

## **CHAPTER 4 : RESEARCH METHODOLOGY**

### **4.1 Terminology**

Announcement date is defined as the date when the KLSE received the announcement from company or merchant bank through fax or e-mail. In view of technology advancement, such information is deemed immediately transmitted to public through communication channel.

Daily closing share price means the last transacted price of share in each trading day.

Kuala Lumpur Composite Index (KLCI) is the market performance indicator calculated based on the weighted average of selected shares listed in the KLSE.

No transaction means the company's shares are either suspended or not traded in a particular day.

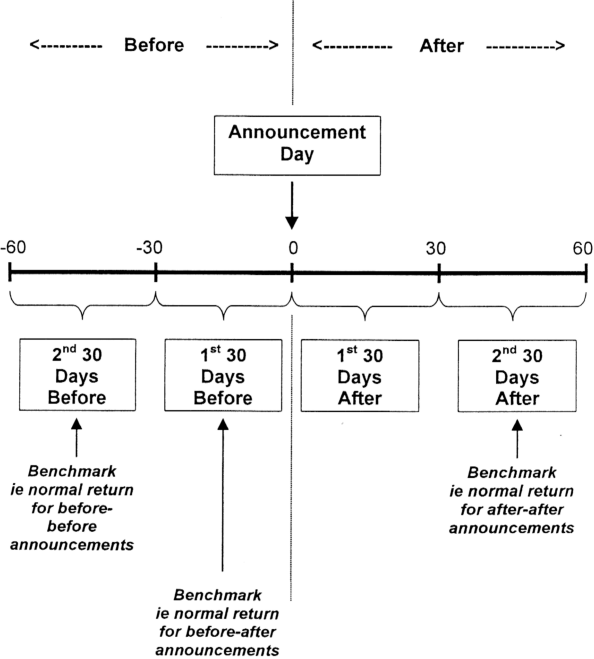
1<sup>st</sup> 30 days before refers to the 30 days immediately preceding the share repurchases programmes announcements (Refer to Diagram 1).

2<sup>nd</sup> 30 days before refers to a period of 30 days prior to the 1<sup>st</sup> 30 days before (Refer to Diagram 1).

1<sup>st</sup> 30 days after refers to the 30 days immediately following the share repurchases programmes announcements (Refer to Diagram 1).

2<sup>nd</sup> 30 days after refers to a period of 30 days after the 1<sup>st</sup> 30 days after (Refer to Diagram 1).

Diagram 1 : Terminology



## 4.2 Research Objective

This research paper is an exploratory research that focuses on the market reaction towards share repurchases programmes announcements made between 1 September 1997 to 15 October 2000 on the Kuala Lumpur Stock Exchange. The objective of this study is to empirically examine share prices behaviour surrounding the public announcements of share repurchases programmes by public listed companies listed on the main board of the Kuala Lumpur Stock Exchange in Malaysia. In other words, it is to determine that abnormal share returns will result from share repurchases announcements.

## 4.3 Research Hypotheses

Based on the above research objective, the following testable hypotheses are formulated:

Before-Before Share Repurchases Programme Announcements:

- $H_0$  : Average Return of the 1<sup>st</sup> 30 days before = Average Return of the 2<sup>nd</sup> 30 days before
- $H_1$  : Average Return of the 1<sup>st</sup> 30 days before  $\neq$  Average Return of the 2<sup>nd</sup> 30 days before

The null hypothesis states that the average return of 1<sup>st</sup> 30 days before is not significantly different from the average return for the 2<sup>nd</sup> 30 days before. Abnormal share returns do not exist during the period 30 days prior to share repurchases programme announcements by companies. The alternative hypothesis states that abnormal returns exist during the period 30 days prior to share repurchases programme announcements by companies. The null hypothesis is rejected if the t-statistic is significant at  $\alpha = 5\%$  level.

After-After Share Repurchases Programme Announcements:

- $H_0$  : Average Return of the 1<sup>st</sup> 30 days after = Average Return of the 2<sup>nd</sup> 30 days after.
- $H_1$  : Average Return of the 1<sup>st</sup> 30 days after  $\neq$  Average Return of the 2<sup>nd</sup> 30 days after.

The null hypothesis states that the average return of the 1<sup>st</sup> 30 days after is not significantly different from the average return of the 2<sup>nd</sup> 30 days after. Abnormal share returns do not exist during the period 30 days after the share repurchases programme announcements by companies. The alternative hypothesis states that abnormal returns exist during the period 30 days after the share repurchases programme announcements by companies. The null hypothesis is rejected if the t-statistic is significant at  $\alpha = 5\%$  level.

Before-After Share Repurchases Programme Announcements:

- $H_0$  : Average Return of the 1<sup>st</sup> 30 days before = Average Return of the 1<sup>st</sup> 30 days after.
- $H_1$  : Average Return of the 1<sup>st</sup> 30 days before  $\neq$  Average Return of the 1<sup>st</sup> 30 days after.

The null hypothesis states that the average return of the 1<sup>st</sup> 30 days before is not significantly different from the average return of the 1<sup>st</sup> 30 days after. Abnormal share returns do not exist during the period 30 days after the share repurchases programme announcements by companies. The alternative hypothesis states that abnormal returns exist during the period 30 days after the share repurchases programme announcements by companies. The null hypothesis is rejected if the t-statistic is significant at  $\alpha = 5\%$  level.

#### **4.4 Sampling Technique**

The sample for this study consists of public listed companies listed on the main board that had made shares buyback announcement to KLSE. The study period spans from 1 September 1997 until 15 October 2000. In selecting the sample, the following rules are observed:

- When the announcement day does not fall on a market trading day, the next trading day will be used as a proxy of the announcement day.
- Those share repurchases prior to 1 November 1998 that do not make announcement to KLSE are excluded from the sample.
- There must be 60 security trading days before and after the announcement day for it to be included in the study.
- Announcements of re-assumptions of previously announced share repurchases programmes are excluded in the study.

The final list of 48 sample open market share repurchases programmes announcements is presented in Appendix 1 in chronological order.

#### **4.5 Research Design**

Event studies examine the market price reaction to events such as earnings, dividends, corporate restructuring announcements and so forth. In other word, event studies focus on the impact of particular types of company-specific events on the prices of the affected companies' shares. A major concern of event studies is to assess the extent to which share price performance around the time of the event has been abnormal. Meaning to say, the extent to which share returns are different from those which would have been appropriate (Brown and Warner 1980).

In this study, the standard event study methodology is employed to determine the abnormal returns around the announcement date of share repurchases programmes by companies. Under this methodology, the share prices behaviour of a share in reaction to share repurchases programme announcement is observed. The impact of the overall capital market movement in share prices at the time of the announcement is being nullified. This means that the specific effect is the residual effect after allowing for the market wide effects. The researcher then assesses the impact of the information on the company's abnormal share price returns for a period of predefined timeframe.

#### **4.5.1 Research Methodology**

The announcement date is designated as day zero ( $t=0$ ). The parameters of the market model as below are estimated for a period of 60 share trading days prior to and 60 share trading days following the share repurchases announcements.

The share's returns of first trading day prior to the announcement day is referred as day  $-1$  ( $t = -1$ ). The share's returns of second trading day prior to the announcement day is referred as day  $-2$  ( $t = -2$ ) and so on. On the other hand, the first trading day following the announcement day is referred as day 1 ( $t=1$ ). The share's returns of second trading day following to the announcement day is referred as day 2 ( $t=2$ ) and so on.

Market-adjusted abnormal returns or residual returns of the shares are then computed. This method takes into account market wide movements which occurred at the same time that the sample companies experienced events (Brown and Warner 1980). In order to obtain the market-adjusted abnormal returns, the daily market portfolio return is deducted from the daily share returns. Thus, the performance measures are the differences between the sample share returns and the market portfolio returns in day  $t$ .

A share's price performance can only be considered 'abnormal' relative to a particular benchmark. Thus, it is necessary to specify a model generating 'normal' returns before abnormal returns can be measured (Brown and Warner 1980). In this study, the following are benchmarked as normal returns:

- The mean of the 2<sup>nd</sup> 30 days before is taken as the benchmark of normal returns for before-before announcements scenario;
- The mean of the 2<sup>nd</sup> 30 days after is taken as the benchmark of normal returns for after-after announcements scenario;
- The mean of the 1<sup>st</sup> 30 days before is taken as the benchmark of normal returns for before-after announcements scenario.

In this connection, the abnormal returns for this study are computed as below:

- The abnormal return for before-before announcement for a given share is defined as the difference between its 'normal' return and its mean of the 30 days prior to share repurchases programme announcement (ie 1<sup>st</sup> 30 days before – 2<sup>nd</sup> 30 days before);
- The abnormal return for after-after announcement for a given share is defined as the difference between its 'normal' return and its mean of the 30 days after the share repurchases programme announcement (ie 1<sup>st</sup> 30 days after – 2<sup>nd</sup> 30 days after);
- The abnormal return for before-after announcement for a given share is defined as the difference between its "normal" return and its mean of the 30 days after the share repurchases programme announcement (ie 1<sup>st</sup> 30 days after – 1<sup>st</sup> 30 days before).

The paired-samples t-test is employed to test the significance of the abnormal returns prior to and after the share repurchases programme announcement. A t-test is a procedure used for comparing sample means to see if there is

sufficient evidence to infer that the means of the corresponding population distributions also differ (George and Mallery 1995). These paired-samples t-tests are usually based on groups of individuals who experience both conditions of the variables of interest. In other word, a paired t-test is appropriate whenever there is a natural pairing of observations in the samples, such as when a sample group is tested twice, before and after an experiment (George and Mallery 1995).

In this study, a company's market-adjusted abnormal return is tested twice for before-before share repurchases programme announcement : Firstly, the period 30 days before the 30 days prior to the share repurchases programme announcement ,and secondly, 30 days prior to the share repurchases programme announcement. The t-test examines the statistical difference between the paired scores. The same approach is employed for the after-after share repurchases programme announcement results and before-after share repurchases programme announcement results. In addition, a company's share return is also being tested for before-after share repurchases programme announcement scenario.

The daily average market-adjusted abnormal returns on a portfolio of repurchasing shares at any time  $t$  relative to the event data are calculated. The t-statistics are computed to test whether these average market-adjusted abnormal returns on event day  $t$  are statistically different from 0.

The cumulative abnormal returns are calculated from the average market-adjusted abnormal returns and are examined around the announcement period. These cumulative abnormal returns are then tested for statistical significance ie significantly different from 0.

#### 4.5.2 Performance Measures

##### Share Returns

Share returns are calculated based on the daily share closing price of sample shares

$$R_{it} = (P_{it} - P_{i,t-1}) / P_{i,t-1}$$

Where  $R_{it}$  = daily return for share  $i$  at trading day  $t$  where  $t = -30$  to  $30$   
share trading day relative to announcement day

$P_{it}$  = closing price for share  $i$  at trading day  $t$

$P_{i,t-1}$  = closing price for share  $i$  at trading day  $t-1$

##### Market Returns

Closing values of KLCI is used as a proxy for the general returns on the market

$$R_{mt} = (CI_t - CI_{t-1}) / CI_{t-1}$$

Where  $R_{mt}$  = daily market return at trading day  $t$  where  $t = -30$  to  $30$   
share trading day relative to announcement day

$CI_t$  = level of KLCI at trading day  $t$

$CI_{t-1}$  = level of KLCI at trading day  $t-1$

##### Market-Adjusted Abnormal Returns

This measurement computes the daily share returns in excess of the market returns. The market-adjusted abnormal returns for share  $i$  on day  $t$  is computed:

$$AR_{it} = R_{it} - R_{mt}$$

Where  $AR_{it}$  = return of share  $i$  in period  $t$  in excess of market return

$R_{it}$  = share return in period  $t$

$R_{mt}$  = market return in period  $t$

### Average Market-Adjusted Abnormal Returns

This measurement is computed by averaging across the relevant shares for each event time relative to the announcement date. The average market-adjusted abnormal return of  $n$  share for event time  $t$  is given by the equally weighted average of the individual share.

$$AAR_t = 1/n \sum_{i=-30}^n AR_{it}$$

where  $n$  = number of share being studied

### Cumulative Abnormal Returns (CAR)

After eliminating the effect of general market movement, the average market-adjusted abnormal returns around the announcement period are examined. This is accomplished by computing the CAR for the time periods centered around the date of the announcement.

$$CAR = \sum_t AAR_t$$

where  $AAR_t$  = average abnormal return for each period  $t$

## **4.6 Sources of Data**

This study uses secondary data collected from various sources. Share repurchases programmes announcements are identified through KLSE library under general announcement section and daily closing share price for a particular share and the correspondent KLCI for a period of 60 share trading days prior to announcement and 60 days share trading days following the announcements are extracted from Bloomberg.

#### **4.7 Analysis of Data**

Share returns and market returns are systematically compiled and calculated using worksheet for example Microsoft Excel. Appropriate statistical tests namely paired t-test and one-sample t-test are conducted by utilising SPSS software to determine the significance of the variables.