CHAPTER III
RESEARCH METHODOLOGY

The publicly traded corporations have grown rapidly in the merging markets since millions of individuals willing to entrust billions of personal wealth to the care of corporate insiders that are capable to act for the long run interest of shareholders. To what extent that the different roles of the insiders and outsiders have on a firm's value will be tested based upon their equity ownership. This chapter elaborates the research methodology employed in greater detail.

Theoretical Framework

At the end of the nineteenth century, the concept of company has evolved from direct ownership-management such as in sole proprietorship and partnership to a much more complex structure i.e. corporation in which its ownership is divorced from the management. In general, there are two types of ownership, namely insider ownership and outsider ownership. An inside shareholder involves directly in the daily operation and management of a firm as well as entitled to exclusive voting rights. An outside shareholder, on the other hand, acts as a monitoring device to ensure the corporate resources are utilized to maximize the market value of the firm.

Jensen and Meckling (1976) show formally how the allocation of shares among insiders and outsiders affect the corporate value. They divided stockholders into two groups namely, insiders who manage the firm with exclusive voting rights and outside shareholders without voting rights but entitled to the same dividends per share of stock held. It was found that the managers have an incentive to adopt investment and financing policies to their own benefit but reduce the payoff to
shareholders. In addition, the costs of deviation from value-maximization decline as management ownership rises. Managers have to bear a larger share of these costs and are less likely to waste corporate wealth as their stakes increase. Thus, the value of the firm increases with management ownership, which is in consistent with the convergence-of-interest hypothesis. However, Fama and Jensen (1983) claimed that when a manager owns a small stake, he might still be forced toward value maximization under market discipline. For instance, in a competitive managerial labor market, the incumbent management team is disciplined by the threat of being replaced by an equally qualified and experienced management team without much higher remuneration.

The relation between the corporate value and ownership structure has continued to evolve from both of the theoretical and empirical ground. From theoretical perspective, Stulz (1988) developed a model in which the market value of firm that is a potential takeover target first increases, and then decreases as the fraction of shares held by inside shareholders increases. Morck, Shleifer and Vishny (1988) provided empirical evidence that the relation between corporate value and inside equity ownership is nonmonotonic or nonlinear. These results suggested that managers facing with two opposing forces. On the one hand, the managers’ personal goals take precedence over that of shareholders interest. On the other hand, when the equity ownership owned by the managers rise, their interests are more likely to be congruent with shareholders’ aspirations. The relationship between ownership and firm value depends upon which forces dominate over any particular range of managerial ownership.

In general, the nonlinear relation between corporate value and equity ownership can be summarized by the convergence-of-interests hypothesis and the
entrenchment hypothesis. The convergence-of-interests hypothesis predicts a positive relation between market valuation of the corporation and the stakes owned by management. The entrenchment hypothesis, in contrast, states that the firm value can be adversely affected for some range of high managerial ownership. However, the predictions of this hypothesis is much less clearcut since entrenchment is not merely borne with voting power. Some managers who have tenure with the firm, status as founder or even personality can be entrenched with relatively small stakes. But, it is still accepted generally that more ownership allows deeper entrenchment.

The studies of Brickley, Lease and Smith (1988) and Pound (1988) are among the few that explore the relation between institutional ownership and corporate value. Pound (1988) suggests three hypotheses of the relation between equity ownership owned by institutional investors and corporate value namely, the efficient-monitoring hypothesis, the conflict-of-interest hypothesis and the strategic-alignment hypothesis. The efficient-monitoring hypothesis postulates that the institutional investors are capable to monitor the firm at lower costs with their expertise compared to dispersed shareholders. Thus, the greater the proportion of shares owned by the institutional investors, the greater the value of the firm. Brickley et al. provided empirical evidence that institutional investors involve actively in opposing the proposals that are disadvantageous to the shareholders. According to the conflict-of-interest hypothesis, the institutional investors have an incentive to vote for management due to some beneficial business relation with the firm. This hypothesis predicts a negative relation between corporate value and institutional ownership. The strategic-alignment hypothesis, on the other hand, asserts that both of institutional investors and managers are prompted to cooperate for their own benefits that may reduce the beneficial effects on firm value. Therefore, the corporate value will be adversely affected by an
increase in institutional ownership. He examined the proxy contests and found a positive correlation between the probability of management to prevail and the institutional ownership.

**Hypotheses Formulation**

There are two hypotheses to be tested in this study as follows:

**H1:** Firm value is a function of ownership structure i.e. the fraction of firm’s shares owned by insiders (directors), institutional investors and foreign corporation.

**H2:** The firm value as a function of ownership structure is hypothesized to depend upon a set of control variables.

The primary hypothesis (H1) is investigated by regressing firm value against different measures of equity ownership as shown in multiple regression model (1.1) to (1.4) to obtain the general relationship between ownership structure and firm value.

Model (1.1):

\[
\frac{MV}{A} = \beta_0 + \beta_1 \text{DIR} + \beta_2 \text{DIR}^2 + u_i
\]

Where

\[
\frac{MV}{A} = \text{firm value (%)}
\]

**DIR** = directors shareholding (%)

The multiple regression model above is the basic model, in which firm value is regressed against directors shareholding and also directors shareholding squared (DIR\(^2\)). The inclusion of the quadratic component here is to capture the curvilinear or nonmonotonic relation of firm value and director ownership as suggested by Stulz (1988) and Morck et al. (1988).
Different types of ownership i.e. institutional investors shareholding and foreign corporate shareholding are introduced into model (1.2) and (1.3) as additional independent variables.

Model (1.2):

$$\frac{MV}{A} = \beta_0 + \beta_1 \text{DIR} + \beta_2 \text{DIR}^2 + \beta_3 \text{INST} + u,$$

Model (1.3):

$$\frac{MV}{A} = \beta_0 + \beta_1 \text{DIR} + \beta_2 \text{DIR}^2 + \beta_3 \text{INST} + \beta_4 \text{FOR} + u,$$

Where

INST = institutional investors shareholding (%)

FOR = foreign corporate shareholding as a dummy variable

Since institutional shareholders can be either passive investors or indirectly involved in corporate activities, both institutional shareholders and inside shareholders are combined [(DIR+INST) and (DIR+INST)^2] in model (1.4) to test whether these two parties operate in conjunction with each other to influence firm value.

Model (1.4):

$$\frac{MV}{A} = \beta_0 + \beta_1 (\text{DIR} + \text{INST}) + \beta_2 (\text{DIR}+\text{INST})^2 + \beta_3 \text{FOR} + u,$$

The multiple regression model (2.1) to (2.2) tests for validity of the second hypothesis (H2) when a set of control variables are introduced. According to Demsetz et al. (1985), firm value is hypothesized to depend on total assets (firms size), the rate of growth in total assets, leverage (debt/assets) and return on assets (ROA). Hence, this set of control variables are inserted into the third multiple regression model to test the sensitivity of the results to the inclusion of the important determinants of firm
value. Time trend variable that control for market-wide influences is also entered the model as follows.

Model (2.1):

\[
\frac{M^V}{A} = \beta_0 + \beta_1 \text{DIR} + \beta_2 \text{DIR}^2 + \beta_3 \text{INST} + \beta_4 \text{FOR} + \beta_5 \text{AS} + \beta_6 \text{GRAS} + \beta_7 \text{LEV} + \beta_8 \text{ROA} + \beta_9 T + u_i
\]

Where

\[\text{AS} = \text{total assets (RM)}\]
\[\text{GRAS} = \text{the rate of growth in total assets (\%)}\]
\[\text{LEV} = \text{leverage (\%)}\]
\[\text{ROA} = \text{return on total assets (\%)}\]
\[T = \text{time trend variable}\]

The same set of control variables enters model (1.4) and reestimated as model (2.2).

Model (2.2):

\[
\frac{M^V}{A} = \beta_0 + \beta_1 (\text{DIR} + \text{INST}) + \beta_2 (\text{DIR} + \text{INST})^2 + \beta_3 \text{FOR} + \beta_4 \text{AS} + \beta_5 \text{GRAS} + \beta_6 \text{LEV} + \beta_7 \text{ROA} + \beta_8 T + u_i
\]

Another interesting linkage between ROA that measures for firms' performance and ownership structure as well as the same set of control variables is shown in model (3.1) and model (3.2). However, the results are not the main concern for the purpose of this study than firm value.

Model (3.1):

\[
\text{ROA} = \beta_0 + \beta_1 \text{DIR} + \beta_2 \text{DIR}^2 + \beta_3 \text{INST} + \beta_4 \text{FOR} + \beta_5 \text{AS} + \beta_6 \text{GRAS} + \beta_7 \text{LEV} + \beta_8 T + u_i
\]
Model (3.2):
\[ \text{ROA} = \beta_0 + \beta_1(\text{DIR} + \text{INST}) + \beta_2(\text{DIR} + \text{INST})^2 + \beta_3 \text{FOR} + \beta_4 \text{AS} + \beta_5 \text{GRAS} + \beta_6 \text{LEV} + \beta_7 T + u_i \]

Both of the models above are built based on simple diagonally recursive system of two equations as follows:

1) \[ \text{ROA} = \beta_0 + \beta_1 \text{DIR} + \beta_2 \text{DIR}^2 + \beta_3 \text{INST} + \beta_4 \text{FOR} + \beta_5 \text{AS} + \beta_6 \text{GRAS} + \beta_7 \text{LEV} + \beta_8 T + u_i \quad (3.1) \]

\[ \frac{\text{MV}}{\text{A}} = \beta_0 + \beta_1 \text{DIR} + \beta_2 \text{DIR}^2 + \beta_3 \text{INST} + \beta_4 \text{FOR} + \beta_5 \text{AS} + \beta_6 \text{GRAS} + \beta_7 \text{LEV} + \beta_8 \text{ROA} + \beta_9 T + u_i \quad (2.1) \]

2) \[ \text{ROA} = \beta_0 + \beta_1(\text{DIR} + \text{INST}) + \beta_2(\text{DIR} + \text{INST})^2 + \beta_3 \text{FOR} + \beta_4 \text{AS} + \beta_5 \text{GRAS} + \beta_6 \text{LEV} + \beta_7 T + u_i \quad (3.2) \]

\[ \frac{\text{MV}}{\text{A}} = \beta_0 + \beta_1(\text{DIR} + \text{INST}) + \beta_2(\text{DIR} + \text{INST})^2 + \beta_3 \text{FOR} + \beta_4 \text{AS} + \beta_5 \text{GRAS} + \beta_6 \text{LEV} + \beta_7 \text{ROA} + \beta_8 T + u_i \quad (2.2) \]

The ROA equations above postulate that ROA is a function of ownership structure and a set of control variables. The firm value equation, on the other hand, shows that firm value is determined by ROA, ownership structure and the same set of control variables. The ROA endogenous variable, which serves as an explanatory variable in the firm value equation, is by assumption uncorrelated with the disturbance term in that equation. Since this equation satisfies the critical assumption of the classical OLS i.e. uncorrelatedness between the explanatory variables and the stochastic disturbances, the straightforward application of OLS will lead to consistent and asymptotically efficient estimates (Gujarati, 1995). The OLS estimates are also unbiased due to the absence of lagged endogenous variables (Kmenta, 1986).
Variables and Measurement

Dependent Variable

Firm value. In this study, firm value is measured by the financial-year-end market value of ordinary shares (financial-year-end closing price of stock multiplied by number of ordinary share issued) normalized by book value of total assets (Hirschey 1999). This is a reduced form of Tobin’s Q ratio introduced by Professor James Tobin (1969).

Tobin’s Q is defined as the ratio of the market value of a firm’s debt and equity to the current replacement costs of its assets. Tobin’s Q is used as a predictor of future investment activity. When Q is greater than one, which means that capital equipment is worth more than it costs to replace, firms will tend to increase investment until Q ratio approaches one. When Q is less than one, no more profitable investment will be generated and it causes the firms stop investing.

\[
\text{Tobin’s Q} = \frac{\text{Market value of firm}}{\text{Replacement cost of assets}}
\]

The numerator of Q is the sum of the market value of all the firm’s debt and equity securities such as ordinary shares and preference shares. This study is based on the market value of ordinary shares in the sense that it reflects how much the investors willing to pay for a firm, and hence the market expectation of the firm value. The denominator is the replacement cost of all assets (RC), which can be calculated as:

\[
\text{RC} = \text{AS} + (\text{RFA} - \text{BFC}) + (\text{RI} - \text{BI})
\]

Where

- AS = total assets
- RFA = replacement cost of fixed assets
- BFA = book value of fixed assets
- RI = replacement cost of inventories
- BI = book value of inventories
Since the replacement cost of fixed assets and inventories are not normally realized and is assumed to be equal to book value. Therefore, the replacement cost of assets is reduced to book value of total assets in the study.

\[
\text{Firm value} = \frac{\text{Market value of firm}}{\text{Book value of total assets}}
\]

**Independent Variables**

**Insider shareholding.** The insider shareholding is taken from the percentage of shares held by directors who have direct interest in ordinary shares of the firm. Unlike most of the studies conducted in developed countries, the shares owned by top management is not taken here due to their negligible ownership interest in the firm in general. Furthermore, the directors shareholding here is overlapping with the managerial ownership in the sense that some of the CEOs are also the members of board such as in Public Bank Bhd., Berjaya Capital Bhd. and Hong Leong Credit Bhd.

**Institutional shareholding.** It refers to the shareholding owned by institutional shareholders from corporate bodies such as banks and trust companies, insurance companies, industrial companies, mutual fund management institutions and government agencies. The influence of institutional shareholders in firms is limited to latent power i.e. the power to constrain certain decision choices since the active power to control key decisions regarding products, marketing, financing and investment policies vested in the hands of management teams. However, institutional shareholders with substantial shareholding and hence increasing voting rights tend to seek for increasing latent power in constraining choices of strategies.
Foreign corporate shareholding. The fraction of shareholding held by foreign corporation is very low in the financial firms on average and hence face with difficulty to get complete data. As a result, it serves as a dummy variable here that is assigned the value of one if foreign corporate shareholders are among the twenty or thirty largest shareholders in a firm as disclosed in the annual report or zero otherwise.

Control Variables

Leverage. Leverage indicates the ratio of total debt to total assets where total debt is the sum of short term and long term debt as well as the related loans. Leverage ratio provides information to investors and long term creditors regarding the riskiness of a firm as an investment or lending alternative. It measures a company's ability to absorb asset reductions arising from losses and also the relative emphasis on debt in a company's capital structure. From the point view of creditors, low leverage ratio is preferable due to the increased cushion against creditors' losses in the case of liquidation. The owners, however, may seek for high leverage in order to benefit from tax deductibility of interest expense and avoid ownership dilution results from issuing new shares.

Return on assets (ROA). ROA is measured by the ratio of income to book value of total assets. Income here is defined as the earnings before extraordinary items after minority interests and taxes. This ratio provides information on how effective the management at using company assets to generate net income. In the scope of this study, ROA is an explanatory variable (control variable) as well as a dependent variable in recursive system of two equations as mentioned earlier.
**Total assets.** Various measurements of firm size have been suggested by researchers such as paid-up capital, market share, total assets, total sales and number of employees depending on the nature of the studies. In this study, size of the firm is measured by the book value of total assets averaged over 1995 to 2001. Larger firms, due to their larger assets bases, are expected to have larger capital resources accompanied with higher market value of a given fraction of ownership. The higher price of a given fraction of ownership reduces the degree of ownership concentration in larger firms (Demsetz 1985). In this study, the smaller firms are predicted to have higher percentages of director shareholding. It is because the smaller firms are usually characterized as closely-held by insiders compared to larger firms (Hirschey 1999).

**The rate of growth in total assets.** The average rate of growth in total assets from 1995 till 2001 is a proxy for the growth rate of a firm. It is because the expansion of a firm’s activity leads to an increase in the value of its assets and its capital value.

**Trend.** The trend variable is introduced to find out how the firm value behaves over the study period. This is an ordinal variable that indicates the sequencing of the seven-year time frame beginning from 1995, receiving a value of 1, and ending in 2001, receiving a value of 7.

**The Study Sample**

The sample consists of 64 KLSE listed financial firms including commercial banks, finance companies, insurance companies, securities and investment companies. The data used for this study covers the period 1995 to 2001. These financial institutions are subjected to the same business risk since the firms in the same
industry are assumed to have similar technology, liquidity requirements, types of assets, overall level of profitability and growth rate. The ownership data and relevant financial data are retrieved from KLSE Annual Companies Handbook Vol. 20 to Vol. 25, various companies' annual reports and KLSE website. The financial-year-end stock closing prices of related companies are supplied by KLSE daily diary that providing daily market price movements of each individual company.

Analysis Method

Descriptive Statistics

Summary information about the pooled cross-section samples on all the variables are reported as the mean, median and standard deviation measures for total sample as well as for small, medium-size and large financial firms. The overall sample firms are classified into three different sizes according to average total assets over the seven-year time frame with each size containing approximately one-third, or 33% of the observations. The average total assets of each firm is first computed and then sorted in ascending order. The firm sizes classification is done by using percentiles, in which the small financial firms correspond to the 33th percentile with mean total assets below RM950 million, medium-size firms lie outside the 33th percentile and correspond to the 66th percentile with mean total assets ranging from RM950 million to RM6500 million while those with more than RM6500 million of mean total assets are categorized as large firms.

Multiple Regression Analysis

The pooled least squares method is used to estimate the multiple linear regression models built. The assumptions made on the models are as follows:
• Statistical relationship exists between the dependent and independent variables.

• The data distribution for both of the dependent and independent variables is normal and homoscedastic.

• There is lack of multicollinearity among the independent variables.