period. While event period was 32 months around the event month.

By using the daily stock returns, the daily closing prices from 1 March 1996 to 10 September 1997 were collected to calculate the abnormal stock returns. This study used 358 days closing prices data before the event period as the estimation period and 36 days data around the event day.