

4. Research methodology

The first analysis will be a descriptive statistics of firm characteristics. These firm characteristics are finance and accounting variables (market capitalization, sales, total assets, operating cash flow, net income before extraordinary items, net sales, book value of equity, number of shares outstanding, debt to equity, earnings per share, market to book value, returns on asset, returns on equity, Tobin's q), board structure (board size, the fraction of independent directors, the fraction of female, the presence of controlling shareholders on board, split of chairman and CEO), ownership structure (director ownership, largest shareholder ownership, the presence of multiple large shareholders), audit committee structure (the fraction of audit committee with accounting or financial expertise, the average tenure of audit committee, the number of meetings), and independent auditor (being the big4 and change of auditor). The analysis will present the findings of financial and non-financial firms separately thorough out the study to account for different regulatory regimes in these two types of firms.

Empirical evidence records that insiders are more likely to manage current discretionary accruals than total discretionary accruals (Guay et al., 1996; Kothari et al., 2005, Jaggi and Tsui, 2007). The discretionary accruals are calculated using four different models and will be selected for the analysis based adjusted r-square.

1) Jones (1991)

$$ACCR_{it} = \beta_0 + \beta_1 \Delta REV_{it} + \beta_2 PPE_{it} + \varepsilon_{it} \quad (1)$$

$$NDACCR_{it} = b_0 + b_1 \Delta REV_{it} + b_2 PPE_{it} \quad (2)$$

Where $ACCR_{it}$ is total accruals of firm i year t. $NDACCR_{it}$ is non-discretionary accruals of firm i year t. ΔREV_{it} is change in revenue of firm i from year t-1 to year t. PPE_{it} is gross property, plant and equipment of firm i year t.

2) Dechow et al. (1995)

$$ACCR_{it} = \beta_0 + \beta_1 (\Delta REV_{it} - \Delta REC_{it}) + \beta_2 PPE_{it} + \varepsilon_{it} \quad (3)$$

$$NDACCR_{it} = b_0 + b_1 (\Delta REV_{it} - \Delta REC_{it}) + b_2 PPE_{it} \quad (4)$$

Where $ACCR_{it}$ is total accruals of firm i year t. $NDACCR_{it}$ is non-discretionary accruals of firm i year t. ΔREV_{it} is change in revenue of firm i from year t-1 to year t. ΔREC_{it} is change in net account receivables of firm i year t. PPE_{it} is gross property, plant and equipment of firm i year t.

3) Kasznik (1999)

$$ACCR_{it} = \beta_0 + \beta_1(\Delta REV_{it} - \Delta REC_{it}) + \beta_2 PPE_{it} + \beta_3 \Delta CFO_{it} + \varepsilon_{it} \quad (5)$$

$$NDACCR_{it} = b_0 + b_1(\Delta REV_{it} - \Delta REC_{it}) + b_2 PPE_{it} + b_3 \Delta CFO_{it} \quad (6)$$

Where $ACCR_{it}$ is total accruals of firm i year t . $NDACCR_{it}$ is non-discretionary accruals of firm i year t . ΔREV_{it} is change in revenue of firm i from year $t-1$ to year t . ΔREC_{it} is change in net account receivables of firm i year t . PPE_{it} is gross property, plant and equipment of firm i year t . ΔCFO_{it} is change in cash flow from operation of firm i from year $t-1$ to year t .

4) Xie (2001)

$$ACCR_{it} = \beta_0 + \beta_1[1/TA_{it}] + \beta_2 \Delta REV_{it} + \beta_3 PPE_{it} + \varepsilon_{it} \quad (7)$$

$$NDACCR_{it} = b_0 + b_1[1/TA_{it}] + b_2 \Delta REV_{it} + b_3 PPE_{it} \quad (8)$$

Where TA_{it} is total asset of firm i year t . $ACCR_{it}$ is total accruals of firm i year t . $NDACCR_{it}$ is non-discretionary accruals of firm i year t . ΔREV_{it} is change in revenue of firm i from year $t-1$ to year t . PPE_{it} is gross property, plant and equipment of firm i year t .

Discretionary current accrual (DACCR) is estimated as of following.

$$DACCR_{it} = ACCR_{it} - NDACCR_{it} \quad (9)$$

Where $DACCR_{it}$ is discretionary accruals of firm i year t . $ACCR_{it}$ is total accruals of firm i year t . $NDACCR_{it}$ is non-discretionary accruals of firm i year t .

Then, we present summary statistics of discretionary current accruals for the sub-samples of financial firms and non-financial firms. The sub-samples are also applied by year to oversee the trend and possible effect of the 2008 global financial crisis on earnings management.

The next step is to relate earnings management and corporate governance mechanisms including board structure and ownership structure by using both univariate and multivariate tests. The panel data analysis is in the following form.

$$\begin{aligned} DCAC_{it} = & \alpha_0 + \alpha_1 FSIZE_{it} + \alpha_2 DTA_{it} + \alpha_3 MB_{it} \\ & + \alpha_4 NED_{it} + \alpha_5 SPLIT_{it} + \alpha_6 DIOWN_{it} + \alpha_7 FAM_{it} \quad (10) \\ & + \alpha_8 BIGF_{it} + \alpha_9 AEXP_{it} + \alpha_{10} AMET_{it} \end{aligned}$$

Where $DCAC_{it}$ is discretionary accruals, $FSIZE$ is natural log of sales, DTA_{it} is debt to asset, MB_{it} is market to book value, NED_{it} is the proportion of non-executive, $SPLIT_{it}$ is dummy

variable equal 1 if the roles of chair man and CEO are separated, and 0 otherwise. $DIOWN_{it}$ is director ownership. FAM_{it} is dummy variable equal 1 if the family sits on board, and 0 otherwise. $BIGF_{it}$ is dummy variable equal 1 if the firm is audited by Big4, and 0 otherwise. $AEXP_{it}$ is the proportion of audit committee with accounting or financial expertise. $AMET_{it}$ is the number of meetings held by the audit committee.

In order to evaluate the association between earnings management and insider trading, the analysis is based on Thai listed firms that have insider trading in the sample year. The distribution of firms in the sample will be exhibited by year.

We compute a firm-specific insider trading metric Net Shares Traded (NST), then identify abnormal insider buy (sell). Beneish and Vargus (2002) and Jaggi and Tsui (2007) note that normal insider trading is likely to be affected by the factors other than earnings management.

$$NST = \sum (\text{Shares Purchased/Shares Outstanding}) - \sum (\text{Shares Sold/Shares Outstanding})$$

Where the shares purchased and sold by all insiders over all the days in a calendar year are summed and scaled by the shares outstanding. The difference between scaled purchased and sales represents NST.

Then, we will calculate descriptive statistics on insider trading: number of insider transactions, number of shares traded, value of shares traded, NST in the fiscal year, and 3 months after the fiscal year.

NST is used to identify abnormal insider buy (sell) activity based on the median of NST buy (sell) of sample firms in such a calendar year. If NST is above zero and greater than the median NST of all net buying firms in calendar year, the firm is considered as an abnormal buying firm. Likewise, if NST is less than zero and lower than the NST median of all net selling firms, the firm is considered as an abnormal selling firm. Abnormal trading (ABT) means abnormal buying and abnormal selling. ABT can be categorized firm-year data as:

Abnormal selling = 1 if $NST < 0$ and NST is lower than the median of all net selling firms, and 0 otherwise.

Abnormal buying = 1 if $NST > 0$ and NST is greater than the median of all net selling firms, and 0 otherwise.

We, then, regress discretionary accruals on abnormal insider buying/selling and corporate governance variables.

$$\begin{aligned}
DACCR = & \beta_0 + \beta_1 \ln mv + \beta_2 td_ta + \beta_3 rroa + \beta_4 abbuy + \beta_5 absell \\
& + \beta_6 abbroa + \beta_7 absroa + \beta_8 daudit_big4 + \beta_9 ptned + \beta_{10} nedbig \\
& + \beta_{11} ptfn\ exp + \beta_{12} split + \beta_{13} dfamfirm
\end{aligned} \tag{10}$$

Where DACCR is discretionary accruals of firm i year t in level form and absolute form, $\ln mv$ is natural logarithm of market value of equity in million baht, td_ta is total debt divided by total assets, $rroa$ is reported return on assets, $abbuy$ is dummy variable equal to 1 if NST is greater than zero and the median of all buying firms and 0 otherwise, $absell$ is dummy variable equal to 1 if NST is lower than zero and the median of all selling firms and 0 otherwise, $daudit_big4$ is dummy variable equal to 1 if the audit firm is one of the big 4 audit firms, and 0 otherwise, $ptned$ is the proportion of independent directors on board, $nedbig$ is the interaction terms of $ptned$ and $daudit_big4$, $ptfinexpert$ is the proportion of directors with accounting or financial background on board, $split$ is dummy variable equal to 1 if the positions of chairman and CEO are held by different person and 0 otherwise, and $dfamfirm$ is dummy variable equal to 1 if the largest shareholder has greater than 25% ownership and is one of the directors.

Finally, we use Fama-French three factor model to measure insider profit of portfolios by abnormal discretionary and abnormal insider trading.

$$R_{p,t} - R_{f,t} = \alpha_p + \beta_p (R_{m,t} - R_{f,t}) + \delta_p SMB_t + \nu_p HML_t + \varepsilon_t \tag{11}$$

Where R_p is portfolio return, R_f is risk free rate, R_m is market portfolio return, SMB is Fama and French size factor returns, and HML is Fama and French market-to-book factor returns.

To estimate equation (11), we classify the firms in our sample into 10 groups by discretionary accruals. The bottom three deciles are defined as low discretionary accruals group and the top three deciles are defined as high discretionary accruals group. Four portfolios are, then, formed by the criteria of abnormal trading and discretionary accruals in non-financial and financial firms separately: abnormal insider buying in high discretionary accruals group, abnormal insider buying in low discretionary accruals group, abnormal insider selling in high discretionary accruals group and abnormal insider selling in low discretionary accruals group. We run time-series regression for these portfolios to estimate the intercept and factor loading. The justification of asymmetric

information is the abnormal returns of hedge portfolio, i.e. buy high earnings quality and sell low earnings quality.

All in all, the empirical evidence will allow us to answer our main questions:

- 1.) Does earnings management exist in the Thai listed firms? If yes, does it change over time?
- 2.) Does the practice of earnings management differ between financial firms and non-financial firms?
- 3.) What are the determinants of earnings management? Can corporate governance and insider trading impact earnings management?

This project will investigate earnings management, corporate governance and insider trading by using a sample of all firms listed in SET. The sample will consist of both financial and non-financial firms for a period of 9 years from 2002 to 2010. Most of the previous studies on earnings management exclude financial institutions, for example Burgstahler and Dichev (1997), Beneish and Vargus (2002), and Thoopsamut and Jaikengkit (2009), because they are highly regulated under the Bank Act and have a unique capital structure. In contrast, several papers argue that financial institutions should be examined, for instance Morgan (2002), Shen and Chih (2005), and Charoenwong and Jirapan (2009). The opacity of banks exposes the entire financial system to bank runs and contagion. To maintain depositors' confidence in financial institutions, managers may adopt earnings management to avoid violating strong regulations in terms of many financial ratios, i.e. non-performing loan ratio, capital adequacy ratio and liquidity ratio.

The internal corporate governance mechanisms under consideration are board structure, audit committee structure and ownership structure. We can determine the relationship between earnings management and corporate governance since the principles were implemented in 2002. In addition, firms will be selected if they survived until 2007 from the initial sample. As mentioned in Section 7, SET issued the principles of corporate governance in 2002 and revised them in 2006. Although this criterion may result in survivorship bias; the exclusion of non-survival firms will ensure that the compliance/non-compliance with the principles were not attributable to the danger of firm failure or the activity of takeover (Hillier and McColgan, 2006). Further, firms under rehabilitation are excluded because their financial data and corporate governance data are mostly incomplete or financial reports are not available. With regard to insider trading, the insiders are defined as directors and top executive offices according to disclosure manual for Thai listed firms.