

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Hypothesis

Almost two years ago Malaysia was hit by the currency crisis. The crisis really affected the Malaysian economy and there were heavy losses in the Malaysian stock market. In order to assess the impact of the crisis on the Bumiputera-controlled companies the study developed three hypotheses.

Hypothesis 1

$$H_0 : R_{\text{Bumi Before The Crisis}} = R_{\text{Bumi During The Crisis}}$$

$$H_1 : R_{\text{Bumi Before The Crisis}} \neq R_{\text{Bumi During The Crisis}}$$

The stock return of the Bumiputera companies before and during the crisis was tested in order to see whether the currency crisis had an impact. This was because during the turbulent times, many businesses were affected.

Hypothesis 2

$$H_0 : R_{\text{Non-Bumi Before The Crisis}} = R_{\text{Non- Bumi During The Crisis}}$$

$$H_1 : R_{\text{Non-Bumi Before The Crisis}} \neq R_{\text{Non- Bumi During The Crisis}}$$

The stock return of the Non-Bumiputera companies before and during the crisis also was also tested in order to see whether the currency crisis had an impact.

Hypothesis 3

$$H_0 : R_{\text{Bumiputera}} = R_{\text{Non- Bumiputera}}$$

$$H_1 : R_{\text{Bumiputera}} \neq R_{\text{Non-Bumiputera}}$$

In order to study more about the currency crisis and its relation to the Bumiputera-controlled companies' stock return, the third hypothesis was developed. The study expected that the stock return of Bumiputera-controlled companies during the crisis was reduced by the currency turmoil, as was also the case with the non-Bumiputera companies. However, the study expected Bumiputera companies to perform better and not be affected as much as the non-Bumiputera companies. This is because many of the Bumiputera companies were involved in Government projects and the Government had shares in them.

Hypothesis 4

$$H_0 : R_{\text{Bumi High Leverage}} = R_{\text{Bumi Low Leverage}}$$

$$H_1 : R_{\text{Bumi High Leverage}} \neq R_{\text{Bumi Low Leverage}}$$

In order to see what type of Bumiputera companies were less affected by the currency crisis, the study divided the Bumiputera Companies into two categories. The companies were divided into the high leverage and low leverage category regardless of their sector. The high leverage companies were defined as companies that had a high operating leverage during the turbulent times while low leverage companies were defined as companies that had a low debt to be serviced. High operating leverage companies were expected to suffer more than low leverage companies during the bad economic situation as firms with high leverage need a lot of money to pay their debts.

3.2 Definition of Data

3.2.1 Definition of Bumiputera-controlled companies

Bumiputera-controlled companies were defined by the KLSE as companies in which over 50% of their equity is owned by Bumiputera shareholders/ institutions or in which at least 35% of their equity is owned by identifiable Bumiputera shareholders. Sally Cheong in her book used a simple definition to illustrate what constitutes "Control " of a company. According to her, the ownership of the majority of the shares in a company such as 50.1% is used as the criterion for control.

There are a number of other conditions stated by the KLSE to define the Bumiputera controlled company such as; the company must have a Bumiputera chairman and chief executive officer with at least 51% of its board members comprising Bumiputera individuals; at least 51% of its management, professional and maintenance staff are Bumiputera; the company's Bumiputera shareholders have no direct or indirect relationship with non-Bumiputera groups and; no non-Bumiputera groups hold more than 10 percent of the voting power or the identifiable non-Bumiputera groups must not own more than 24% of the voting power.

3.2.2 Definition of Companies Performance

In this study companies' performance was evaluated by looking at the companies' stock return. In order to avoid complexity in gaining the data, monthly prices were used rather than daily or weekly prices. The monthly average closing and opening were used to calculate the raw returns. The study also collected the daily closing prices in order to see any abnormalities in stock returns when the Asian region was seriously talking about the devaluation of the Thai Baht which started from 2nd July, 1997.

Larry Y. Dann (1980) analysed the returns of common stock repurchase to bondholders and stockholders. The author examines the effects of a corporate share repurchase on the values of the repurchasing firm's securities. In this study the author used the raw returns rather than market or risk adjusted returns. According to the author, the average raw return was informative for interpreting the economic importance of the event. He also stated that the magnitude of normal daily returns is on average sufficiently small so that complicated market and risk adjustments do not really alter the results.

The stock return for month " t " was computed as below:

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

Where:

$R_{i,t}$ = Returns of stock i at month t

$P_{i,t}$ = Average Opening and Closing Price of stock i for month t

$P_{i, t-1}$ = Average Opening and Closing Price of stock i for month t -1

3.3 Method of the Investigation

3.3.1 Selection of the Sample

In this paper, the companies were divided into two categories; Bumiputera and non-Bumiputera. First, the percentage of Bumiputera holding equity in the 1996 list was used to select one hundred samples of Bumiputera and non-Bumiputera companies. The companies were selected at random. Next, the study chose Bumiputera-controlled companies that had already started trading in the KLSE by February 1995 and were still in the market in 1999. (Refer to Appendix 1-2)

This paper also focused on the high leverage Bumiputera companies and low leverage Bumiputera companies in order to look at the performance due to the currency crisis. In order to study the impact of the currency crisis on high leverage and low leverage Bumiputera companies, the sample is sorted based on their debt to equity.

The debt to equity of the Bumiputera companies was obtained from the Corporate handbook: Malaysia KLSE. Debt to Equity Ratios in this research were computed by summing up the short-term loans and long term loans divided by shareholders funds.

$$\text{Debt to equity ratio} = \frac{\text{Short term Loans} + \text{Long Term Loans}}{\text{Shareholders funds}}$$

3.3.2 Size of the sample

At the beginning of this research, 100 Bumiputera companies and 100 non-Bumiputera companies which were trading in the KLSE were targeted. However, only companies that met the requirements needed in this study were selected. In order to choose a suitable sample, the companies that provided the historical monthly return data from 1995 to the end of 1999 were chosen as a sample. This is because the study wanted to choose the Bumiputera listed companies that were already in the market in 1995 and were still trading in 1999. Lastly, twenty-nine Bumiputera companies and, twenty-nine non-Bumiputera companies that fulfilled the requirements were selected. (Refer to Appendix 3-4)

The debt problems became important issues among the businesses, during the currency crisis. In order to see whether there was such a difference in the performance of Bumiputera-controlled companies because of debt, the study looked at the level of leverage in each company's sample. Bumiputera companies were divided into two categories; low leverage and high leverage based on the debt to equity ratio. Only 14 companies were selected as low leverage companies and 12 companies as high leverage companies. (Refer to Appendix 5)

3.3.3 Period of Study

In this empirical research, the study period was divided into two; "before" and "during" the currency crisis. In order to cover the booming time in 1995 and the crisis period in 1998, a total of twenty-nine pairs of months were analysed. The "before crisis" study period spans from, February, 1995 to July, 1997, while the "during crisis" study period spans from July, 1997 to December, 1999. The objective of having two periods of time was to examine whether the first period was likely to be followed by positive return in the second period or vice versa. The first sub-period was considered as the booming time which was the period before the currency crisis occurs. The second sub-period was considered as the tough time which was the period during the financial crisis. (Refer to Appendix 6-8)

For the event study, the daily closing prices from March 1996 to August 1997 were compiled in order to determine the abnormal stock returns. The study used 348 days closing price data before the window period and 21 days data around the event day. This study used 11th August 1997 as the event day. This date was selected because during that day, the majority of the listed companies reported a tremendous drop in stock price and the Malaysian currency was weakening

against the US dollar. The selected event date was considered in this study as the beginning of the currency crisis in Malaysia. (Refer to Appendix 9-10)

3.3.4 Data Source

The data for this study was obtained from the Za'aba Library, the University Malaya main library, the University Putra main library, the Kuala Lumpur Stock Exchange Library and also from the Kulliyyah of Economics and Management Sciences Post Graduate Center in the International Islamic University Malaysia.

The daily return and monthly return data was downloaded from the Bloomberg on-line web site. The data retrieved from this web site were as follows:

1. The Companies' description file.
2. Historical daily closing price data.
3. Historical percentage moves file to get the monthly open and close price data.
4. The major shareholders list in order to counter-check the status of the companies.

3.3.5 The Empirical Research Methods

This empirical research used the selected companies' monthly prices from February 1995 to December 1999 to calculate the stock returns. First, the study calculated the average of opening and closing prices to get the mean price. Then by using the mean price, the stock returns for each company were computed. The average Bumiputera Companies' stock returns for twenty-nine months before the crisis then were compared with the average stock returns for twenty-nine months during the crisis. This method was used in order to see whether any significant difference existed between these two periods. To test the existence of

currency crisis effects, the t-test assuming equal variances was used. The study also repeated the above step for Non-Bumiputera Companies' samples.

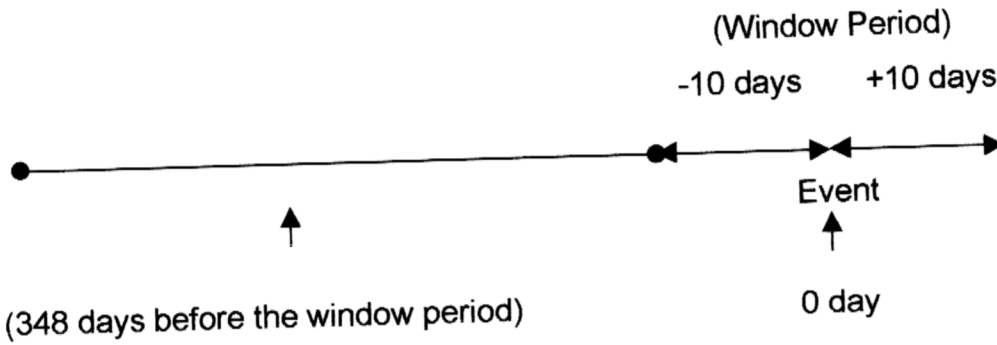
The study then calculated the difference between "Before Crisis" Average Stock Return and "During Crisis " Average Stock Return for both Bumiputera and Non-Bumiputera Companies. The t-test was used to see whether there was a significant difference between the means of these two groups. If the significance level is less than alpha or 0.05, the null hypothesis will be rejected.

Lastly, the Bumiputera-controlled companies were divided into two categories; high and low leverage. The average stocks return "during the crisis" for both groups was computed. Then the t-test was used to see whether there was a significant difference between these two groups during the crisis. This study used the t-test Assuming Unequal Variances in order to identify whether low leverage companies performed differently from high leverage companies.

3.3.6 The Event Study Methods

This research project also used the event study methodology. The event study methodology was conducted to see whether there were any abnormalities of stock return because of the currency crisis. The crash examples in 1987 and abnormal return cases illustrated in the Principles of Corporate Finance by Richard A. Brealey and Stewart C. Myers (1996) were used as a guidance to understand the abnormal phenomenon. In this book, a security's abnormal return was defined as "part of return that is not due to systematic influences".

The daily prices from March 1996 to August 1997 were used to calculate the abnormal return and cumulative abnormal return. The study chose 11th August 1997 as the event day. This was because, on this date the majority of the listed companies experienced a greater drop in their return than on previous days.



A formula to calculate abnormal return and cumulative abnormal return:

Abnormal Return = Actual Return - Expected Return

Expected Return = α + β (return on market)

$$CAR = \sum_{t=-10}^{t=10} AR_{i,t} \quad i = 1, \dots, N$$

(Cumulative abnormal return (CAR) is the total of daily abnormal return)

In this study the announcement period defined for $t = -10$ to $t = 10$

First, average stocks daily return of the Bumiputera-controlled companies was compared with KLCI daily return. The daily prices were used to calculate each selected company's stock return.

The rate of return for day " t " was computed as below:

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

Where:

$R_{i,t}$ = Returns of stock i at time t

$P_{i,t}$ = Price of stock i at today's price

$P_{i,t-1}$ = Price of stock i at yesterday's price

The regression analysis was done only for the period before the window period. The regression analysis was conducted to get the figure of MS residual, alpha, standard deviations, beta and standard error. The same step was also used for the non-Bumiputera-controlled companies. Then, the study computed the KLCI mean return only for the period before the window period.

In order to see whether there was abnormal and cumulative abnormal returns during the event, the OLSEVNT2 program was used. It is a special program that can be used for the event study research. The program can be run through the QBasic system. This study only looks at 10 days before the event and ten days after the event to capture any abnormalities in return due to the crisis. The study then used Z-statistic. This was because the null hypothesis that the correlation was equal between the two sub-periods could be tested using Z-statistic.

$$Z = \frac{AR}{\sqrt{VAR(AR)}}$$