

CHAPTER 4: RESEARCH METHODOLOGY

For the research methodology, the event study methodology used was a simple methodology developed by Brown and Warner [1980]. Brown and Warner had shown that a simple methodology perform no worse than the market model. This event study methodology is detailed in Section 4.6.

In the Malaysia Stock market, bonus issues are declared in various distribution ratios by a company. An example of a distribution ratio of a bonus issue as declared by the issuing company is one for two (1:2), meaning that an existing shareholder of the company with 2 units of stock will be entitled to get 1 bonus unit of stock of the company. In this context, the distribution ratio is equivalent to 50%.

4.1 DATA SELECTION CRITERIA

Bonus issues chosen for this study must meet the following criteria:

- i) The bonus issues must have announcement date and ex-date within the period 1 January 1997 to 31 December 2001.
- ii) The stock must be quoted on the Kuala Lumpur Stock Exchange (KLSE). It does not matter if the stock is listed on the Main Board or the Second Board of the KLSE.
- iii) The bonus issue must have no other announcement on capital change or capital restructuring during the event period. The study will also exclude companies that announced rights issues concurrent with the bonus issues.
- iv) A bonus issue of at least one for every ten existing shares (distribution ratio 10% or more).

4.2 SAMPLE SELECTION

The total number of bonus issues for the period 1 January 1997 – 31 December 2001 was 195 bonus issues. Table 3.1 below presents the number of bonus issues made in each year of the period under review. It is interesting to note that the number of bonus issues average 39 issues a year. There was an exceptionally high number of issues in year 2000 and an exceptionally low number of issues in year 1998.

Table 4.1: Number of Bonus Issues

	1997	1998	1999	2000	2001	Total
Bonus Issues	43	13	24	60	55	195

Upon further analysis, 46 of the bonus issues were dropped from the list due to concurrent announcement of bonus issues with rights issues. A further 23 were eliminated due to the announcement date falling in 1996, which is outside of our event period. The impact of the above screening reduced the final sample size to 126 stocks. The list of the 126 stocks are shown in Appendix I.

The final 126 stocks were grouped into 3 categories based on their distribution ratios. The reasons for the 3 categories is that we want to restrict the sample size to more than 25 for significance and less than 60 for ease of calculation. By grouping into the 3 groups below we found the sample sizes meet our criteria.

Group Low: (Low Distribution Ratio: Less than 50%)
(Ratio = 1:10, 1:6, 1:5, 1:4, 3:10, 1:3, 2:5, 9:20)
Sample Size: 28

Group Medium: (Medium Distribution Ratio: 50% to less than 100%)
(Ratio = 1:2, 4:7, 3:5, 2:3, 3:4, 4:5)
Sample Size: 52

Group High: (High Distribution Ratio: More than 100%)
(Ratio = 1:1, 9:8, 6:5, 5:4, 3:2, 2:1, 6:1)
Sample Size: 46

The total number of events for this study is 126 events.

4.3 DATA COLLECTION

Data was collected from the various sources:

- i) Daily Price records from Hydra System from University of Malaya Main Library.
- ii) Investors Digests from the KLSE Library for announcement dates and ex-dates and list of companies offering bonus issues.
- iii) Prospectus of Bonus offers and Companies Announcements from the KLSE Library.

Two distinct phases of data collection were conducted in order to obtain the information for this study.

4.3.1 Phase 1 of Data Collection

The first phase involves obtaining the list of companies issuing bonus issues, its distribution ratios, their announcement dates and ex-dates. The primary document referred to for this phase is the Investors Digest, a monthly publication of the Kuala Lumpur Stock Exchange. The Investors Digest has its listing section entitled "Bonus Issues in Year xxxx" providing records of all the Bonus Issues which ex-dated within that particular xxxx year. Here we get the names of the list of companies and all our Bonus Issues ex-dates.

Similarly the Investors Digest has a listing section for "Rights Issues in Year xxxx". Within its regular sections, the Investors Digest also has a section entitled "Records of Bonus & Scrip Issues, Rights, Capital Changes, Calls" providing records for the previous one year and another section showing announcements of the previous month. The bonus issue announcement dates for this study was taken from this section of the Investors Digest.

4.3.2 Phase 2 of Data Collection

The second phase of data collection involves accessing the Hydra Financial Data Base System of the University of Malaya Main Library for the required closing prices for each stock. Using announcement dates and ex-dates, the daily closing prices of the particular stock and its corresponding KLSE Index were extracted from the system.

For the particular stock, data ranging from 31 trading days before (need to know the data for day -31 to calculate the AR for day -30) and 30 days after the announcement date and ex-date were collected. This will form the event window of 30 days.

4.4 DATA PROCESSING

The information obtained from the Investors Digest was sieved through to differentiate the various classes of the distribution ratios of the bonus issues.

Table 4.2: Grouping by Classes of Distribution Ratio of Bonus Issues

Group	Class of Distribution Ratio	Percentage of Distribution Ratio	Bonus Issue
Low Distribution Ratio (Less than 50%)	1:10	10%	3
	1:6	17%	1
	1:5	20%	5
	1:4	25%	5
	3:10	30%	1
	1:3	33%	8
	2:5	40%	4
	9:20	45%	1
Medium Distribution Ratio (50%-100%)	1:2	50%	30
	4:7	57%	1
	3:5	60%	11
	2:3	67%	4
	3:4	75%	2
High Distribution Ratio (More than 100%)	4:5	80%	4
	1:1	100%	30
	9:8	113%	1
	6:5	120%	3
	5:4	125%	2
	3:2	150%	5
	2:1	200%	4
6:1	600%	1	
Total			126

The daily closing price data available is in its raw form and the data is adjusted accordingly.

- i) For certain days there are no data depicting untraded or suspended days. In this case, the previous closing daily price and the corresponding closing CI were taken as data for the untraded day. If there is no trading, then there is no way of knowing how much the investors will value the stocks on that particular day. Although the non-trading day price can be calculated using some mathematical models, the calculated stock price will not reflect the market price. It is the

intention of this study to capture the investor's preference price rather than the theoretical price.

- ii) The respective dates for the stocks daily-closing prices has to be synchronized with the dates of the composite index value. If data for the stocks daily closing prices is not available, it is then assumed to be an untraded day and the treatment as per the above paragraph (i) applies.
- iii) When the announcement of the bonus issue was made on a Saturday, the following trading day shall be deemed to be the announcement date.

In this study, the daily closing prices are not adjusted for dividend payout, to be consistent with the samples throughout. In Malaysia, the dividend yield is generally very small to have any significant impact on the returns of the stocks.

4.5 ADJUSTMENT ON STOCK RETURNS

In order to avoid stock price distortion, the stock price will be adjusted for ex-bonus within the study window.

Since bonus issues do not change a firm's wealth, the market capitalization value before a bonus issue should equal the market capitalization value after a bonus issue. If a bonus of n for m shares is declared, then $m+n$ shares after bonus issues are equivalent to m shares before bonus issues.

The share price on the ex-date of bonus issue will be adjusted with the following formula in computing the stock return for the day.

$$m \times P_{t-1} = (m+n) \times P_t$$
$$P_{t-1} = P_t \times (m+n) / m$$

where m = number of shares before Ex-Date
 n = number of shares after Ex-Date
 P_{t-1} = stock price before Ex-Date
 P_t = stock price after Ex-Date

4.6 PERFORMANCE MEASURES

The performance of the bonus issues will be evaluated using a simple methodology developed by Brown and Warner [1980] for measuring security price performance. Brown and Warner had shown that a simple methodology like this perform no worse than the market model.

The daily returns of each sample stock are computed by their daily closing prices according the formula below

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

where $P_{i,t}$ = closing price of stock i at day t

$P_{i,t-1}$ = closing price of stock i at day $t-1$

The daily return of the market portfolio are arrived at by using the following formula

$$R_{m,t} = (M_t - M_{t-1}) / M_{t-1}$$

where M_t = closing index of KLSE composite at day t

M_{t-1} = closing index of KLSE composite at day $t-1$

In this study the KLSE composite index will be used as the proxy to denote the market portfolio.

The daily market adjusted return will be taken as the daily percentage raw return on a stock minus the daily percentage market return for the corresponding trading period.

$$AR_{i,t} = R_{i,t} - R_{m,t}$$

where $AR_{i,t}$ = market adjusted return for stock i in event day t

$R_{i,t}$ = return on stock i in event day t

$R_{m,t}$ = market return in event day t

The average market return on a portfolio of n stocks for event day t is the equally weighted arithmetic average of the market adjusted returns

$$AR_t = 1/n \sum_{i=1}^n (AR_{i,t})$$

where AR_t = Weighted average market adjusted return in event day t

n = number of stocks in the portfolio

Therefore, the cumulative market adjusted returns from event day -30 to event day $+30$ is the summation of the average market adjusted returns

$$CAR_{-30,+30} = \sum_{-30}^{+30} AR_t$$

where $CAR_{-30,+30}$ = Cumulative average market adjusted return from event day -30 to event day $+30$

The $CAR_{-30,+30}$ can be interpreted as the cumulative average market adjusted returns (from day -30 to day $+30$) of the stock from the normal returns of the market movements.

The results of the CAR are tabulated in Appendix II.

4.7 SIGNIFICANCE TEST

Since this study is initiated to determine whether the distribution ratios of the bonus issues would provide any useful information, the patterns of the CARs are examined. A statistical significance test using the Student t-test was computed on the CARs of the various classes of the bonus issues, to see whether any statistical significance exists.

The CARs of all the 126 stocks for all the days in the event study period were analyzed using the t-test function in the SPSS software. The results of the t-test are tabulated in Appendix II.