CHAPTER 3

RESEARCH METHODOLOGY

This chapter illustrates the methodology that shall be used in the study. It describes the variables used in our measurement of ownership structure and corporate performance. Besides, it explains the sampling design, source of data and data analysis techniques that shall be adopted to test the hypotheses.

3.1   RESEARCH HYPOTHESES

From the theoretical and empirical study, we notice the existence of relationship between ownership structure and performance of corporations. Based on the literatures in Chapter 2, we have come out with two hypotheses to be tested in this paper.

Hypothesis 1

H_o: Ownership concentration does not affect corporate performance.

H_1: Ownership concentration (OWNER or HERF) gives significant positive or negative effect on the corporate performance (ROE, MBR or ROA).

Hypothesis 2

H_o: Insider ownership does not affect corporate performance.

H_1: Insider ownership (INSIDER) gives significant positive or negative effect on corporate performance (ROE, MBR and ROA).

3.2   SELECTIONS OF MEASURES

The objective of the study is to examine the relation between ownership structure and corporate performance. There are four independent variables to be included in the regression model and three dependent

variables to be tested. From the summary of empirical study, it seems that Tobin's Q is a popular measurement for corporate performance. However, we faced the problem of obtaining the data used to compute Tobin's Q, such as the market value of debt and replacement cost for all assets, therefore, three accounting profit rates are used to replace Tobin's Q in our study. This model was developed by Xiaonian Xu and Yan Wang (1997) in their study on Chinese Stock Companies. The model is used in our analysis in view of the similar characteristics between the Chinese corporations and Malaysian Corporations.

The following multiple regression equation is used:

$$CP = b_0 + b_1 OWNER + b_2 DEBT + b_3 SALES + b_4 INCOME + b_5 DUMMY + e$$

3.2.1 DEPENDENT VARIABLES

Three dependent variables are used to measure the corporate performance, namely the rate of return on equity and market to book value equity ratio and return on assets.

Return on Equity (ROE)

ROE is the accounting ratio that often used to measure management's effectiveness and to reward the management. The stock price reflects the performance of a corporation. Stock price depends on many factors, one of the factors is the ROE (Brigham & Gapenski, 1997). In this paper, ROE is used as proxy for corporate performance. It is measured by the net profit after tax divided by the book value of common equity.

Market to Book Value Ratio (MBR)

MBR indicates the market valuation of corporate performance. MBR is computed by the ratio of market value per share divided by the book value per share. Market value per share is the last transacted price on the last day of stock market for the year, whereas the book value per share is simply the total shareholders fund (common equity) over the number of outstanding common

shares. This ratio of stock price to its book value gives indication of how equity investors regard them (Brigham & Gapenski, 1997).

Return On Assets (ROA)

ROA is used to measure the return on investment. ROA is calculated by the ratio of net profit after tax divided by the total assets. Normally manager viewed the ROA to be the performance of the corporation.

3.2.2 INDEPENDENT VARIABLES

Four independent variables are included in the model, i.e. ownership structure, debt to assets ratio, growth in net income and sales.

Ownership Structure (OWNER and HERF, INSIDER)

The ownership structure is measured by using the ownership concentration of the corporation. Two variables are used as the measurement of ownership concentration, i.e. OWNER, the percentage of top five largest shareholders and HERF, Herfindahl index of ownership concentration or sum of square of OWNER. For the second hypothesis, the insider ownership (INSIDER) is measured by the percentage of shares owned by (or have direct interest) officers and directors of the selected company.

In addition, other factors that are known to be important in determining the corporate performance are also included in the model. The three other controllable variables are debt to asset ratio (DEBT), sales (SALES), growth in net income (INCOME) and a dummy variable (DUMMY). As data covered from 1993 to 1997, the average (mean) figures are used.

Debt to Asset Ratio (DEBT)

Debt to asset ratio is measured by using the total liabilities to the total assets of the company over the period of 5 years. This variable shall be included to control for any incentive, monitoring and financial-distress effects of debt on corporate value (Claessens, Djankov, Fan & Lang, 1998).

In Modigliani-Miller models on capital structure theory, they concluded that debt would increase the corporate value because of the interest tax shield benefits. Hence, corporation with debt financing will have more operating income flows through to investors. There shall be a positive relation between debt and corporate value. In other words, the corporation is expected to have a better performance (Brigham & Gapenski, 1997).

<u>Sales</u>

Sales are used to measure the size of the corporation. The size has an ambiguous effect on the performance of corporation. The monitoring and agency costs can be greater in large corporations because of the increasing desired managerial ownership. In addition, large corporations are likely to employ more skilled managers, who are consequently wealthier, suggesting a higher level of managerial ownership. On the other hand, large corporations might enjoy economics of scale in monitoring by top management and by rating agencies, leading to a lower optimal level of managerial ownership (Himmelberg, Hubbard & Palia, 1999). However, in this paper, we would assume that when corporate size grows, it becomes more difficult to sustain impressive performance. Thus, we would expect that when large corporation or higher sales would weaken the performance of the corporation and vice versa.

<u>Growth in Net Income (INCOME)</u>

Growth in net income showed the indicator for future growth of the corporation. Prior research used the R & D and advertising expenditure to represent the corporate future growth (Xiaonian Xu & Yan Wang, 1997). However, the data for these variables might not be available for all companies. Hence, the growth in net income is used as a proxy in this case. A high growth in net income indicates better corporate performance and low growth in net income showed weak future performance.

<u>Dummy Variable (DUMMY)</u>

Dummy is introduced in the model to indicate the main board and second board companies, for example dummy equals to zero when the

selected sample unit is a main-board company, whereas dummy equals to one indicates that the selected sample unit is a second-board company.

<u>Error Term (e)</u>

e is the error term with a covariance matrix $cov(e_j, e_k)=0$ for $j \neq k$ and $var(e_j) \neq var(e_k)$. b_i represents coefficient on independent variables, where $i=1,2...4$. ($i=0$ is constant).

3.3   SAMPLING DESIGN

A sample of 100 companies is collected using the random sampling method from the list of public-listed companies on main board and second board companies in Malaysia. Table 2 showed the number of companies listed under KLSE since 1993.

TABLE 2: NUMBER OF COMPANIES LISTED IN KLSE (1993-1999)

Year	Main board	Second board
1993	329	84
1994	347	131
1995	369	160
1996	413	208
1997	444	264
1998	454	282
1999	463	285

The companies selected must satisfy the following criteria,:-

- They shall be operated and listed under the KLSE before or from 1993 to 1997 (5 years);
- They shall not had any missing data or fewer than 5 years data for the variables of interest.

This will enable us to examine the corporate performance from 1993 to 1997, which included the period where Malaysian economy was in the boom and declining stage. Besides, it eliminates the external environment that might affect the performance of the corporation. Furthermore, it also satisfies the

assumption that ownership structure affects the long term or strategic decision making process within a corporation by influencing the agency costs through the corporate governance process (Murphy & Moh'd, 1994). The sample will be collected by first, prepare two separate lists of public-listed companies indicating the main board and second board companies. The first sample unit is collected by randomly selected from the lists. The procedure will continue until a total of 50 companies from each of the main board and second board companies are collected.

3.4 SOURCES OF DATA

After determining the sample companies, the financial data for the sample companies are obtained from the following sources:

- Annual Companies Handbooks provided by KLSE, which cover sample period of 5 years, from 1993 to 1997.
- Corporate Handbook April 1999 by Thomson Information.
- Individual companies' file of KLSE Library.
- Annual Company Report for the selected companies.
- KLSE web site.

3.5 DATA ANALYSIS TECHNIQUES

The data is analyzed using the SPSS Windows software. Scatter diagrams will be plotted to see the distribution of ownership concentration or insider ownership corresponding to the performance variables. We can observe the relation between the two variables. However, correlation analysis and multiple regression analysis will be conducted to test the hypotheses, which will be explained in details later.

Hypothesis 1

H_0: ownership concentration does not affect corporate performance

H_1: ownership concentration does affect corporate performance. In other words, ownership concentration gives significant positive or negative effect to corporate performance.

Two analyses will be conducted to test the hypothesis; those are the correlation and regression analysis. The correlation analysis is used to measure the strength or degree of linear association between two variables. The correlation coefficient (r) or correlation matrix showed the correlation between each independent variable towards the dependent variables. R will fall between negative one and positive one ($-1 \leq r \leq 1$) with r equals to one showed a perfect positive correlation between the two variables, whereas r equals to negative one indicated a perfect negative relation. r equals to zero showed no correlation between the two variables at both 1% or 5% significant levels.

The second analysis will be conducted by using the multiple regression analysis. Before conducting the regression analysis, we have to confirm that there is no multicollinearity among the explanatory variables in the regression model. This is important to assure that our model satisfies the assumption in the *classical linear regression model* (CLRM). The term multicollinearity[8] means the existence of a "perfect" or exact linear relationship among some or all-explanatory variables of a regression model (Gujarati, 1995).

One of the methods of detecting the multicollinearity suggested by Gujarati is by examining the correlation matrix among the explanatory or independent variables. If the correlation matrix shows high correlation between the independent variables, probability of multicollinearity exists. If there is multicollinearity between variables, remedial actions shall be carried out to get rid of the collinearity problem. There are several methods or rules that can be followed as suggested by Gujarati, for example

---

[8] Ragnar Frisch, *Statistical Confluence Analysis by Means of Complete Regression Systems*, Institute of Economics, Oslo University, publ. No. 5, 1934.

- using extraneous or prior information,
- Combining cross-sectional and time-series data,
- Omitting a highly collinear variables,
- Transforming data, and
- Obtaining additional or new data.

When we have confirmed that there is no multicollinearity between the variables in the model, we can use the regression model for our analysis. First, we test the overall significance of our multiple regression models in term of adjusted r^2 value and F value (indicated by the significant value). This is to find out if all partial slope coefficients (b_i) are simultaneously equal to zero. Second, we observe the partial regression coefficients (b_i value) and its significant value. For example the value b_1 of ownership concentration (OWNER) will determine whether there is positive or negative relation between OWNER and ROE. The test is significant if the significant value less than 0.01 or 0.05, at 1% or 5% significant level respectively. The regression is run by replacing the ROE with two other performance variables, MBR and ROA, the result will show the effect of ownership concentration to MBR and ROA.

Hypothesis 2

Ho: Insider ownership does not affect the corporate performance.

H_1:   Insider ownership gives significant positive or negative effect on corporate performance.

We will first examine the relation between the insider ownership and corporate performance using the correlation analysis. The correlation matrix indicates the correlation between insider ownership and corporate performance variables. Then, we will conduct the regression analysis to test the effect of insider ownership towards corporate performance variables, namely ROE, MBR and ROA. The procedure will be the same as our testing of hypotheses in hypothesis 1. The insider ownership variable, INSIDER is

used to replace the OWNER variable in the regression model. The following multiple regression equation is used:

$$CP = b_0 + b_1 INSIDER + b_2 DEBT + b_3 SALES + b_4 INCOME + \Sigma a_j DUMMY + e$$

Before using the regression model, we detect whether there is any multicollinearity problem exists in the regression model. If the model satisfies the assumption of CLRM, we can proceed with the tests using regression. First, we test the overall significance of the regression model. Further, we extend to test on the significance of the partial coefficient on insider ownership. The coefficient (b_i) will show the effect of insider ownership to corporate performance. The result is tested at 1% and 5% significant levels.