

## CHAPTER III

### Data and Methodology

#### 3.1 Data

##### 3.1.1 Ownership data

In order to investigate the statement of problem presented, foreign-ownership details on the nationality and percentage of ownership in the companies are required. The details on foreign ownership of a SET listed company are available on I-SIM and SETSMART since 1993. However, the details on their nationality are available only on SETSMART since 1997.

##### 3.1.2 Measurement of shareholder value data

This thesis defines the shareholder value as the function of firm market value, firm performance, and stock liquidity. Firm market value is measured by Tobin's q ratio; firm performance by the return on equity ratio (ROE) and the return on asset ratio (ROA), while stock liquidity is measured by relative bid-ask spread (RBA). The approach to construct these variables will be discussed in section 3.3. The details on these variables are available from I-SIM since 1993 to 1996 and SETSMART since 1997 to 2005.

##### 3.1.3 Degree of country's investor protection

The investor protection indexes used in this thesis are anti-director rights, creditor rights, and accounting standards index which are provided by La Porta et al. (1998). The levels of each investor protection index are divided into two levels: high and low.

### 3.2 Research Hypotheses

A large foreign shareholder from good governance countries may attempt to improve the governance mechanism of a local company. The reason why he may want to improve governance of a local company is to obtain high return from the improvement – a company with good investor protection policies should have higher value than the others with bad investor protection policies (La Porta et al., 2002).

Accordingly, the first hypothesis can be stated as:

Hypothesis 1: Firms characterized by large foreign ownership should have better shareholder value than those characterized by relatively small foreign ownership.

Corporate governance practice can be transferred to local companies through ownership and monitoring by foreign shareholders (see, Oxelheim and Randoy, 2003). Therefore, firms characterized by a large foreign shareholder from a country with relatively high investor protection should have higher shareholder value than those characterized by a large foreign shareholder from a country with relatively low investor protection. Accordingly, the second hypothesis can be stated as:

Hypothesis 2: The effect of a large foreign shareholder on shareholder value should vary according to the levels of a large foreign shareholder country's investor protection.

The corporate governance evolution in Thailand brought about as a result of the 1997 financial crisis represents an earnest attempt by the local authorities to improve the corporate governance environment in Thailand. If this event attempted by Thai authorities is successful, the effect of a large foreign shareholder on shareholder

value of a local company should be lower than that before the corporate governance improvement. The role of a large foreign shareholder in firm's governance should be apparently seen in an environment with low level of investor protection, in contrast to an environment with good investor protection. This event leads to the third hypothesis.

Hypothesis 3: The effect of a large foreign shareholder on shareholder value should be different between pre and post the event on corporate governance change.

### **3.3 Methodology**

This thesis investigates the impact of foreign ownership on the governance mechanism of local firms in a cross-sectional framework.

#### **3.3.1 Measures shareholder value**

For the purpose of this thesis, the dependent variable is shareholder value - Tobin's q ratio, ROE, ROA, and RBA.

This thesis use Tobin's q ratio as a measure of firm value. Lindenberg and Ross (1981) propose the Tobin's q ratio as the ratio of the firm's market value to the replacement costs of its assets which links to the stream of revenues and costs of a firm, basically, higher revenue imply higher market value at the same costs. However, Chung and Pruitt (1994) argue that the original Tobin's q ratio proposed by Lindenberg and Ross (1981) is costly to calculate both in terms of data requirement and computational effort. Therefore, the approximate Tobin's q ratio provided by Chung and Pruitt (1994), is defined as follows:

Tobin's  $q_{it}$  = (Market value of equity + Total book value of debt)/ Total assets (of firm i at year t).

The market value of equity is the product of a firm's share price and the number of common stock share outstanding at the year-end, along with total book value of debt and total assets.

As described above Tobin's q ratio is the ratio of firm's market value and its replacement costs. Thus, high Tobin's q ratio means that the costs to replace a firm's assets are lower than the value of its stock. This implies that the stock is overvalued. In contrast, Low Tobin's q ratio implies that the stock is undervalued because the cost to replace a firm's assets is greater than the value of its stock. Therefore, the value of a firm can be measured by Tobin's q ratio as described.

According to Barber and Lyon (1996), ROA is a measurement of firm's operating performance. Furthermore, Barth et al. (1998) propose that ROE is the proxies for firm's profitability. ROA and ROE in this thesis are defined as follow:

$ROE_{it}$  = Earning before interest and tax (EBIT)/ Total book value of equity (of firm i at year t).

$ROA_{it}$  = Earning before interest and tax (EBIT)/Total assets (of firm i at year t).

EBIT, Total book value of equity, and Total assets are gathered from year-end data of a firm.

As described above, ROA and ROE are the measurements of a firm operating performance. Thus, high ROA and ROE imply that operating performance of a firm

should yield high profitability. In contrast, low ROA and ROE imply that the profitability of a firm is low.

The liquidity of stocks is the measurement that reflect the value added to shareholders. Brockman and Chung (2003) propose RBA to measure the liquidity of stock. RBA in this thesis is defined as follow:

$$RBA_{it} = \frac{\text{(Average bid price – Average ask price)}}{\text{Mid point of average bid-ask price (of firm i at year t)}}$$

Where average bid price and average ask price are the average bid-ask price of one year' daily for each stock, respectively.

The RBA is the measurement for stock liquidity. High RBA implies that the liquidity of a firm common stock is low. Conversely, low RBA implies that the liquidity of a firm common stock is high.

### 3.3.2 Independent variables

To test empirically the first hypothesis, firms are classified into 2 groups: the firms with more than 25% of foreign ownership and the firms with less than 25% of foreign ownership. With the ownership levels at 25%, the owner can block any special resolution defined by Thai SEC. This implies that a large foreign shareholder has significant impact on decision making of the firm at the 25% ownership. In the interest of robustness of results, this thesis also used alternative definitions of block ownership as the percentage of ownership at 5% and 15%, respectively.

Extent evidence suggests that the relationship of ownership and shareholder value should be non-monotonic (see, Morck et al., 1988; Short and Keasey, 1999).

The non-monotonic relation follows two possible effects which should influence firm performance and managerial ownership: alignment and entrenchment. The concept of rendering management to be a part of company's wealth by allowing managers to hold some shares to further align the interests of shareholders and managers, has been introduced by Jensen and Meckling (1976). They contend that, as managerial ownership in a firm increase, a firm performance should increase accordingly and managers are less inclined to divert resources away from value maximization. On the contrary, Fama and Jensen (1983) argue that market discipline will force managers to adhere to value maximization at very low level of ownership. However, at a certain level of ownership, managers' consumption of perquisites may outweigh the loss they suffer from a decline in firm value. This thesis applies the methodology from the literature of Short and Keasey (1999), which is in cubic form of the relationship between ownership and shareholder value, to avoid the turning point selection problem in piece-wise model of Morck et al. (1988). Short and Keasey (1999) add that there is no theoretical guidance of turning points as there are no effective theory that prove management alignment or entrenchment at any level of ownership, thus proving that the choice of turning points on the piece-wise regression of Morck et al. (1988) theoretically unclear. The more effective way to investigate the relationship between foreign ownership and shareholder value is to employ cubic form of the relation, allowing the coefficients on the foreign ownership variable to determine their own turning points. To test the relationship between foreign ownership and shareholder value, foreign ownership variable is the percentage of shares that the largest foreign shareholder owns in a firm, at the year's end.

To test the second hypothesis, the country's investor protection level of the largest foreign shareholders is the independent variable. In this thesis, the index of

anti-director rights, creditor rights, and accounting standards provided by La Porta et al. (1998) are employed as the investor protection index. The thesis focuses on the nationality of the largest foreign shareholder as he has the most power to control or monitor the company. The controlling shareholder is defined as a shareholder who owns at least 25% of a company's common shares. The nationality of the largest foreign shareholder in any firm is divided into 2 groups – high and low investor protection countries. However, the study of La Porta et al. (1998) observes the investor protection of 49 countries. Thus, there is some nationality cannot defined the investor protection level – this thesis defines as unidentified investor protection level.

Oxelheim and Randoy (2003) find the positive effect of foreign board membership on firm value. Consequently, the involvement of a foreign shareholder on the board of directors is employed in this study. This thesis defines a company that have a foreign shareholder who own shares higher than or equal to 5% and sits in the board of directors as the involvement of foreign shareholder on the board of directors. At the 5% ownership, a shareholder is a block shareholder that has the ability to block special resolutions such as the board of directors' selection or dividend payout policy. According to Demsetz (1983), ownership is an endogenous variable. His argument suggests that firm value can be a determinant of the ownership structure rather than it being determined by ownership structure. In other words, the increase of a firm's value may not arise from ownership, but high firm value attracts investors to invest in the firm. However, the involvement of a foreign shareholder in the board of directors should be considered as an attempt to monitor a local company by the foreigner. Therefore, the variable - the involvement of a foreign shareholder on the board of director - addresses the endogeneity problem.

### 3.3.3 Control variables

To evaluate the effect of foreign ownership on firm value, the factors that need to be controlled are firm size, leverage, and industrial sectors.

Firm size is an important determinant to firm profitability and value. Hall and Weiss (1967) point out that firm size and profitability have a positive relationship, thus, a positive relationship to firm value. They add that the positive effect of firm size arises from two reasons. First, the concept of this relation is economies of scale. A second concept is that market imperfection. The market power and access to capital markets of a large firm may give more access to investment opportunities that are not available to a smaller firm. Firm size is total net assets at year-end of a firm.

Hall and Weiss (1967) describe the leverage terms as a measure of firm profitability. According to Modigliani and Miller (1963), cost of debt should be lower than the cost of equity because the advantage of tax shield. Thus, high leverage implies that a firm with high leverage tends to have high profit. Leverage is measured by total book value of debt divided by total assets at year-end.

SET classifies the industries of companies listed in Thai market as 8 industries and firms under rehabilitation. 8 industries are agriculture & foods, consumer products, financials, industrials, property & construction, resources, services, and technology – defined as i-1 to i-8, respectively. Firms under rehabilitation are defined as i-0.

To evaluate the effect of foreign ownership on firm performance, the factors that need to be controlled other than firm size, leverage, and industrial sectors, is book-to-market of equity ratio (BE/ME).

Fama and French (1995) add the role of BE/ME as a proxy for sensitivity to common risk factor in returns. Normally, stock price reflects investor's expectation on

firm's performance. Poor prospect stock or a low firm performance stock has lower stock price, leading to high BE/ME. This thesis add BE/ME in ROA and ROE regression. BE/ME is the ratio of book value of total equity and market value of equity of a firm at the end of the year. Market value of equity is the product of a firm's share price and the number of common stock share outstanding at the year-end.

The control variables for stock liquidity differ from the firm value. According to Menyah and Paudyal (1996), stock liquidity is the function of stock return volatility, trading volume, and stock price.

They state that trading volume should have an inverse relationship with the bid-ask spread, while stock return volatility and stock price should be directly related to bid-ask spread. Stock return volatility is the standard deviation of daily stock price return of a firm for each year. Trading volume is the daily average number of stocks that are traded each year. Stock price is an average close price of a firm for each year.

#### 3.3.4 Regression analysis

Prior study (Oxelheim and Randoy, 2003) employs the ordinary least-square (OLS) and two-stage least-squares (2SLS) to investigate the effect of foreign board membership on firm value because of the endogeneity problem. However, results of the study by 2SLS approach are consistent with OLS approach – this suggests that endogeneity effects are not a major problem. The endogeneity problem will not be of any particular concern. As described in section 3.3.2, endogeneity problem arise from the question about the relationship between firm value and ownership. However, this thesis argues that there is no reason why foreign investors want to invest in stocks which are overvalued and getting low return. The potential gains to foreign investors may be higher when buying equity stocks from low valuation firms than in high

valuation firms. This is the result of foreign monitoring of the company, installing corporate governance, thereby increasing firm value and thus their profitability. From this understanding, it should be safe to argue that foreign investors create firm value, more than the argument that high firm valuation attracts foreign investors.

This thesis employs the samples based on the Thai market since year 1993. There are significant differences across time periods because there is the financial crisis that affects the stock market. Moreover, the market factors may be changed over time because the Thai market is an emerging market and there is an important event that affects all firms listed in the SET such as corporate governance change event. Therefore, this thesis test the empirical issue by employed the time fixed effects model.

To find the relationship between foreign ownership and shareholder value, this thesis uses the equation (1) in order to test the effect of a large foreign shareholder on shareholder value.

$$V_{it} = \alpha_1 + \sum_{t=1994}^{2005} \alpha_t TIME_t + \beta_1 FO_{it} + \beta_2 MORE_{it} + \beta_3 \ln SIZE_{it} + \beta_4 \ln LEVERAGE_{it} + \beta_5 BOARD_{it} + \sum_{i=1}^8 \gamma_i INDUSTRY_i + \varepsilon_{it} \quad (1)$$

Definition of variables in equation (1)

$V_{it}$  = Shareholder value of firm  $i$  at year  $t$ , defines as Tobin's  $q$  ratio, return on asset, return on equity, or relative bid-ask spread.

$FO_{it}$	=	1; If there is at least one large foreign shareholder of a firm $i$ at year $t$ with proportional shares ownership equal to or higher than 25%, 0; otherwise.
$MORE_{it}$	=	1; If there are several large foreign shareholders of a firm $i$ at year $t$ with each holding ownership equal to or higher than 25%, 0; otherwise.
$SIZE_{it}$	=	Total assets of firm $i$ at year $t$ .
$LEVERAGE_{it}$	=	Total debt/ Total assets of firm $i$ at year $t$ .
$BOARD_{it}$	=	1; If there is at least one foreign shareholder of firm $i$ at year $t$ holding ownership equal to or higher than 5% and is involved in the board of director, 0; otherwise.
$INDUSTRY_{it}$	=	Industry dummies classified by SET (8 industries) of firm $i$ .
$TIME_t$	=	Time dummies of year $t$ .

If a large foreign shareholder has an important influence on the shareholder value,  $\beta_1$  in equation (1) should be positive and statistically significant.

Stulz and Wasserfallen (1994) argue that foreign ownership restrictions have effects on firm value. In addition, Lam (1997) finds that the increase of firm value is related to the reduction of foreign ownership restrictions. As discussed in chapter 2, Thai authorities released the limit on foreign ownership limit as a result of the Financial Crisis.

Furthermore, the effect of foreign institutional shareholders, as discussed in chapter 2, is an important factor that should affect shareholder value.

Therefore, this thesis controls these effects by adding the release of foreign ownership limit (LIMIT), and foreign institutional (INSTITUTE).

#### Definition of variables

LIMIT<sub>it</sub> = 1; if foreign ownership limit of firm i changes at year t and afterwards, 0; otherwise.

INSTITUTE<sub>it</sub> = the percentage of shares that foreign institutions hold in the firm i at year t.

There is ample evidence that ownership and firm performance should have a non-monotonic relationship, as previously discussed. According to Chhibber and Majumdar (1999) firms will exhibit superior performance when foreign ownership is at a very high level (foreign ownership higher than 51%). In contrast, the influence of foreign ownership on firms' performance at low and medium level (foreign ownership up to 25% and the ownership 25% to 51%, respectively) of foreign ownership are less than the very high level. However, there is no theoretical guarantee for the choice of turning points of the foreign ownership. Therefore, in this thesis, the relationship of foreign ownership and firm performance are tested by equation (2) that is applied from Short and Keasey (1999). The turning points are not pre-determined because the cubic form of foreign ownership in equation (2) allows for empirical turning points.

$$\begin{aligned}
 V_{it} = & \alpha_1 + \sum_{t=1994}^{2005} \alpha_t TIME_t + \beta_1 FOS_{it} + \beta_2 FOS_{it}^2 + \beta_3 FOS_{it}^3 \\
 & + \beta_4 \ln SIZE_{it} + \beta_5 \ln LEVERAGE_{it} + \beta_6 BOARD_{it} \\
 & + \beta_7 LIMIT_{it} + \beta_8 INSTITUTE_{it} + \sum_{i=1}^8 \gamma_i INDUSTRY_i + \varepsilon_{it} \quad (2)
 \end{aligned}$$

Definition of variables in equation (2)

$FOS_{it}$  = Percentage of a largest foreign ownership of firm  $i$  at year  $t$ .

If the relationship between foreign ownership and shareholder value is similar to that suggested by the existing literature (Chhibber and Majumdar, 1999), the superior performance of firms should be seen at the highest foreign ownership level.

This thesis uses equation (3) in order to investigate the effect of a large foreign shareholder's investor protection level on shareholder value.

$$\begin{aligned}
 V_{it} = & \alpha_1 + \sum_{t=1998}^{2005} \alpha_t TIME_t + \beta_1 ANTI\_H_{it} + \beta_2 CREDIT\_H_{it} \\
 & + \beta_3 ACCOUNT\_H_{it} + \beta_4 UN\_ANTI_{it} + \beta_5 UN\_CREDIT_{it} \\
 & + \beta_6 UN\_ACCOUNT_{it} + \beta_7 \ln SIZE_{it} + \beta_8 \ln LEVERAGE_{it} + \beta_9 LIMIT_{it} \\
 & + \beta_{10} INSTITUTE_{it} + \beta_{11} BOARD_{it} + \sum_{i=1}^8 \gamma_i INDUSTRY_i + \varepsilon_{it} \quad (3)
 \end{aligned}$$

Definition of variable in equation (3)

$ANTI\_H_{it}$  = 1; if home country of a large foreign shareholder of firm  $i$  at year  $t$  has anti-director rights index of country equal to 4 and 5<sup>1</sup>, 0; otherwise.

$CREDIT\_H_{it}$  = 1; if home country of a large foreign shareholder of firm  $i$  at year  $t$  has creditor rights index of country equal to 4<sup>2</sup>, 0; otherwise.

<sup>1</sup> The range of anti-director right index, which is provided by La Porta et al. (1998), is 0 to 5.

- ACCOUNT<sub>H</sub><sub>it</sub> = 1; if home country of a large foreign shareholder of firm *i* at year *t* has account standards index country *i* is in the rank 69 to 83<sup>3</sup>, 0; otherwise.
- UN\_ANTI<sub>it</sub> = 1; if home country of a large foreign shareholder of firm *i* at year *t* has no anti-director rights index of country, 0; otherwise.
- UN\_CREDIT<sub>it</sub> = 1; if home country of a large foreign shareholder of firm *i* at year *t* has no creditor rights index of country, 0; otherwise.
- UN\_ACCOUNT<sub>it</sub> = 1; if home country of a large foreign shareholder of firm *i* at year *t* has no accounting standards index of country, 0; otherwise.

If the protection level of a large foreign shareholder's country has the significant influence on shareholder value,  $\beta_1$ ,  $\beta_2$ , and  $\beta_3$  in equation (3) should be statistically significant and have positive sign.

From the third hypothesis expectation, the investor protection environment varies between the period before and after corporate governance change event. The samples are divided into three groups, 1993 to 1996, 1997 to 2001, and 2002 to 2005. Hence, the effect investigated by equation (4).

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<sup>2</sup> The range of creditor right index, which is provided by La Porta et al. (1998), is 0 to 4.

<sup>3</sup> The range of accounting standard index, which is provided by La Porta et al. (1998), is 24 to 83.

$$\begin{aligned}
V_{it} = & \alpha_1 + \sum_{m=1}^3 \chi_m D_m FO_{it} + \beta_3 \ln SIZE_{it} \\
& + \beta_4 \ln LEVERAGE_{it} + \beta_5 LIMIT_{it} + \beta_6 INSTITUTE_{it} \\
& + \beta_7 BOARD_{it} + \sum_{i=1}^8 \gamma_i INDUSTRY_i + \varepsilon_{it}
\end{aligned} \tag{4}$$

Definition of variable in equation (4)

- $D_1$  = 1; if the observation began in 1993 and ended at 1996,  
0; otherwise.
- $D_2$  = 1; if the observation began in 1997 and ended at 2001,  
0; otherwise.
- $D_3$  = 1; if the observation began in 2002 and ended at 2005,  
0; otherwise.

If the authorities' effort to improving corporate governance succeeds,  $\chi_1$  should be higher than  $\chi_3$ , where the difference should be statistically significant.

This thesis adds the BE/ME in all ROA and ROE regressions for controlling the risk factor in returns.

Definition of variable

$$BE/ME_{it} = \text{Total Equity/ Market Capitalization of firm } i \text{ at year } t.$$

The results from the first hypothesis can be interpreted as the effect of the transfer of technology. One way to test result robustness is to test the equation (1) by classifying companies into industries. Because the local companies in the industries

that require high technology should obtain more benefits from technological transfer than companies in low technology industries. In other words, the effect of foreign ownership in the high technological companies on shareholder value should be markedly higher. SET have several high technological sectors as defined by Kohers and Kohers (2000) namely: health care services, communications, and electronics components industry<sup>4</sup>.

Finally, as described in section 3.3.3, the factors that should affect RBA are different from Tobin's q ratio, ROA, and ROE. Therefore, this thesis adds stock return volatility (STANDARD DEVIATION), stock price (PRICE), and trading volume (VOLUME) in RBA regression.

#### Definition of variable

STANDARD DEVIATION <sub>it</sub>	=	Standard deviation of daily stock return of firm i at year t.
PRICE <sub>it</sub>	=	Average close price of firm i at year t.
VOLUME <sub>it</sub>	=	Daily average number of stocks that are traded of firm i at year t.

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<sup>4</sup> Health care services sector is a one sector in services industry – i-8. Communications and electronic components sector are the sector in technology industry.