

## **CHAPTER 3**

### **METHODOLOGY**

#### **3.1 SOURCES OF DATA**

Data used in the study comes from three principal sources. The first source is Investors Digest, which is a monthly publication of stock market activity in Malaysia. Bank Negara Malaysia's Annual Reports on the macro-economic activities in Malaysia is the second source of data. The third source is from journals, texts, interviews, published and non-published articles etc. on the Malaysian capital market.

#### **3.2 TYPES OF DATA**

The data used in the study is secondary data - that is data that has been collected by others to be used for purposes distinct from this study. No questionnaire has been designed to collect any data.

The data is presumed to be collected in an objective and unbiased bases and is adopted as reported by the sources. There is one particular instance in which this principle has been violated. In late 1994 and early 1995, Petronas Dagangan Berhad has its non-convertible loan stock, raised in February 1994, selling for RM4 for a par value of RM1. In 1995, the price plummeted to RM0.76. In view of the fact that a non-convertible loan stock selling for four times its par value and carried no coupon payments seems ridiculous, and, because of the weight it constitutes in the bond portfolio (in quarter one of 1995, it carried a weight of 14.35%), this particular bond issue has been left out. The purpose is merely to avoid a distortion of the final results.

### **3.3 METHOD OF ANALYSIS**

A three-step procedure is used to analyse the data. First a bond portfolio is constructed quarterly and its return over the quarter is calculated. Secondly the return on a portfolio of common stocks, which in this case is the Kuala Lumpur Stock Exchange's Composite Index (KLSECI) is computed. Lastly the quarterly yield to

maturity on long-term Malaysian Government Securities (MGS) is calculated. Each of the three steps will be discussed next.

### 3.3.1 RETURN OF BONDS

Unlike the more mature financial markets of New York Stock Exchange, London Stock Exchange and the Tokyo Stock Exchange, there is no bond portfolio reported in the Kuala Lumpur Stock Exchange (KLSE). The bond portfolio constructed consists of all bonds (and afterwards convertible and non-convertible bonds) listed at the beginning of the quarter that continue to be listed until the end of the quarter.

The procedure used to construct and calculate the return on bonds is as follows. Firstly, the market value of each bond at beginning of a quarter is calculated as follows:

$$BMV_{bi} = P_{bi} \times FV_i$$

where,  $BMV_{bi}$  is bond  $i$ 's beginning of quarter market value

$P_{bi}$  is bond  $i$ 's beginning of quarter price

$FV_{b1}$  is bonds  $i$ 's beginning of quarter face value.

The total market value, or the total capitalization of all bonds in the market at the beginning of a quarter is the summation of individual bond's market values, ie

$$TMV_b = \sum_{i=1}^n BMV_{bi}$$

where,  $TMV_b$  is the total market of all bonds at the beginning of a quarter, and

$BMV_{bi}$  is defined as above.

Secondly, the return on a particular bond for a quarter is calculated. It is defined as

$$R_i = \frac{P_{ci} + I_i - P_{bi}}{P_{bi}} \times 100, \text{ where}$$

$R_i$  is the return on bond  $i$  for the quarter,

$P_{ci}$  is the closing price of bond  $i$  for the quarter,

$I_i$  is interest paid on bond  $i$  during the quarter, and

$P_{bi}$  is defined as above.

Thirdly, the relative contribution of each bond to the return of the bond portfolio (referred to later as

relative return) for the quarter is calculated. This is defined as

$$RR_i = \frac{BMV_{bt}}{TMV_b} \times R_i$$

where,  $RR_i$  is relative return on bond  $i$  for the quarter, and the other variables are as defined above.

Finally the cumulative return, simply referred to as bond portfolio return, is obtained by adding together the relative returns on all individual bonds, ie

$$BPR = \sum_{i=1}^n RR_i$$

where, BPR is bond portfolio return,

$RR_i$  is as defined above.

The above procedure is followed in calculating the returns on convertible and non-convertible bond portfolios by simply replacing all bonds by convertible and non-convertible bonds respectively.

Singapore bonds which have been listed on KLSE prior to 1990 have been excluded from the portfolio because these issues are quoted in Singapore dollars and the

calculation of returns may reflect changes in the relative exchange rates of the two currencies rather than changes in the perceptions of the market. Issues called or converted during a quarter are also excluded to avoid the complications of having to revise the portfolio daily or weekly.

### 3.3.2 COMMON STOCKS RETURNS

The quarterly return on common stocks is obtained by calculating the quarterly return on KLSE Composite Index. This is defined as

$$R_{cl} = \frac{L_c - L_b}{L_b} \times 100$$

where,  $R_{cl}$  is the quarterly return on the KLSE Composite Index

$L_c$  is closing level of the KLSE Composite Index, for the quarter, and

$L_b$  is opening level of the KLSE Composite Index for the quarter

This calculation omits the dividends paid in the quarter but follows the tradition of calculating returns on stock market indices.

### 3.3.3 RETURNS ON LONG TERM MALAYSIAN GOVERNMENT SECURITIES (MGS)

Return on long-term MGS (issues having a maturity of about 20 years) are assumed to be risk-free in the study and any return over and above the yield offered by these securities is termed as abnormal return. The semi-annual is yield computed as the interest rate that equates the 'indicative middle price' of the most recently issued MGS to the present value of all cash flows promised by the issue in question. The quarterly rate is computed as the effective quarterly yield implied in the semi-annual yield.

### 3.3.4 COMPARISON

The study compares returns on long-term MGS, convertible bonds portfolio, non-convertible bonds portfolio, an all-bonds portfolio and return on KLSE

composite index and determines the excess abnormal returns.s The excess abnormal return for any period is simply the excess return over and above the returns on MGS. Afterwards, the return on KLSSE composite index is compared with return on all categories on bond's portfolio.