CHAPTER 3 RESEARCH METHODOLOGY

This section is divided into three parts: objectives and hypotheses, data sources and design. The data sources section describes the various sources used to obtain data. The design section, on the other hand, explains the criteria applied in this study, the data collection process and describes the procedure of event study conducted in this research.

3.1 Objectives and hypotheses

This research aims to determine the effects of mergers and acquisition (M&A) activity for a 6-year period between late 1998 and 2004. This study tracks the performance of selected publicly traded Malaysian companies that are listed companies on the Bursa Malaysia which has engaged in any M&A activities in recent years. The results should indicate the impact of any M&A to the creation of shareholder value and whether it is consistent with studies made in other countries. Data from firms across various industries will be analysed and its effects on shareholder value will be determined. The study will also attempt to determine conditions which allow acquirers to earn abnormal returns.

ased on the results of M&A shareholder return studies conducted in Western untries, the following hypothesis is posed for Malaysian M&A activities:

H1: The shareholders of target Malaysian firms gain significantly higher short-term returns than the shareholders of acquirer Malaysian firms.

H2: Cash bids generate more shareholder value than stock swaps

H3: Non-financial sector M&As generate more shareholder value than financial sector ones

H4: Non-conglomerate M&As generate more shareholder value than conglomerate ones

H5: Large size disparity M&As generate more shareholder value than more equal-sized ones

3.2 Data sources

The data relevant to the study was obtained through secondary sources. The data sources are divided into two categories as they fulfil different needs for information.

The first category involves sources that provide more descriptive information on M&A activities in general such as the terms of acquisition agreements. The main sources include:

* Bursa Malaysia website – 'Company Announcements' and 'Company Profiles' section
* Kuala Lumpur Stock Exchange – RIIAM Information System (KLSE-RIS) website
* Investors Digest – Acquisitions & Disposals section (a publication of Bursa

Malaysia)

* Stock Performance Guide (published by Dynaquest)
* Securities research reports
* Company annual reports

The second category involves sources of historical data which are more numeric in nature such as the daily share closing price and KLSE Composite Index (KLCI). The main sources include:

* Perfect Analysis version 4.2.0.1 (accessed from University o Malaya Main Library)
* Yahoo! Finance
* Bloomberg (accessed from Bursa Malaysia Public Information Centre).

3.3 Design

Event study methodology is applied in this study for examining the market response to a merger announcement. The procedures are gathered from previous researches by Capron and Pistre (2002), Campa and Hernando (2004) and Ruback (1982).

3.3.1 Event definition

To begin with, it is necessary to set the definition of an event. In this study, the event is the announcement of any significant mergers and acquisitions (M&A) exercises among firms listed on the Bursa Malaysia, which occurred after the Asian Financial Crises, from mid-1998 to 2004.

The period before the middle of 1998 was ignored because it was likely to have distorted stock prices due to the Asian Financial Crises. Both the KLCI and individual stocks were suffering from a high degree of volatility.

3.3.2 Selection criteria

The next step involves determining the selection criteria from the sample population of many hundreds of M&A activities over the six-year period. The criteria for sample selection are defined below:

1. Both the acquirer and target firms are listed entities on Bursa Malaysia's Main Board or Second Board
2. The historical data of both acquirer firm and target firm's securities should be available at least from 180 days prior to and 30 days after the announcement date.
3. The information related to merger terms, such as transaction price, announcement date, firm's nature of business, and payment method, must be disclosed.
4. The payment method for transaction must fall into one of these categories: cash, stock, or combination of both.
5. The acquirer firm gains majority control over the target firm or acquires the listed target's core business.
6. The proposed M&A was successfully completed.
7. Only two listed companies are involved in the exercise; complex M&As are excluded

3.3.3 Sampling

The 'Company Announcements' section of Bursa Malaysia was scrutinized to identify all mergers and acquisitions (M&A) that satisfied the above criteria. Although the process was rather lengthy, it contained details of all-important transactions which were necessary to build the sample list.

Listed companies of various sectors are considered including Consumer Products, Industrial Products, Construction, Trading/Services, Technology, Infrastructure, Finance, Hotels, Properties, Plantations and Mining. Other sectors such as Trusts, Closed-End Funds, Loans and Call Warrants are not included in this study.

Even after the seven criteria listed above were met, the next important step was to decide which date would constitute as the announcement date because M&A exercises on the Bursa Malaysia can be of various forms. In general, the date of the first sale agreement or offer was chosen in favour of supplemental agreements or revised offers. Memorandum of understandings (MOU) were not considered as announcement dates because it is seldom used except for the more regulated industries such as bank mergers and it also provides little or no information to investors with regards to the terms of the acquisition.

The most common form was acquisitions via sales and purchase agreements, which are sometimes called share sale agreements. However, there exist tender offers, both conditional and unconditional, such as mandatory offers and voluntary offers, which also transfer share ownership to the acquirer. In order to satisfy the need for consistency, focus was made on binding agreements which eventually resulted in the acquisition of a controlling stake or a 'take-over' by the acquirer.

A take-over occurs when a company or a person acquires voting control in relation to another company. Under the Securities Commission Act, acquisition of more than 33% of voting rights of a listed company is considered a take-over. The individual or company would be required to undertake a mandatory general offer to all the other shareholders to acquire the remaining shares pursuant to the Malaysian Code on Take-overs and Mergers (1998) unless an exemption is sought and approved. The reason for this is to ensure fair treatment to minority shareholders of target firms when control of the companies changes hands following an acquisition.

After performing close investigations on the corporate announcements, the sample of study was short-listed and a final sample size of 20 M&A exercises was accepted after a thorough examination. This constitutes 40 public listed companies in total. The sample listing and pairings are available for reference in Appendix A.

3.3.4 Data collection

The following step involves collection of historical data from the various sources mentioned in the earlier section. The types of data required include:

* Daily closing KLCI for the six period of 1998-2004
* Daily closing price for each company from six months before

announcement date to one month after

* Acquisition terms including offer price, units and percentage of shares transacted , total consideration and payment method wherever applicable
* Dividend, stock split and rights information
* Sector, core business and principal activities
* Issued share capital of each firm, on or available before, announcement date

Dividend and stock split information are used to adjust closing prices, wherever adjusted closing prices are not available, for a more accurate reflection of the true value of stock prices. Sector information is gathered to determine the classification of financial and non-financial M&As. Information on core business and principal activities is used to deduce the take-over type, particularly on whether it is conglomerate and non-conglomerate. Issued share capital is used in combination with the closing price on announcement date to determine each company's market capitalisation.

Information on the M&A activities in the study, which includes details of the important sale agreements and tender offers as well as the sector and type of take-over in each case, is available in Appendix B.

3.3.5 Expected return

Before considering abnormal returns, it is important to define expected or 'normal' return, which is applied to discount the changes in the general stock market. In this study, expected return was calculated on the basis of the simple market model relative to the KLSE Composite Index (KLCI); with a beta parameter estimated using observations corresponding to 150 days prior to the initial date of the event windows. Regression analysis for the period from t-180 to t-31 is used to determine each firm's alpha, α and beta, β. The 30 days prior to announcement date is excluded because it may be contaminated by rumours of the mergers and acquisition (M&A) activity. The sample output for a pair of merging entities, Public Bank Berhad (PBB) and Hock Hua Bank Berhad (HHB) can be viewed in Appendix C.

3.3.6 Abnormal return

The measure of abnormal return (AR) is computed as the difference between the return to shareholders and the expected return to shareholders. The calculation effectively assumes that the sample firm's shares were acquired at the beginning of the day and then sold again at the end of the day and ignores all transaction costs. The individual ARs needed to be added together in a manner that created meaningful results. The cumulative abnormal returns (CAR) method was used for this in order to test to the research hypotheses.

The ordinary least square (OLS) market model is applied to estimate the abnormal return on a specific stock. This model is assumed to satisfy normal requirements of a linear regression model. The stochastic error terms is expected to have a mean of zero.

The following is the formula for OLS market model to compute daily abnormal returns:

$$AR_{jt} = R_{jt} - (\alpha_j + \beta_j R_{mt}) \tag{1}$$

where AR_{jt} = abnormal return of stock j on day t

R_{jt} = actual return on the j^{th} stock on day t

R_{mt} = return on the market index, value-weighted return.

α_j, β_j = the market model parameter estimates for stock j for the control period (event day –180 through –31). The coefficients estimated were used to compute the abnormal daily returns for the test period (i.e. event day –30 to +30) where event day ± t represents the t^{th} trading day before and after the announcement date (t = 0).

The average abnormal returns (AAR) for each day is calculated by:

$$AAR_t = \frac{1}{N}\sum_{i=1}^{N} AR_{jt} \tag{2}$$

where N = number of securities in the sample

Cumulative abnormal return (CAR) is calculated after AR_{jt} is set. The CAR for each security j is formed by summing individual abnormal returns over time as follows:

$$CAR_{jt} = \sum_{t=-k}^{k} AR_{jt} \qquad (3)$$

where k = number of event days centred on day t

The cumulative average abnormal return (CAAR) over the event window of t ± k is calculated by:

$$CAAR_{t} = \frac{1}{N}\sum_{i=1}^{N} CAR_{jt} \qquad (4)$$

Another commonly used measurement of CAAR which uses AAR instead is calculated as follows:

$$CAAR = \sum_{t=-k}^{k} AAR_{t} \qquad (5)$$

Equation (4) is generally used to measure CAAR throughout this study while equation (5) is sometimes used for comparison purposes.

3.3.7 Event windows

The research methodology involves empirical analysis of the firm's stock market data. Gains from corporate acquisitions will be tested by examining the stock price changes that occur around the time of the merger or take-over announcement. The event window, or measurement period for the effects of an event, is up to 30 days before and after the first announcement. The changes in stock prices of the acquirer and target firms will represent the market's beliefs about the value created by the merger and the division of that value between both firms.

Cumulative abnormal returns from the announcement of a mergers and acquisition (M&A) event are calculated relative to the expected returns for windows of lengths ±1, ±2, ±5, ±10, ±20 and ±30 days centred on the announcement date. The six event windows are measured to provide further insight into the timeframe within which cumulative abnormal returns are on average generated. Attention should be focused on CAR during the period –1 to +1. Most likely, CAR will show dramatic changes around that period as compared to other ranges.

3.3.8 Significance test

t-test is the statistical technique used to determine whether the cumulative abnormal returns differ significantly from zero for any event day.

3.4 Limitations

Secondary financial data is used in this study which introduces the possibility of bias and distortion or misinterpretation. Share prices contain some speculative elements which may not reflect of the real value of the mergers and acquisitions (M&A). However, this study has adopted techniques and procedures that were consistently used throughout to minimise biases.

The date of the first signed agreement or offer is the criterion imposed in consideration of the announcement date because it reflects the markets perception of the benefit that both acquirer and target companies enjoy based on the agreed terms which normally starts off with a sale and purchase agreement or a general offer. However, certain types of M&As especially the heavily regulated industries such as bank mergers require prior approval from Bank Negara Malaysia (BNM) before negotiations can even commence. This introduces some measure of bias because the market is already reacting to the possible outcome upon BNM approval or even the signing of a Memorandum of Understanding (MOU).

The series of bank mergers which occurred were enforced by the government after the Asian financial crises. The reluctance of certain parties to agree to merger terms or cede control led to breakdown of negotiations on numerous occasions. This causes the cumulative abnormal returns of financial M&A to be less reliable especially when the event window size increases.

An M&A proposal that arrive at a signed agreement, which is often conditional initially, by and large reach an eventual successful conclusion even if supplemental agreements or amendments are required along the way. The fact that proposed acquisitions require approvals from various parties, which includes the Foreign Investment Committee (FIC), Securities Commission (SC), shareholders of the acquirer firm and shareholders of he target firm, might result in alterations to the initial agreement.

M&A activities in Malaysia are regulated mainly by the Securities Commission (SC), Foreign Investment Committee (FIC), Ministry of International Trade and Industry (MITI), Bank Negara Malaysia (BNM), Ministry of Finance (MOF), Bursa Malaysia and Registrar of Companies (ROC).

BNM approves all M&As involving any bank, merchant bank and financial institution as well as insurance companies. MOF is directly responsible for any M&A involving stockbroking firms. MITI monitors the transactions affecting licensed manufacturing companies. Bursa Malaysia grants approval to deals involving share creation or addition.

In comparison to studies made on western nations such as the U.S. or Europe, the sample population of listed firms in Malaysia is comparatively small and consequently M&A activities are also relatively limited. Direct information on M&A activities is not readily available which necessitates time-consuming investigations into all listed firms.

There are varying degrees of M&A among sample firms in terms of relative size and control. Consequently, it is difficult to find companies with similar profiles for comparison. Furthermore, merging firms in Malaysia that matches the selection criteria is limited which may result in insufficient representation.

Another challenge was discounting non-merger related factors especially when dealing with historical stock prices. The expected returns of the stocks were calculated using the simple market model. The coefficients were derived by regression analysis which necessitated the collection of a large period of historical data. Many of the acquired or merged companies had a change of name or were even delisted after the transaction. Acquiring data of delisted companies proved to be quite a challenge since it was not available from regular sources.