

Earnings Management, Corporate Governance and Insider Trading: Evidence from Thailand¹

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Abstract

Empirical evidence for developed countries has shown that corporate governance has the capacity to constrain earnings management. However, because of endemic informational inefficiency in emerging markets, earnings management may actually be one of the mechanisms used to improve the quality of information. Using Thai regulatory reforms of corporate governance over the period of 2002-2011, this paper investigates whether corporate governance leads to greater earnings management in emerging markets. The findings from two-stage least squares show that corporate governance characteristics such as a board with directors having accounting or financial expertise, splitting the role of Chairman/CEO and family owners are associated with lower levels of earnings management, whereas larger boards and a higher proportion of non-executive directors are positively associated with earnings management. In addition, we find that a hedge portfolio based on insider trading conditioned on earnings management provides

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positive returns. However, once returns are adjusted for risk, there is no evidence of abnormal performance suggesting that efficient price formation in Thailand. The findings contribute to the debate on the efficacy of corporate governance in emerging markets. The policy implications of our study are that corporate governance can enhance the informational quality of earnings.

Keywords: Corporate Governance, Earnings Management, Emerging Markets, Insider Trading, Information asymmetry, Thailand.

การจัดการกำไร ธรรมชาติ และการซื้อขายหุ้นของ บุคคลวงใน: กรณีศึกษาประเทศไทย¹

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บทคัดย่อ

หลักฐานเชิงประจักษ์ของประเทศที่พัฒนาแล้วได้แสดงให้เห็นว่า การมีธรรมชาติส่งผลให้การจัดการกำไรลดลง อย่างไรก็ตาม เนื่องจากความไม่มีประสิทธิภาพของการรับรู้ข้อมูลข่าวสารในตลาดเกิดใหม่ การจัดการกำไรของบริษัทสามารถถูกใช้เพื่อเป็นกลไกหนึ่งในการทำให้คุณภาพของข้อมูลข่าวสารดีขึ้นได้ งานวิจัยนี้จึงทำการศึกษาว่าธรรมชาติส่งผลต่อการจัดการกำไรของบริษัทหรือไม่ในตลาดเกิดใหม่โดยใช้ข้อมูลประเทศไทยปี พ.ศ. 2545-2554 ที่ได้มีการปฏิรูปกฎเกณฑ์ด้านธรรมชาติเป็นกรณีศึกษา ผลจากสมการถดถอยกำลังสองน้อยที่สุดสองชั้นแสดงให้เห็นว่าคุณลักษณะด้านธรรมชาติ อันได้แก่ คณะกรรมการที่มีความชำนาญด้านบัญชีหรือการเงิน การแยกบทบาทของประธานกรรมการและกรรมการผู้จัดการ และบริษัทครอบครัว มีความสัมพันธ์กับการลดลงของการจัดการกำไร ในขณะที่จำนวนคณะกรรมการที่มากขึ้นและสัดส่วนของกรรมการที่ไม่เป็นผู้บริหารที่สูงขึ้น มีผลทำให้การจัดการกำไรเพิ่มขึ้น นอกจากนี้ ผู้วิจัยพบว่ากลุ่มหลักทรัพย์ที่ติดตามการซื้อขายหลักทรัพย์ของบุคคลวงในและการจัดการกำไรสามารถให้อัตราผลตอบแทนที่เป็นบวก อย่างไรก็ตาม เมื่อปรับปรุงอัตราผลตอบแทนดังกล่าวด้วยความเสี่ยงแล้วกลับไม่ปรากฏผลตอบแทนที่ผิดปกติอันแสดงถึงความมีประสิทธิภาพในการกำหนดราคา ผลการศึกษานี้จึงก่อให้เกิดประโยชน์ต่อคำโต้แย้งในด้านประสิทธิภาพของธรรมชาติในตลาดเกิดใหม่ การนำไปใช้เชิงนโยบายที่เป็นไปได้ต่อผู้กำหนดกฎเกณฑ์ตลาดคือธรรมชาติสามารถเพิ่มคุณภาพทางข้อมูลข่าวสารของกำไร

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1. Introduction

In this paper, we ask what impact corporate governance has on earnings management, as well as examine the insider trading and earnings management relationship in the context of distinctive corporate governance and ownership structures that exist in emerging market environments. One of the conduits for managers to influence observed corporate performance is through earnings management. Although earnings figures are monitored by auditors, the audit committee, board of directors, and financial analysts, many studies report that earnings are proactively manipulated. Reasons include a desire to exceed a specified earnings threshold (Degeorge, Patel, and Zeckhauser, 1999), to avoid a decrease in earnings (Burgstahler and Dichev, 1997, Charoenwong and Jiraporn, 2009); to improve executive compensation (Safdar, 2003; Burns and Kedia, 2006; Bergstresser and Philippon, 2006; Efendi, Srivastava, and Swanson, 2007; Cornett, Marcus, and Tehranian, 2008); to exploit informational inefficiencies (Beneish and Vargus, 2002); to enhance job security (DeFond and Park, 1997; Ahmed, Lobo, and Zhou, 2006; Mergenthaler, Rajgopal, and Srinivasan, 2009); and to improve operational flexibility (DeFond and Jiambalvo, 1994; Sweeney, 1994). However, if prices are inefficient, earnings management can also be used to signal valuable information to investors (Guay, Kothari, and Watts, 1996; Arya, Glover, and Sunder, 2003).

In the same context, corporate governance impacts upon all areas of a company's operations by improving the decisions of a company's management. It has been shown to increase firm value (Chong and Lopez-de-Silanes, 2006; Balasubramanian, Black, and Khanna, 2010; Ammann, Oesch, and Schmid, 2011; Eberhart, 2012), affect dividend decisions (Gugler, 2003; Gugler and Yurtoglu, 2003; Mitton, 2004), reduce related party transactions (Gordon, Henry, and Palia, 2004; Wahab, Haron, Lok, and Yahya, 2011; Tong, Wang, and Xu, 2014), lower the frequency of discretionary accruals (Hutchinson, Majella, and Erkurtoglu, 2008; Kent, Routledge, and Stewart, 2008; Bhuiyan, Roudaki, and Clark, 2013) and mitigate against corporate fraud (Caplan, 1999; Beasley, Carcello, Hermanson, and Lapides, 2000).

In developed markets, regulatory scrutiny and strong legal institutions incentivize firms to have effective corporate governance structures that constrain managerial behavior. However, in emerging markets, there are a number of institutional factors that reduce the power of corporate governance to affect managerial decisions. Informational inefficiencies, weak regulatory institutions, concentrated ownership structures, and a general lack of investor sophistication suggests that managers will be more entrenched in emerging market environments (Kanna and Palepu, 2000, La Porta, Lopez-de-Silanes, Shleifer, 1999; La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 1998, 2000; Patel, Balic, and Wakira, 2002; Lins, 2003; Claessens, Fan, and Lang, 2006).

Earnings management can be a serious problem if it helps managers to become even more entrenched in a firm. With low information quality being endemic in less-developed economies, regulators have a responsibility to minimize the likelihood that earnings management is used to maximize the utility of managers at the expense of shareholders. This is the reason why corporate governance is so important.

Besides, Ke et al. (2003) report that insider trading can indicate earnings quality. They find that net insider trading activity is correlated with breaks in consecutive earnings increases. Insider sales are also more common for growth firms before a longer period of declining earnings and when the drop in earnings is greater. Beneish and Vargus (2002) suggest that earnings quality can be assessed by informative insider trading. They highlight that insider trading can be used to identify the quality of accruals and present evidence that managers inflate earnings prior to insider sales. Insider trading may take place in response to earnings shocks to mitigate their impact (Olsen and Zaman, 2013). Since senior corporate executives have much greater knowledge of internal operations and future expected cash flow streams, contemporaneous insider trading may provide evidence that reported accruals are too high or too low.

Many studies observe insider trading is contrarian in nature (Cheng and Leung, 2008; Ke et al., 2003; Kahle, 2000; Karpoff and Lee, 1991). They report that insiders trade on their informational advantage of future firm performance as well as on other private information in anticipation of future corporate disclosures. Baryeh, Yaari, and Dadalt, (2012) note that market participants are unable to perfectly infer earnings

management and do not take into account earnings management, thus weakly rewarding unobservable inflated earnings. Firms with insider sales typically manage earnings more aggressively than firms with net insider buying activity. Ke et al. (2003) suggest that earnings no longer truly reflect firm fundamentals and earnings management makes financial reports opaque. As a result, insider trading can be an alternative source of information and more informative to investors.

We use Thailand as a case study because although the country is regarded as an emerging market according to most criteria, it has a vibrant stock market, open economy, strong accounting regulations, and a very strong culture of record keeping (Alba, Claessens, and Djankov, 1998; Forson and Janrattagul, 2013; Limpaphayom and Connelly, 2004; Pongsaparn, 2007; Valadkhani and Chancharat, 2008). Principles of good corporate governance in Thailand were introduced in 2002 and these were revised in 2006 to be coherent with the OECD Principles of Corporate Governance. Apart from the standard requirements, the principles recommend guidelines for corporate insider trading in securities of their own firm. Directors are prohibited from engaging in trading based on non-public material information in many forms of regulations, e.g. the Securities and Exchange Act no. 241, the Codes of Best Practice for Directors of Listed Companies, the Principles of Security Regulations no. 10 and 28, the Principles of Good Corporate Governance for Listed Companies and the Guidelines on Disclosure of Information of Listed Companies- Section 3.6(2).

We find less earnings management when a firm has directors with accounting or financial expertise, the role of chairman and CEO is split between two people, and the company has a controlling family shareholding. Firms with larger board sizes and a greater proportion of non-executive directors have higher levels of earnings management. There is very little impact on earnings management from controlling shareholders and firms using the big 4 audit firms. One-third of firm-year observations or seventy-five percent of the total number of firms in our sample as having corporate insider trading. Generally, insider sales are larger in size and price than insider purchases. Firms with abnormal insider trading have different firm sizes, unmanaged return on assets and many corporate governance practices- i.e. board size, the proportion of non-executive directors

on the board, the proportion of directors with accounting or financial expertise, splitting the role of chairman and CEO, director ownership and multiple large shareholders- from those without abnormal insider trading. Discretionary accruals are generally lower and do not have relationship with abnormal insider trading. Furthermore, hedge portfolios that use earnings management as the proxy for information asymmetries can offer positive returns, but these become negative after adjusting for risk.

Our study contributes to the debate on corporate governance in emerging markets by showing that higher overall governance quality does not necessarily mean that earnings management will be lower. The specific characteristics of a firm's governance structure are key in this regard. Unlike developed market research (e.g. Warfield, Wild and Wild, 1995; Peasnell, Pope, and Young, 2000; Klein, 2002; Hazarika, Karpoff and Nahata, 2012), our overall evidence suggests that strong boards increase earnings management whereas concentrated ownership and control leads to lower earnings management. Our findings also shed light on theoretical research (Clikeman, 2003; Leuz, Nanda, and Wysocki, 2003) which argues that earnings management imposes transparency costs on shareholders. Instead, we believe that with emerging market's poor information environment, earnings management increases informational efficiency and, as a result, shareholder costs are reduced. Discretionary accruals do not impact reported ROA. Earnings management is more likely to improve information quality in this context. Upward earnings management tends to be a signal of good news to the market when it is in conjunction with insider buying activity. Nevertheless, positive relationship of earnings management and the proportion of non-executive directors is found in net insider selling companies. This may suggest an effort to improve NED roles and to evaluate the procedures for the appointment of NEDs to ensure independence and monitoring effectiveness. Additionally, although positive returns of hedge portfolios based on insider trading is indication of information asymmetry in the market, the exploitation of this information disadvantage is not empirically verified. Insider trading does not appear to harm market quality and, in contrast, can serve as a valuable information signal to the market.

The remainder of this paper is organized as follows. Section 2 summarizes the extant literature. Section 3 describes the data and research methodology. Finally, Section 4 presents the empirical results and Section 5 concludes.

2. Literature Review

Earnings management has attracted policy and academic interest since Healy (1985) showed that accruals management can be used to manipulate executive compensation. A number of studies have been conducted on earnings management in the context of developed economies. McKee (2005) argues that in order to achieve predictable financial results, earnings management is a reasonable and legal management activity. More recent research addresses the issue of managers manipulating earnings to affect stock prices or meet analyst forecasts (Leuz, et al., 2003; Bhattacharya, Black, and Larson, 2003). For example, Burgstahler and Dichev (1997) and Degeorge et al. (1999) document the use of accruals in US firms to avoid reporting small losses. There are various aspects of research into earnings management such as its presence in firms, (Matsunaga and Park, 2001; Othman and Zeghal, 2006), its magnitude (Bauwhede and Wilekens, 2003; Charoenwong and Jiraporn, 2009), corporate constraints (Van Caneghem, 2002, Wasley and Wu, 2006; Givoly, Hayn, and Katz, 2010), incentives to manage earnings (Sevin and Schroeder, 2005; Darrough and Rangan, 2005), and the market impact of earnings management (Dechow, Sloan, and Sweeney 1995; Sloan, 1996; Beneish, 1997).

When managerial incentives rely on a firm's financial performance, there may be a potential agency problem between managers and shareholders that leads to financial fraud (Enron, Worldcom and Parmalat are examples). As a result, many market regulators have increased corporate governance requirements to enhance the reliability of financial reports (Beasley, 1996; Abbott, Parker, and Peters, 2001). Also, if insider trading and earnings management are tools for managers to set their own remuneration, there will be a relationship between the two actions, either substitutive or complementary.

Earnings management and corporate governance

Cornett et al. (2008) conclude that well-designed corporate governance practices can limit earnings management. Other studies also provide evidence of the impact of corporate governance on earnings management. For example, Peasnell et al. (2000) and Klein (2002) report that lower discretionary accruals are associated with the appointment of independent directors. Using the absolute value of discretionary accruals, Warfield et al. (1995) find a positive relationship between accruals and managerial ownership. Shen and Chih (2007) conclude that South East Asian firms with good corporate governance tend to conduct less earnings management. In contrast, firms in stronger anti-director right countries exhibit stronger earnings smoothing.

Bergstresser and Philippon (2006) show that there is a positive relationship between performance-related compensation and earnings management. Thoopsamut and Jaikengkit (2009) focus on the impact of the audit committee on quarterly earnings announcements of Thai firms during 2005 and 2006. Only the tenure of audit committee members reduces earnings management. Charoenwong and Jiraporn (2009) find weak evidence of earnings management in Singaporean and Thai firms between 1975 and 2003. Further, they document that government-linked firms manage their earnings to sustain recent performance, whereas private firms manage their earnings to report zero or positive profits. Likewise, several studies report an association between ownership type and earnings quality (Beatty et al., 2002; Ball and Shivakumar, 2006; Chen, Duh, and Shiue, 2008; Guthrie and Sokolowsky, 2010; and Givoly et al., 2010). Fan and Wong (2002) and Wang (2006) finds that high family ownership firms in East Asia have high quality earnings as long as ownership is not too concentrated in the controlling owner.

Various proxies of corporate governance are used to link with earnings management, for instance board composition, external auditor and ownership. GAAP requires firms to use accruals; however management can control the timing of accrual expenditure (Xie, Davidson, and DaDalt, 2003). Tangjitprom (2013) supports the role of corporate governance to reduce negative earnings management, leading to increase firm value. The board of directors has to monitor and control these discretionary accruals. It is expected that higher board composition of non-executive directors will improve

monitoring effectiveness (Vafeas, 2000). Xei et al. (2003) confirm that a large board with more independent directors can prevent earnings management. However, existing evidence highlights that non-executive directors may not act as good monitors if they have other directorships that compete for their time or if they have limited time to devote to the company (Luan and Tang, 2007; Peasnell, Pope, and Young, 2005; Tang, Chen, and Chang, 2013). Besides, companies with a controlling shareholder typically have less independent decision-making, since the controlling shareholder can access to information and control decision activities of board of directors. Management is more independent in control over decision making if shareholding is scattered. Thus, family involvement on a firm's board may lead to higher earnings management (Uzun, Szewczyk, and Varma, 2004). Additionally, Chomchan (2007) finds that the board of directors, audit committee and chairman characteristics affect earnings management, measured by total accruals in Thai listed firms between 2003 and 2005. Another important board characteristic is CEO duality. If the CEO also holds the position of chairperson, monitoring ability of the board is less. Abdul et al. (2005) claim that companies with CEO duality perform worse than their competitors. Nevertheless, some existing research papers do not find a significant relationship between CEO duality and earnings management, such as Bugshan (2005), Cornet et al. (2006), Rahman and Ali (2006) and Meca and Ballesta (2009).

Many studies focus on the audit monitoring mechanism and earnings management, such as Bauwhede et al. (2003), Bedard, Chtourou, and Courteau (2004), Bradbury, Mak, and Tan (2004) and Yang and Krishnan (2005). Audit firm size (big 4 or non-big 4 audit firm) is typically used as a proxy for quality auditors. Big 4 auditors are more likely to be conservative and control the use of discretionary accruals. Balsam Krishnan, and Yang (2003), Siregar and Utama (2008) and Teoh and Wong (1993) point that the big 4 auditors have greater independence from their clients. Discretionary accruals in companies audited by big 4 firms have less discretionary accruals than in other firms. Finally, Xie et al. (2003) and Bedard et al. (2004) document smaller discretionary accruals in the firms with directors having a financial background.

The above literature suggests two main reasons for earnings management. One, firms smooth earnings to maximize the utility of executives, whether it is through increased remuneration, improved job security, or enhanced operational flexibility. The other reason is that managers use earnings management to increase the quality of information relating to the firm's operations. Irrespective of the underlying reason for earnings management, the incentive to undertake this type of activity will be stronger in emerging markets given the informational inefficiencies endemic to the environment and the lower thresholds for managerial entrenchment. If corporate governance improves executive decision-making, then observing how it relates to earnings management provides insights into why managers smooth income figures.

Earnings management and insider trading

Many studies suggest that insider trading can convey private information about a firm's prospects to the market. This is generally explained by signaling theory, (Kabir and Vermaelen, 1996; Garfinkel, 1997; Bettis, Coles, and Lemmon, 2000; Fredereich, Gregory, Matatko, and Tonks 2002; Hauser, Kraizberg, and Dahan 2003; Darrough and Rangan, 2005; Barron, Harris, and Stanford, 2005; Louis and White, 2007; and Prentice and Donelson, 2010). Empirical evidence documents the association between earnings management and insider trading, where the likelihood that a firm's accruals are high or low quality can be reflected by contemporaneous insider trading (Beneish and Vargus, 2002). In other words, insider trading is informative about earnings quality. Tang, Chen and Chang (2012) also provide evidence that insider trading is more informative when alternative sources of information are poor quality.

Claessens et al. (2000) document that stock exchanges in Southeast Asian countries do not have strict regulations on both insider trading or earnings management, and the implementation of these regulations is weak. Jaggi and Tsui (2007) document that insider trading is common even in Hong Kong, which is known as one of the largest financial centers in the region. When corporate executives intend to buy (sell) their shares in the public market, they can manage earnings to present a worse (or better) performance and motivate outside investors to sell (or buy) shares of their firms in turn maximizing profit from their own insider trading activity.

Gains from insider trading around earnings announcements with abnormal accruals can only be realized when those shares are sold. Insider buying may be motivated by market opportunities and individual needs. On the other hand, abnormal insider buying in conjunction with higher reported earnings may appear illegal to the regulators. As a result, accruals are likely to be negative. Sawicki and Shrestha (2008) support the view that insiders manage earnings downward when buying and upward when selling. Value firms (high book to market value) are more likely to manage their earnings upward relative to growth firms (low book to market value). Tang et al. (2013) further investigate the endogenous relationship between abnormal insider trading and accruals and examine whether corporate governance affects this relationship. They suggest that insiders take advantage of abnormal accruals to time their trading as well as manipulate accruals to mislead the market prior to their trading on the Taiwan Stock Exchange. However, Kolaskinski and Li (2010) indicate that public information about prices and earnings affects insider's trading strategies. If the price reaction to an earnings announcement is negative (positive), insiders will buy (sell). In other words, managers are savvy about their own company share price.

Several studies report that litigation is more likely against firms whose managers sell their stocks and manage earnings (Grundfest and Perino, 1997; Lu, 2003; Johnson, Nelson, and Pritchard, 2007). They use event study methodology to examine insider trading immediately after earnings announcements in association with discretionary accruals in the prior period. The general finding is that managers increase discretionary accruals to sell their shares subsequently at inflated prices. Nevertheless, many papers highlight the threat of litigation in explaining manager's trading patterns surrounding material events. Managers sell and manage earnings contemporaneously for the subsequent revelation of declining financial performance. For example, Beneish and Vargus (2002) show that managers trade on advance knowledge of their firm's earnings quality. Also, Ke et al. (2003) find that managers do not trade in two quarters prior to a break in consecutive earnings increases. Rogers (2008) supports the view that the quality of information managers provide to the market is affected by incentives. Managers provide higher quality disclosures before selling their shares than they provide in the absence of trading and high quality disclosure is used to reduce the litigation risk associated with management sales.

Based on signaling theory, managers send a signal of firm value in the form of earnings forecasts and insider trading. Managers will hold more shares only when firm value (earnings) is higher. Managers are more likely to signal firm value in an efficient manner with the least costly combination of signals. Signaling costs can be mitigated with earnings management (Lee 1998, 2004, 2005). Managers can signal the firm value by using direct disclosure of expected earnings and insider ownership retention simultaneously, and voluntary disclosure of earnings forecasts is positively related to the extent of earnings management. Thus, insider ownership is positively related to the extent of earnings management.

3. Data and Research Methodology

The initial sample consists of non-financial firms listed on the Stock Exchange of Thailand (SET) over the period 2002 to 2011. The starting year is 2002 as this was the year that corporate governance principals were formally introduced to the country, resulting in the public availability of corporate governance data. The raw data relating to corporate executive trading data in SEC Form 59-2 between 2002 and 2004 was provided by the Thai Securities and Exchange Commission (SEC) and we then manually collected from the SEC website for year 2005-2011. A number of filtering rules are applied to ensure that the sample of insider trades is not confounded by exogenous corporate events and poor data characteristics. First, only transactions in publicly traded equities are included in the sample. Second, we omit all transactions that are related to warrant and option exercises. Finally, all firms must have accounting and financial data on Datastream. Information on corporate governance is manually collected from Form 56-1 (annual registration statement). All firm variables are winsorized at 1% to exclude extreme values. Corporate governance information includes board structure (i.e. board size, fraction of independent directors, fraction of directors with financial expertise, chairman/chief executive split role dummy), ownership structure and board details. A full description of all variables is given in the appendix. In total, there are 338 firms or 3,711 firm-year observations of which 1,682 observations and 2,029 observations are classified into the pre- and post-2006 corporate governance reform periods, respectively. There are 4,660 firm-year observations in total of which 33% has insider trading. The proportion of companies with insider trading is about 83% and 56% on average for non-financial and financial firms, respectively.

Table 1 Sample distribution

The table reports the number of sample firms over the sample period ranging from 2002 to 2011.

Year	No. of firm-years	Firm-years withinsider trading	%
2002	336	95	28.27%
2003	336	122	36.31%
2004	336	105	31.25%
2005	336	115	34.23%
2006	336	120	35.71%
2007	338	100	29.59%
2008	338	112	33.14%
2009	338	109	32.25%
2010	337	138	40.95%
2011	337	140	41.54%
Total no. of firm-years	3368	1156	34.32%
No. of firms	338	278	82.25%

Following Ball et al. (2000), Lang, Raedy, and Yetman (2003) and Machuge and Teitel (2009), earnings quality is measured by the variability of earnings and the ratio of earnings variability to operating cash flow. Earnings variability is positively associated with earnings quality. Empirical evidence also records that firms are more likely to manage discretionary accruals than total accruals (Guay et al., 1996; Kothari, Leone, and Wasley, 2005; Jaggi and Tsui, 2007). The absolute value of discretionary accruals is used as a measure of earnings management. We measure accruals by using the Jones (1991), Dechow et al. (1995) and Kasznik (1999) models. In the main section of the paper, we use the Dechow et al. (1995) model and present results for the other models in our robustness tests. In general, the three proxies present similar results. Total accruals (ACCR) are defined as the difference between net income before extraordinary items and net cash flows from operating activities. We then disaggregate total accruals (ACCR) into non-discretionary accruals (NDACCR) and discretionary accruals (DACCR).

Non-discretionary accruals are the fitted values from respective regressions of the Jones (1991), Dechow et al. (1995), and Kasznik (1999) models, and discretionary accruals are the residuals from these regressions. All variables are standardized by beginning-year total assets. The models are:

1) Dechow et al. (1995)

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

where $ACCR_{it}$ is total accruals of firm i in year t , ΔREV_{it} is the change in net account receivables of firm i in year t and PPE_{it} is gross property, plant and equipment of firm i in year t .

2) Jones (1991)

$$ACCR_{it} = \beta_0 + \beta_1 (\Delta REV_{it} - \Delta REC_{it}) + \beta_2 PPE_{it} + \epsilon_{it} \quad (2)$$

where $ACCR_{it}$, ΔREV_{it} , and PPE_{it} are as before, and ΔREC_{it} is the change in revenue for firm i from year $t-1$ to year t ,

3) Kasznik (1999)

$$ACCR_{it} = \beta_0 + \beta_1 (\Delta REV_{it} - \Delta REC_{it}) + \beta_2 PPE_{it} + \beta_3 \Delta CFO_{it} + \epsilon_{it} \quad (3)$$

where $ACCR_{it}$, ΔREV_{it} , PPE_{it} , and ΔREC_{it} are as before, and ΔCFO_{it} is the change in operating cash flow of firm i from year $t-1$ to year t .

We then relate accruals to corporate governance by using an instrumental variable regression with two-stage least squares.

$$\begin{aligned} ABDACCR_{it} = & \alpha_0 + \alpha_1 LNMV_{it} + \alpha_2 DTA_{it} + \alpha_3 ROA_{it} + \alpha_4 LNBSIZE_{it} \\ & + \alpha_5 DAUDIT_{BIG4_{it}} + \alpha_6 PTNED_{it} + \alpha_7 PTFINEXPERT_{it} + \alpha_8 SPLIT_{it} \\ & + \alpha_9 DFAMFIRM_{it} + \alpha_{10} (DFAMFIRM_{it} * ROA_{it}) \\ & + \alpha_{11} (DFAMFIRM_{it} * PTFINEXPERT_{it}) \end{aligned} \quad (4)$$

where $ABDACCR$ is absolute discretionary accruals of firm i in year t . $LNMV$ is the natural log of market value. DTA is the debt to assets ratio. ROA is the return on assets. $LNBSIZE$ is the natural log of board size. $DAUDIT$ is a dummy variable equal to 1 if the independent auditor is one of the big four audit firms and zero otherwise. $PTNED$ is the

proportion of non-executive directors on the board. FINEXPERT is the proportion of financial experts on the board. SPLIT is a dummy variable equal to 1 if the roles of chairman and CEO are split and zero otherwise. DFAMFIRM is a dummy variable equal to 1 if the largest family shareholder holds at least 25% of the company's equity and is on the board, and 0 otherwise.

To evaluate the relationship between earnings management and insider trading, abnormal insider buying and selling are classified according to the median of scaled insider buying and selling in each year for all firms. Net Shares Traded (NST) is computed for each firm and then abnormal insider buying and selling is identified based on the median of NST buy and sell.

$$NST_i = \sum \left(\frac{SharesPurchased_i}{SharesOutstanding_i} \right) - \sum \left(\frac{SharesSold_i}{SharesOutstanding_i} \right) \quad (5)$$

where the shares purchased and sold are number of shares purchased and sold by all insiders in year i . *SharesOutstanding* is the number of shares outstanding in year i .

We, then, classify the sample firms in each year into three groups by insiders' net shares traded: positive, negative and zero. We use the distribution of firms by groups of insiders' net shares traded to analyze the pattern of insider trading.

Finally, to examine the association between insider trading performance and information asymmetry (as proxied by discretionary accruals), we construct four monthly calendar-time portfolios conditional on discretionary accruals and the types of insider transaction (purchase and sale). The four portfolios are: (1) firms engaged in high discretionary accruals and net purchase insider trading; (2) firms engaged in high discretionary accruals and net sale insider trading; (3) firms engaged in low discretionary accruals and net purchase insider trading; and (4) firms engaged in low discretionary accruals and net sale insider trading. Portfolios 1 and 4 represent the portfolios of firms with signaling discretionary accruals adjustment in the same direction as insider trading. We use the Fama-French three factor model to model the return of hedge portfolios by abnormal discretionary and insider trading.

$$R_{hp,t} = \alpha_p + \beta_p (R_{m,t} - R_{f,t}) + \delta_p SMB_t + \nu_p HML_t + \varepsilon_t \quad (6)$$

where R_{hp} is hedged portfolio return, R_f is risk free rate, R_m is market portfolio return, SMB are Fama and French size factor returns, and HML are Fama and French market-to-book factor returns.

To estimate equation (6), we classify the firms in our sample into 10 groups by discretionary accruals. The bottom three deciles are defined as the most negative discretionary accruals group and the top three deciles are defined as the most positive discretionary accruals group. Four portfolios are formed by the criteria of abnormal trading and discretionary accruals in non-financial and financial firms separately: abnormal insider buying in the high discretionary accruals group, abnormal insider buying in the low discretionary accruals group, abnormal insider sales in the high discretionary accruals group and abnormal insider sales in the low discretionary accruals group. We run equation (6) for these portfolios separately to estimate the intercept and factor loadings.

4. Empirical Results

Table 2 presents summary data on firm characteristics, performance and corporate governance in Panels A, B and C, respectively. On average, Thai firms have been listed on the stock exchange for 12 years and their market value is 12.69 billion baht (about US\$400 million) with debt to assets of 0.26 and a market to book ratio of 1.3. Firm size grew significantly from about 10 billion baht in the pre-reform period to 14 billion baht in the post-reform period. Firm leverage (i.e. debt to assets) significantly decreased from about 0.30 in the pre-reform period to 0.24 in post-reform period.

With regard to firm performance, the average return on assets (ROA) over the full period was 10 percent, reflecting a 12 percent and 9 percent ROA before and after the corporate governance reforms, respectively. To ensure that ROA is robust to accounting manipulation, we follow Cornett et al. (2008) and also calculate an Unmanaged ROA, which is defined as (EBIT-Discretionary accruals)/Total Assets. With all three models (Jones, 1991; Dechow et al., 1995; Kraznik, 1999), the unmanaged ROA was 12.9%, which statistically remained unchanged throughout the full period.

Table 2 Descriptive Statistics

	Full	Pre-Reform	Post-Reform	t-diff
A. Firm characteristics				
Firm age	12.82	11.18	13.71	8.90
Market value	12,693.20	10,259.36	14,018.07	1.98
Debt to asset	0.26	0.30	0.24	-5.78
Market to book value	1.34	1.57	1.21	-1.21
B. Firm performance				
Reported ROA	0.10	0.12	0.09	-2.54
Unmanaged ROA				
Dechow et al. (1995)	0.13	0.14	0.12	-1.15
Jones (1991)	0.13	0.14	0.12	-1.15
Kasznik (1999)	0.13	0.14	0.12	-1.13
C. Corporate governance variables				
Board size	10.77	11.01	10.64	-2.98
Fraction of independent directors	0.37	0.32	0.40	15.31
Fraction of directors with financial expertise	0.27	0.11	0.35	32.17
Split of chairman and CEO	0.74	0.70	0.77	4.07
Director ownership	20.62	20.73	20.56	-0.19
Largest family ownership	36.66	35.14	37.47	2.58
Dummy if largest shareholder on board	0.89	0.89	0.89	0.10
Dummy if multiple large shareholders	0.63	0.59	0.65	3.02
Dummy if family firms	0.64	0.61	0.65	2.11
Audit committee size	2.39	2.60	2.29	-7.56
Dummy if big 4 auditor	0.55	0.61	0.52	-4.54

This table reports summary statistics of firm characteristics, firm performance and corporate governance. The sample covers non-financial Thai listed firms between 2002 and 2011. The Pre-Reform sub-period covers the sample between 2002 and 2005 and represents the period before the implementation of the Principles of Corporate Governance. Post-Reform sub-period covers the sample between 2006 and 2011 and represents the post-implementation of Principles of Corporate Governance. Firm characteristic variables include firm age (the number of years from incorporation year to the financial report year), market value (millions baht), debt to asset (total debt divided by total assets), and market to book value (market value of equity divided by book value of equity). Firm performance variables include reported ROA and unmanaged ROA (reported ROA-discretionary accruals), in which the discretionary accruals are measured by three models: Dechow et al. (1995), Jones (1991) and Kasznik (1999). Corporate governance variables include board size (the number of directors on the board), fraction of independent directors (the proportion of independent directors on the board), fraction of directors with financial expertise (the proportion of directors with accounting or financial background on board), split of chairman and CEO (dummy variable equal to 1 if the positions of chairman and CEO are held by different person, and 0 otherwise.), director ownership (direct and indirect shareholdings of directors and their spouses), largest family ownership (direct and indirect shareholdings of the largest shareholder), dummy if largest shareholder on board (dummy variable equal to 1 if the largest shareholder is a director on board, and 0 otherwise.), dummy if multiple large shareholders (dummy variable equal to 1 if the firm has many shareholders with greater than 25% ownership, and 0 otherwise.), dummy if family firms (dummy variable equal to 1 if the largest shareholder has greater than 25% ownership and is one of the directors), audit committee size (the number of audit committee) and dummy if big 4 auditor (dummy variable equal to 1 if the audit firm is one of the big 4 audit firms, and 0 otherwise).

The average board of directors in Thai-listed firms has approximately 11 directors and, generally, Thai listed firms split the positions of chairman and CEO (74%). The split is more common in the Post-reform period and significantly different from that of the pre-reform period. Moreover, after the introduction of the 2006 Corporate Governance reforms, Thai firms had significantly more independent and financially experienced directors. Shares held by directors were approximately 20 percent on average. Families increased their control in the latter period by growing their shareholdings from 35.1 percent to 37.5 percent. Further, 89 percent of firms had a representative of the largest shareholder on the board. The average audit committee size is about 2.39, and 55 percent of firms had an auditor from one of the big 4 firms.

Earnings Quality

Leuz et al. (2003) and Price, Roman, and Rountree (2011) present four proxies of earnings management: (a) the ratio of earnings volatility to cash flow volatility, (b) correlation between changes in accruals and changes in cash flows, (c) absolute value of scaled accruals and (d) the propensity of small positive earnings to small negative earnings. The first two proxies capture earnings smoothing behavior. A lower ratio for (a) and higher correlation in (b) both imply greater usage of accruals to smooth earnings. The third proxy (c) shows the aggressiveness of accruals, while the last proxy (d) ties accrual management to benchmark thresholds. In this study we use proxy (a) to determine whether earnings management takes place, and (c) to measure the extent to which discretion in reported earnings is exercised.

Table 3 presents some descriptive statistics of our earnings management proxies. The variability of net income is 0.0014 and the variability of net income to operating cash flow ratio is 0.0374. From Table 2, net income variability (VNI) and operating cash flow variability (VOCF) is lower after the corporate governance reforms. In particular, the ratio of VNI/VOCF is significantly lower. Likewise, the correlation between changes in operating cash flow and changes in accruals is negative, signaling greater income smoothing. The ratio of small profits to small losses is larger than 1 and suggests evidence of loss avoidance. Assuming that the corporate governance reforms are effective, it appears that managers were more likely to act in shareholder's interests by smoothing income figures to improve information quality.

Table 3 Earnings Management Statistics

	Full Pre-Reform	Post-Reform	
Variability of change in OCF (VOCF)	0.00460	0.00462	0.00458
Variability of change in NI (VNI)	0.00140	0.00151	0.00134
VNI/VOCF	0.03740	0.03890	0.03660*
Correlation between change in CFO and change in accruals	-0.40944	-0.48336	-0.39224
Small profits to small losses	2.38462	1.57895	2.84848

This table reports a number of earnings management statistics. The sample covers non-financial Thai listed firms between 2002 and 2011. The Pre-Reform sub-period covers the sample between 2002 and 2005 and represents the pre-implementation of Principles of Corporate Governance. Post-Reform sub-period covers the sample between 2002 and 2005 and represents the post-implementation of Principles of Corporate Governance. OCF is operating cash flow, VOCF is variability of change in operating cash flow, NI is net income, VNI is variability of net income, and small profits are defined as earnings divided by total assets that fall in the range [0.00, 0.01] and small losses as [-0.01, 0), *represents the significant difference between Pre-Reform and Post-Reform periods at 95% confidence level.

Earnings management

The average values of total accruals and discretionary accruals are shown in Table 4. Total accruals and discretionary accruals are all negative and there is a significant difference between pre-and post-reform periods. This is similar to previous studies, for example Chayavoradech and Srijunpetch (2008) and Machuga and Teitel (2009). The results further suggest that the corporate governance reforms drove managers to reduce stated earnings, which reflects more conservative financial reporting. Overall, absolute discretionary accruals were between 3 and 4 percent of total assets during the full sample period.

Table 4 Accruals Statistics

	Full	Pre-Reform	Post-Reform	t-diff
Total accruals	-0.025	-0.0158	-0.0303	-3.92
Discretionary accruals				
Dechow et al. (1995)	-0.0246	-0.0155	-0.0297	-9.42
Jones (1991)	-0.0246	-0.0155	-0.0298	-8.30
Kasznik (1999)	-0.025	-0.0162	-0.0299	-7.71
Absolute discretionary accruals				
Dechow et al. (1995)	0.0361	0.037	0.0356	-1.39
Jones (1991)	0.0409	0.0416	0.0406	-0.96
Kasznik (1999)	0.0428	0.0411	0.0437	1.27

This table reports mean statistics of total accruals, discretionary accruals and absolute value of discretionary accruals. The sample covers non-financial Thai listed firms between 2002 and 2011 in the full sample. Pre-Reform sub-period covers the sample between 2002 and 2005 and represents the pre-implementation of Principles of Corporate Governance. Post-Reform sub-period covers the sample between 2002 and 2005 and represents the post-implementation of Principles of Corporate Governance. Total accruals are defined as earnings before interest and tax minus cash flows from operations. Discretionary accruals are measured by four models: Jones (1991), Dechow et al. (1995), and Kasznik (1999)).

Earnings management and corporate governance

This section investigates the relationship between earnings management and corporate governance. Earnings management is measured as the absolute value of discretionary accruals (Leuz et al., 2003; Nabar and Boonlert-U-Thai 2007; Price et al., 2011). As the regressions of all earnings management proxies are qualitatively similar, we only present the results generated by Dechow et al. (1995)'s model because it leads, on average, to the greatest statistical power (R^2) in our regressions. Regression results for the other models are discussed in our robustness tests.

From Table 5, variables that have a significant correlation with total discretionary accruals are firm performance (reported ROA), firm size (market value of equity), firm leverage (total debt to total assets) and some corporate governance variables including board size, fraction of independent directors on the board, and the chairman/CEO split role. Overall, the strength of relationship between the corporate governance and accrual variables is stronger after the 2006 reforms, consistent with the stronger governance environment in Thailand. For almost all variables, the correlation signs are consistent in both periods, with only board size, return on assets, and debt/assets ratio having different correlations between pre-and post-reform periods.

Table 5 Correlation Matrix

		daccru	rroa	mv	td ta	bsize	ptned	ptfnexp	split	ddr fam
rroa	Full	-0.03777								
	Pre-	-0.01371								
	Post-	-0.06281								
mv	Full	0.04617	0.06791							
	Pre-	0.08648	0.06007							
	Post-	0.0308	0.08103							
td_ta	Full	0.09098	-0.11221	0.03556						
	Pre-	0.07848	-0.11264	0.03437						
	Post-	0.10097	-0.12485	0.04455						
bsize	Full	0.05091	0.02204	0.15237	-0.03902					
	Pre-	0.01381	-0.03017	0.11032	-0.10856					
	Post-	0.07967	0.04981	0.18286	0.02176					
ptned	Full-	0.11991	-0.0185	0.11121	-0.03552	-0.2237				
	Pre-	0.04941	0.08477	0.04902	-0.11286	-0.49824				
	Post-	0.15298	-0.02002	0.11964	0.02575	-0.13433				
ptfnexp	Full	0.00131	-0.03334	-0.00081	-0.0039	-0.1842	0.20992			
	Pre-	0.03429	0.06047	0.03988	0.04457	-0.12011	0.15262			
	Post-	-0.01663	-0.00833	-0.02878	0.05245	-0.18612	0.11179			
split	Full	-0.04624	0.00393	0.0894	-0.04065	0.10456	0.005	0.04997		
	Pre-	-0.01885	-0.01113	0.10993	-0.04863	0.1354	-0.01271	0.01837		
	Post-	-0.06486	0.02336	0.08008	-0.02096	0.09704	-0.01525	0.0167		
ddr_fam	Full	-0.00167	0.07763	0.01513	0.05427	0.01533	-0.02827	-0.01162	-0.08355	
	Pre-	-0.04816	0.02137	-0.07236	0.04796	0.03619	-0.03178	-0.04248	-0.11854	
	Post-	0.02782	0.1096	0.0612	0.05966	0.00205	-0.0276	-0.00091	-0.06416	
daudit big4	Full	0.01165	0.08836	0.02448	0.00524	0.11411	0.00714	0.02006	0.07661	-0.05744
	Pre-	0.02569	0.03712	0.00826	-0.0353	0.03883	-0.02481	0.15367	0.12243	-0.13324
	Post-	0.00444	0.10025	0.03359	0.01998	0.14508	0.03973	0.03991	0.06484	-0.0218

This table presents the correlation matrix of discretionary accruals, firm characteristics, firm performance and corporate governance for non-financial. The sample covers non-financial Thai listed firms between 2002 and 2011 in the full sample. Pre-Reform sub-period covers the sample between 2002 and 2005 and represents the pre-implementation of Principles of Corporate Governance. Post-Reform sub-period covers the sample between 2006 and 2011 and represents the post-implementation of Principles of Corporate Governance. Total accruals are defined as earnings before interest and tax minus cash flows from operations. Discretionary accruals are measured by Jones (1991)'s model. Firm performance variables include rroa (reported ROA). Firm characteristics variables include mv (market value of equity in million baht) and td_ta (total debt divided by total assets). Corporate governance variables include bsize (the number of directors on board), ptned (the proportion of independent directors on board), ptfexp (the proportion of directors with accounting or financial background on board), split (dummy variable equal to 1 if the positions of chairman and CEO are held by different person, and 0 otherwise.), ddr_fam (dummy variable equal to 1 if the largest shareholder has greater than 25% ownership and is one of the directors), and daudit_big4 (dummy variable equal to 1 if the audit firm is one of the big 4 audit firms, and 0 otherwise).

In Table 6, a number of factors are shown to influence discretionary accruals. Notably, many corporate governance factors have become significant after the reforms. If corporate governance incentivizes managers to improve the quality of earnings figures via income smoothing, one would expect those governance variables to be positively related to absolute discretionary accruals.

Although our corporate governance variables are statistically significant in the post-reform period, their signs are not all in the same direction. Whereas board size and the proportion of non-executive directors on the board are positively related to absolute discretionary accruals, splitting the role of chairman/ chief executive and having financially sophisticated directors are negatively related to absolute discretionary accruals.

With respect to the control variables, leverage and return on assets are positively related to absolute discretionary accruals. Existing literature documents both positive and negative relationships for leverage (DeAngelo, DeAngelo, and Skinner, 1994; DeFond and Jiambalvo, 1994; Sweeney, 1994; Chen, Elder, and Hsieh, 2007) and ROA (Guthrie and Sokolowsky, 2010). It is interesting that ROA loses its statistical significance after the governance reforms, providing further evidence that the corporate governance regulations worked in minimizing the use of earnings management to maximize reported accounting performance. This suggests that the corporate governance reforms were successfully implemented.

Table 6 Determinants of Discretionary Accruals

	Full	Pre-Reform	Post-Reform			
intercept	-0.0221 (-3.45)	-0.0204 (-3.16)	-0.0077 (-0.49)	-0.0109 (-0.69)	-0.0286 (-3.89)	-0.0246 (-3.27)
lnmv	0.0008 (1.90)	0.0009 (0.99)	0.0015 (1.81)	0.0017 (0.08)	0.0005 (0.98)	0.0005 (0.91)
dta	0.0134 (5.17)	0.0131 (5.04)	0.0184 (4.03)	0.0179 (3.91)	0.0105 (3.28)	0.0107 (3.33)
rroa	-0.0049 (-0.89)	0.0067 (0.79)	-0.0021 (-0.17)	0.0483 (2.69)	-0.0063 (-1.03)	-0.0087 (-0.90)
lnbsize	0.0159 (6.36)	0.0159 (6.39)	0.0085 (1.57)	0.0076 (1.41)	0.0196 (6.74)	0.0196 (6.74)
daudit_big4	0.0004 (0.36)	0.0001 (0.12)	0.0023 (0.91)	0.0017 (0.70)	-0.0008 (-0.58)	-0.0008 (-0.53)
ptned	0.0315 (8.66)	0.0317 (8.74)	0.0205 (1.39)	0.0205 (1.40)	0.0332 (9.05)	0.0331 (9.00)
ptfinexpert	-0.0010 (-0.42)	-0.0104 (-2.70)	0.0020 (0.25)	-0.0014 (-0.13)	-0.0002 (-0.06)	-0.0099 (-2.17)
split	-0.0022 (-1.94)	-0.0024 (-2.90)	-0.0006 (-0.25)	-0.0003 (-0.11)	-0.0031 (-2.08)	-0.0034 (-2.26)
dfamfirm	0.0013 (1.13)	-0.0012 (-0.60)	-0.0018 (-0.79)	0.0060 (1.97)	0.0033 (2.39)	-0.0024 (-0.94)
dfamfirm*rroa		-0.0186 (-1.78)		-0.0887 (-3.90)		0.0048 (0.42)
dfamfirm*ptfinexpert		0.0147 (3.08)		0.0321 (0.32)		0.0150 (2.68)
adj r square	0.0629	0.0680	0.0287	0.0524	0.0859	0.0900

This table reports the regression results of discretionary accruals and explanatory variables. The sample covers both non-financial and financial Thai listed firms between 2002 and 2011 in the full sample. Pre-Reform sub-period covers the sample between 2002 and 2005 and represents the pre-implementation of Principles of Corporate Governance. Post-Reform sub-period covers the sample between 2002 and 2005 and represents the post-implementation of Principles of Corporate Governance. Discretionary accruals are measured by Dechow, Sloan and Sweeney (1995)'s model. Explanatory variables include $\ln mv$ (natural logarithm of market value of equity in million Baht), dta (total debt divided by total assets), $rroa$ (EBIT divided by total assets), $\ln size$ (natural logarithm of the number of directors on board), $daudit_big\ 4$ (dummy variable equal to 1 if the audit firm is one of the big 4 audit firms, and 0 otherwise.), $ptned$ (the proportion of independent directors on board), $ptfinexpert$ (the proportion of directors with accounting or financial background on board), $split$ (dummy variable equal to 1 if the positions of chairman and CEO are held by different person, and 0 otherwise.) and $dfamfirm$ (dummy variable equal to 1 if the largest shareholder has greater than 25% ownership and is one of the directors), audit committee size (the number of audit committee)

Table 7 Descriptive statistics of insider transactions

	Purchases	Sales
Tnumber	486,196.20	1,771,303.00
	20,000.00	13,750.00
Tprice	37.02	47.69
	14.70	14.10
Tvalue	4,143,211.00	6,566,836.00
	316,500.00	292,500.00
MV	30,052.65	68,342.59
	2,696.57	7,783.71

The table reports summary statistics of insider transactions in the sample period of 2002-2010. The statistics are mean in the first line and the median in the second line. Tnumber is transaction number of shares traded. Tprice is transaction price. Tvalue is transaction value in Baht. MV is market value in thousand Baht.

Table 8 Summary statistics of net shares traded by insider trading

	NST	No. of firms NST > 0	No. of firms NST < 0	No. of firms NST = 0
2002	0.2649 0.0021	45	0	95
2003	-0.4827 -0.0396	40	82	0
2004	0.0428 0.0058	65	39	1
2005	0.121 0	54	57	4
2006	-0.4627 0	59	59	2
2007	-2.585 -0.0001	0	100	0
2008	-1.221 -0.0002	0	112	0
2009	-1.2833 -0.0001	5	104	0
2010	0.5323 -0.007	58	77	3
2011	-0.5023 0	69	67	4

The table reports summary statistics of net shares traded by insider trading in the sample period of 2002-2011. The statistics are mean in the first line and the median in the second line. $NST = \sum(\text{Shares Purchased}/\text{Shares Outstanding}) - \sum(\text{Shares Sold}/\text{Shares Outstanding})$ summed over the year.

Insider exploitation of asymmetric information as characterized by earnings quality measures

Mean and median insider transaction characteristics are reported in Table 7. In summary, the number of shares traded for insider buy transactions is higher than that in case of insider selling. The number of shares bought is about one-third of that of shares sold for non-financial firms. In general, insider buy transaction prices are lower than that of insider sales. With regards to transaction value, the amount bought is typically higher than the amount sold. Firms that engage in insider buying are smaller than those where insiders have sold their equity.

Table 8 presents net shares traded and number of firms. The negative sign for NST indicates that the relative number of shares sold is higher than that of shares bought. The majority of Net shares traded are negative; indicating that relative number of shares sold is higher than that of shares bought, especially for the period around and after the global financial crisis in 2007. This pattern is similar to the US (Seyhum, 1998; Beneish and Vargus, 2002) and Hong Kong (Jaggi and Tsui, 2007). There are only two years that have positive net shares traded: 2002 and 2004-2005.

To identify possible insider trading gains and earnings management, we run regressions for portfolios formed by the criteria of abnormal trading and discretionary accruals. Table 9 reports insider trading performance in terms of portfolio returns in Panel A and portfolio risk adjusted returns in Panel B. The interest is with Jensen's alphas as a measure of excess returns after controlling for the Fama and French risk factors.

Portfolios of insider purchases and sales earn positive returns. Information asymmetry is empirically evident. Insider purchases conditioned on accruals show that insider purchases in firms with high accruals exhibit higher returns than those with low accruals. Insider trading can convey private information about a firm's long-term prospects to the market. Thus, managers will hold more shares when they manipulate earnings higher. Likewise, insider sales conditioned on discretionary accruals exhibit possible information asymmetry on earnings management. Portfolio returns of insider sales in firms with high accruals are higher than those in firms with low accruals. A firm's accruals are

Table 9 Insider exploitation of asymmetric information as characterized by earnings management measures

	Purchases		Sell	
	Mean	Median	Mean	Median
A. Univariate Returns				
No condition	0.1962	0.165	* 0.1114	0.0889 *
High DACC (> median)				
abaccru_dss	0.2015	0.1668	* 0.1243	0.0930 *
abaccru_jones	0.2227	0.1886	* 0.1325	0.1090 *
abaccru_kasz	0.2239	0.1771	* 0.1178	0.0903 *
Low DACC (< median)				
abaccru_jones	0.1733	0.1427	* 0.0925	0.0746 *
abaccru_dss	0.1974	0.1625	* 0.1077	0.0844 *
dacc_kasz	0.1756	0.1542	* 0.1116	0.0857 *
B. Three-factor model returns				
Insider with net purchase-Insider with net sell	-0.03994			
Insider with net purchase & high DACC-Insider with net sell & low DACC				
abaccru_dss	-0.03992			
abaccru_jones	-0.03027			
abaccru_kasz	-0.03914			
Insider with net purchase & low DACC-Insider with net sell & high DACC				
abaccru_dss	-0.06978	*		
abaccru_jones	-0.10963	*		
abaccru_kasz	-0.03392			

The table reports the regression results of Fama-French three factor model. The sample covers both non-financial and financial Thai listed firms between 2002 and 2011. Discretionary accruals are abaccru_jones by Jones (1991), abaccru_dss by Dechow et al. (1995) and abaccru_kasz by Kasznik (1999) Abnormal buy is firm having NST greater than the median of all buying firm. Abnormal sell is firm having NST lower than the median of all selling firm. High (low) discretionary accruals are firms having discretionary accruals greater (less than) median. *represents significant different from zero at 95% confidence level.

of high or low quality can be reflected by the contemporaneous insider trading. The signal to market over the short term view is that when insiders intend to sell, they manage earnings to a better performance to send a positive signal to the market

Further, we construct a zero-investment portfolio based on the assumption that insider trading performance is positively correlated with firm exposure to the systematic component of asymmetric information risk. Three investment strategies are tested: 1. Long net purchase insider trading firms and short net sell insider trading firms (no condition on discretionary accruals), 2. Long net purchase insider trading firms with high discretionary accruals and short net selling insider trading firms with low discretionary accruals (long term prospective) and 3. Long net purchase insider trading firms with low discretionary accruals and short net selling insider trading firms with high discretionary accruals (short term prospective). All intercepts are negative. This may indicate that although information asymmetry is highlighted, the informational advantage of insiders is not exploited. In addition, for the Thai market it may be the case that insider trading actually improves the quality of information

Robustness Tests

We have shown that corporate governance factors have a statistical impact on earnings management in Thailand, but the opposing signs of board size and non-executive directors to financial expertise and splitting the role of chairman and chief executive makes it difficult to disentangle the economic importance of these variables. Following Hillier et al. (2011), we examine the impact of different corporate governance factors on accruals by using an elasticity index (EI_f). Using elasticities permits a comparison of the impact of corporate governance factors from different regressions in a homogeneous base.

$$h_k = b_k \frac{\bar{x}_k}{b' \bar{x}} \quad (9)$$

$$EI_f = \frac{h_f}{\sum h_k} \quad (10)$$

Where h_k is the factor elasticity, b_k is the factor coefficient, \bar{x}_k is the mean value of each factor, $b'\bar{x}$ is the estimate of the expected value for the dependent variable using the mean value of each regressor, El_f is the proportional power of each factor, h_f is the corporate governance factor elasticity, and $\sum h_k$ is the sum of the coefficient elasticities over all explanatory variables.

In Table 10, we present factor elasticities of our corporate governance variables, which allows us to understand the relative effect of a 1 percent change in each variable on the dependent variable. It is clear that board size and the proportion of non-executive directors on the board has a much stronger effect on earnings management than splitting the role of chairman/CEO or having directors with financial expertise. We also find from the change in elasticities that the corporate governance reforms substantially increased the importance of board size and non-executive directors in earnings management. This is consistent with our earlier interpretation that in emerging markets, earnings management is used to signal information to outside investors.

Table 11 presents the results from running the regressions from Table 6 with the Jones (1991) and Kasznik (1999) accrual models. The coefficients are wholly consistent with those presented in Table 6 and all the variables that are significant for the Dechow et al. (1995) model in the post-reform period are also significant for the Jones (1991) and Kasznik (1999) models.

Table 10 Factor Elasticities

	Full		Pre-Reform		Post-Reform	
lnmv	0.1720	0.1898	0.3132	0.3324	0.1076	0.1073
dta	0.0989	0.0948	0.1545	0.1407	0.0698	0.0709
rroa	-0.0144	0.0194	-0.0071	0.1536	-0.0167	-0.0230
lnsize	1.0643	1.0439	0.5700	0.4771	1.2922	1.2880
daudit_big4	0.0063	0.0015	0.0397	0.0274	-0.0117	-0.0117
ptned	0.3321	0.3278	0.1828	0.1711	0.3736	0.3712
ptfinexpert	-0.0076	-0.0775	0.0062	-0.0041	-0.0020	-0.0971
split	-0.0465	-0.0498	-0.0118	-0.0055	-0.0672	-0.0735
dfamfirm	0.0235	-0.0213	-0.0308	0.0960	0.0605	-0.0438
dfamfirm * rroa		-0.0310		-0.1552		0.0076
dfamfirm * ptfinexpert		0.0713		0.0535		0.0952
EI (CG)	0.8425	0.8063	0.6214	0.5131	0.9110	0.9082

The table presents the elasticities for the estimated corporate governance coefficients from 2SLS regression of earnings management on different corporate governance variables. lnmv (natural logarithm of market value of equity in million baht), dta (total debt divided by total assets), rroa (EBIT divided by total assets), lnsize (natural logarithm of the number of directors on board), daudit_big 4 (dummy variable equal to 1 if the audit firm is one of the big 4 audit firms, and 0 otherwise.), ptned (the proportion of independent directors on board), ptfinexpert (the proportion of directors with accounting or financial background on board), split (dummy variable equal to 1 if the positions of chairman and CEO are held by different person, and 0 otherwise.) and dfamfirm (dummy variable equal to 1 if the largest shareholder has greater than 25% ownership and is one of the directors), audit committee size (the number of audit committee)

Table 11 Alternative Measures of Discretionary Accruals

	Full	Pre-	Post-	Full	Pre-	Post-
intercept	0.0073 (1.07)	0.0136 (0.80)	0.0022 (0.28)	0.0057 (0.76)	-0.0025 (-0.15)	0.0112 (1.24)
lnmv	0.0005 (0.97)	0.0006 (0.66)	0.0004 (0.74)	0.0005 (1.03)	0.0016 (1.86)	-0.0002 (-0.30)
dta	0.0112 (4.10)	0.0159 (3.24)	0.0086 (2.57)	0.0143 (4.77)	0.0188 (3.79)	0.0138 (3.59)
rroa	-0.0024 (-0.26)	0.0425 (2.21)	-0.0193 (-1.92)	0.0130 (1.31)	0.0770 (3.95)	-0.0075 (-0.64)
lnbsize	0.0091 (3.46)	0.0029 (0.51)	0.0124 (4.07)	0.0073 (2.54)	0.0035 (0.60)	0.0093 (2.68)
daudit_big 4	0.0007 (0.56)	0.0039 (1.47)	-0.0009 (-0.58)	0.0001 (0.07)	0.0009 (0.34)	0.0007 (0.41)
ptned	0.0242 (6.35)	0.0204 (1.30)	0.0242 (6.32)	0.0268 (6.37)	0.0244 (1.54)	0.0248 (5.66)
ptfinexpert	-0.0094 (-2.31)	-0.0000 (0.00)	-0.0091 (-1.91)	-0.0006 (-0.13)	-0.0081 (-0.65)	-0.0040 (-1.74)
split	-0.0029 (-2.18)	-0.0019 (-0.75)	-0.0033 (-2.09)	-0.0005 (-2.32)	0.0009 (0.36)	-0.0013 (-2.73)
dfamfirm	-0.0001 (-0.04)	0.0046 (2.11)	0.0003 (0.11)	0.0015 (0.65)	0.0085 (2.21)	-0.0007 (-0.23)
dfamfirm * rroa	-0.0212 (-1.93)	-0.0846 (-3.48)	0.0001 (0.01)	-0.0100 (-0.83)	-0.1019 (-4.14)	0.0195 (1.40)
dfamfirm * ptfinexpert	0.0129 (2.58)	0.0316 (0.31)	0.0101 (1.97)	0.0050 (2.91)	0.0299 (0.29)	0.0048 (1.97)
adj r square	0.0407	0.0366	0.0525	0.0325	0.0483	0.0311

The table reports the regression results of alternative measure of discretionary accruals and explanatory variables. Alternative discretionary accruals are measured by Dechow et al. (1995)'s and Kasznik (1999)'s models. The sample covers both non-financial and financial Thai listed firms between 2002 and 2011 in the full sample. Pre-Reform sub-period covers the sample between 2002 and 2005 and represents the pre-implementation of Principles of Corporate Governance. Post-Reform sub-period covers the sample between 2002 and 2005 and represents the post-implementation of Principles of Corporate Governance. Discretionary accruals are measured by Jones (1999)'s model. Explanatory variables include $\ln mv$ (natural logarithm of market value of equity in million baht), dta (total debt divided by total assets), $rroa$ (EBIT divided by total assets), $\ln bsize$ (natural logarithm of the number of directors on board), $daudit_big4$ (dummy variable equal to 1 if the audit firm is one of the big 4 audit firms, and 0 otherwise.), $ptned$ (the proportion of independent directors on board), $ptfinexpert$ (the proportion of directors with accounting or financial background on board), $split$ (dummy variable equal to 1 if the positions of chairman and CEO are held by different person, and 0 otherwise.) and $dfamfirm$ (dummy variable equal to 1 if the largest shareholder has greater than 25% ownership and is one of the directors), audit committee size (the number of audit committee)

5. Conclusions

This paper examines the effect of corporate governance on earnings management, using Thai publicly traded companies as a case study for emerging markets. Using a variety of board and ownership characteristics as proxies for different aspects of corporate governance, we show that earnings management is closely related to board size and the proportion of non-executive directors on the board. Moreover, this relationship becomes much stronger after the 2006 Thai corporate governance reforms.

Of importance it Thai policy makers and investors, earnings management is used in Thailand to improve the quality of information relating to a firm, especially after the reform of corporate governance to correspond to OECD Principles of Corporate Governance. To academics, the evidence is contrary to much of developed market research, where earnings management is perceived as imposing costs on shareholders and carried out for selfish managerial reasons. More research is clearly required in this area as it is possible that the findings relate only to Thailand. Future work should consider a wider number of countries from different environments to ensure the findings in this paper are generalizable to other emerging markets. Also, after the period of our study (2002-2011), the Stock Exchange of Thailand reformed the Principles of Corporate Governance in 2012 to be compatible with ASEAN Scorecard. Our study, which requires the manual data collection of corporate governance variables, may be revisited to further investigate the reform in 2012 as a structural change in regulatory environment.

Further, we form portfolios by abnormal insider trading and earnings management. Possible excess returns are expected for hedge portfolios that use earnings management as the proxy for information asymmetries exploited by insider buying. However, we find no evidence for Thai firms to suggest that insiders exploit their information advantage with respect to earnings figures by trading in the equity of their own firm. In other words, insider trading does not actually harm the market and can be an insightful information signal to investors.

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