

## CHAPTER V

### RESEARCH DESIGN

This chapter presents (i) the sample, (ii) ownership data, (iii) proxies for family ownership, (iv) proxies for controlling shareholders who are politically connected, (v) the measure of accounting conservatism, and (vi) the model specifications.

#### 5.1 SAMPLE

The initial sample used in this study consists of all December fiscal year-end Thai listed firms during the period 1999-2005 from the *I-SIM CD-ROM* and the *SET Market Analysis and Reporting Tool ("SETSMART")* on-line services and accounting data available on *Datastream*. December 31<sup>st</sup> is used to ensure that all companies are subject to similar market conditions. To be included in the sample, firms must have 12-month returns ending two months after the financial year-end.

#### 5.2 ACCOUNTING AND OWNERSHIP DATA

The data for accounting and equity ownership, members of the board of directors, and the number of shares outstanding are obtained from the companies' annual reports (Form 56-1) submitted annually to Stock Exchange of Thailand. The company's annual report (Form 56-1) provides detailed ownership data that includes the top 10 shareholders in the company. It also provides a list of a firm's affiliated companies and the shareholdings. The Business on Line (BOL) database provides the ownership information of non-listed companies. The BOL company is the sole agent that has a license from the Ministry of Commerce to reproduce the accounting and ownership information of all companies registered at the Ministry of Commerce.

This study treats all family members as well as those of companies ultimately owned by these members as a single shareholder to account for the fact that it is a common practice in Thailand that a business is closely tied to an extensive family. A shareholder, therefore, includes individuals with the same surname as well as individuals that are linked to the family by marriage (including spouses, children, siblings and parents). Surnames can be used to trace family relationships as family names in Thailand are unique and only family members of that family will use the surname.

This study is confined to shareholders with the same family name as identified in the company annual report. It excludes close relatives with different surnames who are also shareholders because it is difficult to identify precise family relationship in such cases in Thailand.

### 5.3 PROXIES FOR FAMILY OWNERSHIP

This study defines controlling shareholder characteristics as follows:

- a) Founding family (hereafter “*FF*”) firms are established by the founder (who takes responsibility for the firm’s early growth and development). At least 10% of the firm’s equity is owned by the founder or by founding family members by blood or marriage.
- b) Family (hereafter “*FAM*”) firms are firms owned by a family who does not take responsibility for the firm’s early growth and development. Firms in this category refer to non-founding family firms that have at least 10% of the firm’s equity is owned by members of the new family by blood or marriage.

### 5.3.1 Family ownership

Following Anderson and Reeb (2003), this study defines *FF* firms as firms where a single shareholder or member of his or her family by either blood or marriage is a director, either individually or as a group.

Following Anderson and Reeb (2003), *FF* ownership is defined and tested in two ways. First, a binary variable (*OWN*) is coded one if *FF* members are either on the board of directors or in the top management of the company and directly or indirectly own more than 10% at the beginning of the fiscal year, and coded zero otherwise. The influences of *FF* members exerted on the firm, represented by voting power, may go beyond the common stock percentage owned by family members. Therefore, the binary variable of family ownership is used for primary analysis. For completeness, a second variable *OWN(rank)* is used to measure *FF* ownership based on the percentage of common stock owned by family members at the beginning of the fiscal year, with a larger value indicating greater family interest in the firm<sup>15</sup>. Every year, firms are partitioned into 10 equal groups based on the percentage of ownership held by *FF* members. The scaled decile rank is determined by first ranking observations each year into 10 groups from zero to nine, and then scaling the ranking by nine so that the rank variable falls within the zero-to-one interval. High rank means high ownership. The decile rank of *OWN(rank)* is used instead of ownership itself, to allow for potential non-linearity in the relationship between ownership and asymmetric timeliness. In addition, this study divides percentage of ownership into 10%-20%, more than

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<sup>15</sup> La Porta et al., (1999) define ownership based on voting rights rather than cash flow rights. They would like to know whether corporations have shareholders with substantial voting rights, either directly or through a chain of holdings. Fan and Wong (2002) argue that controlling owners obtain the power (through high voting rights) and the incentive (through high cash flow rights) to negotiate and enforce corporate contracts with various stakeholders, including minority shareholders, managers, laborers, material suppliers, customers, debtholders, and governments.

20%-50% and more than 50%<sup>16</sup>. *FAM* firms are also used the same measure as that of *FF* firms.

As a supplement to the binary and continuous variables that measure family ownership, *FF* firms are classified further into three groups with different CEO attributes: founder CEO (*CEO\_F*), which equals one if the *FF* firm has the founder as CEO and zero otherwise, descendant CEO (*CEO\_D*), which equals one if the *FF* firm is headed by a family descendant and zero otherwise, or hired CEO (*CEO\_H*), which equals one if the CEO is hired from outside the family and zero otherwise. Family CEOs (founders and descendants) might be drawn from a suboptimal labor pool that prevents more talented professional executives from running the firms (Anderson and Reeb, 2003). Thus, family firms with family members as CEOs might perform poorly. Conversely, family CEOs can enhance firms' wealth because they possess special expertise (Morck et al., 1988) and intentions of long-term presence (Anderson et al., 2003). The same measures for CEO characteristics are also used for *FAM* firms.

For some younger firms, this approach is straightforward, since the proxy statement denotes the founder, his/her immediate family members, and their holdings. However, several generations after the founder, the family expands to include distant relatives such as second or third cousins whose last names may no longer be the same. This study resolves descendant issues by examining corporate histories for each firm in the sample. Histories are from annual reports, the companies' websites, and from individual companies.

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<sup>16</sup> The cutoffs of 10 percent and 20 percent are used because they provide a significant threshold of votes and most countries mandate disclosure of 10 percent, and usually even lower, ownership stakes (La Porta et al., 1993).

#### *5.4 POLITICALLY CONNECTED FIRMS VARIABLES*

Faccio (2006) defines a controlling shareholder as connected with a politician if one of the company's large shareholders or top directors is: (1) a member of parliament, or (2) a minister or the head of state. This study also includes government or state owned firms as politically connected firms.

##### *5.4.1 Connections with a member of parliament*

Firms may be connected through a member of parliament (MP) in two ways. First, at least one of the firm's top directors may currently sit in the national parliament. As in Claessens et al. (2000) and Faccio and Lang (2002), a top director is defined as a company's CEO, president, vice-president, or member of the board. Second, companies are classified as connected when the controlling shareholder is a member of parliament.

##### *5.4.2 Connection with a minister or head of state*

There are three types of connection with minister or head of state: as director; as large shareholder; or through a relative. A relative may be a spouse, a child, a sibling, or a parent.

Faccio (2006) notes that politically connected firms also include companies with close relations to top officials (such as friend of a friend who is a member of parliament, minister, or head of state). Close relationships amongst shareholders are more ambiguous and difficult to identify in Thailand because it is difficult to identify separate the private and public interests of politicians due to weak oversight regulations and limited disclosure. Therefore, this study traces at least one of the top directors who is also a member of the national parliament. To simplify this study, the

objective is to identify at least one large shareholder who is also a member of parliament and has a connection with a minister or head of state, including, but not limited to, a relative, spouse, children, siblings, or parents. However, this study is also limited to identifying the relationship based only on the surname and the family information provided in the company's annual report.

### 5.5 MEASURE OF ACCOUNTING CONSERVATISM

Basu's (1997) model captures the difference in effects of negative returns and positive returns on earnings (a measure of asymmetric timeliness in earnings) as a conservatism measure. This measure intuitively captures asymmetric verification standards for recognition of good and bad news.

#### 5.5.1 Empirical model for tests using the asymmetric timeliness measure

Basu (1997) improves his model significantly by adding another property of accounting income: conservatism. He interprets conservatism as the accountant's tendency to require a higher degree of verification for recognizing good news than bad news in financial statements. Earnings, as a result, reflect bad news more quickly (times) than good news, and this is called conservative asymmetry in accounting income timeliness. His model can be written as:

$$EPS = \beta_0 + \beta_1 RD_{it} + \beta_2 R_{it} + \beta_3 R_{it} * RD_{it} + \varepsilon_{it} \quad (1)$$

where  $EPS$  is the earnings per share of firm  $i$  in fiscal year  $t$  divided the price per share at the beginning of the fiscal year,  $R_{it}$  is the return of firm  $i$  over the 12 months beginning ten months prior to the end of fiscal year  $t$ , and  $RD_{it}$  is a dummy variable set equal to 1 if  $R_{it}$  is negative and 0 otherwise.

When good news,  $RD_{it}$  is equal to zero, the model is  $EPS = \beta_0 + \beta_2 R_{it} + \varepsilon_{it}$ .

When bad news,  $RD_{it}$  is equal to 1, the model is  $EPS = \beta_0 + \beta_1 + (\beta_2 + \beta_3)R_{it} + \varepsilon_{it}$ .

Various measures of conservatism can be developed from the result of regression (1):

#### **The incremental response**

- The incremental response to bad news relative to good news, is captured by  $\beta_3$ . Under conservative reporting,  $\beta_3$  is expected to be positive.

#### **Sensitivity**

- The relative sensitivity of earnings to bad news compared with their sensitive to good news is measured by the ratio  $(\beta_2 + \beta_3)/\beta_2$ . Under conservative reporting, this ratio is expected to be greater than one.

Basu (1997) shows that earnings' sensitivity to current negative returns increased relative to earnings' sensitivity to current positive returns over the period 1963-1990, consistent with accounting conservatism increasing over that time. He attributed this to two factors: (1) the legal liability exposure of auditors and managers for tardy disclosure of 'bad news' has increased significantly over the last three decades; and (2) contracting parties increasing their demand for conservatism.

This study's research design uses the Basu (1997) reverse-regression between earnings and contemporaneous returns ( $R$ ). This study uses 12 month share returns from 10 months before the financial year-end to 2 months after the financial year-end as proxy for the news about firms' performance that is publicly available. The Basu (1997) model incorporates a dummy variable for negative returns ( $RD$ ), which is

interacted with a return variable ( $R$ ) to proxy for bad news ( $R*RD$ ). Good news is then proxied by the main effect on the return variable ( $R$ ). The estimated coefficients of  $R$  and  $R*RD$  are predicted to be positive. This study has no expectation for the sign for  $RD$ . Under accounting conservatism, earnings will have a higher sensitivity to bad news as compared with good news. Accordingly, this study predicts that the coefficient of  $R*RD$  is greater than zero.

This study extends the Basu (1997) model to examine the link between accounting conservatism and controlling shareholders (included  $FF$  and  $FAM$  firms) by incorporating ownership proxies ( $OWN$ ) into the model. This variable is then interacted with the variable in the standard Basu (1997) model as shown in equation (2)

$$\begin{aligned}
 EPS = & \beta_0 + \beta_1 RD_{it} + \beta_2 R_{it} + \beta_3 R_{it} * RD_{it} + \beta_4 OWN_{it} \\
 & + \beta_5 R_{it} * OWN_{it} + \beta_6 RD_{it} * OWN_{it} \\
 & + \beta_7 R_{it} * RD_{it} * OWN_{it} + Control\ Variables + \varepsilon_{it} \quad (2)
 \end{aligned}$$

All of the control variables (see detail in section 5.6) in the regression are also interacted with  $RD_{it}$  and  $R_{it}$ .



CEO characteristics also add and extend the Basu (1997) model to examine the link between accounting conservatism and CEO characteristics in controlling shareholder (included *FF* and *FAM* firms) by incorporating CEO proxies into the model. This variable is then interacted with the variable in the standard Basu (1997) model as shown in equation (3)

$$\begin{aligned}
 EPS = & \beta_0 + \beta_1 RD_{it} + \beta_2 R_{it} + \beta_3 R_{it} * RD_{it} + \beta_4 F\_CEO \\
 & + \beta_5 R_{it} * F\_CEO + \beta_6 RD_{it} * F\_CEO \\
 & + \beta_7 R_{it} * RD_{it} * F\_CEO + \beta_8 D\_CEO + \beta_9 R_{it} * D\_CEO \\
 & + \beta_{10} RD_{it} * D\_CEO + \beta_{11} R_{it} * RD_{it} * D\_CEO \\
 & + \beta_{12} H\_CEO + \beta_{13} R_{it} * H\_CEO + \beta_{14} RD_{it} * H\_CEO \\
 & + \beta_{15} R_{it} * RD_{it} * H\_CEO + Control\ Variables + \varepsilon_{it} \quad (3)
 \end{aligned}$$

All of the control variables (see detail in section 5.6) in the regression are also interacted with  $RD_{it}$  and  $R_{it}$ .

Variable	Definition	Prior research	Data
<i>EPS</i>	<i>EPS</i> is earnings per share before extraordinary item divided by beginning of period price.	Basu (1997)	SETSMART
<i>R</i>	Stock return for firm <i>i</i> from 10 months before the financial year-end to 2 months after the financial year-end. Stock return is calculated as $(P_t - P_{t-1})/P_{t-1}$ . Share prices have been adjusted from stock splits, new equity issues, etc.	Basu (1997)	SETSMART
<i>RD</i>	Dummy variable coded 1 if <i>R</i> is negative, zero is otherwise	Basu (1997)	None

Independent variables which are collected from annual reports are as follows:

Variable	Definition	Prior research	Expected sign	Hypotheses	Data
<i>OWN</i> (dummy)	Dummy variable equal to one if the <i>OWN</i> are either <i>FF</i> or <i>FAM</i> firms members on the board of directors or in the top management and directly or indirectly owner more than 10% of outstanding shares at the beginning of the fiscal year, zero is otherwise.	Anderson and Reeb (2003) and Wang (2006)	+/-	H <sub>1a</sub> , H <sub>1b</sub> and H <sub>1c</sub>	Annual report
<i>OWN</i> (rank)	Equal to the scaled decile rank of percentage of shares held by <i>FF</i> or <i>FAM</i> firms members <sup>17</sup> .	Anderson and Reeb (2003) and Wang (2006)	+/-	H <sub>1a</sub> , H <sub>1b</sub> and H <sub>1c</sub>	Annual report
<i>OWN</i> 10-20%	Dummy variable equal to one if common stock owned by <i>FF</i> or <i>FAM</i> firms members is between 10%-20% of outstanding shares at the beginning of the year, zero is otherwise.	Anderson and Reeb (2003) and Wang (2006)	+/-	H <sub>1a</sub> , H <sub>1b</sub> and H <sub>1c</sub>	Annual report
<i>OWN</i> >20-50%	Dummy variable equal to one if common stock owned by <i>FF</i> or <i>FAM</i> firms members is more than 20%-50% of outstanding shares at the beginning of the year, zero is otherwise.	Anderson and Reeb (2003) and Wang (2006)	+/-	H <sub>1a</sub> , H <sub>1b</sub> and H <sub>1c</sub>	Annual report

<sup>17</sup> Every year, firms are partitioned into 10 equal groups based on the percentage of ownership held by *FF* or *FAM* members. The scale deciled rank is determined by first ranking observations each year into 10 groups from zero to nine, and then scaling the ranking by nine so that the rank variable falls within the zero-to-one interval. High rank means high ownership.

Variable	Definition	Prior research	Expected sign	Hypotheses	Data
<i>OWN</i> >50%	Dummy variable equal to one if common stock owned by <i>FF</i> or <i>FAM</i> firms members is more than 50% of outstanding shares at the beginning of the year, zero is otherwise.	Anderson and Reeb (2003) and Wang (2006)	+/-	H <sub>1a</sub> , H <sub>1b</sub> and H <sub>1c</sub>	Annual report
<i>F_CEO</i>	Dummy variable equal to one if the CEO is the founder of the <i>FF</i> or <i>FAM</i> firm, zero is otherwise.	Anderson and Reeb (2003) and Wang (2006)	+/-	H <sub>2a</sub> , H <sub>2b</sub> and H <sub>2c</sub>	Annual report
<i>D_CEO</i>	Dummy variable equal to one if the CEO is a descendant of the <i>FF</i> or <i>FAM</i> firm, zero is otherwise.	Anderson and Reeb (2003) and Wang (2006)	+/-	H <sub>3a</sub> , H <sub>3b</sub> and H <sub>3c</sub>	Annual report
<i>H_CEO</i>	Dummy variable equal to one if the CEO is a hired outsider for the <i>FF</i> or <i>FAM</i> firms, zero is otherwise.	Anderson and Reeb (2003) and Wang (2006)	-	H <sub>4a</sub> , H <sub>4b</sub> and H <sub>4c</sub>	Annual report

This study also extends the Basu (1997) model to examine the link between accounting conservatism and politically connected firms (“*POL*”) by incorporating the dummy variable *POL* into the model that takes the value of one if the one or more of the family members are members of parliament or a minister or the head of state and zero otherwise. This variable is then interacted with the variable in the standard Basu (1997) model as shown in equation (4).

$$\begin{aligned}
 EPS = & \gamma_0 + \gamma_1 RD_{it} + \gamma_2 R_{it} + \gamma_3 POL_{it} \\
 & + \gamma_4 R_{it} * RD_{it} + \gamma_5 R_{it} * POL_{it} \\
 & + \gamma_6 RD_{it} * POL_{it} + \gamma_7 R_{it} * RD_{it} * POL_{it} \\
 & + Control\ Variables + \varepsilon_{it}
 \end{aligned}
 \tag{4}$$

All of the control variables (see detail in section 5.6) in the regression are also interacted with  $RD_{it}$  and  $R_{it}$ .

Variable	Definition	Prior research	Expected sign	Hypotheses	Data
Politics ( <i>POL</i> )	Dummy variable coded one if <i>FF</i> or <i>FAM</i> members are members of parliament or a minister or the head of state, zero is otherwise.	Faccio (2006)	-	H <sub>4</sub> , H <sub>4a</sub> and H <sub>4b</sub>	www.cabinet.thaigov.go.th

## 5.6 CONTROL VARIABLES

The main control variables are divided into corporate governance and firm characteristics control variables. Corporate governance control variables include CEO's dual roles, board size, independent audit committee, and external auditor (big four audit firms). Firm characteristics control variables include leverage, institutional share ownership, size, litigation risk, and market-to-book ratio. The details of the control variables are as follows:

### 5.6.1 *The link between CEO's dual roles (DUAL) and conservatism*

A board of directors chaired by the CEO is likely to be less independent than otherwise because it is likely to be dominated by the CEO. Best practice recommends that the roles of CEO and chairman should be separated. Jensen (1993) argues that separating the position of chairman of the board and CEO results in greater independence of the board from management. Previous research has linked the separation of the positions of CEO and chairman of the board to higher debt rating (Ashbaugh et al., 2006), and to lower likelihood of an SEC enforcement action (Dechow et al., 1996). Therefore, this research uses a dummy variable that takes on a value of one if the CEO is also chairman of the board, and zero otherwise, as a control variable. This study expects a negative relationship between the combination of decision control and decision management (CEO/Chair combined) and accounting conservatism.



### *5.6.2 The link between board size (BRDSIZE) and conservatism*

Fama and Jensen (1983) argue that the board of directors represents the pinnacle of the decision-making hierarchy and control system in large companies. One important duty of the board of directors is to monitor and evaluate senior management's activities within the company.

The link between the size of the board and its effectiveness remains open for debate. Small boards are normally easier to coordinate (Jensen, 1993) and have less free-rider problems (Hermalin and Weishbach, 2003). On the other hand, large boards are more likely to have more experienced directors (Xie et al., 2003) and allow directors to focus on their task at hand (Ahmed and Duellman, 2007). The empirical evidence mirrors this trade-off. Xie et al. (2003) find that the board size is negatively associated with earnings management. This suggests that larger boards are more effective in monitoring. Greater specialization and more experienced directors can lead to more effective monitoring. This study expects a positive relationship between greater board of directors and accounting conservatism. Consistent with prior literature, board size is measured as the number of directors on the board at the year-end.

### *5.6.3 The link between independent audit committee (IND) and conservatism*

The audit committee plays an important role in maintaining the quality of financial reporting. The main responsibility of an audit committee is to ensure the integrity of the firm's financial reports. That is, the financial report is prepared according to accounting standards. Because accounting standards are conservative in nature, firms with an effective audit committee are likely to have more conservative reporting. Prior

research consistently shows that audit committees play a significant role in financial reporting, such as in the prevention of earnings management (Klein, 2002) and accounting errors (Defond and Jiambalov, 1994) and accounting fraud (Beasley et al., 2000).

An independent audit committee is important to the effectiveness of an audit committee. Regulators around the world are moving towards fully independent audit committees. The percentage of independent directors in the audit committee at the year-end has been commonly used by prior research to measure the level of independence of audit committees. This study expects a positive relationship between greater independent audit committee and accounting conservatism.

#### *5.6.4 The link between external auditors (BIG4) and conservatism*

The role of an external auditor is to provide assurance to the public from a third party perspective that a firm's financial reports are prepared according to accounting standards. Therefore, auditors potentially play a significant role in ensuring the quality of financial reports. There are two possible avenues for the link between external auditors and conservatism. Firstly, conservatism is an important principle in accounting and is translated into accounting standards. Secondly, external auditors are motivated to adopt conservatism to reduce litigation costs. For example, Basu et al. (2001) find fourth quarter earnings are more conservative than earlier quarter earnings and the difference in conservatism between the fourth and earlier quarters is higher in periods of high auditor liability. This is consistent with auditors adopting conservatism to reduce litigation costs. This assurance is more credible if it comes from big accounting firms because of the need to maintain their reputation. Basu et al. (2001)

find that firms with a Big 4 auditors tend to be more conservative. Therefore, firms with Big 4 auditors are expected to be more conservative than firms with a non-Big 4 auditors.

#### *5.6.5 The link between leverage (LEV) and conservatism*

Ahmed and Duellman (2007) argue that a high level of leverage tends to promote greater bond-holder and shareholder conflicts which in turn have been shown to affect the contractual demand for conservative accounting. Ahmed et al. (2002) find accounting conservatism mitigates bond-holder and shareholder conflict over dividend policy and reduces firms' cost of debt. Similarly, Zhang (2006) documents that lenders benefit from conservative accounting via the accelerated violation of debt covenants while borrowers benefit from conservative accounting via lower initial interest rates. This study expects a positive relationship between higher leverage and accounting conservatism. Leverage is defined as total debts divided by total assets.

#### *5.6.6 The link between institutional ownership (PINT) and conservatism*

Institutional ownership is used as a control variable because the presence of institutional investors is viewed as a characteristic of the firm. The large stockholding of institutional investors induces them to perform monitoring activities, as their voting power allows them to significantly influence management (Shleifer and Vishny, 1986). Bhojraj and Sengupta (2003) find results consistent with the monitoring effect of institutional shareholders; where firms with greater institutional ownership have lower bond yields and higher debt. Thus monitoring by institutions can substitute for monitoring by the board. However, high institutional ownership also allows institutions to influence managers and secure private benefits at the expense of other



shareholders. This study uses the percentage of shares outstanding owned by institutional investors as an explanatory variable. This study expects a positive relationship between greater institutional ownership and accounting conservatism.

#### *5.6.7 The link between firm size (SIZE) and conservatism*

Firm size is used as control variable, by including the market value of equity divided by total assets at the beginning of the fiscal year as an explanatory variable. Large firms likely face large political costs that induce them to use more conservative accounting (Watts and Zimmerman, 1978). On the other hand, Basu et al. (2001) show that, large firms are often less conservative than small firms. Their returns are more volatile, making them more likely to have material economic impairments and therefore exposing their managers to greater legal liability risk. In addition, Givoly et al. (2007) contend that the aggregation of projects in large firms can lead to incorrect inferences regarding the level of conservatism. Givoly et al. (2007) document that the asymmetric timeliness of earnings for large firms is significantly smaller than for small firms, consistent with the information asymmetry and aggregation effect dominating the political cost effect. Therefore, this study expects a negative relationship between firm size and accounting conservatism.

#### *5.6.8 The link between litigation risk (RISK) and conservatism*

Litigation risk, a dummy variable, is included to control for firms with high litigation risk. As the expected cost of litigation is higher for firms that overstate their earnings and/or asset base than for firms that understate their earnings and/or asset base, firms can use conservative accounting to decrease their expected litigation costs (Watts, 2003a). Furthermore, Field et al. (2005) find that technology firms have higher

litigation risk than non-technology firms. Therefore, litigation risk is included as control variable indicating which indicated whether firms are in a technology industry, as defined by Field et al. (2005). The variable is equal to one if the firm is in a technology industry and zero otherwise. This study expects a positive relationship between litigation risk and accounting conservatism.

#### *5.6.9 The link between market-to-book ratio (MTB) and conservatism*

Roychowdhury and Watts (2007) find that, over longer horizons the association between Basu's measure of conservatism and market-to-book ratio flips from negative to positive. While the negative association between the Basu coefficient and market-to-book ratio has been used as evidence against the Basu coefficient capturing conservatism, Roychowdhury and Watts (2007) demonstrate that this negative association is due to relatively greater dependence of short period Basu estimates on the composition of market-to-book ratio at the beginning of the estimation period. This study expects a positive relationship between market-to-book ratio and accounting conservatism.

## Summarized definition of control variables

Variable	Definition	Prior research	Expected sign	Data
<i>DUAL</i>	Dummy variable coded one if the CEO is chairman of the board, zero otherwise.	Jensen (1993)	-	Annual report and <i>SETSMART</i>
<i>BRDSIZE</i>	Number of directors on the board at the year-end.	Ahmed and Duellman (2007)	+	Annual report and <i>SETSMART</i>
<i>IND</i>	Number of independent audit committee divided by total board size.	Klein (2002)	+	Annual report and <i>SETSMART</i>
<i>BIG 4</i>	Dummy variable coded one if the firm's auditor is a big-four firm, zero otherwise.	Basu et al. (2001)	+	Annual report and <i>SETSMART</i>
<i>LEV</i>	Scaled decile rank of total debts divided by total assets at the beginning of the fiscal year.	Ahmed and Duellman (2007)	+	<i>Datastream</i>
<i>PINST</i>	Institutional share ownership as a percentage of the total number of outstanding shares at the year-end.	Schleifer and Vishny (1986)	+	Annual report and <i>SETSMART</i>
<i>SIZE</i>	Scaled decile rank of market value of equity divided by total assets at the beginning of the fiscal year.	Roychowdhury and Watts (2007)	-	<i>Datastream</i>
<i>RISK</i>	Dummy variable coded one if the firm is a technology industry, zero otherwise.	Field et al. (2005)	+	Annual report and <i>SETSMART</i>
<i>MTB</i>	Scaled deciles rank of the market-to-book ratio at the beginning of the fiscal year. Shareholder equity at the beginning of the fiscal year is deducted from revaluation surpluses at the beginning of the fiscal year <sup>18</sup> .	Roychowdhury and Watts (2007)	+	<i>Datastream</i>

<sup>18</sup> Thai GAAP follows IFRS (IAS 16) which permits upward revaluation of assets and capitalization of property, plant, and equipment and capitalization of certain internally generated intangibles (e.g. development cost) whereas US GAAP prohibits such upward revaluation of capitalization of intangibles.