The Effect of IFRS and SOX-like Regulations on Earnings Management in East Asian Countries

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Abstract

This thesis examines the effect of IFRS and SOX-like regulations on earnings management in Asian countries. Firstly, the study finds no strong evidence that IFRS convergence leads to a decline in discretionary accruals in Thailand. Institutional factors including debt and equity financing exhibit a positive relationship with discretionary accruals. Boards of directors and block shareholders appear to play a role in mitigating discretionary accruals, while big-4 auditors do not. Secondly, in the post-IFRS period, listed firms in China, Hong Kong, Malaysia, and Singapore experience a decline in income smoothing, especially those with a high level of income smoothing in the pre-IFRS period. These firms seem to switch from accruals to real activity manipulation, especially overproduction. In the post-IFRS period, however, their income smoothing level is still relatively high compared to those with a low level of income smoothing. Finally, JSOX contributes to a decline in loss avoidance of Japanese firms, especially large firms, but it has no effect on manipulating methods. Japanese firms with a propensity for avoiding losses, used both specific accruals and investment adjusting in both the pre- and post-JSOX periods. The study also finds that firms switch from one specific accrual to another to achieve loss avoidance and are likely to alter capital expenditure rather than research and development expenses. In short, changes in accounting standards and regulations contribute to some decline in earnings management in Asian countries. The institutional factors still negatively affect accounting quality in this region after many years of the changes.

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Chapter 1

Introduction

1.1 Introduction

Recently, there have been two main changes in financial reporting around the world. The first is the adoption of International Financial Reporting Standards (IFRS) in many countries. A large body of research has been conducted to examine the effect of that adoption on accounting quality (Van Tendeloo and Vanstraelen, 2005; Hung and Subramanyam, 2007; Barth et al., 2008; Jeanjean and Stolowy, 2008; Callao and Jarne, 2010; Chen et al., 2010; Iatridis, 2010; Iatridis and Rouvolis, 2010; Liu et al., 2011; Zéghal et al., 2011; Chua et al., 2012; Houqe et al., 2012; Lin et al., 2012). However, the extent to which the adoption of IFRS contributes to an improvement in the quality of corporate accounting information is inconclusive. The second one is the enactment of the Sarbanes-Oxley Act of 2002 (SOX) in the US, in response to accounting scandals, such as the cases of Enron and WorldCom, which has influenced regulatory changes in many other countries. The extant studies consistently report a positive effect of SOX on the reliability of accounting information of US firms (Lobo and Zhou, 2006; Cohen et al., 2008; Bartov and Cohen, 2009; Nagy, 2010; Singer and You, 2011; Aubert and Grudnitski, 2014; Gilliam et al., 2015).

Asian countries have adopted or converged to IFRS for years and some have enacted SOX-like regulations, but studies on the impact of such changes on accounting quality in this region are still small. This provides an opportunity to shed some light

on the effect of IFRS and SOX-like regulations on accounting quality in an Asian context. The central question in this thesis is to what extent the changes affect the earnings management of Asian firms.

The thesis consists of five chapters: an introduction, three substantive chapters, and a conclusion. In the introduction chapter, we document and discuss earnings management, IFRS, SOX, and gaps in the extent literature. The chapter also includes a brief discussion of the contribution of the thesis. The first study asks to what extent convergence to IFRS affects the discretionary accruals of Thai listed companies. In addition, it seeks to examine the influence of institutional factors and corporate governance on accounting quality. The second study examines the effect of IFRS adoption/convergence on income smoothing in four Asian countries including China, Hong Kong, Malaysia, and Singapore. It also contributes to the existing income smoothing literature that seems to focus mainly on accrual income smoothing by examining both accrual and real activity manipulation. The last study investigates the effect of Japanese SOX on loss-avoidance behaviour in Japan. It also includes an analysis of specific accruals and investment manipulation of those Japanese firms that have a propensity for loss-avoidance behaviour. The last chapter concludes.

1.2 Background

1.2.1 Earnings management

Earnings are considered an important figure for financial statement users to make decisions about a corporation and so management may have incentives to manipulate earnings (Degeorge et al., 1999). Accounting researchers have been studying the relationship of earnings management and its motivations for years. It has hypothesised many factors that create incentives for earnings management, such as executive bonuses (Healy, 1985; Holthausen et al., 1995), debt covenants (DeFond and Jiambalvo, 1994; Sweeney, 1994), and political costs (Watts and Zimmerman,

1990; Cahan, 1992; Key, 1997). For example, according to the bonus plan hypothesis, when managerial remuneration is tied to firm accounting performance, management tend to inflate earnings to increase their bonuses, which results in misleading reported earnings. Many other incentives have also been reported, such as to increase stock price during initial public offerings (IPOs) (Shivakumar, 2000; Marquardt and Wiedman, 2004), to maintain self-reputation (Graham et al., 2005), to avoid losses or meet analyst's earnings expectation (Burgstahler and Dichev, 1997; Degeorge et al., 1999).

Generally Accepted Accounting Principles (GAAP) themselves provide some room for discretion including accounting choices and estimation for management to report firm economic performance. Hence, by selecting accounting choices and/or adjusting estimation of particular accounts such as an allowance for doubtful accounts receivable, earnings management can be partly accommodated within GAAP. Moreover, corporate management can also employ real activity manipulation to inflate earnings. Real activity manipulation is achieved by timing the decision of investment and/or manipulating business activities, such as offering special credit to boost sales, or overproducing to reduce cost of goods (Schipper, 1989; Goel and Thakor, 2003; Roychowdhury, 2006).

Schipper (1989, p.92) defines earnings management as: "...a purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain". Healy and Wahlen (1999, p.368) define earnings management as:

> Earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers.

Walker (2013, p.446) define earnings management as:

> The use of managerial discretion over (within GAAP) accounting choices, earnings reporting choices, and real economic decisions to influence how underlying economic events are reflected in one or more measures of earnings.

According to these definitions, earnings management seems problematic for financial reporting in that the underlying economic performance of the firm may not be truly and fairly presented – given the principles provided by accounting standards. However, the literature reports conflicting viewpoints on earnings management among countries and professions. For instance, Geiger et al. (2006) report that accounting students in Asian countries, such as Malaysia and Indonesia, consider both accounting and real earnings management as acceptable, while those in the US and Australia tend to perceive merely the latter as acceptable. American management are prone to perceive real earnings management as more ethical than accounting earnings management (Bruns and Merchant, 1990). Practitioners and regulators are likely to consider earnings management as dubious while academics are not (Dechow and Skinner, 2000). For example, income smoothing seems acceptable in that it may improve the informativeness of accounting information (see for example Tucker and Zarowin 2006; Jayaraman 2008; Sun 2011). This thesis takes the regulatory view and considers earnings management as an obstruction of the true and fair presentation of corporate accounting information which plausibly results in wrong financial decisions of financial statement users.

Accounting researchers have been developing a variety of proxies to study earnings management for decades. According to McNichols (2000), the studies can be grouped into three topics: discretionary accruals, specific accruals, and earnings distribution. Discretionary accruals (DAC) occur when management select accounting choices and/or estimate accruals that do not present a true and fair view of the economic performance of their company. The extant literature employs the Jones model and its variations to compute DAC (Jones, 1991; Dechow et al., 1995; Kothari et al., 2005). Specific accrual studies focus on measuring accrual bias from particu-

lar accounts such as an allowance for doubtful accounts receivable or a provision for warranty (McNichols and Wilson, 1988; Jackson and Liu, 2010; Cohen et al., 2011). The last group studies zero-earnings discontinuity in earnings distribution, focusing on manipulating earnings to meet thresholds such as small positive earnings and last year earnings (Burgstahler and Dichev, 1997; Degeorge et al., 1999; Burgstahler and Chuk, 2015).

Each type of study is problematic in some aspects. For example, the first type is based mainly on a regression model to quantify DAC so it appears to suffer from the omitted-variable bias and model specification (Dechow et al., 1995; Kothari et al., 2005). For specific accruals, because one particular accrual may only be a small part of overall earnings management engaged by management so, as suggested by McNichols (2000), to study the extent of earnings management one may require many models and more data. The last one may suffer from sample selection bias which may cause zero-earnings discontinuity in earnings distribution from an absence of loss-making firms in the sample set (Durtschi and Easton, 2005, 2009).

Another type of earnings management is income smoothing. Goel and Thakor (2003, p.151) define income smoothing as:

> Earnings smoothing is a special case of earnings management involving intertemporal smoothing of reported earnings relative to economic earnings; it attempts to make earnings look less variable over time.

According to this definition, income smoothing is a long-term strategy and relates to both earnings inflating and deflating. Income smoothing studies focus on the volatility/smoothness of earnings measured by, for example, the variance or standard deviation of earnings alone or relative to referencing figures, such as revenues or operating cash flow (Eckel, 1981; Dechow and Dichev, 2002; Lang et al., 2003; Leuz et al., 2003; Lang et al., 2006). Many accounting studies have mainly investigated accounting or accruals income smoothing in various aspects (Beattie et al., 1994;

Chaney et al., 1998; Leuz et al., 2003; Peek, 2004; Fonseca and Gonzalez, 2008; Sood and Abou, 2012) but have paid little attention to real activity income smoothing.

1.2.2 International Financial Reporting Standards (IFRS)

The International Financial Reporting Standards (IFRS) are generally considered principles-based accounting standards since they provide a basic principle for accounting methods. A process to improve the standards has been undertaken for years by the International Accounting Standards Committee (IASC). In particular, the IASC has removed some accounting choices from the International Accounting Standards (IAS) – as suggested by the International Organization of Securities Commission before some revised standards went into effect in 1995 (Nobes, 2008b). The process has been carried on by the IASC successor, namely the International Accounting Standards Board (IASB), which additionally aligns IAS with fair-value orientation. Adopting such revised IAS/IFRS may lead to an improvement in accounting quality since they constrain management in their use of discretion in accounting choices (Ashbaugh and Pincus, 2001).

A large body of research has been undertaken to test the effect of IFRS/IAS adoption on accounting quality. For instance, the adoption leads to a decrease in earnings management (Barth et al., 2008; Chen et al., 2010; Iatridis, 2010; Iatridis and Rouvolis, 2010; Liu et al., 2011; Zéghal et al., 2011; Chua et al., 2012). However, many studies, especially those investigating European firms, find no significant effect of IFRS on accounting quality (Van Tendeloo and Vanstraelen, 2005; Jeanjean and Stolowy, 2008; Callao and Jarne, 2010; Lin et al., 2012). Houqe et al. (2012) show that IFRS adoption does not contribute to a decline in discretionary accruals unless the adopting country has strong investor protection rights. Daske et al. (2008) and Landsman et al. (2012) report that legal enforcement plays an important role in ensuring the effectiveness of IFRS.

1.2.3 The Sarbanes-Oxley Act (SOX)

The high profile accounting scandals, such as the cases of Enron and WorldCom have led to scepticism about the reliability of accounting information and the quality of public auditors in the US. The US Congress passed the Sarbanes-Oxley Act of 2002 in response to these incidents so as to regain public confidence. The Act prescribes several mechanisms to amend financial reporting of US firms. For instance, it prescribes managerial certification of financial report accuracy and completeness, imposes more penalties for financial misconduct, and institutes more auditing standards. Many prior studies have documented that SOX has contributed to a positive change in the reliability of accounting information of US listed firms (Lobo and Zhou, 2006; Cohen et al., 2008; Bartov and Cohen, 2009; Nagy, 2010; Singer and You, 2011).

Many other countries have embraced SOX-like regulations to improve their corporate accounting practices, such as Canada, Australia, and China. Japan is among the first in Asia following the US in passing a new securities law, the Financial Instrument and Exchange Law, in 2006. The law prescribes some requirements similar to those of SOX, the so-called JSOX. For instance, JSOX requires managerial certification of financial reports and assessment of internal control systems for listed companies to comply with from April 2008. The new regulations also increase the penalties for several market fraud activities including the submission of financial statements and associated documents containing either material misstatements or fictitious accounting information.

1.3 Contribution and outline of the thesis

This thesis contributes to accounting research in many ways. Basically, it adds to a large body of research about IFRS, SOX, and earnings management. We document the effect of IFRS on earnings management in many Asian settings and also on a variety of earnings management proxies. The findings also add to the ongoing debate

about quantifying and testing earnings management, such as the case of earnings management to avoid losses.

1.3.1 The effect of IFRS on accounting quality in Thailand

Research in the region mainly focused on market-based accounting quality (such as value relevance and timeliness of accounting information) and the effect of the Asian financial crisis of 1997 (Graham et al., 2000; Davis-Friday et al., 2006; Vichitsarawong et al., 2010; Choi et al., 2011). Charoenwong and Jiraporn (2009) and Vichitsarawong et al. (2010) report that the corporate governance mechanisms newly implemented after the crisis led to an improvement in accounting quality in many Asian countries. It can be argued that improvement in market-based accounting quality may be attributable to economic recovery after the crisis. In addition, three or four years after the crisis, as in the case of Thailand, corporate governance was still in the early stage of implementation. So the findings of prior studies may be premature.

This study asks to what extent IFRS affects the accounting quality of Thai listed companies. We extend prior research by examining the accounting-based proxy (i.e. discretionary accruals). From the univariate tests, we find some evidence of a decline in discretionary accruals of Thai listed companies. However, the regression results that control for related factors mainly show no significant effect of IFRS on discretionary accruals. The multivariate results additionally show that firm-level factors have a significantly negative influence on discretionary accruals including debt and equity incentives while only board size and block shareholders appear to be associated with a decline in discretionary accruals. Interestingly, we find no relationship between big-4 auditors and discretionary accruals.

Based on the accounting-based proxy, the findings are inconsistent with prior studies (Charoenwong and Jiraporn, 2009; Vichitsarawong et al., 2010) that find an improvement in market-based accounting quality shortly after the crisis. In addition, our findings do not support the findings that IFRS contribute to a decline

in discretionary accruals in many countries (Chen et al., 2010; Iatridis, 2010; Ipino and Parbonetti, 2011; Zéghal et al., 2011; Chua et al., 2012).

We conclude that because firm-level factors that negatively influence financial reporting practices may not be changed easily, policy makers and regulators may require country-level mechanisms to support IFRS compliance. For example, a law regarding the right of minority holders may be required for an improvement to be measurably present. The process of enforcement should be vigorously implemented accordingly.

1.3.2 The effect of IFRS on income smoothing in Asia

Prior income smoothing research mainly focuses on accounting income smoothing (see for example Beattie et al. (1994); Chaney et al. (1998); Elgers et al. (2003); Tucker and Zarowin (2006); Athanasakou et al. (2007)) while it pays little attention to real income smoothing. It may be that researchers perceive real manipulation as less problematic for financial reports. Recently, Roychowdhury (2006) has developed models to compute real earnings management using accounting information, so it is possible to contribute to the literature by examining both accounting and real income smoothing. The extant literature reports that to smooth income, US firms substituted real earnings management for accounting earnings management when the accounting options were restricted (Tan and Jamal, 2006). With many strong income-smoothing incentives (Francis et al., 2004; Graham et al., 2005; Ball, 2006), the attempts of IFRS to constrain accounting manipulation may lead to the use of real earnings management instead and the effect of IFRS on income smoothing may be unclear. This study investigates the effect of IFRS on income smoothing in China, Hong Kong, Malaysia, and Singapore. We group samples into quartiles based on the level of income smoothing to investigate not only the effect of IFRS on income smoothing but also changes in accounting and real activity earnings management between IFRS periods of each group.

We find that firms in these countries exhibit a significant decline in income smoothing (more earnings volatility) in the post-IFRS period, especially those with a high level of income smoothing in the pre-IFRS period, which agrees with the findings of prior studies (Hung and Subramanyam, 2007; Barth et al., 2008; Liu et al., 2011; Chua et al., 2012). In addition, firms with a high level of income smoothing exhibit a decrease in signed discretionary accruals and an increase in the use of real activity methods, especially those related to overproduction to reduce cost and some evidence of cutting discretionary expenses. The findings are consistent with prior studies (Tan and Jamal, 2006; Ipino and Parbonetti, 2011) about the substitution of earnings manipulation methods.

The analysis of firms with a low level of income smoothing shows that IFRS have different effects on income smoothing and manipulating methods. They exhibit an increase in income smoothing and discretionary accruals. We assume that these firms may have conservative accounting practices so we conjecture that IFRS may shift their accounting practices to be more neutral. Taking into account the role of legal enforcement, we find some evidence that a strong legal enforcement enhances the efficacy of IFRS, which is consistent with the findings of Daske et al. (2008) and Landsman et al. (2012). However, we find no evidence that a strong legal enforcement leads to a greater prevalence of real earnings management as found in the study of Ipino and Parbonetti (2011).

The findings suggest that firms with greater income-smoothing incentives are more likely to turn to real activity in the post-IFRS period after accounting methods have been restricted. It is important to note that though the level of income smoothing of these firms statistically declines, their income smoothing level is still relatively high in comparison to that of low level income-smoothing firms. So compliance with IFRS may not contribute to an economically significant decrease in income smoothing.

1.3.3 The effect of Japanese-SOX on earnings management to avoid losses in Japan

The positive effect of the Sarbanes-Oxley Act (SOX) on accounting quality reported in the US has raised interesting questions about the effect of SOX-like regulations on accounting quality in other countries. We examine the effect of JSOX on the loss-avoidance behaviour of Japanese firms. Firstly, we find evidence that, in Japan, zero-discontinuity of earnings distribution may result from earnings management to avoid losses, which is in line with the findings of Thomas et al. (2004) and Shuto and Iwasaki (2014). We also find that JSOX has a negative effect on loss-avoidance behaviour in Japan, especially for large firms. The findings are partly consistent with the US findings (Lobo and Zhou, 2006; Cohen et al., 2008; Bartov and Cohen, 2009; Aubert and Grudnitski, 2014; Gilliam et al., 2015). We conjecture that a different degree of the effectiveness of JSOX may be that 1) JSOX is less stringent in relation to SOX and 2) there is a difference in the institutional factors, such as different legal enforcement levels and/or Japanese business practice for reporting or maintaining a modest profit.

In both pre- and post-JSOX periods, loss-avoidance firms (suspect firms) use both methods to achieve loss avoidance in relation to other firms. Comparing only suspect firms between the JSOX periods, we find that they still use both accounting and real activity earnings management methods to achieve their goals. The findings do not support prior US studies (Cohen et al., 2008; Bartov and Cohen, 2009) that report a decline in accounting and an increase in real earnings management after SOX. JSOX appears to have no effect on the methods used to manage earnings in Japan. It may be that, as already mentioned, JSOX is less stringently applied. Another possible explanation may be the different perceptions of earnings management, in that Japanese management may perceive both methods as acceptable.

Furthermore, we find that suspect firms appear to switch from one specific accrual to another account to manipulate earnings. Marquardt and Wiedman (2004)

establish that different accounts may have different costs of manipulation. Therefore, Japanese managers may turn to other particular accruals, perceiving them as having lower costs in order to compensate for the increased costs imposed by JSOX (e.g. penalty costs). Interestingly, we find that suspect firms are less likely to adjust research and development expenses (R&D) while they are more likely to adjust CAPEX to achieve loss avoidance. A possible explanation may be because firms invest in more CAPEX in relation to R&D, so a larger amount may be more susceptible for manipulation. In addition, we find that small suspect firms are less likely to use real earnings management.

The study sheds some light on the effect of SOX-like regulations in a business context that is different from that of the US. In addition, it contributes to the ongoing debate about the validity of loss-avoidance investigating methods.

Chapter 2

The effect of IFRS on accounting quality in Thailand

2.1 Introduction

The Asian financial crisis of 1997 has motivated researchers to investigate accounting quality and corporate governance in Asia. The accounting quality of firms in the region has been reported to be low resulting from many institutional factors that are different from those of the western countries. After the crisis, many Asian countries have adopted or converged to the International Financial Reporting Standards (IFRS)/ International Accounting Standards (IAS) and implemented corporate governance mechanisms to improve their corporate accounting information. The Thai government was under pressure to improve corporate governance, including the transparency in financial reporting practices. Many regulatory changes and IFRS-based accounting standards were enforced after the crisis. Albeit many studies have been conducted, they appear to focus on the effect of the crisis on accounting quality, while the effect of changes in accounting standards and corporate governance on accounting quality after the crisis has been little investigated.

IFRS are considered principles-based accounting standards because they provide basic principles for accounting methods. Many accounting choices have been eliminated from IFRS/IAS for years to limit managerial discretion. A large body of research reports mixed effects of compliance with IFRS on accounting quality

(Van Tendeloo and Vanstraelen, 2005; Barth et al., 2008; Jeanjean and Stolowy, 2008; Zéghal et al., 2011). The difference between prior findings may be caused by the different research settings, such as samples and proxies used for accounting quality. Many institutional and corporate governance factors have been documented as playing a critical role in determining accounting quality, such as legal enforcement (Leuz et al., 2003; Landsman et al., 2012), ownership structure (Leuz et al., 2003; Coffee, 2005), and leverage (DeFond and Jiambalvo, 1994; Sweeney, 1994). The related factors possibly pose a challenge to accounting researchers to investigate the effect of IFRS.

The literature reports that accounting quality of firms in the region is poor (based mainly on market-based proxies, including value relevance and timeliness) and the quality became even worse during the crisis but displayed an improvement shortly after it (Graham et al., 2000; Ball et al., 2003; Davis-Friday et al., 2006; Vichitsarawong et al., 2010; Choi et al., 2011). Charoenwong and Jiraporn (2009) and Vichitsarawong et al. (2010) propose that the improvement results from newly implemented corporate governance mechanisms after the crisis. It may be argued that improvement in market-based accounting quality is partly attributable to economic recovery. In addition, for Thailand, several years after the crisis, corporate governance was still in the early stage of implementation so prior proposals may be ambiguous.

The present study adds to the literature by investigating the effects of IFRS convergence and corporate governance implementation in Thailand. The advantage of investigating one particular country is that it requires no control for country-level institutional factors. We test discretionary accruals (DAC) of Thai listed companies between 1994-2011. We group discretionary accruals into the pre-accounting reform (AR) period, 1994-2002, and the post-AR period, 2003-2011.

From the univariate tests, we find some evidence of a significant decline in the level of overall absolute discretionary accruals. However, the results from multivariate tests that control for related factors and industry- and year-fixed effects show no

effect of IFRS on accounting quality. The analysis additionally shows that related factors have relatively strong influences on discretionary accruals, both desirable and undesirable. We find that equity issuance and debt have a positive relationship with DAC. While equity issuance is linked to income-increasing DAC, debt is linked to both income-increasing and income-decreasing discretionary accruals. The findings partly support the debt covenant hypothesis. A possible explanation for the relation between income-decreasing accruals and debt may be that firms that are under debt restructuring may use negative accruals to emphasise their poor performances to gain a better condition from debt negotiations (DeAngelo et al., 1994). Board size and block shareholders appear to be related to a decline in discretionary accruals.

In contrast to prior studies (Street and Gray, 2002; Zéghal et al., 2011), we find no relationship between the big-4 auditors and discretionary accruals. As in Thailand the demand for high quality external financial reports is low and the legal enforcement is weak, the role of the big-4 auditors may be different from those in the US or UK (Francis and Wang, 2008).

In conclusion, at least on the basis of accounting-based proxy, we find no strong evidence that IFRS convergence has a positive effect on the accounting quality of Thai listed companies. The findings are inconsistent with prior studies about the positive effect of IFRS on accounting quality (Barth et al., 2008; Iatridis and Rouvolis, 2010; Zéghal et al., 2011). Firm-level institutional factors, such as leverage and equity financing, tend to obstruct the efficacy of IFRS. Big-4 auditors in Thailand mainly appear to have no effect on managerial discretion. The Thai government and policy makers may require country-level corporate governance, such as improved investor protection law and enforcement mechanisms as part of the reform to improve financial reporting practices.

The contribution of our study is that we are among the first to exclusively examine the impact of IFRS on accounting-based accounting quality in Thailand. Prior research focuses on market-based proxies to measure accounting quality. The re-

search implication may benefit policy makers and regulators of Thailand and other developing countries.

Section 2.2 discusses related literature. In section 2.3, we discuss our research design and describe the data. Section 2.4 presents the analysis and empirical results. Section 2.5 concludes.

2.2 Literature review

2.2.1 Institutional factors and accounting quality in Thailand

The ownership structure of Thai businesses is family concentrated. They tend to consider a simple accounting system as an adequate tool to supervise their business and fulfil the requirements of the tax authority, which leads to a small incentive to comply with accounting standards (Akathaporn et al., 1993). Though a company has become a public company on the stock market, its ownership structure is still concentrated. Management and the majority of stakeholders are likely to be from the same family or related parties so they can internally communicate financial information which results in a small demand for high quality external financial reports (Ball et al., 2003).

The law of Thailand is highly codified with the influence of common law.[1] The Commercial law enacted by the Ministry of Commerce (MC) prescribes many requirements for accounting practices, such as the minimum disclosure in financial reports, maintaining bookkeeping records, and audited financial reports for statutory filing. Tax law has a strong influence on accounting practices (Vichitsarawong et al., 2010); however, it merely requires the standardisation of financial reports but does not prescribe valuation methods of reported accounts (Tay, 1994). It also requires an agreement between financial reporting and tax reporting for claimable expenses which results in a firm adopting accounting methods to minimise tax (Angus-Leppan, 1997).

[1] www.cia.gov/library/publications/the-world-factbook/geos/th.html

In Thailand, the first stock market was privately formed in 1962. It ceased operation in 1974 because of the lack of knowledge in the securities market (Tay, 1994) and corruption in trading (Angus-Leppan, 1997). The new stock market, the Securities Exchange of Thailand (SET), began operating in 1975 with governmental support. In 1978, with the new Public Companies Act B.E. 2521 (1978) enacted, listed companies were required to adopt public company status and have their financial statements audited by auditors. Fourteen years later, the Public Limited Companies Act B.E. 2535 (1992) – which replaced the first public company act – requires the Securities and Exchange Commission (SEC) to be formed as an independent regulator. The Thai SEC has a responsibility to prevent unfair security trading practices, and license and regulate listed company auditors.[2] SET is classified as a less developed stock exchange with weak investor protection rights (Leuz et al., 2003).

The development of Thai Accounting Standards (TAS) has no long history in comparison to those of the UK and US. TAS, before being revised to align with IFRS, were influenced by the accounting standards of common law countries. Gray et al. (1984) document that IASC and IFAC have a significant influence and the UK accounting standards have a moderate influence on Thai financial reporting practices.

After the crisis of 1997, Thailand was under pressure to improve its corporate governance and financial reporting practices. The International Monetary Fund (IMF) required Thailand to improve the transparency of financial reporting by compliance with international practices including accounting standards, as parts of a financial support programme. The Thai government and regulatory bodies imposed several methods to improve corporate governance. In 1998, the Institute of Certified Accountants and Auditors of Thailand (ICAAT) announced a plan to converge TAS to be in line with the International Accounting Standards. According to appendix A, around 20 revised accounting standards have been in effect since 2002 and around

[2] www.sec.or.th

25 revised standards have been in effect since 2006. As at July 2015, Thailand has not fully adopted IFRS, some standards regarding financial instruments including 'IFRS 9 - Financial Instruments' and 'IFRS 7 - Financial Instruments: Disclosures' have not been adopted.[3]

The Thai Accounting Act B.E 2543 (2000) was enacted requiring corporations to comply with Thai accounting standards (TAS) developed by ICAAT. Since then, TAS have been endorsed by law so non-compliance is subject to penalties. The Accounting Profession Act B.E. 2547 (2004), the second accounting law, established self-regulatory organization, namely the Federation of Accounting Professions (FAP). FAP (which replaced ICAAT) has authority to autonomously license and regulate the accounting profession. Auditors and accountants are required to be members of FAP and comply with regulations and standards prescribed under this Act.

Thai SEC has prescribed that listed firms are to have an audit committee, starting in 1999. In 2002 the corporate governance principles were introduced by SET for listed companies to implement from the year 2002. The principles were revised to be compatible with the OECD corporate governance principles in 2006 by including requirements such as the right of shareholders, financial disclosure, director responsibility, and the composition of a board of directors. However, the requirements are on a comply-or-explain basis. White (2004) reports that, a few years after the prescription of the principles, there had been no desirable changes in financial reporting practices because the controlling families of Thai firms seemed to have no intention of complying with new regulations. In 1998, the Thai regulatory bodies founded the Thai Institute of Directors Association to educate directors of the listed companies and improve corporate governance. Thailand seems to place more duty of corporate governance on directors rather than on top executives in comparison to the US regulators (Persons, 2006).

[3]www.ifrs.org

Based on market-based proxies, accounting information in many Asian countries (including Thailand) has been reported to be of low quality. For example, it is less timely (Ball et al., 2003) and even less conservative and timely during the crisis (Vichitsarawong et al., 2010). Graham et al. (2000) report that the value relevance of book values and earnings declined during the crisis of 1997. Accounting quality has been reported to improve shortly after the crisis resulting from the newly implemented corporate governance (Charoenwong and Jiraporn, 2009; Vichitsarawong et al., 2010). The improvement, we argue, may partly result from the effect of economic recovery after the crisis. Srijunpetch (2004) reports that three years after the crisis the degree of compliance with IAS significantly increased. As discussed, Thailand started accounting standard convergence in 1998 and listed companies were required to have an audit committee starting from 1999. Revised corporate governance principles were introduced three years later and were revised to catch up with the OECD principles in 2006. Given corporate governance mechanisms had not been implemented properly in the early period of accounting reform, the findings about the accounting improvement of the prior studies may be premature.

2.2.2 International Financial Reporting Standards and accounting quality

IFRS are generally considered principles-based accounting standards as they provide a basic principle for accounting methods. The IASC had been improving the standards for years – such as removing accounting choices and accounting rules containing precise thresholds from the standards before some revised standards went into effect in 1995 (Nobes, 2008b).[4] For example, there have been no more options for the recording of particular development expenses. The LIFO (Last-in, First-out) method for inventory valuation is no longer permitted. Numeric threshold figures for classifying lease contracts have been replaced with general principles focusing

[4]The process of IAS improvement has been handed over to the IASC successor, namely the International Accounting Standards Board (IASB). The new standards developed by IASB are called the International Financial Reporting Standards (IFRS).

on the substance of them. Therefore, the adoption of improved IAS/IFRS plausibly contribute to an improvement in accounting quality since the standards impose constraints on the accounting policy choices available to management (Ashbaugh and Pincus, 2001). According to the conceptual framework of IASB, the qualitative characters of financial statements include relevance and faithful representation. Elimination of accounting choices is explicitly the means to the faithful representation character of the financial statements of adopting firms. However, Barth et al. (2008) point out that 1) fewer options may lessen the ability to reflect firm performance and 2) the principles-based concept may provide more opportunity to management to alter earnings. In addition, the literature reports that limiting accounting choices can lead to the use of real earnings management (Tan and Jamal, 2006; Ipino and Parbonetti, 2011).

IFRS also employ a fair-value principle to create a true and fair presentation of accounting information. The standards prescribe a fair-value presentation of both financial and non-financial assets. Ball (2006) suggests that the concept may improve the quality of reported earnings if they timely report new gain/loss information. However, Ball (2006) also points out that this may not be the case since management might manipulate earnings by adjusting the fair value calculation via financial models. According to the SEC (2005), this concern would happen when an active market for particular assets being valued is not available. The report conversely notes that the fair-value concept would mitigate earnings management involving accounting-motivated transaction structures, such as selling of available-for-sale investment to realise unrealised gain that could not be recognised to inflate earnings (SEC, 2005).

A large body of research has documented a positive effect of IFRS adoption on accounting quality. For instance, the adoption leads to a decrease in discretionary accruals in many countries (Chen et al., 2010; Iatridis, 2010; Ipino and Parbonetti, 2011; Zéghal et al., 2011). Both voluntary and mandatory adoption of IFRS leads to a decline in income smoothing (an increase in earnings volatility) worldwide

(Hung and Subramanyam, 2007; Barth et al., 2008; Iatridis and Rouvolis, 2010; Liu et al., 2011; Chua et al., 2012). Iatridis and Rouvolis (2010) find that adopting new standards in Greece appears to pay off in the period subsequent to the adopting year.

However, many studies find no significant effect of IFRS on accounting quality. They find no significant improvement in accounting quality (based on the study of discretionary accruals and income smoothing) after IFRS adoption (Van Tendeloo and Vanstraelen, 2005; Paananen and Lin, 2009; Lin et al., 2012; Ahmed et al., 2013). IFRS compliance leads to no decline in earnings management to avoid losses in many European countries and Australia (Jeanjean and Stolowy, 2008; Callao and Jarne, 2010) and even leads to an increase in discretionary accruals of European firms (Callao and Jarne, 2010). Many firm-level factors, such as the quality of auditors and block shareholders (Street and Gray, 2002; Van Tendeloo and Vanstraelen, 2005; Zéghal et al., 2011) and country-level factors such as investor protection rights (Houqe et al., 2012) and legal enforcement (Daske et al., 2008; Landsman et al., 2012) have been documented as playing a critical role in supporting the efficacy of IFRS compliance. So these factors possibly pose a challenge to researchers studying the effect of IFRS. In addition, Pope and McLeay (2011, p.235) suggest that the different findings may result from 'pseudo-adoption', in that firms do not faithfully adopt IFRS.

Researchers appear to be interested in accounting quality in Asian countries after the Financial Crisis of 1997 but have tended to focus on the effect of the crisis (Graham et al., 2000; Davis-Friday et al., 2006; Charoenwong and Jiraporn, 2009; Vichitsarawong et al., 2010; Choi et al., 2011) and not on the effect of accounting standard and corporate governance changes. Accounting information in most Asian countries has been reported to be of low quality in comparison to that of the developed countries resulting from many institutional factors such as ownership structure, legal system, debt financing, and ownership concentration (Ball et al., 2003; Leuz et al., 2003). Many countries in Asia have adopted or converged to IFRS for years

to improve the quality of their corporate accounting information, partly due to the increasing globalization of financial investment and at times under the conditions for financial support programmes from IMF after the crisis. Research has paid little attention to the effect of such changes in this region.

2.2.3 Corporate governance and accounting quality

Leuz et al. (2003) find that countries whose firms have concentrated ownership have more aggressive earnings management than those with dispersed ownership structure. However, Coffee (2005) proposes that controlling shareholders can directly supervise their business so they need no system such as a bonus plan to drive management, which results in fewer managerial incentives to manipulate earnings for self-interest. Zéghal et al. (2011) report that in France, block shareholders play an important role in reducing earnings management when their firm complies with IFRS. As discussed, institutional blockholders and family blockholders may play different roles in financial reporting so the effect of ownership structure on accounting information seems inconclusive.

Many studies have reported that big-4 auditors play an important role in mitigating earnings management (DeFond and Jiambalvo, 1994; Becker et al., 1998; Krishnan, 2003).[5] In addition, they appear to play an important role in ensuring the efficacy of IFRS in earnings management reduction (Van Tendeloo and Vanstraelen, 2005; Zéghal et al., 2011) or disclosure compliance with IFRS/IAS (Street and Gray, 2002). However, in countries with low investor protection rights, the audit quality of big-4 and non-big-4 auditors tends to be similar (Francis and Wang, 2008). In Asia, the role of auditors has been differently documented. Auditors in ASEAN countries are considered to have weak quality (Claessens and Fan, 2002) and are somewhat compromising with their clients (Favere-Marchesi, 2000). The literature

[5]The term "big-4 auditor(s)" in our study also refers to big-5 or big-6 auditors before many mergers.

shows that the accounting quality of Asian firms audited by big-4 and non-big-4 auditors appears to be no different (Jeong and Rho, 2004; Herrmann et al., 2008).

Boards of directors have been reported to have an effect on accounting quality. For instance, for US firms, board size appears to be related to accounting fraud (Beasley, 1996). Xie et al. (2003) report a negative relationship between board size and discretionary accruals of US firms. The authors also report that the existence of CEO duality (CEO holds the role of chairman on the board) has no significant relationship with discretionary accruals. The independence of the audit committee has a negative relationship with discretionary accruals (Klein, 2002). In the UK, the number of outside directors on the board is negatively related to the likelihood of the use of income-increasing accruals to avoid presenting losses/ an earnings decrease (Peasnell et al., 2005). In Hong Kong where a business tends to have highly concentrated ownership, Jaggi and Leung (2007) and Jaggi et al. (2009) demonstrate that the audit committee and independent directors play a key role in mitigating earnings management but their duties are less effective when other board members consist of persons from a controlling family. However, in the UK, Peasnell et al. (2005) find no relationship between the presence of an audit committee on the board and accrual earnings management. In Thailand, an independent director seems to have a small role since she/he is nominated because firms solely want to meet regulatory requirements (Dhnadirek and Tang, 2003).

Based on the debt covenant hypothesis, firms may manipulate earnings to mitigate the likelihood of debt covenant violation (Watts and Zimmerman, 1990). The hypothesis holds among those US firms approaching a violation of debt covenants (DeFond and Jiambalvo, 1994; Sweeney, 1994). Inconsistently, researchers investigating Asian firms find a negative relationship between income-increasing manipulation and the level of debt (Astami and Tower, 2006). Companies in financial difficulties have been reported to use income-decreasing accruals to emphasise their problem to gain better debt restructuring conditions (DeAngelo et al., 1994). In addition, equity issuance has been reported to link to earnings manipulation. Compa-

nies are more likely to inflate their earnings around the period of IPOs and seasoned equity offerings (SEOs) to maximize stock prices (Shivakumar, 2000; Marquardt and Wiedman, 2004). In Asia, Malaysian companies tend to engage in income-increasing earnings management during the IPO year (Ahmad-Zaluki et al., 2011). Locally traded Chinese firms, however, use income-decreasing manipulation in the pre-IPO period to boost their long-term performance (Kimbro, 2005).

Based on the political cost hypothesis, large firms are more likely to manage earnings downward to avoid strong regulatory measures from the government/regulators (Watts and Zimmerman, 1990). Many studies in the US context support this hypothesis (Cahan, 1992; Key, 1997). Shen and Chih (2007) find that large Asian firms are more likely than small firms to smooth earnings. Conversely, Astami and Tower (2006) find that there is no relationship between firm size and a managerial decision to choose accounting methods in the Asia Pacific region.

This study extends prior literature on the effects of IFRS adoption by investigating accounting-based proxies for accounting quality in developing Asian countries. The main research question is to what extent IFRS convergence contributes to an improvement in accounting quality in Thailand.

2.3 Research design and sample selection

This study examines accounting quality based on the criteria proposed by Ball (2006) that high quality accounting information contains less managerial accounting discretion. We use discretionary accruals as a proxy for earnings management.

2.3.1 Measuring discretionary accruals

A method generally used to calculate discretionary accruals (DAC) consists of two steps. Firstly, total accruals (TAC) have to be computed by either the balance sheet approach or the cash flow approach. The balance sheet approach calculates TAC

from working capital as follows:

$$TAC = (\Delta CA - \Delta CASH) - (\Delta CL - \Delta STD) - DEP, \tag{2.1}$$

where, CA is current assets; CASH is cash and cash equivalents; CL is current liabilities; STD is short-term debt; DEP is depreciation and amortization. The cash flow approach computes TAC as the difference between net income and operating cash flow. Hribar and Collins (2002) document that non-recurring events such as mergers and acquisitions recorded in the balance sheet partly cause the difference between balance-sheet TAC and cash-flow TAC, suggesting that the former may be inferior. However, Shi and Zhang (2011) argue that the balance-sheet TAC is superior if non-recurring events have been removed. This study uses TAC from the cash flow approach to reduce the effect of non-recurring transactions.

Secondly, TAC will be separated into nondiscretionary accruals and discretionary accruals (DAC). Jones (1991) is among the first to develop an accrual model (hereafter the Jones model) to calculate DAC. The author regresses TAC on change in revenues and property, plant and equipment (PPE), assuming that these accounts are less contaminated by managerial discretion. So accruals that cannot be explained by these accounts are hypothesised to be DAC. The Jones model is as follows:

$$TAC_{it}/TA_{it-1} = \beta_0 + \beta_1(\Delta REV_{it}/TA_{it-1}) + \beta_2(PPE_{it}/TA_{it-1}) + \varepsilon_{it}, \tag{2.2}$$

where, REV is revenues; PPE is gross property, plant and equipment; TA is total assets; ε is a residual representing DAC. All variables are scaled by lagged total assets to reduce the effect of heteroscedasticity (Jones, 1991). To estimate the coefficients for the model, the same model is used for firm's time series data (estimation period) assuming that in the estimation period management have smaller incentives to manipulate earnings compared to the event period. Therefore, DAC gained from the event period being tested is hypothesised to be greater than that in the estimation

period. In the study of Jones (1991), the event period is the period when a firm is under import relief investigation so it has a strong incentive to deflate earnings to gain the grant.

Dechow et al. (1995) modify the Jones model by adjusting changes in revenues by changes in accounts receivable (hereafter the Modified Jones or MJ model) to control year-end earnings manipulation through recognition of unearned revenues. However, this implies that all changes in accounts receivable are caused by earnings manipulation (Kothari et al., 2005). Dechow et al. (1995) also note that the models may be misspecified when used to test a sample consisting of firms with extreme financial performance. The MJ model is reported to be more powerful for detecting DAC relative to the Jones model (Dechow et al., 1995). The MJ model is as follows:

$$TAC_{it}/TA_{it-1} = \beta_0 + \beta_1(\Delta REV_{it} - \Delta AR_{it})/TA_{it-1}) + \beta_2(PPE_{it}/TA_{it-1}) + \varepsilon_{it}, \tag{2.3}$$

where, AR is accounts receivable. Ronen and Yaari (2008) suggest that both the Jones model and MJ model can correctly detect earnings management directions (income-increasing or income-decreasing manipulation) but the likelihood of type II error of the latter seems smaller.

Kothari et al. (2005) propose a performance-matched approach to calculate DAC and report that this approach exhibits better performance in comparison to the traditional models. The performance-matched DAC is the difference between DAC gained from the MJ Model and DAC from the ROA-Matched firms assumed to have less earnings management. They also include (lagged) return on assets (ROA) into the traditional models to control for the effect of firms' performance. Though the models with ROA are not comparable with the performance-matched approach, the traditional model with lagged ROA shows some evidence of an improvement in calculating DAC (Kothari et al., 2005). The model including lagged ROA is as

follows:

$$TAC_{it}/TA_{it-1} = \beta_0 + \beta_1(\Delta REV_{it} - \Delta AR_{it})/TA_{it-1}) + \beta_2(PPE_{it}/TA_{it-1}) + \beta_3(ROA_{it-1}) + \varepsilon_{it}. \quad (2.4)$$

Researchers extend the Jones model and MJ model by including many other variables reported to have a relationship with accruals, such as change in cash flow from operating activities (CFO) and book-to-market ratio (Kasznik, 1999; Larcker and Richardson, 2004). Albeit adding more variables may lessen an omitted variable bias and yield a higher R-squared value, such extended models have not been statistically tested for specification and power in calculating DAC.

Other aspects on the use of accrual models have also been documented. For example, using a small sample size is likely to yield large standard errors and may lead to type II error (Ronen and Yaari, 2008). Cross-sectional regression analysis appears to be more powerful than time series analysis when applied to firms with large earnings management (Bartov et al., 2001).

The present study lacks firms assumed to have small earnings management for the matching approach, so we use the MJ model including lagged ROA to control for a firm's performance (Kothari et al., 2005). Because of the availability of data, we use net property, plant and equipment for the analysis in stead of gross property, plant and equipment. According to Culvenor et al. (1999), gross property, plant and equipment can also be used without significant differences in DAC. We conduct a cross-sectional regression by year and industry to obtain DAC.

To test the effect of IFRS on discretionary accruals of Thai firms, we firstly employ a univariate test comparing the level of DAC between periods. Secondly we develop a multivariate model to control for related factors discussed earlier including firm size (Key, 1997; Shen and Chih, 2007), debt (DeFond and Jiambalvo, 1994; Sweeney, 1994), ownership structure (Leuz et al., 2003; Coffee, 2005; Zéghal et al., 2011), equity financing (Shivakumar, 2000; Marquardt and Wiedman, 2004; Ahmad-

Zaluki et al., 2011), CEO duality and board size (Xie et al., 2003), and auditor quality (Street and Gray, 2002; Zéghal et al., 2011). We also include industry- and year-fixed effects to control for industry-specific accruals and economic cycle. We employ a regression model as follows:

$$\begin{aligned} |DAC|_{it} = {} & \beta_0 + \beta_1 IFRS_{it} + \beta_2 CG_{it} + \beta_3 CRISIS_{it} + \beta_4 SIZE_{it} + \beta_5 LEV_{it} + \beta_6 EQ_{it} \\ & + \beta_7 AUD_{it} + \beta_8 BSIZE_{it} + \beta_9 DUAL + \beta_{10} BLOCK_{it} \\ & + Industry\_dummy + Year\_dummy + \upsilon_{it}, \end{aligned} \tag{2.5}$$

where, DAC is discretionary accruals; IFRS is a dummy variable (1 = sample in the IFRS period (2003-2011), 0 = otherwise); CG is a dummy variable (1 = sample in the CG period (2006-2011), 0 = otherwise); CRISIS is a dummy variable (1 = sample in the crisis period (1997-1998), 0 = otherwise); SIZE is the logarithm of total assets; LEV is total debt scaled by total assets; EQ is a dummy variable for equity financing (1 = sample in the pre-IPO and during IPO periods or issuing stock for more than 10%, 0 = otherwise); AUD is a dummy variable (1 = the firm's auditor is a big-4 auditor, 0 = otherwise); BSIZE is the number of directors on the board; DUAL is a dummy variable for duality (1 = the firm with CEO holding a position of chairman of the board, 0 = otherwise); BLOCK is the summary percentage on common stock holdings equal to or in excess of 5%.

2.3.2 Sample and descriptive statistics

Our data are accounting data for Thai companies listed on the SET extracted from the DataStream databases. Some variables are collected from public sources including firms' websites, annual reports, and the database publicly provided by Thai SEC and SET. Firms in financial and oil and gas industries are excluded due to the difference in accounting standards used. State-owned enterprises are also excluded

since they are tightly regulated by the government.[6] The final sample consists of 309 firms (4,041 firm-year observations) for the fiscal years between 1994 and 2011 across seven main industries.[7]

Thailand started converging its local accounting standards in 1998 and there have been around 20 revised standards enforced since 2002. For the case of Thailand, it was not a one-time adoption so to assign the cut-off point for the analysis is somewhat challenging. Sutthachai and Cooke (2009) report that between 1999 - 2002 (around five years after the crisis) there had been no significant changes in accounting measurements by Thai firms. We assume that at the end of 2002 there were a sufficient number of revised standards (20 standards) that may contribute to changes in accounting quality. So we classify the period between 1994 - 2002 as the pre-accounting reform (AR) and the period between 2007-2011 as the post-accounting reform period. In addition, Thailand has an improved version of corporate governance principles in 2006 (compatible with the OECD version) so we classify the period between 2003-2006 as the adjusting period and also the period between 2007-2011 as the CG period for additional tests. Note that since 2006 there were around 25 revised standards that have been in effect. The periods being tested are presented in Figure 2.1.

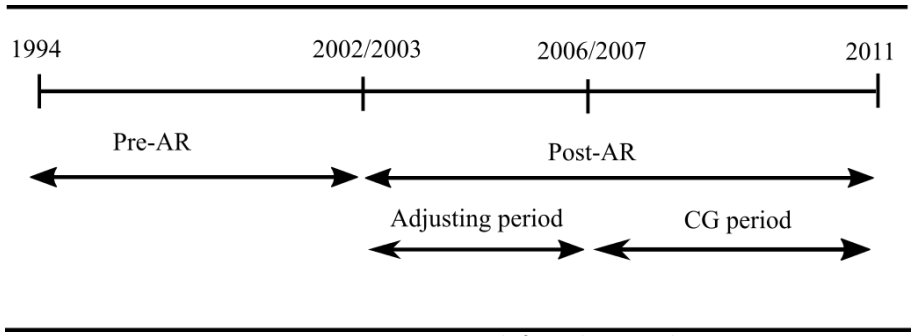

Figure 2.1: Time period for the analysis

The sample distribution is presented in Table 2.1 as follows.

[Table 2.1 about here]

[6]State-owned firms in China have been found to have less earnings management (Ding et al., 2007; Wang and Campbell, 2012).

[7]The industrial grouping is based on International Classification Benchmark (ICB).

Panel B of Table 2.1 shows that the post-AR period has a greater number of observations because many new companies joined the stock market. Panel C shows that the consumer goods industry has the highest number of observations accounting for around 26%, while the health care industry has the lowest number accounting for around 5% of the overall sample.

[Table 2.2 about here]

Table 2.2 shows descriptive statistics of the variables being tested. Mean absolute DAC shows no significant decline in the post-AR period (around 7% of total assets in both periods) while the median value shows a minor decline from around 5.1% to 4.8%. Firms show some growth in the post-AR periods based on total assets. Mean debt declines from a leverage ratio of around 57% to 41%. Around 56% of firms in the pre-AR period are audited by big-4 auditors while the number in the post-AR period is around 58%. The average number of directors drops from around 12 to 11. The decline could be because many newly listed firms in the post-AR have not yet nominated directors to the board. Around 20% of firms in each period have management holding the chairman's position on the board. As expected, Thai firms have relatively high ownership concentration with a mean value of around 56% of total equity in the pre-AR period and around 58% in the post-AR period.

[Table 2.3 about here]

Table 2.3 presents the Spearman (above diagonal) and the Pearson (below diagonal) pairwise correlations between variables. Both Pearson and Spearman correlations show an absolute value of 0.563 (the largest magnitude) for the relation between IFRS and CG. For all pairs of variables the absolute values of the Pearson and Spearman correlation coefficients are relatively low, suggesting that there is a low likelihood of multicollinearity in the regression analysis. Considering the sign of coefficients between DAC and other variables, IFRS, firm size, and board size have a negative association with DAC while crisis, leverage, equity financing, and duality

have a positive association. The directions of relationships seem to be consistent with prior studies. However, big-4 auditor has a positive association with DAC. The relationships discussed are consistent between Spearman and Pearson correlations. The inconclusive one is block ownership which has a positive association with DAC for Spearman but a negative relationship for the Pearson correlation.

2.4 Empirical results and discussion

This study conducts two main sets of tests: 1) a univariate test comparing DAC between the AR-periods using the Mann-Whitney U test, and 2) a multivariate test using a regression analysis.

2.4.1 Univariate tests

The results from the tests are presented in Table 2.4 as follows:[8]

[Table 2.4 about here]

Panel A of Table 2.4 shows no significant decline in overall absolute DAC. We find that only industrials and consumer goods industries experience a significant decrease in absolute DAC at the 5% and 1% levels, respectively. In contrast, we find that two industries including basic materials and other industries show a statistically significant increase in DAC. Panel B presents the results from comparing DAC of firms after excluding samples during the adjusting period (2003-2006). The results show a significant decline in overall DAC at the 5% level – absolute discretionary accruals decrease from around 5.1% to 4.7% of total assets. The analysis by industry shows similar results to Panel A.

We also conduct the analysis based on a constant sample (firms with at least one observation in the pre- and post-AR periods). Panel A of Table 2.5 shows a significant decline in overall absolute DAC at the 1% level – absolute discretionary

[8]We also conduct a test for skewness and kurtosis similar to the Jarque-Bera test of normality. Based on the tests, samples of each group being compared exhibit no normal distribution of DAC. So using a nonparametric method may be more appropriate.

accruals decrease from around 5.1% to 4.5% of total assets. As found in Table 2.4, we find that industrials and consumer goods industries experience a significant decrease in absolute DAC at the 5% and 1% levels, respectively. We also find that two industries show a statistically significant increase in DAC. Panel B presents the results from comparing the DAC of firms after excluding samples during the adjusting period. The analysis shows similar results to Panel A.

From the univariate tests, the findings are partly consistent with prior studies that find a decline in discretionary accruals (Chen et al., 2010; Iatridis, 2010; Zéghal et al., 2011) though some industries show the opposite results. Note that many corporate governance mechanisms were introduced during the post-AR period so we caution that a positive change in accounting quality may partly result from such mechanisms and IFRS combined.

2.4.2 Multivariate tests

The results from the regression model are as follow:

[Table 2.6 about here]

The regression results are presented in Table 2.6.[9] From Panel A, model 1 shows that IFRS has no significant effect on absolute DAC. CRISIS has no significant effect on DAC, which is inconsistent with the findings of Graham et al. (2000) and Vichitsarawong et al. (2010) who find that the crisis leads to a decline in market-based accounting quality. CG also shows no effect on DAC.

Other factors appear to have a relatively strong influence on DAC. In particular, the coefficients on SIZE, BSIZE, and BLOCK are significantly negative at the 1%, 1%, and 10% levels, respectively, suggesting larger firms, firms with bigger board size, and firms with concentrated ownership have a lower level of discretionary accruals. However, considering the value of the coefficients, there seems to be no economic significance from the three variables. In contrast, the coefficients on LEV

[9]The Variance Inflation Factor (VIF) is also computed showing no evidence of multicollinearity.

and EQ are significantly positive at the 1% level, suggesting that more debt and equity issuance lead to a greater degree of discretionary accruals.

We additionally conduct regression models for positive DAC (model 2) and negative DAC (model 3) separately to gain more insight into the effects of IFRS and related factors. From the additional tests, both models show no significant effects of IFRS, CRISIS, and CG. From Model 2, debt and equity issuance appear to have a strong influence on income-increasing DAC. Board size seems to be an important factor in mitigating income-increasing DAC. From model 3, debt is still significantly positive, so an increase in debt leads to an increase in the use of income-decreasing discretionary accruals. The relationship between debt and income-increasing discretionary accruals found in Model 2 supports the debt covenant hypothesis. A possible explanation for the use of income-decreasing accruals found in Model 3 may be that, as suggested by DeAngelo et al. (1994), firms in financial difficulty may use income-decreasing accruals to emphasise their performance to gain better debt restructuring condition. Therefore, the effect of debt on DAC of Thai firms seems to be inconclusive during our sampling period. Block shareholders are related to a decline in income-decreasing DAC. Large firms seem to have less earnings management for both income-increasing and income-decreasing DAC. From the tests, we find no evidence that CEO duality and big-4 auditors significantly affect DAC. This is consistent with the findings of Francis and Wang (2008) that in a country with low investor protecting rights, big-4 and local auditors tend to have the same audit quality.

We also conduct the F-test for the combined effect of corporate governance mechanism on discretionary accruals. The first one is the combined effect of big-4 auditor and board size and the second is the combined effect of big-4 auditor, board size, and concentrated ownership. However, we find no significant effect of a combined effect, except that they have a significant effect on negative DAC at the 10% level.

We also conduct a regression analysis with standard errors adjusted to address possible correlation within industry (the results are presented in Panel B of Table

2.6). The findings are more or less similar to those found earlier, except that the effect of firm size in Model 2 and the effect of board size and block shareholders in Model 3 disappear. We additionally conduct a regression analysis with constant sample (firms with at least one observation in the pre- and post-IFRS periods). The results are presented in Table 2.7 as follows:

[Table 2.7 about here]

From the results, the effect of firm size, debt, equity issuance, and ownership structure on DAC are similar to those from the analysis of the full sample. Interestingly, the analysis shows that the coefficients on AUD and CG are significantly positive at 10% level for models 1 and 2. The results suggest that big-4 auditors positively affect the overall DAC and income-increasing DAC, while the corporate governance appears to be associated with a decline in the use of income-decreasing DAC. Consistently, the F-test of the combined effect of big-4 auditor, board size, and concentrated ownership is significant at the 10% level for income-decreasing DAC. The findings in Panel B with standard errors adjusted to address possible correlation within industry show similar results to Panel A, except that we find no evidence of the significant effect of big-4 auditors and corporate governance on DAC.

In short, changes in accounting standards in Thailand and corporate governance mechanisms are less likely contribute to a decline in DAC. Factors such as debt and equity financing appear to have a relatively strong negative influence on the accounting quality of Thai listed firms. Directors on the board seem to play a role in mitigating discretionary accruals while the big-4 auditors do not appear to play a gatekeeper role in financial reporting in Thailand.

2.5 Summary and conclusion

This study investigates to what extent convergence to IFRS contributes to an improvement in the accounting quality of listed companies in Thailand. We examine discretionary accruals as a proxy for accounting quality during 1994 and 2011.

We find no strong evidence that IFRS lead to a decline in the magnitude of discretionary accruals. The factors that play an important role in determining accounting quality include debt and equity financing. Corporate governance mechanisms found to reduce discretionary accruals of Thai firms are internal factors, such as the directors on the board, while external factors, such as the public auditors especially big-4 auditors, mainly show no effect. The tests also show some evidence that controlling ownership is significantly related to a decline in discretionary accruals.

From the results, many issues may be of interest for future research. For example, because of the findings on the effect of big-4 auditors, the role of auditors on IFRS compliance in the Asian context may be of interest. The effect of board composition in the Asian context may be another aspect for further investigation.

Finally, the evidence suggests that many attempts to improve accounting quality by the Thai government and regulatory bodies have hardly paid off. Rather than firm-level institutional factors, country-level institutional factors, such as legal enforcement and investor protection rights that are weak in Thailand, may also obstruct the effect of IFRS. So the Thai government and policy makers may require country-level mechanisms such as an improved investor protection law and a vigorous enforcement mechanism as part of accounting reform.

Table 2.1: Sample distribution

	No. of Observations	Percent
Panel A: Year breakdown		
1994	94	2.33
1995	115	2.85
1996	126	3.12
1997	137	3.39
1998	151	3.74
1999	153	3.79
2000	156	3.86
2001	216	5.35
2002	226	5.59
2003	247	6.11
2004	276	6.83
2005	297	7.35
2006	307	7.60
2007	309	7.65
2008	308	7.62
2009	308	7.62
2010	308	7.62
2011	307	7.60
Total	4,041	100.00
Panel B: Period breakdown		
Pre-AR	1,374	34.00
Post-AR	2,667	66.00
Total	4,041	100.00
Panel C: Industry breakdown		
Basic Materials (1000)	482	11.93
Industrials (2000)	949	23.48
Consumer Goods (3000)	1,036	25.64
Household and Home Construction (3720)	402	9.95
Health Care (4000)	202	5.00
Consumer Services (5000)	633	15.66
Other	337	8.34
Total	4,041	100.00

Note:
Other includes Communications(6000), Technology (9000), and Utility Sectors(7000). The industrial grouping is based on International Classification Benchmark (ICB).

Table 2.2: Descriptive statistics

	Pre-AR (N=1,374)					Post-AR (N=2,667)				
	Mean	Std.Dev.	25%	Median	75%	Mean	Std.Dev.	25%	Median	75%
|DAC|	0.070	0.066	0.024	0.051	0.094	0.069	0.066	0.023	0.048	0.092
SIZE	14.865	1.308	13.917	14.709	15.703	14.977	1.323	13.998	14.754	15.739
LEV	0.565	0.563	0.325	0.509	0.691	0.413	0.250	0.232	0.412	0.568
EQ	0.112	0.316	0	0	0	0.065	0.247	0	0	0
AUD	0.560	0.497	0	1	1	0.581	0.493	0	1	1
BSIZE	12	4	9	11	14	11	3	9	10	12
DUAL	0.199	0.399	0	0	0	0.209	0.407	0	0	0
BLOCK	0.557	0.165	0.458	0.569	0.673	0.582	0.180	0.469	0.603	0.708

Note:
Variable definitions are as follows: DAC is discretionary accruals computed from the MJ model with lagged ROA. SIZE is the logarithm of total assets. LEV is total debt scaled by total assets. EQ is a dummy variable for equity financing (1= sample in the period of one-year pre-IPO and IPO or stock issuance more than 10%, 0 = otherwise). AUD is a dummy variable (1 = the firm's auditor is big-4 auditor, 0 = otherwise). BSIZE is the number of directors on the board. DUAL is a dummy variable for duality (1 = the firm with CEO holding the position of chairman on the board, 0 = otherwise). BLOCK is the summary percentage on share holdings in equal to or in excess of 5%. All variables are winsorized at 1% to control for outliers.

Table 2.3: Correlation table

	|DAC|	IFRS	CRISIS	CG	SIZE	LEV	EQ	AUD	BSIZE	DUAL	BLOCK
|DAC|		−0.020	0.041	−0.038	−0.026	0.103	0.061	0.016	−0.120	0.022	0.012
		(0.208)	(0.009)	(0.016)	(0.094)	(0.000)	(0.000)	(0.298)	(0.000)	(0.171)	(0.434)
IFRS	−0.012		−0.386	0.563	0.036	−0.188	−0.081	0.020	−0.124	0.012	0.078
	(0.461)		(0.000)	(0.000)	(0.021)	(0.000)	(0.000)	(0.214)	(0.000)	(0.449)	(0.000)
CRISIS	0.020	−0.386		−0.217	0.023	0.155	−0.001	−0.018	0.034	−0.012	−0.031
	(0.194)	(0.000)		(0.000)	(0.147)	(0.000)	(0.933)	(0.252)	(0.031)	(0.436)	(0.047)
CG	−0.030	0.563	−0.217		0.067	−0.121	−0.149	−0.039	−0.099	−0.008	0.064
	(0.058)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)	(0.013)	(0.000)	(0.613)	(0.000)
SIZE	−0.028	0.040	0.020	0.069		0.304	0.052	0.345	0.174	−0.035	−0.076
	(0.074)	(0.011)	(0.205)	(0.000)		(0.000)	(0.001)	(0.000)	(0.000)	(0.028)	(0.000)
LEV	0.194	−0.184	0.104	−0.121	0.132		0.061	0.073	−0.066	0.045	−0.133
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)	(0.005)	(0.000)
EQ	0.093	−0.081	−0.001	−0.149	0.051	0.022		0.009	−0.002	−0.010	−0.041
	(0.000)	(0.000)	(0.933)	(0.000)	(0.011)	(0.159)		(0.579)	(0.915)	(0.533)	(0.009)
AUD	0.016	0.020	−0.018	−0.039	0.354	0.030	0.009		0.102	−0.135	0.087
	(0.306)	(0.214)	(0.252)	(0.013)	(0.000)	(0.055)	(0.579)		(0.000)	(0.000)	(0.000)
BSIZE	−0.123	−0.144	0.050	−0.112	0.192	−0.080	0.018	0.085		−0.183	−0.073
	(0.000)	(0.000)	(0.002)	(0.000)	(0.000)	(0.000)	(0.243)	(0.000)		(0.000)	(0.000)
DUAL	0.026	0.012	−0.012	−0.008	−0.063	0.066	−0.010	−0.135	−0.164		0.062
	(0.093)	(0.449)	(0.436)	(0.613)	(0.000)	(0.000)	(0.533)	(0.000)	(0.000)		(0.000)
BLOCK	−0.017	0.068	−0.027	0.061	−0.068	−0.080	−0.043	0.089	−0.049	0.052	
	(0.287)	(0.000)	(0.090)	(0.000)	(0.000)	(0.000)	(0.006)	(0.000)	(0.002)	(0.001)	

Note:
The Spearman correlations are presented above the diagonal and Pearson below the diagonal. Variable definitions are as follows: IFRS is a dummy variable (1 = sample in the IFRS period, 0 = otherwise). CRISIS is a dummy variable (1 = sample in the crisis period (1997-1998), 0 = otherwise). CG is a dummy variable (1 = sample in the CG period (2006-2011), 0 = otherwise). Other variables are defined in Table 2.2.

Table 2.4: Comparison of discretionary accruals (DAC) - Overall sample

	Pre-AR		Post-AR			
	N	Median	N	Median	z-stat	p-value
Panel A: Overall sample						
Overall Sample	1,374	0.051	2,667	0.048	1.26	0.104
Basic Materials	144	0.057	338	0.059	-2.15^{**}	0.016
Industrials	316	0.052	633	0.047	2.03^{**}	0.021
Consumer Goods	400	0.052	636	0.039	4.48^{***}	0.000
Household and Home Construction	142	0.069	260	0.070	0.78	0.218
Health Care	71	0.025	131	0.025	-0.50	0.310
Consumer Services	200	0.047	433	0.050	-0.62	0.268
Other	101	0.051	236	0.073	-2.93^{***}	0.002
Panel B: Excluding sample in the adjusting period						
Overall Sample	1,148	0.051	1,540	0.047	1.66^{**}	0.048
Basic Materials	124	0.056	205	0.071	-2.83^{***}	0.002
Industrials	261	0.053	364	0.043	3.13^{***}	0.002
Consumer Goods	337	0.055	360	0.037	5.05^{***}	0.000
Household and Home Construction	119	0.064	150	0.059	0.77	0.220
Health Care	59	0.023	75	0.020	0.06	0.478
Consumer Services	163	0.045	245	0.048	-0.93	0.176
Other	85	0.048	141	0.079	-3.58^{*}	0.000

Note:
This table reports the results from the Mann-Whitney U test. DAC is discretionary accruals computed from the MJ model with lagged ROA to control for firm's performance (Jones, 1991; Dechow et al., 1995; Kothari et al., 2005). *, ** , *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively (one-tailed).

Table 2.5: Comparison of discretionary accruals (DAC) - Constant sample

	Pre-AR		Post-AR			
	N	Median	N	Median	z-stat	p-value
Panel A: Sample with data in both periods						
Overall Sample	1,374	0.051	2,030	0.045	2.99***	0.001
Basic Materials	144	0.057	180	0.058	−1.69**	0.045
Industrials	316	0.052	495	0.047	2.20**	0.014
Consumer Goods	400	0.052	567	0.039	4.41***	0.000
Household and Home Construction	142	0.069	207	0.068	1.06	0.145
Health Care	71	0.025	108	0.022	0.03	0.487
Consumer Services	200	0.047	333	0.046	0.33	0.370
Other	101	0.051	140	0.061	−1.59*	0.056
Panel B: Excluding sample in the adjusting period						
Overall Sample	1,148	0.051	1,126	0.043	3.33***	0.000
Basic Materials	124	0.056	100	0.066	−2.23**	0.013
Industrials	261	0.053	275	0.039	3.45***	0.000
Consumer Goods	337	0.055	315	0.036	4.97***	0.000
Household and Home Construction	119	0.064	115	0.055	1.09	0.137
Health Care	59	0.023	60	0.020	0.58	0.281
Consumer Services	163	0.045	185	0.048	−0.56	0.288
Other	85	0.048	76	0.064	−2.45***	0.007

Note:
This table reports the results from the Mann-Whitney U test. DAC is discretionary accruals computed from the MJ model with lagged ROA to control for firm's performance (Jones, 1991; Dechow et al., 1995; Kothari et al., 2005). *, ** , *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively (one-tailed).

Table 2.6: Regression analysis of discretionary accruals

	|DAC|		PosDAC		|NegDAC|	
	Coef.	*t*-stat	Coef.	*t*-stat	Coef.	*t*-stat
Panel A: Overall sample						
IFRS	0.00	0.15	0.00	0.23	−0.00	−0.00
CG	0.00	0.42	−0.00	−0.46	−0.00	−0.17
CRISIS	0.01	0.71	−0.01	−0.47	−0.00	−0.19
SIZE	−0.00***	−4.81	−0.00***	−2.61	−0.01***	−5.04
LEV	0.02***	8.66	0.04***	7.08	0.02***	6.31
EQ	0.02***	5.75	0.03***	6.11	0.00	0.70
AUD	0.00	1.51	0.00	1.09	0.00	0.78
BSIZE	−0.00***	−4.24	−0.00***	−3.70	−0.00*	−1.82
DUAL	0.00	0.05	0.00	0.50	−0.00	−0.54
BLOCK	−0.01*	−1.94	−0.01	−0.72	−0.01**	−2.00
Constant	0.16***	10.72	0.14***	6.17	0.18***	9.59
Industry		incl.		incl.		incl.
Year		incl.		incl.		incl.
N		4,041		1,944		2,097
Adjusted R^2		0.08		0.09		0.08
F-test	F-stat.(P-Value)		F-stat.(P-Value)		F-stat.(P-Value)	
AUD+BSIZE	0.67(0.413)		0.25(0.614)		0.23(0.628)	
AUD+BSIZE+BLOCK	2.50(0.114)		0.26(0.610)		3.09(0.079)	
Panel B: Robust standard errors for within industry correlation						
IFRS	0.00	0.08	0.00	0.17	−0.00	−0.00
CG	0.00	0.25	−0.00	−0.52	−0.00	−0.13
CRISIS	0.01	0.35	−0.01	−0.25	−0.00	−0.15
SIZE	−0.00**	−3.65	−0.00	−1.27	−0.01***	−9.18
LEV	0.02***	14.26	0.04***	7.40	0.02***	6.66
EQ	0.02**	2.82	0.03**	2.75	0.00	0.81
AUD	0.00	0.77	0.00	0.71	0.00	0.44
BSIZE	−0.00***	−6.31	−0.00**	−3.12	−0.00	−1.05
DUAL	0.00	0.04	0.00	0.37	−0.00	−0.34
BLOCK	−0.01**	−2.96	−0.01	−1.22	−0.01	−1.55
Constant	0.16***	5.69	0.14**	3.43	0.18***	7.96
Industry		incl.		incl.		incl.
Year		incl.		incl.		incl.
N		4,041		1,944		2,097
R^2		0.09		0.11		0.10
F-test	F-stat.(P-Value)		F-stat.(P-Value)		F-stat.(P-Value)	
AUD+BSIZE	0.18(0.682)		0.10(0.767)		0.08(0.781)	
AUD+BSIZE+BLOCK	3.58(0.107)		0.24(0.642)		2.82(0.144)	

Note:
This table reports the results from estimating the following regression model:

$$|DAC|_{it} = \beta_0 + \beta_1 IFRS_{it} + \beta_2 CG_{it} + \beta_3 CRISIS_{it} + \beta_4 SIZE_{it} + \beta_5 LEV_{it} + \beta_6 EQ_{it} + \beta_7 AUD_{it} + \beta_8 BSIZE_{it} + \beta_9 DUAL + \beta_{10} BLOCK_{it} + Industry\_dummy + Year\_dummy v_{it}.$$

DAC is computed from the MJ model with lagged ROA to control for firm's performance (Jones, 1991; Dechow et al., 1995; Kothari et al., 2005). PosDAC is positive discretionary accruals. NegDAC is negative discretionary accruals. IFRS is a dummy variable (1 = sample in the IFRS period, 0 = otherwise). CG is a dummy variable (1 = sample in the corporate governance period (2007-2011), 0 = otherwise). CRISIS is a dummy variable (1 = sample in the crisis period (1997-1998), 0 = otherwise). Other variables are defined in Table 2.2. *, ** , *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 2.7: Regression analysis of discretionary accruals - Constant sample

	|DAC|		PosDAC		|NegDAC|	
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
Panel A: Constant sample						
IFRS	−0.01	−1.19	−0.01	−1.11	−0.00	−0.06
CG	0.01*	1.68	0.01	1.43	−0.02**	−2.24
CRISIS	0.00	0.56	−0.00	−0.13	−0.00	−0.13
SIZE	−0.00***	−4.32	−0.00***	−2.62	−0.01***	−4.33
LEV	0.02***	8.61	0.04***	7.07	0.02***	6.36
EQ	0.02***	4.01	0.02***	3.84	0.01	1.09
AUD	0.00*	1.65	0.01*	1.73	0.00	0.47
BSIZE	−0.00***	−3.70	−0.00***	−3.25	−0.00**	−1.59
DUAL	0.00	0.38	0.00	0.96	−0.00	−0.49
BLOCK	−0.01	−1.61	−0.00	−0.17	−0.01*	−1.84
Constant	0.15***	9.81	0.14***	5.73	0.17***	8.58
Industry		incl.		incl.		incl.
Year		incl.		incl.		incl.
N		3,404		1,597		1,807
Adjusted R^2		0.08		0.09		0.09
F-test	F-stat.(P-Value)		F-stat.(P-Value)		F-stat.(P-Value)	
AUD+BSIZE	1.14(0.285)		1.48(0.224)		0.05(0.826)	
AUD+BSIZE+BLOCK	1.37(0.242)		0.08(0.784)		2.96(0.086)	
Panel B: Robust standard errors for within industry correlation						
IFRS	−0.01	−0.57	−0.01	−0.68	−0.00	−0.06
CG	0.01	1.09	0.01	1.90	−0.02	−1.57
CRISIS	0.00	0.28	−0.00	−0.07	−0.00	−0.11
SIZE	−0.00**	−3.31	−0.00	−1.42	−0.01***	−4.67
LEV	0.02***	19.69	0.04***	7.28	0.02***	7.89
EQ	0.02**	3.09	0.02**	3.46	0.01	0.99
AUD	0.00	0.68	0.01	1.34	0.00	0.19
BSIZE	−0.00***	−4.69	−0.00**	−2.69	−0.00	−0.88
DUAL	0.00	0.28	0.00	0.62	−0.00	−0.28
BLOCK	−0.01	−1.90	−0.00	−0.23	−0.01	−1.37
Constant	0.15***	4.77	0.14**	3.21	0.17***	6.17
Industry		incl.		incl.		incl.
Year		incl.		incl.		incl.
N		3,404		1,597		1,807
R^2		0.09		0.11		0.10
F-test	F-stat.(P-Value)		F-stat.(P-Value)		F-stat.(P-Value)	
AUD+BSIZE	0.20(0.668)		0.79(0.408)		0.01(0.927)	
AUD+BSIZE+BLOCK	1.29(0.299)		0.08(0.788)		2.00(0.207)	

Note:
This table reports the results from estimating the following regression model as presented in Table 2.6.

Chapter 3

The effect of IFRS on income smoothing in Asia

3.1 Introduction

This study investigates the impact of IFRS adoption/convergence on the income smoothing behaviour of firms in Asian countries. Researchers have been studying income smoothing for years but focused on accounting income smoothing. Though management can smooth income using accrual or real activity manipulation or both, the extent to which they employ real activity manipulation to smooth earnings has been little investigated. Recently, Roychowdhury (2006) has developed models to investigate real earnings management. Hence, together with accrual models that are widely used to study accrual-based earnings management (Jones, 1991; Dechow et al., 1995; Kothari et al., 2005), it is possible to fill the gap in the literature by investigating income smoothing and both accounting and real earnings management.

IASC/IASB has been eliminating some accounting choices and rules with precise thresholds from IAS/IFRS for years. The improved standards may impose on management a constraint in the use of accounting choices for opportunistic earnings management (Ashbaugh and Pincus, 2001). Therefore compliance with IFRS possibly contributes to a decline in accounting earnings management. IFRS also employ a fair-value concept to create a true and fair presentation of accounting information. Ball (2006) points out that IFRS may lead to more volatility of earnings (less income smoothing) which improves the quality of reported earnings because earn-

ings may timely report new information of gains and losses; the author, however, also adds that earnings might be contaminated with managerial manipulation since IFRS allow financial models for fair-value calculation.

Many incentives to smooth income have been documented. For instance, investors perceive firms with smooth income as less risky (Graham et al., 2005), reward them with lower financial costs (Francis et al., 2004), and prefer smoother earnings because the number can be used to predict future earnings easier (Ball, 2006). As with many incentives, management may turn to other non-accounting manipulation after IFRS adoption. Studies have reported switching between accounting and non-accounting methods to manage the earnings in western countries after accounting principles have been restricted (Tan and Jamal, 2006; Ipino and Parbonetti, 2011).

We use the variance of change in net income as a proxy for income smoothing (Lang et al., 2003, 2006; Barth et al., 2008). Our method is different from the prior studies in that we employ a firm-level variance while they employ group-level variance. Based on a firm-level variance, we can use a multivariate test to control for related factors in testing the effect of IFRS. We measure accounting manipulation based on discretionary accruals (Jones, 1991; Dechow et al., 1995; Kothari et al., 2005) and measure real manipulation based on abnormal cash flow, abnormal production cost, and abnormal expenses (Roychowdhury, 2006). Our sample consists of firms from four Asian countries that adopted/converged IFRS around 2005-2007. Accounting data are collected five years prior to and post IFRS adoption year, yielding a 10-year data sample span. To increase the power of the tests, we group our sample into quartiles based on the smoothness of earnings from the pre-IFRS period, assuming that the difference in smoothness degrees results from the different degrees of managerial incentives. Dividing the sample into subgroups makes it possible to find a relation between accounting and real earnings management in relation to the level of income smoothing after IFRS adoption of each group.

From the univariate and multivariate tests we find that Asian firms with a high level of income smoothing have a significant decline in income smoothing (earnings volatility increases) which is consistent with prior findings (Hung and Subramanyam, 2007; Barth et al., 2008; Liu et al., 2011). In addition, firms in these groups exhibit a decrease in discretionary accruals and some evidence of an increase in the use of real activity methods, especially overproduction. We also find that firms with a lower level of income smoothing appear to use no real activity earnings management, though they experience a decline in income smoothing. The findings suggest that firms with greater income-smoothing incentives are more likely to turn to real activity in the post-IFRS period after the accounting principles have been restricted.

In addition, we find that IFRS have different effects on firms with a low level of income smoothing and assumed to have conservative accounting practices. They exhibit an increase in income smoothing and discretionary accruals and are unlikely to engage in real activity manipulation. We conjecture that IFRS may shift their accounting practices from conservative to less conservative practices, which results in more true and fair views of reported earnings.

Taking into account the effect of legal enforcement, we also find some evidence that strong legal enforcement leads to a stronger effect of IFRS, which supports the findings of Daske et al. (2008) and Landsman et al. (2012). However, we find no evidence that it leads to a greater prevalence of real earnings management in the post-IFRS period, as found by Ipino and Parbonetti (2011). From our tests, strong income-smoothing incentives seem to be related to an increase in real activity manipulation.

Finally, compliance with IFRS may lead to a statistical improvement of accounting quality but may not be economically significant because in the post-IFRS period firms in a high level of income smoothing group still show a higher level of income smoothing in relation to those in a low income smoothing group. The findings have raised the question as to whether the accounting quality of firms in this region is comparable in the post-IFRS period.

The rest of the chapter is organised as follows. Section 3.2 reviews related literature and discusses the research questions. Section 3.3 discusses the research method including variable measuring and sample selection. Section 3.4 reports the empirical results, and section 3.5 summarises and concludes.

3.2 Literature review

3.2.1 Income smoothing, accounting and real earnings management

Eckel (1981) points out that there are two types of income smoothing: natural and intentional smoothing. The former results from the accrual basis of accounting process while the latter is engaged by corporate management for self-interest. As discussed in Chapter 1, income smoothing is related to both increasing and decreasing earnings. Using solely discretionary accruals seems to fulfil a managerial requirement to smooth income for both goals. For example, management can over-estimate a provision for warranty to reduce earnings during a good time or under-estimate an allowance for doubtful accounts receivable to amplify earnings during a difficult time.

Many studies have reported the use of accounting methods to smooth income, such as in the banking industry (see for example, Fonseca and Gonzalez, 2008; Sood and Abou, 2012). Apart from the banking industry, Chaney et al. (1998) find that firms listed on the New York stock exchanges use discretionary accruals to smooth income. Beattie et al. (1994) report that UK firms unfairly classify extraordinary items to smooth net income before extraordinary items. Peek (2004) reports that Dutch companies use accrual estimation to smoothing earnings. Leuz et al. (2003) also studied the effect of institutional factors on accrual-based income smoothing in many countries. Literature has paid little attention to the use of real activity manipulation to smooth income. To the best our knowledge, few have studied real activity income smoothing. For instance, Nagy and Neal (2001) find that Japanese firms listed on the US stock exchanges alter their R&D to a greater extent than

their peer US firms do to smooth income. Consistently, Mande et al. (2000) find that listed Japanese firms adjust R&D to smooth income and do even more in expansion years. While accruals can be used to both inflate and deflate earnings, real earnings manipulation seems to be the income-increasing strategy of management during times of difficulty (Graham et al., 2005; Roychowdhury, 2006). Walker (2013) points out the findings of Graham et al. (2005) calling for more studies about real activity earnings management and income smoothing.

Accounting profession and financial statement users seem to perceive income smoothing differently. On the one hand, intentionally smoothing out fluctuating earnings is considered undesirable by regulators (Levitt, 1998) because such smoothness may misrepresent firm's underlying economic performance. On the other hand, investors seem to prefer smooth income for many reasons. For instance, Graham et al. (2005) find that management believe that investors perceive firms with smooth income as less risky in comparison to those with variable income. Francis et al. (2004) find that investors reward such firms with lower costs of capital. Ball (2006) points out that smooth income is preferable for earnings prediction. With its big incentives, income smoothing is generally considered to be common business practice worldwide.

3.2.2 International Financial Reporting Standards and earnings management

As discussed in Chapter 1, a large body of research has investigated the effect of IFRS on earnings management in many countries. While a number of previous studies focus on accrual earnings management after the IFRS adoption (Van Tendeloo and Vanstraelen, 2005; Callao and Jarne, 2010; Zéghal et al., 2011; Houqe et al., 2012), some test income smoothing. For instance, Barth et al. (2008) by comparing earnings variation of firms worldwide – between the pre- and post-IAS periods and between IAS firms and non-IAS firms, report that income smoothing declines after voluntary IAS adoption. Consistently, Liu et al. (2011), by using the same methods

with those of Barth et al. (2008), report a significant decline in income smoothing in China. Hung and Subramanyam (2007) report an increase in income variability of German firms after voluntary IAS adoption. In contrast, adopting IFRS in Europe shows different consequences. Chen et al. (2010) find an increase in income smoothing of European firms after compliance with IFRS. Ahmed et al. (2013) report a rise in income smoothing worldwide by comparing firms in IFRS adopting countries and those in non-IFRS countries. Capkun et al. (2013) find an increase in income smoothing for both voluntary and mandatory IFRS adopters worldwide. However, smoothing methods have been little investigated. Note that the majority of these prior studies estimated a group variance of net income as a proxy for income smoothing. So they could only employ a univariate test in order to investigate the effect of IFRS.

Though accounting standards adopted by firms are considered of high quality, other incentives also play an important role in determining the quality of accounting information (Ball et al., 2003). So if the income-smoothing incentives discussed earlier still remain, management may use real activity manipulation to smooth income instead. Ewert and Wagenhofer (2005) theoretically propose that restricting accounting standards may lead to the use of real manipulation. Empirical evidence has also been documented. For instance, Tan and Jamal (2006), based on results from their experimental study, report that tightening accounting allowances leads to a drop in accrual manipulation but a manager who has a clear picture of a firm's future earnings is still able to engage in real activity manipulation to smooth earnings. Ipino and Parbonetti (2011) investigating both discretionary accruals and real activity manipulation, find that adopting IFRS leads to an increase in overall real manipulation, especially for firms in strong legal enforcement countries.

Given that management can employ both accrual and real activity manipulation and if IFRS may directly affect accounting choices and allowances, a decline in income smoothing after the adoption found in some prior research may be possibly explained as follows (not mutually exclusive): 1) accrual manipulation decreases

while real manipulation remains, or 2) the magnitude of decrease in accrual manipulation is more than the degree of real earnings management increases. Nevertheless, the relation between income smoothing and the methods used to reduce earnings volatility around the IFRS adoption period has been less documented.

3.2.3 Institutional factors and income smoothing in Asian context

Leuz et al. (2003) investigate income smoothing and accrual quality in many countries and report that Singapore, Hong Kong, and Malaysia – classified as the countries with a low level of ownership concentration, extensive outsider rights, high disclosure, and strong legal enforcement – have a relatively low level of earnings management. However, considering the median values of ownership concentration of these countries presented in Leuz et al. (2003), we can find that the ownership concentration of these three countries (between 52%-54%) is relatively high in comparison to those of the US, UK, Australia, and Canada (between 12%-28%). In addition, Jaggi and Leung (2007) consider Hong Kong business ownership structure as family concentrated. Chinese listed companies also have high ownership concentration. Based on the study of Firth et al. (2007), the six-year average (1998-2003) percentage of shares owned by the largest shareholder was around 44%. In terms of legality, while Singapore, Hong Kong, and Malaysia have common-law influenced legal systems, the legal system of China is based on the code law system. According to the Rule of Law, China has a relatively low legal enforcement in comparison to those of the other three.[10] Singapore has the highest score, followed by Hong Kong and Malaysia. Gassen et al. (2006) report that firms in common law countries have a lower level of income smoothing compared to those in code law countries.

Singapore, Hong Kong, and Malaysia were British colonies for decades, hence their local accounting standards were influenced by the British standards. Gray et al. (1984) based on the international survey report that Hong Kong accounting practices were strongly British influenced and those of Malaysia were very strongly British

[10]The scores of Rule of Law are presented in appendix B.

influenced. Singaporean accounting standards were also strongly British influenced (Ball et al., 2003). Hong Kong has adopted IFRS since 2005 but Singapore and Malaysia have not fully adopted IFRS.[11] Malaysia and Singapore, however, have been converging their standards for years to align with IFRS. As at January 2006, there were around 39 converged standards being effected for Malaysian firms to comply with (Muniandy and Ali, 2012). Singapore has adopted around 37 IFRS-based accounting standards since 2005.[12] Chinese accounting practices once had the purposes of macro-economic planning based on the Soviet system and many attempts before accounting reform in 2007 to modernise accounting practices were unsuccessful (Ding and Su, 2008). China has adopted IFRS since 2007.

Some studies have reported on income smoothing in the Asian region. For example, Shen and Chih (2007) by investigating many emerging Asian countries such as Hong Kong, Malaysia, and Singapore, find that large firms in these countries are likely to smooth income. Ashari et al. (1994) investigating companies listed on the Stock Exchanges of Singapore (including Singaporean and Malaysian firms) report that companies in high-risk industries, such as hotels and properties, and companies in Malaysia are prone to smooth income. The authors suggest that nationality is a significant factor to explain income smoothing behaviour between the two countries. Their findings suggest that country-level institutional factors play an important role in determining accounting quality. In the US market, there has also been evidence about the effect of industry on firm's income smoothing behaviour (Albrecht and Richardson, 1990).

This study extends prior research investigating the effect of IFRS on income smoothing in China, Hong Kong, Malaysia, and Singapore. It is different to prior research in many ways. First, we study both accounting and real activity manipulation in relation to the magnitude of income smoothing to find the connection between income smoothing and the manipulating methods that management may

[11] www.ifrs.org
[12] www.iasplus.com

use. We test income smoothing, linking methods used around the period of IFRS adoption. Second, while prior literature employs group-level income smoothing, we employ firm-level income smoothing. Third, we focus on income smoothing of Asian firms that have different business specifics in relation to those of western countries, such as ownership structure. The research questions are as follows:

1. Does income smoothing of Asian firms decline after the adoption of IFRS?

2. Given the level of income smoothing, to what extent does accounting and real activity manipulation change around the period of IFRS adoption?

3.3 Research design and sample selection

3.3.1 Measuring income smoothing

Proxies for income smoothing have been constructed in a variety of concepts. For instance, they include the ratio of coefficient of variation of net income (standard deviation divided by mean value) to the coefficient of variation of revenues (Eckel, 1981) and the ratio of standard deviation of operating earnings to standard deviation of operating cash flow (Leuz et al., 2003). Lang et al. (2003, 2006); Barth et al. (2008), in order to control for economic activities that may partly influence the smoothness of earnings, use the variance of residuals from a regression model of change in net income on control variables as an income smoothing proxy. Their regression model is as follows:

$$\begin{aligned}\Delta NI_{it}/TA_{it} = \alpha_0 &+ \alpha_1 SIZE_{it} + \alpha_2 GROWTH_{it} + \alpha_3 EISSUE_{it} \\ &+ \alpha_4 LEV_{it} + \alpha_5 DISSUE_{it} + \alpha_6 (REV_{it}/TA_{it}) \\ &+ \alpha_7 (CFO_{it}/TA_{it}) + \upsilon_{it}, \end{aligned} \tag{3.1}$$

where, NI is net income; TA is total assets; SIZE is natural logarithm of total assets; GROWTH is percent changes in revenues; EISSUE is percent changes in common

stock; LEV is total debt divided by total assets; DISSUE is change in total liabilities; REV is revenues; CFO is operating cash flow; υ is a residual representing change in net income after economic activities have been controlled. To test income smoothing of firms between the pre- and post-IAS periods, Barth et al. (2008) estimated the model pooling samples from both the pre- and post-IAS periods to obtain firms' respective residuals. After that, they employed the F-test of equality of variances to test the variances of the residuals (i.e. the variance of net income after controlling for economic activities) between groups of firms in the pre- and post-IAS periods.

Another proxy is earnings variability computed from the standard deviation of net income before extraordinary items (STDNI) scaled by total assets (Dechow and Dichev, 2002; Francis et al., 2004). Based on these proxies, a high value of proxy indicates a low level of income smoothing.

The measures that require referencing figures such as revenues (Eckel, 1981) and operating cash flow (Leuz et al., 2003) imply that such figures are clean of managerial manipulation. Nevertheless, these figures can also be manipulated. Revenues may be contaminated if a company intentionally recognises premature revenues or manipulates revenues by real activity methods. If a company cuts down expenses, such as advertising or development expenses, cash flow is also affected. Rountree et al. (2008) report that it is more likely that management manipulate cash flow rather than earnings since a high level of cash flow volatility leads to a lower firm value. So using these figures as benchmarks to construct income smoothing proxies may bias the analysis.

To reduce the effect of economic activities on earnings smoothness, we follow Lang et al. (2003, 2006) by employing the variance of residuals from the regression model (equation 3.1) as a proxy of income smoothing – Var(υ). We conduct a cross-sectional regression by country and year to obtain residuals. As discussed earlier, smoothing income is considered a long-term activity, so we calculate Var(υ) at firm level for the five-year pre- and post-IFRS adoption year yielding two values of the variances (VARNI) for each firm. Our study is different from prior studies (Lang

et al., 2003, 2006; Barth et al., 2008) in that they employ the group-level variance. Our method permits us to use a multivariate test to control for firm-level related factors.

3.3.2 Measuring accounting and real earnings management

We use an accrual model to compute discretionary accruals (DAC) for accounting manipulation (Jones, 1991; Dechow et al., 1995). The assumption of the model is that accruals that cannot be explained by PPE and revenues represent accounting manipulation because these accounts are assumed to be less contaminated by managerial discretion. Following Kothari et al. (2005), we control for the effect of firms' performance on the specification and power of the model as follows:

$$TAC_{it}/TA_{it-1} = \beta_0 + \beta_1(\Delta REV_{it} - \Delta AR_{it})/TA_{it-1}) + \beta_2(PPE_{it}/TA_{it-1}) + \beta_3(ROA_{it-1}) + \varepsilon_{it}, \quad (3.2)$$

where, TAC is total accruals calculated from the difference between net income and operating cash flow; TA is total assets; REV is revenues; AR is accounts receivable; PPE is net property, plant and equipment; ROA is return on assets; ε is a residual representing DAC. Consistent with the income smoothing proxy, we conduct a cross-sectional regression by country and year to obtain DAC.

For real earnings manipulation, we follow Roychowdhury (2006) who hypothesises that if a company boosts its sales by offering extra discounts/credit terms and cutting discretionary expenses such as R&D, it will show an abnormally low operating cash flow and expenses, respectively. In addition, he also hypothesises that if a company overly produces goods to lower average fixed cost per unit, it will show an abnormally high cost of production. Roychowdhury (2006) constructs the models

to detect these abnormal accounts as follows:

$$CFO_{it}/TA_{it-1} = \alpha_0 + \alpha_1(REV_{it}/TA_{it-1}) + \alpha_2(\Delta REV_{it}/TA_{it-1}) + \epsilon_{it}, \quad (3.3)$$

$$DISEXP_{it}/TA_{it-1} = \beta_0 + \beta_1(REV_{it-1}/TA_{it-1}) + \upsilon_{it}, \quad (3.4)$$

$$PROD_{it}/TA_{t-1} = \delta_0 + \delta_1(REV_{it}/TA_{it-1}) + \delta_2(\Delta REV_{it}/TA_{it-1}) + \delta_3(\Delta REV_{it-1}/TA_{it-1}) + \varepsilon_{it}, \quad (3.5)$$

where, PROD is production cost (cost of goods sold + changes in inventory); DISEXP is discretionary expenses; ϵ represents abnormal operating cash flow (AbCFO); υ represents abnormal discretionary expenses (AbEXP); ε represents abnormal production cost (AbPROD). Abnormally low values of ϵ and υ are assumed to represent real activity manipulation by sale boosting and discretionary expenses cutting, respectively. On the other hand, abnormally high value of ε is assumed to represent over-producing. We multiply AbCFO and AbEXP by -1(minus one) to make the three proxies consistent for interpretation – a high value indicates a high level of real earnings management. We conduct a cross-sectional regression by country and year to obtain AbCFO, AbEXP and AbPROD. Because of the unavailability of data (Asian firms are less likely to disclose their R&D expenses) we use total selling and administrative expenses excluding depreciation for equation 3.4.

To test the effect of IFRS on income smoothing and EMC, we use a univariate test comparing income smoothing, and real and accounting earnings management. We additionally employ a regression model to control for related factors including firm size (Key, 1997; Shen and Chih, 2007), debt (DeFond and Jiambalvo, 1994; Sweeney, 1994), industry (Albrecht and Richardson, 1990; Ashari et al., 1994). Since VARNI has a different scale (one value out of five years) in comparison to other variables (e.g. five data sets for board size in each period), we use a five-year average value for

controlling variables for an analysis. The regression model for the tests is as follows:

$$VARNI_{it} = \beta_0 + \beta_1 IFRS_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + Industry\_dummy + \epsilon_{it}, \quad (3.6)$$

where, IFRS is a dummy variable (1 = sample in IFRS period, 0 = otherwise); SIZE is a five-year average logarithm of total assets; LEV is a five-year average firm leverage. We expect a significantly positive coefficient on IFRS variable for an increase in earnings variability (less income smoothing). We also include industry-fixed effects to control for industry-specific accounting practices.

To test the effect of IFRS on accounting (DAC) and real earnings manipulation (AbCFO, AbPROD, and AbEXP) we use a regression model as follows:

$$DEP_{it} = \beta_0 + \beta_1 IFRS_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + Industry\_dummy + Year\_dummy + \varepsilon_{it}, \quad (3.7)$$

where, DEP represents the various earnings management proxies including discretionary accruals (DAC), abnormal operating cash flow (AbCFO), abnormal production cost (AbPROD), and abnormal expenses (AbEXP); SIZE is the natural logarithm of total assets; LEV is firm leverage.

3.3.3 Sample and descriptive statistics

Our sample comprises firms from Asian countries that have adopted/converged to IFRS including China, Hong Kong, Malaysia, and Singapore. We select a sample with accounting data covering five years before and after the adopting years (two-year lagged data is also required for proxy computing). Firms in the financial industry, oil and gas industries, and utilities are excluded because of the differences in business nature and accounting standards used. The final sample consists of 1,135

firms from six industries (11,350 firm-year observations) for the fiscal years between 2000 and 2012 (inclusive) as presented in Table 3.1.

[Table 3.1 about here]

The descriptive statistics of related variables are presented in Table 3.2. The statistics are separated into the pre-and post-IFRS periods to gain an initial idea of the variables.

[Table 3.2 about here]

VARNI exhibits an increase in the post-IFRS adoption period from the mean (median) value of 0.037 (0.004) to 0.048 (0.010). While mean DAC displays a little change from -0.000 to -0.001, median DAC decreases from 0.003 to -0.002. Although these statistics do not control for other factors, they suggest the positive effect of IFRS since, in the post-IFRS period, firms seem to have lower levels of income smoothing (an increase in variance of net income) and discretionary accruals. Unexpectedly, real activity manipulations decline or show no changes. AbCFO shows no significant changes between periods for both mean and median values. Mean AbPROD slightly declines from 0.000 to -0.0003 while the median value shows no changes. Mean (median) AbEXP decreases from 0.004 (0.024) to -0.002 (0.020). Considering the median values, many interested variables are relatively skewed in both periods. For example, VARNI is positively skewed while AbPROD, and AbEXP are negatively skewed. Firms show some growth, larger in the post-IFRS period (based on logarithm of total assets), while firm leverage displays no change – the mean (median) value of total debt to total assets is around 46% (45%).

3.4 Empirical results and discussion

To increase the power to detect changes between periods and relationships between income smoothing and manipulation methods, we classify our sample into quartiles based on the level earnings smoothness (VARNI) of the pre-IFRS period. Quartile 1

represents the sample with a high level of income smoothing while quartile 4 represents the sample with a low level of income smoothing. We assume that firms in each quartile also represent different incentives for opportunistic earnings management; quartile 1 has stronger earnings management incentives relative to quartile 4. We also assume that quartile 4 represents firms with conservative accounting practices.

3.4.1 Univariate tests

We employ the Mann-Whitney U test to examine the difference of income smoothing (VARNI), accrual (DAC) and real earnings management (AbCFO, AbPROD, and AbEXP) between the pre- and post-IFRS periods. The results are presented in Table 3.3 as follows:

[Table 3.3 about here]

From Table 3.3, the first three quartiles show a significant decline in income smoothing (an increase in VARNI) all at the 1% level in the post-IFRS period. Consistent with the findings of prior studies (Hung and Subramanyam, 2007; Barth et al., 2008; Liu et al., 2011), the results suggest that IFRS may contribute to a significant decline in the income smoothing of Asian firms. Quartile 4 shows a significant increase in income smoothing at the 1% level. The increase in income smoothing of this quartile, however, may not be problematic since the level of earnings smoothing of this group is still low in comparison to those of the first three quartiles. Specifically, the median values of VARNI in the post-IFRS period are 0.003, 0.009, and 0.012 for the first three quartiles, respectively, while the value is 0.027 for the fourth quartile. There may be a statistical improvement in the income smoothing of firms in the quartiles with a high level of income smoothing but it may not be economically significant, given the level of earnings smoothness of quartile 4.

For accrual manipulation, the first three quartiles show a significant decline in DAC at the 1%, 1% and 5% levels, respectively. Conversely, the last quartile shows a significant increase in DAC at the 1% level. For real activity earnings manipulation,

quartile 1 shows a significant increase in AbPROD at the 1% level and quartile 2 shows a significant increase in AbCFO and AbPROD both at the 5% level. While firms in the third and fourth quartiles are less likely to use real earnings management except that the fourth quartile shows a significant increase in AbEXP at the 10% level, and is less likely to adjust AbCFO and AbPROD.

From the analysis, IFRS plausibly constrain management to engage in accrual income smoothing, especially firms with a high level of income smoothing. For firms with a lower level of income smoothing, the effect of IFRS on earnings management methods shows different directions. After IFRS adoption, firms with a low level income smoothing tend to have a positive DAC and more income smoothing. We conjecture that IFRS shift their conservative practices to be more neutral, resulting in a true and fair presentation of earnings.

Given the strong income-smoothing incentives, firms, especially in the first two quartiles, appear to engage in real earnings management including sales boosting and overproducing in the post-IFRS period. The findings are consistent with those of Tan and Jamal (2006) and Ipino and Parbonetti (2011), who find that management use real manipulation when accounting methods have been restricted. The decrease in income smoothing may result from the greater amount of accrual manipulation decrease relative to that of real manipulation increase.

Roychowdhury (2006) mentions that a proxy for over-production may not be a proper measure for non-manufacturing firms. We address the issue by recomputing abnormal production cost (AbPROD2) excluding samples from health care and consumer services sectors. The results are consistent with the findings found earlier, though the increases are less profound (the z-statistics are lower).

It is worth noting that AbCFO and AbEXP appear to change in different directions – while the former increases, the latter decreases. Since discretionary expenses also affect CFO, we cannot rule out a possible bias of AbCFO that may be affected by an increase in discretionary expenses. In particular, assuming that a firm did not

manipulate earnings via sales boosting, a big increase in expenses possibly leads to an abnormally lower level of CFO.

To address country-level institutional factors (i.e. the legal enforcement level), we conduct additional tests, regrouping the sample based on two criteria (i.e. the levels of income smoothing and legal enforcement). Firstly, we group our sample into high and low income smoothing groups. Then we separate each group into strong and weak legal enforcement. Based on the Rule of Law score (presented in Appendix B) we group China and Malaysia the scores of which are -0.42 and 0.52, respectively, as a weak legal enforcement group (the score is eleven-year average value). We group Hong Kong and Singapore the scores of which are 1.51 and 1.66, respectively, as a strong legal enforcement group. The results from the analysis are presented in Panel B of Table 3.3. For firms with a high level of income smoothing, it appears that income smoothing significantly declines (VARNI increases) at the 1% level for both strong and weak legal enforcement groups. DAC significantly decline at the 10% and 1% levels for firms in strong and weak legal enforcement groups, respectively. Real earnings management significantly increases in both strong and weak legal enforcement groups. In particular, firms in a strong legal enforcement group exhibit a significant increase in AbCFO at the 10% level and those in the weak legal enforcement group have a significant increase in AbPROD at the 1% level. An increase in AbPROD is still significant after non-manufacturing firms are excluded. Firms are less likely to adjust expenses for earnings manipulation.

For firms with a low level of income smoothing, firms in a strong legal enforcement group exhibit a significant decline in income smoothing at the 1% level, while those in a weak legal group show an increase in income smoothing at the 5% level. Those in a strong legal group, however, exhibit a significant increase in DAC at the 1% level and show no evidence of using real activity earnings manipulation. Firms with a low level of income smoothing in a weak legal enforcement group are less likely to engage in real activity manipulation.

The change in income smoothing shows more magnitude for firms in a strong legal enforcement group in relation to those in weak group which is consistent with the finding of Daske et al. (2008) and Landsman et al. (2012) that legal enforcement plays an important role in the efficacy of IFRS. For example, the sample with a high level income of smoothing in a strong legal enforcement group has a VARNI change between periods of about 0.022 (0.024 minus 0.002) while those in a weak legal enforcement group demonstrate a change of 0.003 (0.004 minus 0.001). However, we find no evidence that a strong legal enforcement leads to a greater prevalence of real earnings management in the post-IFRS period, as found by Ipino and Parbonetti (2011). From our tests, it appears that stronger income-smoothing incentives seem to be positively related to real activity manipulation. We exclude Malaysian firms from the sample and additionally conduct the analysis. The results are presented in Table 3.4. The results are more or less similar to those presented in Table 3.3.

As discussed earlier, Malaysia employed the convergence method for its standards, so the IFRS-period of Malaysia assigned by this study may lead to ambiguous results from the analysis. We additionally conduct the univariate test based on the sample but excluding Malaysian firms, the results of which are presented in Table 3.4. The main results from the analysis are more or less similar to those in Table 3.3.

We additionally test STDNI as another proxy of income smoothing. Accrual and real manipulation are also regrouped on the basis of this proxy. Table 3.7 shows qualitatively similar results for income smoothing and discretionary accruals for high level income smoothing groups. However, the effects of IFRS on AbCFO and AbPROD are not significant though the directions of statistics are consistent with the results in Table 3.3.

3.4.2 Multivariate tests

The results from the regression models for income smoothing and manipulating methods are as follow:

[Table 3.5 about here]

Table 3.5 presents the results from the regression analysis of IFRS on earnings management metrics controlling for firm size, debt, and industry- and year-fixed effects. From Panel A of Table 3.5, quartile 1 shows a positive effect of IFRS on VARNI at the 1% level. The coefficient on DAC is significantly negative at the 10% level. In addition, the coefficients on AbPROD and AbEXP are significantly positive at the 5% and 1% levels, respectively. The findings are partly consistent with the findings from the univariate tests discussed earlier, in that IFRS appear to be related to a decline in income smoothing. In addition, firms with a high level of income smoothing in the pre-IFRS periods show a decline in discretionary accruals and an increase in real activity earnings manipulation including overproduction and cutting discretionary expenses in the post-IFRS periods, suggesting that IFRS contribute to a decline in discretionary accruals but lead to an increase in real activity manipulation of firms with a high level of income smoothing. From the regression analysis of the other three quartiles, though quartiles 2 and 3 show a decline in income smoothing, they show no change in accruals and real activity manipulation after control for related factors.

Panel B of Table 3.5 shows the results from the analysis of regrouped samples based on the levels of smoothing and legal enforcement. For firms with a high level of income smoothing, the results show that the coefficients on IFRS are significantly positive at the 1% level for both strong and weak legal enforcement groups. However, we find no evidence of a decline in discretionary accruals. We find that the coefficient on AbCFO is significantly positive at the 5% level of firms in a strong legal enforcement group. For firms with a low level income smoothing, IFRS have a significant effect on income smoothing solely for firms in a strong legal enforcement group. We find no evidence of a decline in discretionary accrual and firms are less likely to engage in real activity earning manipulation in the post-IFRS periods.

[Table 3.6 about here]

We also re-test the regression analysis with the sample after excluding Malaysia, the results of which are presented in Table 3.6. We find that the effect of IFRS on income smoothing is consistent with the findings in Table 3.5. However, we find no evidence of an increase in real activity manipulation of firms with a high level of income smoothing. We re-test the effect of IFRS on income smoothing based on STDNI the results of which are presented in Table 3.8. Discretionary accruals and earnings manipulating methods are also regrouped based on STDNI. The findings are more or less similar to those found earlier about the effect of IFRS on the overproduction of firms with a high level of income smoothing.

From the analysis, IFRS appear to have a negative effect on the income smoothing of Asian firms, especially those with a high level of income smoothing, which is partly consistent with prior research (Hung and Subramanyam, 2007; Barth et al., 2008; Liu et al., 2011). Considering manipulating methods, it appears that IFRS have a negative effect on discretionary accruals and a positive effect on real activity manipulation, especially on firms with a high level of income smoothing.

3.5 Summary and conclusion

This study examines the effect of IFRS on income smoothing in Asian countries. We also link income smoothing to the methods management may use to smooth income including, accounting and real activity earnings manipulation. We assume that the difference in income smoothing levels results from the different degrees of incentives of financial reporting so they differently affect manipulating methods used around IFRS adoption periods.

After IFRS adoption/convergence, Asian firms with a high level of income smoothing exhibit a significant decline in income smoothing, though the level of their income smoothing in the post-IFRS period is still relatively high in comparison to those with a low level of income smoothing group. They also exhibit a significant decline in discretionary accruals which may be due to the effect of IFRS that con-

strain management from using discretionary accruals. In addition, we find some evidence of an increase in the use of real activities including overproducing, especially for firms with a high level of income smoothing. We find some evidence that a strong legal enforcement leads to a stronger impact of IFRS in reducing income smoothing. However, our findings suggest that strong income-smoothing incentives, not legal enforcement lead to a greater prevalence of real earnings management in the post-IFRS period, as found in prior research.

Finally, IFRS adoption may lead to a statistical improvement in accounting quality, such as a decline in income smoothing and accrual manipulation. However, the effect of IFRS may not be economically significant since firms with a high level of income smoothing in the pre-IFRS period still show a high level of income smoothing in relation to those with a low level of income smoothing in the post-IFRS period. The findings have raised questions as to whether the accounting quality of Asian firms is comparable in the post-IFRS period, which is an interesting subject for further investigation.

Table 3.1: Sample distribution

	Year of IFRS Adoption/Convergence	No. of Firms	No. of Observations	Percent
Panel A: Country breakdown				
China	2007	491	4,910	43.26
Hong Kong	2005	217	2,170	19.12
Malaysia	2006	297	2,970	26.17
Singapore	2005	130	1,300	11.45
Total		1,135	11,350	100.00
Panel B: Year breakdown				
2000			347	3.06
2001			644	5.67
2002			1,135	10.00
2003			1,135	10.00
2004			1,135	10.00
2005			788	6.94
2006			838	7.38
2007			644	5.67
2008			1,135	10.00
2009			1,135	10.00
2010			1,135	10.00
2011			788	6.94
2012			491	4.33
Total			11,350	100.00
Panel C: Industry breakdown				
Basic Material (1000)			1,680	14.80
Industrials (2000)			3,790	33.39
Consumer Goods (3000)			2,840	25.02
Health Care (4000)			550	4.85
Consumer Services (5000)			1,830	16.12
Technology (9000)			660	5.81
Total			11,350	100.00

Note:
The industrial grouping is based on International Classification Benchmark (ICB).

Table 3.2: Descriptive statistics

	Pre-IFRS						Post-IFRS					
	N	Mean	Std.Dev.	25%	Median	75%	*N*	Mean	Std.Dev.	25%	Median	75%
VARNI	1,135	0.037	0.150	0.001	0.004	0.013	1,135	0.048	1.150	0.003	0.010	0.031
DAC	5,675	0.000	0.098	−0.042	0.003	0.046	5,675	−0.001	0.120	−0.055	−0.002	0.051
AbCFO	5,675	0.000	0.089	−0.047	0.003	0.046	5,675	0.000	0.097	−0.051	0.002	0.051
AbPROD	5,675	0.000	0.124	−0.049	0.011	0.061	5,675	−0.003	0.144	−0.058	0.011	0.069
AbEXP	5,675	0.004	0.100	−0.022	0.024	0.056	5,675	−0.002	0.111	−0.031	0.020	0.054
LEV	5,675	0.455	0.223	0.301	0.444	0.584	5,675	0.461	0.228	0.295	0.452	0.598
SIZE	5,675	13.659	1.491	12.576	13.777	14.626	5,675	14.127	1.716	12.908	14.178	15.259

Note:
Variable definitions are as follows: VARNI is the variance of net income. DAC is discretionary accruals. AbCFO is abnormal operating cash flow. AbPROD is abnormal production costs. AbEXP is abnormal expenses. LEV is total debt scaled by total assets. SIZE is logarithm of total assets. All variables are winsorized at 1% to control for outliers.

Table 3.3: Comparison of earnings management metrics

		Quartile 1		Quartile 2		Quartile 3		Quartile 4	
		Median (N)	z-stat. (p-value)	Median (N)	z-stat. (p-value)	Median (N)	z-stat. (p-value)	Median (N)	z-stat. (p-value)
Panel A: Sample grouping based on the level of income smoothing									
VARNI	Pre	0.001 (284)	-13.84^{***}	0.002 (284)	-11.69^{***}	0.007 (284)	-6.82^{***}	0.033 (283)	4.03^{***}
	Post	0.003 (284)	(0.000)	0.009 (284)	(0.000)	0.012 (284)	(0.000)	0.027 (283)	(0.000)
DAC	Pre	0.008 (1,420)	6.07^{***}	0.006 (1,420)	2.87^{***}	0.004 (1,420)	1.68^{**}	-0.010 (1,415)	-4.06^{***}
	Post	-0.006 (1,420)	(0.000)	-0.002 (1,420)	(0.002)	-0.002 (1,420)	(0.046)	0.004 (1,415)	(0.000)
AbCFO	Pre	-0.004 (1,420)	-0.90	-0.008 (1,420)	-1.66^{**}	0.001 (1,420)	-0.11	0.025 (1,415)	1.91^{**}
	Post	-0.000 (1,420)	(0.184)	-0.005 (1,420)	(0.049)	-0.002 (1,420)	(0.458)	0.020 (1,415)	(0.028)
AbPROD	Pre	0.001 (1,420)	-3.30^{***}	-0.000 (1,420)	-1.90^{**}	0.015 (1,420)	1.29^{*}	0.031 (1,415)	3.04^{***}
	Post	0.010 (1,420)	(0.001)	0.007 (1,420)	(0.029)	0.008 (1,420)	(0.099)	0.018 (1,415)	(0.001)
AbPROD2	Pre	0.002 (1,135)	-3.05^{***}	0.001 (1,120)	-1.66^{**}	0.011 (1,115)	1.58^{*}	0.030 (1,115)	3.64^{***}
	Post	0.010 (1,135)	(0.001)	0.004 (1,120)	(0.048)	0.003 (1,115)	(0.057)	0.015 (1,115)	(0.000)
AbEXP	Pre	0.021 (1,420)	2.62^{***}	0.030 (1,420)	2.68^{***}	0.027 (1,420)	3.19^{***}	0.012 (1,415)	-1.49^{*}
	Post	0.017 (1,420)	(0.004)	0.024 (1,420)	(0.004)	0.020 (1,420)	(0.001)	0.020 (1,415)	(0.068)

Table 3.3: Continued

		High-Strong		High-Weak		Low-Strong		Low-Weak	
		Median (N)	z-stat. (p-value)	Median (N)	z-stat. (p-value)	Median (N)	z-stat. (p-value)	Median (N)	z-stat. (p-value)
Panel B: Sample grouping based on the levels of income smoothing and legal enforcement									
VARNI	Pre	0.002 (88)	-10.72^{***}	0.001 (480)	-13.75^{***}	0.017 (259)	-4.17^{***}	0.010 (308)	2.09^{**}
	Post	0.024 (88)	(0.000)	0.004 (480)	(0.000)	0.036 (259)	(0.000)	0.010 (308)	(0.018)
DAC	Pre	0.010 (440)	1.30^{*}	0.006 (2,400)	6.23^{***}	0.002 (1,295)	-3.40^{***}	-0.004 (1,540)	0.33
	Post	-0.003 (440)	(0.098)	-0.004 (2,400)	(0.000)	0.014 (1,295)	(0.000)	-0.007 (1,540)	(0.370)
AbCFO	Pre	-0.012 (440)	-1.52^{*}	-0.004 (2,400)	-1.26	0.005 (1,295)	-0.06	0.018 (1,540)	2.07^{**}
	Post	-0.013 (440)	(0.065)	-0.001 (2,400)	(0.104)	0.002 (1,295)	(0.477)	0.013 (1,540)	(0.019)
AbPROD	Pre	0.007 (440)	-0.54	-0.001 (2,400)	-3.71^{***}	0.018 (1,295)	0.61	0.025 (1,540)	3.70^{***}
	Post	0.010 (440)	(0.295)	0.009 (2,400)	(0.000)	0.011 (1,295)	(0.272)	0.014 (1,540)	(0.000)
AbPROD2	Pre	0.014 (320)	-0.44	0.000 (1,935)	-3.37^{***}	0.015 (980)	0.69	0.023 (1,250)	4.46^{***}
	Post	0.012 (320)	(0.329)	0.007 (1,935)	(0.000)	0.013 (980)	(0.247)	0.008 (1,250)	(0.000)
AbEXP	Pre	0.046 (440)	1.97^{**}	0.023 (2,400)	3.24^{***}	0.034 (1,295)	-0.21	0.017 (1,540)	1.56^{*}
	Post	0.036 (440)	(0.025)	0.018 (2,400)	(0.001)	0.032 (1,295)	(0.419)	0.014 (1,540)	(0.059)

Note:
This table reports the results from the Mann-Whitney U test. For Panel A, the sample is grouped into quartiles based on the levels of income smoothing. Quartile 1 represents the sample with the highest level of income smoothing. For Panel B, the sample is grouped based on two criteria: 1) income smoothing levels (high and low) and 2) legal enforcement levels (strong and weak). All other variables are defined in Table 3.2. AbPROD2 is abnormal accruals computed from the sample with consumer services and health care industries excluded. *, ** , *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively (one-tailed).

Table 3.4: Comparison of earnings management metrics - Excluding Malaysia

		Quartile 1		Quartile 2		Quartile 3		Quartile 4	
		Median (N)	z-stat. (p-value)	Median (N)	z-stat. (p-value)	Median (N)	z-stat. (p-value)	Median (N)	z-stat. (p-value)
Panel A: Sample grouping based on the level of income smoothing									
VARNI	Pre	0.001 (210)	-15.26^{***}	0.003 (209)	-12.16^{***}	0.009 (210)	-6.11^{***}	0.038 (209)	2.31^{**}
	Post	0.008 (210)	(0.000)	0.013 (209)	(0.000)	0.015 (210)	(0.000)	0.037 (209)	(0.011)
DAC	Pre	0.011 (1,050)	6.44^{***}	0.007 (1,045)	3.42^{***}	0.005 (1,050)	0.29	-0.015 (1,045)	-3.74^{***}
	Post	-0.008 (1,050)	(0.000)	-0.005 (1,045)	(0.000)	0.003 (1,050)	(0.77)	0.002 (1,045)	(0.000)
AbCFO	Pre	-0.003 (1,050)	-0.52	-0.006(1,045)	-1.79^{**}	-0.003 (1,050)	-0.12	0.024 (1,045)	0.99
	Post	0.001 (1,050)	(0.302)	-0.002 (1,045)	(0.037)	-0.005 (1,050)	(0.454)	0.022 (1,045)	(0.161)
AbPROD	Pre	0.002 (1,050)	-2.31^{**}	0.002 (1,045)	-1.24	0.014 (1,050)	0.49	0.032 (1,045)	2.56^{***}
	Post	0.012 (1,050)	(0.010)	0.009 (1,045)	(0.107)	0.008 (1,050)	(0.314)	0.018 (1,045)	(0.005)
AbPROD2	Pre	0.011 (810)	-3.30^{***}	0.009 (780)	-2.86^{***}	0.016 (810)	-0.56	0.039 (800)	1.68^{***}
	Post	0.024 (810)	(0.001)	0.021 (780)	(0.002)	0.017 (810)	(0.287)	0.028 (800)	(0.003)
AbEXP	Pre	0.027 (1,050)	3.49^{***}	0.029 (1,045)	2.80^{***}	0.029 (1,050)	2.59^{***}	0.011 (1,045)	-0.93
	Post	0.019 (1,050)	(0.000)	0.023 (1,045)	(0.003)	0.022 (1,050)	(0.005)	0.018 (1,045)	(0.175)

Table 3.4: Continued

		High-Strong		High-Weak		Low-Strong		Low-Weak	
		Median (N)	z-stat. (p-value)	Median (N)	z-stat. (p-value)	Median (N)	z-stat. (p-value)	Median (N)	z-stat. (p-value)
Panel B: Sample grouping based on the levels of income smoothing and legal enforcement									
VARNI	Pre	0.002 (109)	-11.74^{***}	0.002 (310)	-15.06^{***}	0.019 (238)	-3.00^{***}	0.011 (181)	-0.23
	Post	0.025 (109)	(0.000)	0.007 (310)	(0.000)	0.038 (238)	(0.001)	0.012 (181)	(0.409)
DAC	Pre	0.014 (545)	1.72^{**}	0.007 (1,550)	6.92^{***}	-0.001 (1,190)	-3.85^{***}	-0.004 (905)	0.48
	Post	-0.002 (545)	(0.042)	-0.008 (1,550)	(0.000)	0.014 (1,190)	(0.000)	-0.008 (905)	(0.316)
AbCFO	Pre	-0.011 (545)	-1.47^{*}	0.001 (1,550)	-0.94	0.005 (1,190)	-0.00	0.016 (905)	1.15
	Post	-0.012 (545)	(0.071)	0.004 (1,550)	(0.175)	0.002 (1,190)	(0.499)	0.013 (905)	(0.125)
AbPROD	Pre	0.010 (545)	-0.15	-0.001 (1,550)	-2.76^{***}	0.017 (1,190)	0.43	0.026 (905)	2.85^{***}
	Post	0.009 (545)	(0.441)	0.009 (1,550)	(0.003)	0.012 (1,190)	(0.335)	0.014 (905)	(0.002)
AbPROD2	Pre	0.016 (395)	-0.92	0.009 (1,195)	-4.51^{***}	0.025 (905)	-0.36	0.031 (705)	1.47^{*}
	Post	0.021 (395)	(0.180)	0.023 (1,195)	(0.000)	0.019 (905)	(0.361)	0.024 (705)	(0.070)
AbEXP	Pre	0.050 (545)	2.69^{***}	0.023 (1,550)	3.63^{***}	0.031 (1,190)	-0.70	0.018 (905)	2.56^{***}
	Post	0.039 (545)	(0.004)	0.017 (1,550)	(0.000)	0.031 (1,190)	(0.243)	0.012 (905)	(0.005)

Note:
This table reports the results from the Mann-Whitney U test. For Panel A, the sample is grouped into quartiles based on the levels of income smoothing. Quartile 1 represents the sample with the highest level of income smoothing. For Panel B, the the sample is grouped based on two criteria: 1) income smoothing levels (high and low) and 2) legal enforcement levels (strong and weak). All other variables are defined in Table 3.2. AbPROD2 is abnormal accruals computed from the sample with consumer services and health care industries excluded. *, ** , *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively (one-tailed).

Table 3.5: Regression analysis of IFRS on earnings management metrics

	VARNI	DAC	AbCFO	AbPROD	AbPROD2	AbEXP
	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.
	(t-stat)	(t-stat)	(t-stat)	(t-stat)	(t-stat)	(t-stat)
Panel A: Sample grouping based on the level of income smoothing						
Quartile 1						
IFRS	0.01**	−0.03*	−0.03	0.06**	0.04	0.05***
	(8.36)	(−1.85)	(−1.60)	(2.34)	(1.38)	(2.77)
LEV	0.04	−0.03***	0.14***	0.13***	0.13***	−0.03***
	(1.56)	(3.64)	(15.50)	(9.34)	(8.42)	(−3.59)
SIZE	0.00*	0.00***	−0.01***	−0.00	−0.00	0.01***
	(1.72)	(3.85)	(−7.39)	(−0.62)	(−0.21)	(8.53)
Constant	−0.01**	−0.04*	0.02	−0.00	−0.02	−0.04**
	(−2.08)	(−1.88)	(1.21)	(−0.12)	(−0.68)	(−2.12)
Industry	incl.	incl.	incl.	incl.	incl.	incl.
Year		incl.	incl.	incl.	incl.	incl.
N	568	2,840	2,840	2,840	2,270	2,840
Adjusted R^2	0.13	0.03	0.10	0.09	0.06	0.09
Quartile 2						
IFRS	0.03***	−0.01	−0.02	−0.01	−0.00	0.00
	(5.02)	(−0.95)	(−1.31)	(−0.34)	(−0.13)	(0.16)
LEV	0.09***	−0.04***	0.12***	0.13***	0.13***	−0.02**
	(4.95)	(−4.78)	(13.98)	(10.40)	(10.03)	(−2.36)
SIZE	−0.01***	0.00***	−0.01***	0.00	−0.00	0.01***
	(−3.28)	(2.81)	(−6.83)	(0.09)	(−0.32)	(10.01)
Constant	0.05	−0.04*	0.00	−0.06**	−0.05*	−0.08***
	(1.64)	(−1.88)	(0.00)	(−2.08)	(−1.69)	(−4.42)
Industry	incl.	incl.	incl.	incl.	incl.	incl.
Year		incl.	incl.	incl.	incl.	incl.
N	568	2,840	2,840	2,840	2,240	2,840
Adjusted R^2	0.09	0.02	0.09	0.13	0.06	0.17
Quartile 3						
IFRS	0.03***	−0.00	−0.01	0.01	0.02	0.01
	(5.54)	(−0.26)	(−1.20)	(0.35)	(0.82)	(0.79)
LEV	0.03**	−0.04***	0.09***	0.10***	0.09***	−0.02***
	(2.39)	(−4.00)	(11.22)	(8.57)	(6.90)	(−2.62)
SIZE	−0.00**	0.01***	−0.01***	−0.01***	−0.01***	0.01***
	(−2.53)	(4.77)	(−7.69)	(−3.36)	(−3.00)	(5.12)
Constant	0.04*	−0.05**	0.06***	0.04*	0.05*	−0.02
	(1.84)	(−2.50)	(3.10)	(1.70)	(1.68)	(−1.08)
Industry	incl.	incl.	incl.	incl.	incl.	incl.
Year		incl.	incl.	incl.	incl.	incl.
N	568	2,840	2,840	2,840	2,230	2,840
Adjusted R^2	0.09	0.01	0.07	0.11	0.12	0.11

Table 3.5: Continued

	VARNI	DAC	AbCFO	AbPROD	AbPROD2	AbEXP
	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.
	(t-stat)	(t-stat)	(t-stat)	(t-stat)	(t-stat)	(t-stat)
Quartile 4						
IFRS	0.01	0.03	0.01	−0.00	0.01	−0.01
	(0.26)	(1.26)	(0.58)	(−0.21)	(0.56)	(−0.38)
LEV	0.29***	−0.07***	0.04***	0.03***	0.04***	−0.08***
	(7.52)	(−6.99)	(5.87)	(3.63)	(3.95)	(−9.12)
SIZE	−0.03***	0.01***	−0.01***	0.01***	0.00*	0.02***
	(−4.70)	(5.37)	(−8.37)	(3.12)	(1.86)	(14.22)
Constant	0.43***	−0.09***	0.17***	−0.01	0.02	−0.23***
	(4.39)	(−2.98)	(8.52)	(−0.31)	(0.73)	(−9.27)
Industry	incl.	incl.	incl.	incl.	incl.	incl.
Year		incl.	incl.	incl.	incl.	incl.
N	566	2,830	2,830	2,830	2,230	2,830
Adjusted R^2	0.13	0.04	0.05	0.06	0.06	0.12
Panel B: Sample grouping based on the levels of income smoothing and legal enforcement						
High-Strong						
IFRS	0.07***	0.01	0.02**	0.00	0.00	−0.03
	(4.12)	(0.38)	(2.15)	(0.05)	(0.17)	(−1.59)
LEV	0.11**	−0.05**	0.12***	0.05*	0.07***	−0.06***
	(2.35)	(−2.21)	(8.17)	(1.96)	(2.58)	(−2.65)
SIZE	−0.00	0.00	−0.01***	0.01**	0.01***	0.01***
	(−0.22)	(1.57)	(−3.66)	(2.04)	(2.61)	(5.40)
Constant	−0.04	−0.02*	0.01	−0.06	−0.10**	−0.07*
	(−0.53)	(−0.71)	(0.53)	(−1.39)	(−2.18)	(−1.76)
Industry	incl.	incl.	incl.	incl.	incl.	incl.
Year		incl.	incl.	incl.	incl.	incl.
N	176	880	880	880	640	880
Adjusted R^2	0.10	0.03	0.13	0.04	0.02	0.09
High-Weak						
IFRS	0.01***	−0.05***	−0.00	−0.02**	0.00	−0.03***
	(4.53)	(−8.30)	(−0.64)	(−2.30)	(0.39)	(−5.07)
LEV	0.04***	−0.03***	0.13***	0.15***	0.14***	−0.01**
	(5.50)	(−5.14)	(19.22)	(15.51)	(13.57)	(−2.33)
SIZE	−0.00***	0.00***	−0.01***	−0.00**	−0.00**	0.01***
	(−3.31)	(4.59)	(−9.25)	(−2.39)	(−2.38)	(10.92)
Constant	0.03**	−0.03**	0.05***	−0.02	−0.01	−0.09***
	(1.98)	(−1.97)	(4.06)	(−0.95)	(−0.49)	(−6.86)
Industry	incl.	incl.	incl.	incl.	incl.	incl.
Year		incl.	incl.	incl.	incl.	incl.
N	960	4,800	4,800	4,800	3,870	4,800
Adjusted R^2	0.06	0.03	0.09	0.14	0.08	0.16

Table 3.5: Continued

	VARNI	DAC	AbCFO	AbPROD	AbPROD2	AbEXP
	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.
	(t-stat)	(t-stat)	(t-stat)	(t-stat)	(t-stat)	(t-stat)
Low-Strong						
IFRS	0.04**	−0.01	−0.00	−0.00	0.00	−0.01
	(1.97)	(−0.65)	(−0.21)	(−0.06)	(0.24)	(−0.50)
LEV	0.24***	−0.05***	0.08***	0.04***	0.06***	−0.10***
	(5.74)	(−4.34)	(8.88)	(2.87)	(4.06)	(−7.94)
SIZE	−0.03***	0.01***	−0.01***	0.00**	0.00**	0.02***
	(−4.83)	(6.52)	(−9.11)	(2.19)	(2.48)	(11.59)
Constant	0.38***	−0.11***	0.16***	0.03	0.01	−0.15***
	(4.49)	(−4.17)	(8.41)	(1.20)	(0.47)	(−5.81)
Industry	incl.	incl.	incl.	incl.	incl.	incl.
Year		incl.	incl.	incl.	incl.	incl.
N	518	2,590	2,590	2,590	1,960	2,590
Adjusted R^2	0.12	0.03	0.09	0.12	0.14	0.14
Low-Weak						
IFRS	−0.00	−0.03**	−0.00	−0.03***	−0.01	−0.03***
	(−0.06)	(−2.43)	(−0.01)	(−2.58)	(−0.41)	(−3.87)
LEV	0.29***	−0.06***	0.06***	0.07***	0.07***	−0.05***
	(10.77)	(−7.92)	(8.63)	(8.19)	(7.34)	(−9.69)
SIZE	−0.02***	0.00***	−0.01***	−0.00***	−0.01***	0.01***
	(−4.17)	(3.35)	(−7.25)	(−2.61)	(−3.61)	(9.67)
Constant	0.16**	−0.03	0.10***	0.05**	0.08***	−0.08***
	(2.49)	(−1.58)	(5.11)	(2.17)	(3.09)	(−5.25)
Industry	incl.	incl.	incl.	incl.	incl.	incl.
Year		incl.	incl.	incl.	incl.	incl.
N	616	3,080	3,080	3,080	2,500	3,080
Adjusted R^2	0.17	0.02	0.04	0.06	0.06	0.11

Note:
This table reports the results from estimating the following regression:

$$DEP_{it} = \beta_0 + \beta_1 IFRS_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + Industry\_dummy + Year\_dummy + \epsilon_{it}.$$

Variable definitions are as follows:
DEP is the dependent variable investigated including VARNI, AbCFO, AbPROD, and AbEXP; IFRS is a dummy variable (1 = sample in IFRS period, 0 = otherwise); SIZE is a five-year average logarithm of total assets; LEV is a five-year average firm leverage; industry is a dummy variable for industry; year is a dummy variable for year. *, ** , *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 3.6: Regression analysis of IFRS on earnings management metrics - Excluding Malaysia

	VARNI	DAC	AbCFO	AbPROD	AbPROD2	AbEXP
	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.
	(t-stat)	(t-stat)	(t-stat)	(t-stat)	(t-stat)	(t-stat)
Panel A: Sample grouping based on the level of income smoothing						
Quartile 1						
IFRS	0.02**	−0.02*	−0.02	0.03	0.01	0.02
	(2.37)	(−1.68)	(−1.39)	(1.37)	(0.40)	(1.21)
LEV	0.09**	−0.04***	0.15***	0.20***	0.19***	−0.01
	(2.15)	(−3.22)	(12.54)	(10.70)	(9.25)	(−0.48)
SIZE	−0.01*	0.00**	−0.01***	−0.00	−0.00	0.01***
	(−1.75)	(2.44)	(−5.18)	(−1.02)	(−0.50)	(4.25)
Constant	0.06	−0.04	0.00	−0.05	−0.07*	−0.03
	(0.88)	(−1.53)	(0.13)	(−1.45)	(−1.81)	(−1.12)
Industry	incl.	incl.	incl.	incl.	incl.	incl.
Year		incl.	incl.	incl.	incl.	incl.
N	420	2,100	2,100	2,100	1,620	2,100
Adjusted R^2	0.02	0.05	0.12	0.13	0.07	0.12
Quartile 2						
IFRS	0.04***	−0.02	−0.02*	0.01	0.02	0.02
	(4.31)	(−1.31)	(−1.86)	(0.54)	(1.04)	(1.48)
LEV	0.15***	−0.05***	0.10***	0.14***	0.13***	−0.01
	(5.21)	(−4.65)	(10.58)	(9.39)	(8.56)	(−1.11)
SIZE	−0.01***	0.00*	−0.01***	−0.00	−0.00	0.01***
	(−4.02)	(1.74)	(−6.60)	(−0.14)	(−1.01)	(7.54)
Constant	0.14**	−0.02	0.03	−0.04	−0.01	−0.08***
	(2.51)	(−0.63)	(1.49)	(−1.19)	(−0.42)	(−3.30)
Industry	incl.	incl.	incl.	incl.	incl.	incl.
Year		incl.	incl.	incl.	incl.	incl.
N	418	2,090	2,090	2,090	1,560	2,090
Adjusted R^2	0.12	0.02	0.07	0.13	0.06	0.16
Quartile 3						
IFRS	0.04***	0.00	−0.01	0.00	0.01	0.01
	(5.26)	(0.12)	(−1.12)	(0.19)	(0.58)	(0.86)
LEV	0.05***	−0.03***	0.11***	0.11***	0.11***	−0.02**
	(2.83)	(−2.99)	(10.79)	(8.03)	(7.04)	(−2.22)
SIZE	−0.01***	0.00***	−0.01***	−0.00**	−0.00	0.00***
	(−3.29)	(3.19)	(−5.60)	(−2.16)	(−1.51)	(3.17)
Constant	0.08**	−0.04*	0.03	0.01	0.01	−0.00
	(2.37)	(−1.77)	(1.57)	(0.49)	(0.41)	(−0.07)
Industry	incl.	incl.	incl.	incl.	incl.	incl.
Year		incl.	incl.	incl.	incl.	incl.
N	420	2,100	2,100	2,100	1,620	2,100
Adjusted R^2	0.12	0.01	0.08	0.15	0.18	0.14

Table 3.6: Continued

	VARNI	DAC	AbCFO	AbPROD	AbPROD2	AbEXP
	Coef. (t-stat)	Coef. (t-stat)	Coef. (t-stat)	Coef. (t-stat)	Coef. (t-stat)	Coef. (t-stat)
Quartile 4						
IFRS	0.03	0.03	0.02	−0.01	0.01	−0.02
	(0.69)	(1.28)	(0.97)	(−0.30)	(0.45)	(−0.92)
LEV	0.50***	−0.06***	0.03***	0.03***	0.04***	−0.08***
	(7.44)	(−5.43)	(4.16)	(2.70)	(3.25)	(−8.11)
SIZE	−0.07***	0.01***	−0.01***	0.01***	0.01***	0.03***
	(−5.22)	(5.40)	(−6.90)	(4.11)	(3.13)	(13.81)
Constant	0.92***	−0.14***	0.19***	−0.05	−0.03	−0.32***
	(4.63)	(−3.69)	(7.49)	(−1.42)	(−0.81)	(−9.87)
Industry	incl.	incl.	incl.	incl.	incl.	incl.
Year		incl.	incl.	incl.	incl.	incl.
N	418	2,090	2,090	2,090	1,600	2,090
Adjusted R^2	0.18	0.04	0.06	0.07	0.07	0.15
Panel B: Sample grouping based on the levels of income smoothing and legal enforcement						
High-Strong						
IFRS	0.07***	0.01	0.02**	−0.00	0.02	−0.03*
	(4.12)	(0.47)	(2.33)	(−0.22)	(1.06)	(−1.73)
LEV	0.11**	−0.05***	0.13***	0.06**	0.07***	−0.06***
	(2.35)	(−2.64)	(10.19)	(2.45)	(2.98)	(−2.72)
SIZE	−0.00	0.00*	−0.00***	0.00**	0.01**	0.01***
	(−0.22)	(1.73)	(−3.36)	(2.17)	(2.38)	(5.41)
Constant	−0.04	−0.02	0.01	−0.03	−0.05	−0.04
	(−0.53)	(−0.52)	(0.67)	(−0.73)	(−1.29)	(−1.14)
Industry	incl.	incl.	incl.	incl.	incl.	incl.
Year		incl.	incl.	incl.	incl.	incl.
N	176	1,090	1,090	1,090	790	1,090
Adjusted R^2	0.10	0.02	0.14	0.05	0.04	0.07
High-Weak						
IFRS	0.01***	−0.02**	−0.01	0.00	−0.02*	−0.00
	(4.53)	(−2.43)	(−1.01)	(0.48)	(−1.90)	(−0.41)
LEV	0.04***	−0.04***	0.12***	0.21***	0.19***	0.02***
	(5.50)	(−4.90)	(12.73)	(16.36)	(13.61)	(2.97)
SIZE	−0.00***	0.00**	−0.01***	−0.01***	−0.01***	0.01***
	(−3.31)	(2.03)	(−8.84)	(−3.25)	(−3.56)	(6.88)
Constant	0.03**	−0.01	0.13***	0.00	0.03	−0.10***
	(1.98)	(−0.41)	(5.86)	(0.00)	(0.98)	(−5.45)
Industry	incl.	incl.	incl.	incl.	incl.	incl.
Year		incl.	incl.	incl.	incl.	incl.
N	960	3,100	3,100	3,100	2,390	3,100
Adjusted R^2	0.06	0.05	0.09	0.18	0.09	0.23

Table 3.6: Continued

	VARNI	DAC	AbCFO	AbPROD	AbPROD2	AbEXP
	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.
	(t-stat)	(t-stat)	(t-stat)	(t-stat)	(t-stat)	(t-stat)
Low-Strong						
IFRS	0.04**	0.01	0.00	−0.02	−0.01	−0.01
	(1.97)	(0.86)	(0.11)	(−1.22)	(−0.64)	(−1.01)
LEV	0.24***	−0.05***	0.07***	0.03**	0.05***	−0.10***
	(5.74)	(−4.20)	(7.74)	(2.50)	(3.69)	(−7.98)
SIZE	−0.03***	0.01***	−0.01***	0.00**	0.01***	0.02***
	(−4.83)	(6.57)	(−8.99)	(2.28)	(2.80)	(11.58)
Constant	0.38***	−0.12***	0.18***	0.03	0.00	−0.17***
	(4.49)	(−4.30)	(8.48)	(1.04)	(0.14)	(−6.10)
Industry	incl.	incl.	incl.	incl.	incl.	incl.
Year		incl.	incl.	incl.	incl.	incl.
N	518	2,380	2,380	2,380	1,810	2,380
Adjusted R^2	0.12	0.03	0.09	0.12	0.15	0.14
Low-Weak						
IFRS	−0.00	−0.02	0.01	−0.04***	−0.04***	−0.03***
	(−0.06)	(−1.43)	(0.53)	(−2.92)	(−2.81)	(−4.28)
LEV	0.29***	−0.06***	0.06***	0.08***	0.08***	−0.06***
	(10.77)	(−6.24)	(6.76)	(7.56)	(7.03)	(−8.63)
SIZE	−0.02***	0.00	−0.01***	0.00	−0.00	0.01***
	(−4.17)	(1.19)	(−4.16)	(0.29)	(−0.60)	(8.09)
Constant	0.16**	−0.02	0.08***	−0.02	0.02	−0.11***
	(2.49)	(−0.52)	(2.77)	(−0.44)	(0.57)	(−4.91)
Industry	incl.	incl.	incl.	incl.	incl.	incl.
Year		incl.	incl.	incl.	incl.	incl.
N	616	1,810	1,810	1,810	1,410	1,810
Adjusted R^2	0.17	0.03	0.04	0.09	0.10	0.18

Note:
This table reports the results from estimating the following regression:

$$DEP_{it} = \beta_0 + \beta_1 IFRS_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + Industry\_dummy + Year\_dummy + \epsilon_{it}.$$

Variable definitions are as follows:
DEP is the dependent variable investigated including VARNI, AbCFO, AbPROD, and AbEXP; IFRS is a dummy variable (1 = sample in IFRS period, 0 = otherwise); SIZE is a five-year average logarithm of total assets; LEV is a five-year average firm leverage; industry is a dummy variable for industry; year is a dummy variable for year. *, ** , *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 3.7: Comparison of earnings management - Based on STDNI

		Quartile 1		Quartile 2		Quartile 3		Quartile 4	
		Median (N)	z-stat. (p-value)	Median (N)	z-stat. (p-value)	Median (N)	z-stat. (p-value)	Median (N)	z-stat. (p-value)
Panel A: Sample grouping based on the level of income smoothing									
STDNI	Pre	0.009 (284)	-13.68^{***}	0.022 (284)	-6.17^{***}	0.043 (284)	1.76^{**}	0.102 (283)	8.95^{***}
	Post	0.020 (284)	(0.000)	0.030 (284)	(0.000)	0.041 (284)	(0.039)	0.063 (283)	(0.000)
DAC	Pre	0.010 (1,420)	4.81^{***}	0.009 (1,420)	4.26^{***}	0.002 (1,420)	1.25	-0.016 (1,415)	-3.95^{***}
	Post	-0.004 (1,420)	(0.000)	-0.004 (1,420)	(0.000)	-0.001 (1,420)	(0.105)	-0.000 (1,415)	(0.000)
AbCFO	Pre	0.001 (1,420)	-0.26	-0.007 (1,420)	-1.12	-0.006 (1,420)	-1.24	0.028 (1,415)	1.84^{**}
	Post	0.002 (1,420)	(0.399)	-0.005 (1,420)	(0.131)	-0.003 (1,420)	(0.108)	0.019 (1,415)	(0.033)
AbPROD	Pre	0.010 (1,420)	-0.61	0.004 (1,420)	-0.61	0.004 (1,420)	-1.89^{**}	0.026 (1,415)	2.42^{***}
	Post	0.011 (1,420)	(0.273)	0.008 (1,420)	(0.271)	0.011 (1,420)	(0.030)	0.013 (1,415)	(0.008)
AbPROD2	Pre	0.009 (1,060)	0.30	0.003 (1,105)	-1.29^{*}	0.006 (1,145)	-0.90	0.022 (1,175)	2.55^{***}
	Post	0.009 (1,060)	(0.381)	0.008 (1,105)	(0.098)	0.006 (1,145)	(0.184)	0.011 (1,175)	(0.005)
AbEXP	Pre	0.029 (1,420)	4.76^{***}	0.027 (1,420)	4.28^{***}	0.027 (1,420)	1.20	0.005 (1,415)	-3.11^{***}
	Post	0.022 (1,420)	(0.000)	0.020 (1,420)	(0.000)	0.023 (1,420)	(0.116)	0.015 (1,415)	(0.001)

Table 3.7: Continued

		High-Strong		High-Weak		Low-Strong		Low-Weak	
		Mean (N)	z-stat. (p-value)	Mean (N)	z-stat. (p-value)	Mean (N)	z-stat. (p-value)	Mean (N)	z-stat. (p-value)
Panel B: Sample grouping based on the levels of income smoothing and legal enforcement									
STDNI	Pre	0.017 (121)	-8.47^{***}	0.015 (447)	-10.03^{***}	0.069 (226)	2.15^{**}	0.058 (341)	7.56^{***}
	Post	0.036 (121)	(0.000)	0.022 (447)	(0.000)	0.064 (226)	(0.016)	0.043 (341)	(0.000)
DAC	Pre	0.020 (605)	0.30	0.006 (2,235)	6.83^{***}	-0.009 (1,130)	-3.18^{***}	-0.003 (1,705)	0.06
	Post	0.013 (605)	(0.382)	-0.006 (2,235)	(0.000)	0.006 (1,130)	(0.001)	-0.004 (1,705)	(0.477)
AbCFO	Pre	-0.009 (605)	-1.42^{*}	-0.001 (2,235)	-0.30	0.006 (1,130)	0.01	0.014 (1,705)	0.99
	Post	-0.010 (605)	(0.078)	0.002 (2,235)	(0.382)	0.002 (1,130)	(0.495)	0.008 (1,705)	(0.162)
AbPROD	Pre	0.016 (605)	0.42	0.005 (2,235)	-1.22	0.013 (1,130)	0.08	0.016 (1,705)	0.50
	Post	0.011 (605)	(0.336)	0.009 (2,235)	(0.112)	0.010 (1,130)	(0.468)	0.012 (1,705)	(0.310)
AbPROD2	Pre	0.014 (430)	-0.21	0.006 (1,735)	-0.72	0.015 (870)	0.61	0.013 (1,450)	1.12
	Post	0.014 (430)	(0.417)	0.008 (1,735)	(0.235)	0.011 (870)	(0.270)	0.007 (1,450)	(0.132)
AbEXP	Pre	0.055 (605)	3.83^{***}	0.024 (2,235)	5.03^{***}	0.024 (1,130)	-1.71^{**}	0.014 (1,705)	-0.31
	Post	0.039 (605)	(0.000)	0.018 (2,235)	(0.000)	0.030 (1,130)	(0.043)	0.015 (1,705)	(0.379)

Note:
This table reports the results from the Mann-Whitney U test. For Panel A, the sample is grouped into quartiles based on the levels of income smoothing. Quartile 1 represents the sample with the highest level of income smoothing. For Panel B, the sample is grouped based on two criteria: 1) income smoothing levels (high and low) and 2) legal enforcement levels (strong and weak). All other variables are defined in Table 3.2. AbPROD2 is abnormal accruals computed from the sample with consumer services and health care industries excluded. All other variables are also regrouped based on STDNI.*, ** , *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively (one-tailed).

Table 3.8: The effect of IFRS on earnings management metrics

	STDNI	DAC	AbCFO	AbPROD	AbPROD2	AbEXP
	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.
	(t-stat)	(t-stat)	(t-stat)	(t-stat)	(t-stat)	(t-stat)
Panel A: Sample grouping based on the level of income smoothing						
Quartile 1						
IFRS	0.01***	0.00	−0.01	0.03*	0.02	0.02*
	(6.51)	(0.03)	(−0.72)	(1.85)	(0.82)	(1.68)
LEV	0.00	−0.04***	0.08***	0.13***	0.13***	0.00
	(0.31)	(−4.15)	(10.17)	(10.69)	(9.24)	(0.57)
SIZE	−0.00	0.00	−0.00***	0.00	−0.00	0.01***
	(−1.09)	(1.62)	(−4.34)	(0.70)	(−0.65)	(4.51)
Constant	0.04***	−0.01	0.02	−0.03	−0.01	−0.02
	(3.48)	(−0.61)	(1.16)	(−1.02)	(−0.23)	(−0.11)
Industry	incl.	incl.	incl.	incl.	incl.	incl.
Year		incl.	incl.	incl.	incl.	incl.
N	568	2,840	2,840	2,840	2,120	2,840
Adjusted R^2	0.07	0.03	0.07	0.12	0.10	0.13
Quartile 2						
IFRS	0.02***	−0.01	0.00	0.03*	0.05**	0.02
	(6.15)	(−0.51)	(0.05)	(1.71)	(2.59)	(1.40)
LEV	0.04***	−0.02*	0.13***	0.14***	0.16***	−0.02*
	(3.87)	(−1.75)	(14.79)	(11.16)	(11.50)	(−1.85)
SIZE	−0.01***	0.00**	−0.01***	−0.00	−0.01***	0.01***
	(−4.99)	(2.49)	(−8.57)	(−1.37)	(−3.21)	(9.22)
Constant	0.09	−0.02	0.04**	0.00	0.04	−0.06***
	(5.86)	(−1.21)	(2.43)	(0.10)	(1.48)	(−3.36)
Industry	incl.	incl.	incl.	incl.	incl.	incl.
Year		incl.	incl.	incl.	incl.	incl.
N	568	2,840	2,840	2,840	2,210	2,840
Adjusted R^2	0.11	0.02	0.08	0.09	0.08	0.12
Quartile 3						
IFRS	0.01***	−0.01	−0.02	0.03*	0.04**	0.04**
	(3.44)	(−0.93)	(−1.53)	(1.88)	(2.12)	(2.46)
LEV	0.02*	−0.06***	0.09***	0.09***	0.09***	−0.02**
	(1.82)	(−6.12)	(11.55)	(7.17)	(6.60)	(−2.40)
SIZE	−0.01***	0.01***	−0.01***	−0.00	0.00	0.01***
	(−4.50)	(5.59)	(−8.25)	(−1.21)	(0.47)	(9.10)
Constant	0.13***	−0.05**	0.07***	0.02	−0.01	−0.07
	(6.36)	(−2.51)	(3.61)	(0.83)	(−0.24)	(−3.49)
Industry	incl.	incl.	incl.	incl.	incl.	incl.
Year		incl.	incl.	incl.	incl.	incl.
N	568	2,840	2,840	2,840	2,290	2,840
Adjusted R^2	0.05	0.03	0.06	0.08	0.04	0.11

Table 3.8: Continued

	STDNI	DAC	AbCFO	AbPROD	AbPROD2	AbEXP
	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.
	(t-stat)	(t-stat)	(t-stat)	(t-stat)	(t-stat)	(t-stat)
Quartile 4						
IFRS	−0.00	0.02	0.00	−0.02	−0.00	−0.02
	(−0.38)	(0.90)	(0.27)	(−0.80)	(−0.16)	(−0.94)
LEV	0.10***	−0.07***	0.05***	0.05***	0.05***	−0.08***
	(6.06)	(−6.92)	(6.70)	(5.12)	(4.76)	(−9.34)
SIZE	−0.02***	0.01***	−0.01***	−0.00	−0.00	0.02***
	(−6.79)	(4.64)	(−8.16)	(−0.29)	(−0.71)	(11.28)
Constant	0.36***	−0.08***	0.15***	0.02	0.04	−0.20***
	(8.32)	(−2.59)	(7.23)	(0.85)	(1.25)	(−7.92)
Industry	incl.	incl.	incl.	incl.	incl.	incl.
Year		incl.	incl.	incl.	incl.	incl.
N	566	2,830	2,830	2,830	2,350	2,830
Adjusted R^2	0.14	0.03	0.04	0.08	0.08	0.12
Panel B: Sample grouping based on the levels of income smoothing and legal enforcement						
High-Strong						
IFRS	0.02***	−0.00	0.02*	0.01	0.00	−0.01
	(4.13)	(−0.01)	(1.67)	(0.70)	(0.06)	(−0.94)
LEV	0.03	−0.03	0.11***	0.12***	0.16***	0.01
	(1.61)	(−1.47)	(8.57)	(5.56)	(6.83)	(0.70)
SIZE	−0.00	0.01***	−0.00**	0.01***	0.00	0.01***
	(−0.87)	(3.73)	(−1.99)	(2.79)	(0.36)	(4.47)
Constant	0.01	−0.07*	−0.01	−0.06*	−0.02	−0.01
	(0.54)	(−2.31)	(−0.45)	(−1.78)	(−0.43)	(−0.41)
Industry	incl.	incl.	incl.	incl.	incl.	incl.
Year		incl.	incl.	incl.	incl.	incl.
N	176	1,210	1,210	1,210	860	1,210
Adjusted R^2	0.15	0.02	0.08	0.07	0.08	0.10
High-Weak						
IFRS	0.02***	−0.05***	−0.01	−0.02**	−0.02*	−0.03***
	(7.66)	(−7.43)	(−0.89)	(−2.44)	(−1.69)	(−5.62)
LEV	0.02***	−0.01**	0.11***	0.15***	0.15***	−0.00
	(3.09)	(−2.02)	(16.32)	(15.59)	(13.80)	(−0.79)
SIZE	−0.00***	0.00	−0.01***	−0.00***	−0.01***	0.01***
	(−4.30)	(0.31)	(−8.68)	(−3.39)	(−3.74)	(7.74)
Constant	0.07***	0.01	0.07***	0.02	0.03	−0.05***
	(6.53)	(0.82)	(4.95)	(0.97)	(1.46)	(−4.28)
Industry	incl.	incl.	incl.	incl.	incl.	incl.
Year		incl.	incl.	incl.	incl.	incl.
N	960	4,470	4,470	4,470	3,470	4,470
Adjusted R^2	0.08	0.03	0.08	0.12	0.09	0.14

Table 3.8: Continued

	STDNI	DAC	AbCFO	AbPROD	AbPROD2	AbEXP
	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.
	(t-stat)	(t-stat)	(t-stat)	(t-stat)	(t-stat)	(t-stat)
Low-Strong						
IFRS	0.02**	−0.01	−0.00	−0.01	−0.01	−0.01
	(2.11)	(−0.64)	(−0.27)	(−0.35)	(−0.32)	(−0.53)
LEV	0.10***	−0.06***	0.08***	0.02	0.04***	−0.11***
	(4.66)	(−4.41)	(8.28)	(1.49)	(2.64)	(−8.88)
SIZE	−0.02***	0.01***	−0.01***	0.00	0.01***	0.02***
	(−5.83)	(4.74)	(−9.68)	(1.07)	(3.34)	(11.33)
Constant	0.30***	−0.08***	0.20***	0.07**	−0.01	−0.19***
	(6.81)	(−2.86)	(9.17)	(2.04)	(−0.26)	(−6.35)
Industry	incl.	incl.	incl.	incl.	incl.	incl.
Year		incl.	incl.	incl.	incl.	incl.
N	518	2,260	2,260	2,260	1,740	2,260
Adjusted R^2	0.11	0.02	0.09	0.11	0.12	0.14
Low-Weak						
IFRS	−0.01	−0.01	0.00	0.01	−0.02	0.00
	(−0.93)	(−0.95)	(0.28)	(1.00)	(−1.17)	(0.45)
LEV	0.13***	−0.07***	0.08***	0.09***	0.07***	−0.05***
	(11.56)	(−9.77)	(11.97)	(10.39)	(8.57)	(−8.72)
SIZE	−0.02***	0.01***	−0.01***	−0.00***	−0.00***	0.01***
	(−8.13)	(5.15)	(−7.66)	(−2.61)	(−3.07)	(10.49)
Constant	0.23***	−0.04**	0.07***	0.02	0.04	−0.09***
	(8.41)	(−2.32)	(4.20)	(0.93)	(1.48)	(−5.96)
Industry	incl.	incl.	incl.	incl.	incl.	incl.
Year		incl.	incl.	incl.	incl.	incl.
N	616	3,410	3,410	3,410	2,900	3,410
Adjusted R^2	0.24	0.04	0.06	0.07	0.04	0.13

Note:
This table reports the results from estimating the following regression:

$$DEP_{it} = \beta_0 + \beta_1 IFRS_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + Industry\_dummy + Year\_dummy + \epsilon_{it}.$$

Variable definitions are as follows:
DEP is the dependent variable investigated including VARNI, AbCFO, AbPROD, and AbEXP; IFRS is a dummy variable (1 = sample in IFRS period, 0 = otherwise); SIZE is a five-year average logarithm of total assets; LEV is a five-year average firm leverage; industry is a dummy variable for industry; year is a dummy variable for year. *, ** , *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Chapter 4

The effect of Japanese-SOX on earnings management to avoid losses in Japan

4.1 Introduction

Prior research reports that the Sarbanes-Oxley Act of 2002 (SOX) leads to an improvement in the reliability of financial information in the US (Lobo and Zhou, 2006; Cohen et al., 2008; Singer and You, 2011; Aubert and Grudnitski, 2014). The positive effect may be partly attributed to an increase in the penalties for financial-reporting misconduct imposed by SOX (Lobo and Zhou, 2006) or new regulations about the internal control system (Nagy, 2010; Singer and You, 2011) or an improvement in audit quality (DeFond and Lennox, 2011) or all of them combined. The Japanese business environment is reported to be different from those of the US, such as the tight relationship between business and main banks and a cross-shareholding between firms (Douthett and Jung, 2001; Bauer et al., 2008). The enactment of SOX-like regulations in Japan (JSOX) provides an opportunity to study the effect of the regulations on earnings management in a business environment that is different from that of the US. The purpose of this study is two-fold. First, it tests the effect of JSOX on the loss-avoidance behaviour of Japanese firms. Second, it examines earnings management components (EMC) that firms may use to engage in such behaviour to gain more insight into the methods that Japanese firms use to achieve loss avoidance.

We conduct two types of test to investigate the effect JSOX on loss-avoidance behaviour. Firstly, based on the studies of Burgstahler and Dichev (1997) and Degeorge et al. (1999), we examine the discontinuity at zero of the earnings distribution. The discontinuity occurs when small loss firms inflate earnings to present a positive profit which results in the unexpectedly high number of small profit firms (SPOS) and the unexpectedly low number of small loss firms (SLOS). We construct histograms from the net annual income of Japanese firms from 2000 to 2008 (pre-JSOX) and from 2009 to 2014 (post-JSOX) to examine the degree of discontinuity of each period. Based on the standardised difference, we find that the degree of the difference of SPOS and SLOS firms is somewhat high in the pre-JSOX periods and the degree exhibits a decline in the post-JSOX period. Secondly, we test the effect of JSOX on the prevalence of loss-avoidance firms between periods, using a logistic regression controlling for debt, firm size, industrial group (*keiretsu*). The logistic regression results show that the prevalence of loss-avoidance firms exhibits a significant decline in the JSOX period.

We partition our sample into small and large firm sub-groups for additional tests to address the effect of firm size on the extent of earnings management as suggested by Burgstahler and Chuk (2015). The results from the histogram analysis are partly consistent with the overall findings; they show a decrease in the degree of standardised difference of SPOS and SLOS firms in the post-JSOX period for both groups. The logistic regression results show a significant decline in loss avoidance for large firms but show no significant effect of JSOX for small firms. It may be that, as suggested by Depken and Ouyang (2006) and Lobo and Zhou (2006), the regulations may impose more potential costs of manipulation on firms. Large firms may be the first group to which the regulators pay more attention, so the regulations may affect them first. It is also possible that an improvement in internal control systems triggered by JSOX in large firms pays off much sooner as they have more resources relative to small firms.

Both types of analysis suggest some desirable effects of JSOX on loss-avoidance behaviour in Japan, which is partly consistent with the US findings (Lobo and Zhou, 2006; Cohen et al., 2008; Bartov and Cohen, 2009; Aubert and Grudnitski, 2014; Gilliam et al., 2015). A possible explanation for the moderate effect may be that JSOX is basically different from SOX – it includes only a few parts from SOX so it is less stringent. Another possible explanation would be the difference in the institutional factors, such as legal enforcement and/or the strong incentive for Japanese firms to report or maintain a modest profit.

We additionally examine five EMC including three specific accruals related to accounts receivable, inventory, and accrued expenses, and two investment accounts related to R&D and CAPEX. From the univariate and logistic regression tests, we find that, in both pre- and post-JSOX periods, SPOS firms use both accrual and investment manipulation to manage earnings in relation to other firms. Comparing EMC of SPOS firms between the pre- and post-JSOX periods, we find no changes in the methods used to avoid losses, which is inconsistent with prior US studies (Cohen et al., 2008; Bartov and Cohen, 2009) that report a decline in accounting and an increase in real earnings management after SOX. It may be that JSOX, as mentioned earlier, is less stringent in comparison to SOX. Another possible explanation may be the different perceptions of earnings management. While American management may perceive real activity earnings management as more ethical so they substitute them for accounting methods, Japanese management may perceive both methods as acceptable.

Furthermore, we find that SPOS firms switch from one specific accrual manipulation to another specific account between JSOX periods to achieve loss avoidance. So for accrual manipulation alone, firms have several accounts to use. The findings link with Marquardt and Wiedman (2004) who propose that costs of manipulation may be different among specific accounts. It is possible that Japanese managers turn to other particular accounts perceived as having lower costs in order to compensate for the potentially increased costs, such as penalty costs, imposed by JSOX.

Interestingly, albeit Japanese firms have large R&D spending, we find that SPOS firms are less likely to adjust R&D but are more likely to adjust CAPEX to achieve loss avoidance. It may be that firms invest in more CAPEX in relation to R&D so the larger amount may provide more scope for manipulation.

The analysis of large and small firms also shows more or less similar results. In addition, we find that small SPOS firms are less likely to use real earnings management which is in contrast to large firms that use both methods. The findings seem to support the notion of Burgstahler and Chuk (2015) that large firms tend to have more accounting choices and a larger amount which is more susceptible to manipulation.

In short, JSOX appears to have some desirable effects on the prevalence of loss avoidance in Japan, especially for large firms. Firms still use the same methods, including accrual and investment manipulation, to achieve loss avoidance after JSOX. Accruals seem to be crucial tools as there are many sets of accounts which management utilise to switch from one special type of accrual to another.

The remainder of the chapter proceeds as follows. Section 4.2 discusses the related literature, including the effect of SOX on earnings management, business environment and earnings management in Japan. Section 4.3 documents research design, including loss-avoidance measurement, analysis methods, sample selection, and descriptive statistics. The tests and results are discussed in section 4.4 and section 4.5 concludes.

4.2 Literature review

4.2.1 SOX and earnings management

Corporate accounting scandals, such as the cases of Enron and WorldCom, have raised scepticism about the reliability of accounting information of firms and about the quality of independent auditors in the US. In response, the US Congress enacted the Sarbanes Oxley Act of 2002. SOX establishes many standards for financial re-

porting to improve the reliability of accounting information. For instance, the Act prescribes corporate management to certify the accuracy and completeness of financial reports and imposes penalties for financial misconduct. It also institutes more auditing standards, such as requirements for assessing and reporting on the effectiveness of internal control systems of a company and rotation of audit partners auditing a particular client. In addition, SOX created the Public Company Accounting Oversight Board (PCAOB) to regulate public auditors.

Prior studies demonstrate that SOX contributes to a positive change in the financial reporting quality of US listed firms. For instance, Nagy (2010) reports that SOX is linked to a decrease in the likelihood of misstated financial reports. Lobo and Zhou (2006) and Singer and You (2011), by testing discretionary accruals (DAC) around SOX periods, report that SOX leads to a decline in DAC in accounting information of American firms. Lobo and Zhou (2006) point out that legal liabilities imposed by SOX may outweigh earnings management incentives, resulting in more conservative accounting choices by managers. Cohen et al. (2008) and Bartov and Cohen (2009) examine not only DAC but also real earnings management (including boosting sales, over-producing goods and cutting discretionary expenses) around the passage of SOX and report a decline in DAC. However, they also report an increase in aggregate real earnings management of US firms, especially those that have a propensity for earnings management to avoid earnings losses/decreases or to meet earnings forecasts. The authors caution that such changes may result from the compound effects of SOX itself and an increase in the watchfulness of auditors and regulators after the scandals. A decline in accrual manipulation suggests an improvement in the quality of financial reports but an increase in overall real activity manipulation may raise questions about the overall impact of SOX. A trade-off and switching between accounting and real earnings management have also been reported in the US market (Tan and Jamal, 2006; Zang, 2012) and in many other countries (Ipino and Parbonetti, 2011) which is caused by the related costs of manipulation and accounting standard restrictions.

Some studies report on the effect of SOX on earnings management to exceed earnings thresholds. For instance, Bartov and Cohen (2009) find that the prevalence of earnings management to meet or beat analyst expectations declines after SOX. Aubert and Grudnitski (2014) report a decrease in opportunistic earnings management by studying firms' earnings per share and analysts' earnings consensus. Depken and Ouyang (2006) report a decrease in the prevalence of loss avoidance, suggesting that SOX may impose more political and economic costs on earnings manipulation thus restricting management of earnings manipulation. Gilliam et al. (2015), by examining the earnings distribution of US firms between SOX periods, report a disappearance of the zero-earnings discontinuity in the post-SOX periods.

4.2.2 Accounting changes in Asia

Many countries in Asia have been reported to have low quality corporate accounting information (high level of earnings management) caused by many institutional factors such as ownership structure, legal enforcement level, and investor protection (Ball et al., 2003; Leuz et al., 2003). Some countries, such as Thailand and Malaysia, have converged their local accounting standards to align with IFRS that are considered to be of high quality to improve the quality of their corporate accounting information. The IASB has been in the process of improving IFRS for many years by eliminating accounting choices from the standards in order to limit managerial discretion of the adopting firms. Unlike IFRS, SOX, as a law, uses other mechanisms, such as imposing penalties for financial misconduct and prescribing, for example, internal control assessment. Both IFRS and SOX, however, could be considered partly similar for they have the primary purpose of improving the quality of financial information.

Recently, China and Japan have followed the US by enforcing SOX-like regulations. China enacted such regulations in 2012 after the adoption of IFRS in 2007 making studying the effect of SOX in China relatively challenging as one has to isolate the effect of SOX and IFRS on accounting quality. Japan has not adopted

IFRS but it enacted the Financial Instrument and Exchange Law in 2006, after Japanese accounting scandals around 2004-2005. The law consists of four main purposes: 1) to establish a cross-sectional legislative framework for investor protection, 2) to enhance disclosure requirements, 3) to ensure appropriate management of self-regulatory operations by exchanges, and 4) to maximise strict countermeasures against various market frauds.[13] To improve financial disclosure and internal control over financial reporting, the law prescribes some requirements similar to Sections 302 and 404 of SOX. It requires the managerial certifying of financial reports and assessment of the effectiveness of a firm's internal control systems for listed companies to comply with from April 2008. The certifying letter will be filed with annual and quarterly financial statements. It also increases the criminal penalty of many market fraud activities, including the submission of financial statements and attached documents containing material misstatements or fictitious information. For example, the imprisonment time for falsifying financial reports has been increased from 5 years to 10 years and the fines have also been increased from ¥5 million to ¥10 million for an individual and from ¥500 million to ¥700 million for a corporation.

JSOX, however, could be considered less stringent than SOX as it includes only Sections 302 and 404 of SOX. Furthermore, while one of the main purposes of SOX is to improve audit quality – SOX has created PCAOB to regulate public auditors and many standards regarding auditing practices have been enforced – JSOX apparently does not have any changes in regulating system for Japanese auditor. In addition, unlike SOX, which requires an auditor's assessment of and opinion on company internal control, JSOX requires only an auditor's opinion on the internal control assessment report of management (Nishizaki et al., 2014). Though JSOX may be less restrictive, the changes related to financial disclosure imposed by JSOX may, to some extent, affect the financial reporting practices of Japanese management.

To the best of our knowledge, there have been few studies investigating the impact of JSOX on Japanese financial reporting practices, except the study of Nishizaki

[13]http://www.fsa.go.jp/en/policy/fiel/

et al. (2014) who report that, for the first two years after the passage of JSOX, disclosure of internal control weakness is still low among Japanese firms relative to those of US firms. However, the authors also report some evidence of investor reaction supporting the informativeness of such disclosure. So, Japan would be an interesting setting to gain insight into the effect of SOX-like regulations on accounting quality in an Asian context.

4.2.3 Japanese business environment

The corporate sector in Japan is generally dominated by the unique industrial group of companies namely "*keiretsu*" (hereafter K-firms). The relationship among firms in *keirestu* may be different from that of firms in the same industry. A firm in a particular industry may treat its peers as competitors but K-firms appear to treat other K-firms in the same group as their allies or strategic partners. For example, Gramlich et al. (2004) show evidence of income shifting between K-firms for tax planning. Darrough et al. (1998) document that K-firms share business information among members in a group. K-Firms generally have a cross-holding of equity and have a main bank or main banks for financing. Inter-holding of equity is on a long-term basis which leads to less short-term earnings orientation relative to western business (Nobes, 2008a). Hence, K-firms may have different financial reporting practices relative to non-K-firms.

The extent to which this kind of relationship affects the financial reporting practices of K-firms has been studied and the findings have been inconclusively reported. For example, Cooke (1996) finds that there is no difference in the levels of financial disclosure between K-firms and non-K-firms, though he argues that K-firms are less subject to market regulation. However, Covrig and Low (2005) report that the accounting information of K-firms is unlikely to explain firms' market values, implying that they disclose less financial information than non-K-firms do. It may be the case that the long-term relationship between K-firms and main bank(s) makes available

information sharing which leads to less external information disclosure (Darrough et al., 1998).

In terms of the quality of accounting numbers, Douthett and Jung (2001) find that K-firms have a lower level of DAC than do non-K-firms which may result from the high level of regulatory and coordinated systems among members and main bank(s). Then K-firms seem to have less earnings management relative to non-K-firms. However, Rahman et al. (2010) claim that debt and equity holders (assumed to be their main bank(s) or other K-firms in the group) do not play a monitoring role in supervising accounting practices. Shuto and Iwasaki (2014) also report that a strong relationship between banks and firms leads to the loss-avoidance behaviour of the latter. So the accounting information of K-firms may not be of high quality. Inoue and Thomas (1996) find that both firm size and debt influence Japanese managers to choose accounting choices in the same way, regardless of belonging to a *keirestu* group; their finding supports the political cost and debt covenant hypotheses.

In Japan, the government has an important influence on the accounting practices of the corporate sector through the commercial code and security law (Darrough et al., 1998). The US practices have a moderate influence on Japanese accounting reporting practices and the tax authority has a relatively high influence (Gray et al., 1984). Since 2007, Japan has been working on converging its accounting standards to IFRS. Japanese listed companies that meet certain criteria can voluntarily adopt IFRS-based Japanese standards for their consolidated financial reports from March 2010. However, as of February 2014, only around 30 companies have disseminated information about their adoption or solely their intention to comply.[14] According to Leuz et al. (2003), Japan is classified as a country with a high level of ownership concentration, weak investor protection, and low disclosure levels in comparison to the US or UK. These institutional factors contribute to a relatively high level of earnings management in Japan (Leuz et al., 2003).

[14] www.ifrs.org

4.2.4 Earnings management in Japan

Many studies report that earnings management incentives in Japan are similar to those in the western countries, though institutional factors are somewhat different. For example, Darrough et al. (1998) demonstrate that Japanese managers are more likely to engage in income-increasing manipulation to boost their bonuses or increase external financing. Shuto (2007) reports a positive relationship between discretionary accruals and executive cash compensation suggesting that Japanese managers manage earnings via DAC to inflate their bonuses. The author also finds that they are more likely to take a big bath (using accruals and extraordinary items) during the year the executive bonuses are cut in order to maximise future bonuses. However, Inoue and Thomas (1996) show that the bonus plan hypothesis does not hold in Japan. The authors explain that Japanese executive bonuses are relatively low and stable in comparison to those of US firms, so they may have a small effect on managerial accounting choices.

Unlike IFRS, Japanese GAAP prohibit capitalisation of R&D expenses.[15] The extant studies especially in the US and UK report that managers may alter investment to inflate earnings such as cutting R&D (Baber and Fairfield, 1991; Dechow and Sloan, 1991; Bushee, 1998; Osma and Young, 2009). Nagy and Neal (2001) find no evidence of accrual manipulation by American and Japanese firms listed on the US stock exchanges but they report that the latter alter R&D to a higher degree to smooth income. Consistently, Mande et al. (2000) find that listed Japanese firms adjust R&D to smooth income and do so even more in expansion years. Albeit Japanese firms can capitalise R&D investment and then amortise such investment over a five-year period in according with the Japanese commercial code, the majority of the Japanese firms record R&D as expense when it is incurred (Mande et al., 2000). Since Japanese firms are generally R&D-intensive (see OECD (2013)), a large amount of R&D investment may open more opportunities for manipulation.

[15] www.iasplus.com

A few studies have documented earnings management to meet thresholds in Japan. For instance, Shuto and Iwasaki (2014) find a relatively strong discontinuity at zero in the earnings distribution of Japanese firms, suggesting a strong incentive for loss avoidance in Japan. Thomas et al. (2004) also examining earnings distribution, report that Japanese companies use business transactions with their affiliates/subsidiaries (could be considered as firms in *keiretsu*) to manage earnings to avoid earnings losses. Herrmann et al. (2003) find a negative relationship between gains from sale of fixed assets/securities and management forecast error of Japanese firms. The relationship suggests that Japanese managers may choose the timing of assets sales to manage earnings to meet their earnings forecasts.

This study extends prior research about earnings management to avoid losses in Japan around the passage of JSOX. The research questions are as follows:

1. Does loss avoidance of Japanese firms decline after the passage of JSOX?

2. To what extent does accounting and real activity manipulation of loss avoidance firms change around the JSOX period?

4.3 Research design and sample selection

4.3.1 Managing to avoid earnings losses

The extant research reports that small-loss firms have incentives to manipulate earnings upward to avoid reporting losses, which causes a discontinuity at zero in the earnings distribution. Burgstahler and Dichev (1997) find a discontinuity by examining the distribution of market value-scaled earnings and Burgstahler and Chuk (2015) find the same pattern by examining the earnings (in million dollars) distribution of US firms. They demonstrate that firms with loss-avoidance behaviour cause a discontinuity in the distribution because the number of SPOS firms, firms that may have achieved loss avoidance, is unexpectedly high and the number of SLOS firms is unexpected low. Degeorge et al. (1999) find the same unsmooth pat-

tern at zero in earnings per share distribution suggesting also managing earnings to thresholds, including positive earnings, last year's earnings, and analysts' forecasts. However, some studies argue that such discontinuity is not the evidence of earnings management but is caused by the research design of prior studies.

Durtschi and Easton (2005, 2009) propose an alternative explanation of such zero-earnings discontinuity, including earnings scaling and selection bias. In particular, the authors argue that an unexpectedly high (low) number of SPOS (SLOS) could be explained as 1) profitable firms tend to have higher market value (MV) in relation to loss making firms, so using MV to deflate earnings may draw profitable firms toward zero – a problem of scaling and 2) a number of loss making firms are excluded from the sample in the prior study due to a lack of MV leading to a relatively low number of small loss firms – a problem of selection bias. Examining the relatively similar sample with those in the study of Burgstahler and Dichev (1997), they show the absence of zero-earnings discontinuity when earnings histograms are plotted against net income (in million). In addition, Beaver et al. (2007) report that the discontinuity may result from tax expenses and special items since such items draw profits towards zero. Dechow et al. (2003) propose that if SPOS firms have achieved loss avoidance by manipulating accruals then their discretionary accruals might be higher than those of SLOS firms. The authors find no supporting evidence that earnings management causes such a discontinuity.

Gilliam et al. (2015) examine MV-scaled earnings of US firms around SOX and find no supporting evidence that scaling leads to the discontinuity of earnings distribution in the pre-SOX period. In addition, Burgstahler and Chuk (2015) maintain that the histograms of unscaled earnings still exhibit the discontinuities if the interval widths of histogram being plotted correspond with firm size. They suggest that a large firm is likely to have a variety of business transactions and in a larger amount in relation to those of a small firm, which provides more opportunities for large firm management to manage earnings to a greater extent.

Prior studies used different interval widths to investigate loss-avoidance behaviour. For example, Burgstahler and Dichev (1997) and Roychowdhury (2006) used a bin width of 0.005 while Jeanjean and Stolowy (2008) and Barth et al. (2008) used a bin width of 0.01. Glaum et al. (2004) used several sets of bin widths to study the earnings management of German and American firms. As suggested by Burgstahler and Chuk (2015), a proper interval width may be essential for investigating loss avoidance effectively. Nevertheless, we argue that determining the interval width for histogram plotting may be viewed as a selection bias since different widths may lead to different patterns around zero in the distribution and/or different groups of suspect firms in investigated interval. Moreover, Glaum et al. (2004) highlight the sensitiveness of the results to bin width if the sample being tested consists of observations from many countries. Though the zero-earnings discontinuity is still a controversial issue among researchers, many studies have been using SPOS firms, firms in the first interval to the right of zero, as firms suspected of loss-avoidance behaviour (Lang et al., 2006; Roychowdhury, 2006; Barth et al., 2008; Cohen et al., 2008; Jeanjean and Stolowy, 2008; Bartov and Cohen, 2009).

This study examines the effect of JSOX on loss avoidance by examining the degree of the discontinuity of the earnings distribution of Japanese firms for the pre- and post-JSOX periods. To mitigate biases that may occur from the effects of scaling and interval width selecting discussed earlier, we use unscaled net income (in million yen) to plot earnings distributions. We follow Degeorge et al. (1999) and Shuto and Iwasaki (2014) in systematically calculating the interval width for earnings distribution plotting based on the Freedman–Diaconis rule as:

$$Interval\ width = 2(IQR)N^{(-1/3)},$$

where, IQR is the interquartile of the data; N is the number of observations.

To test the degree of discontinuity at zero in the earnings distribution, we test to what extent the observed number of SPOS and SLOS firms are different from the

expected number. The significance of the difference is considered evidence of loss avoidance. According to Burgstahler and Dichev (1997), the standardised difference (d) of the number of firms in the interval i and the expected number is calculated as follows:

$$d_i = \frac{Observed\ number - Expected\ number}{\sigma(Observed\ number - Expected\ number)}, \tag{4.1}$$

where, the expected number of firms in the interval i is the average number of the two directly adjoining intervals (interval *i+1* and *i-1*). We follow Beaver et al. (2007) in calculating the standard deviation as follows:

$$\sigma = (Np_i(1-p_i) + (1/4)N(p_{i-1}+p_{i+1})(2-p_{i-1}-p_{i+1}))^{0.5}, \tag{4.2}$$

where, N is the number of firms and p is the probability that firms fall into a particular interval.

4.3.2 Accounting and real earnings management

According to the COSO report about fraudulent financial reporting (Beasley et al., 2010), the number of firms committing financial fraud investigated by the US SEC shows no decline in the last two decades (274 cases for 1987-1997 and 347 cases for 1998-2007). From the report, we can infer that accounting manipulation seems to be a critical tool for manipulating earnings. For instance, to boost earnings, revenue recognition accounts for around 61% followed by expense capitalising which accounts for around 51% of the reported cases. Consistently, Nelson et al. (2002), based on their survey of US auditors, report that the majority of earnings management attempts by US firms are related to revenue recognition. The regulators and auditors may not be interested in real activity manipulations since they may not directly violate GAAP so no issues are documented.

Graham et al. (2005), however, find that management themselves report a preference for real manipulations, such as altering discretionary expenses (e.g., R&D, advertising, and maintenance) or postponing investment projects over accounting manipulations. The authors also point out that managers are more likely to report conducting real earnings manipulations, perceiving them to be more ethical. To gain more insight about loss avoidance in Japan, the present study examines both accounting and real earnings manipulation of Japanese firms around the passage of JSOX.

To study the methods used to achieve loss avoidance, we basically compare accounting and real activity of earnings management between firms with a propensity for loss avoidance with other firms. This method is in the same spirit of many prior studies that test earnings management components of loss avoidance firms (Dechow et al., 2003; Roychowdhury, 2006; Cohen et al., 2008; Bartov and Cohen, 2009). In addition, we also employ a multivariate test to control for related factors. For accounting earnings management, a large body of accounting research employs accrual models such as those based on the study of Jones (1991) to compute aggregate DAC. Researchers have been debating about the proper use of such models and many related problems have been documented, such as model specification and omitted-variable problems, resulting in many extended versions of the models (Dechow et al., 1995; Kothari et al., 2005). The accrual model can be used to detect earnings management but, as suggested by the Marquardt and Wiedman (2004) study, specific accruals gain more insight into the methods used by firms to accomplish earnings management. Researchers have also studied several specific accruals as a tool of corporate managers for earnings management. For example, Cohen et al. (2011) report that firms adjust warranty expenses and Jackson and Liu (2010) demonstrate that firms use bad debt expenses to manage earnings. Frank and Rego (2006) demonstrate that firms manage earnings to meet analyst forecasts via an allowance for deferred tax assets.

This study examines accruals related to accounts receivable, inventory, and accrued expenses that may be used by Japanese managers to avoid reporting losses around JSOX periods. We follow Marquardt and Wiedman (2004) in calculating specific accruals as follows:

$$UAR_{it} = [AR_{it} - (AR_{it-1} * REV_{it}/REV_{it-1})]/TA_{it-1}, \tag{4.3}$$

$$UINV_{it} = [INV_{it} - (INV_{it-1} * COGS_{it}/COGS_{it-1})]/TA_{it-1}, \tag{4.4}$$

$$UACCL_{it} = [ACCL_{it} - (ACCL_{it-1} * REV_{it}/REV_{it-1})]/TA_{it-1}, \tag{4.5}$$

where, UAR is unexpected accounts receivable; AR is accounts receivable; REV is revenues; UINV is unexpected inventory; INV is inventory; COGS is cost of goods sold; UACCL is unexpected total accrued expenses; ACCL is accrued expenses; TA is total assets. Due to the availability of data, our total accrued expenses are computed from total current liabilities minus accounts payable, short-term debt, and the current portion of long-term debt. We also address the effect of industrial business practices by calculating unexpected accruals from industrial revenue and cost of goods sold growths.

While Marquardt and Wiedman (2004) construct several proxies to calculate unexpected accounts, we employ three proxies that seem to be directly related to accrual estimation the most. In particular, we do not employ unexpected special items because they seem to be related to the choices of transaction timing rather than accrual manipulation. The assumption for our test is that if a company inflates earnings by intentionally underestimating an allowance for doubtful accounts, UAR will be highly positive (the booked accounts receivable is larger than the expected accounts receivable given the revenue growth). Note that Marquardt and Wiedman (2004) also interpret an unexpectedly high value of accounts receivable as the result of sales boosting. In the same spirit, UINV will be highly positive resulting from an undervalued allowance for obsolete inventory. UACCL will be highly negative assuming that accounts related to a provision for product warranty or a promotional

programme is undervalued. We multiply UACCL by -1 to make interpretation consistent with UAR and UINV in that the more positive the value the greater the degree of earnings management via these accounts. These measures are calculated from revenues or cost of goods sold, assuming that they are clean from managerial intervention. However, Marquardt and Wiedman (2004) mention that this may not be the case since, for example, revenues may be contaminated by premature revenues. Furthermore, it can be argued that the models may be more accurate to estimate the unexpected accounts of a steady state growth firm, not a firm, for example, in a decline period.

As mentioned before, Japanese firms have been reported to adjust investment spending to manage earnings, especially R&D, so we also examine the effect of JSOX on real earnings management. The extant studies use changes in R&D and/or CAPEX as the indicators of earnings management (Baber and Fairfield, 1991; Dechow and Sloan, 1991; Bushee, 1998). Note that changes in the investment may be caused by many factors. So to address the issue, Roychowdhury (2006) has developed a model to measure unexpected discretionary expenses including R&D and maintenance expenses as follows:

$$DISEXP_{it} = \beta_0 + \beta_1(REV_{it-1}/TA_{it-1}) + \varepsilon_{it}. \tag{4.6}$$

According to the model, discretionary expenses (DISEXP) are modelled by lagged revenues and the residual from the model represents unexpected discretionary expenses.

Calculating unexpected accruals, discussed earlier, seems reasonable since these accounts may vary correspondingly with revenue movement – an increase in revenues plausibly leads to an increase in an allowance for doubtful accounts or a provision for warranty – so variation from the expected value may be caused by unfair managerial estimations while this may not be the case with R&D spending. Nguyen et al. (2010) show a significant relationship between many factors and the R&D spending

of Japanese firms, such as cash, debt, and firm size. Bhagat and Welch (1995) also find that last year's debt significantly explains the R&D expenses of Japanese firms. The time-series regression model of US firms conducted by Berger (1993) shows that significant explanatory variables for R&D are last year's R&D, internal funds, and industrial R&D. From these studies, funding and last year's R&D seem to play an important role in determining current R&D, so we compute the unexpected R&D investment of Japanese firms from the following regression:

$$RD_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 RD_{it-1} + \beta_3 CFO_{it-1} + \beta_4 LEV_{it-1} + \varepsilon_{it}, \tag{4.7}$$

where, RD is research and development expenses; SIZE is the natural logarithm of total assets; CFO is operating cash flow; LEV is total debt; ε represents unexpected R&D (URD). RD, CFO, and LEV are scaled by total assets. We include lagged operating cash flow and leverage to control for the funding of a company. Since R&D may vary across industries, we conduct cross-sectional regression models by year and industry to obtain URD. Unexpected CAPEX (UCAPEX) is computed in the same way. We multiply URD and UCAPEX by -1 to make the interpretation consistent with unexpected accruals.

We additionally test the effect of JSOX based on a multivariate analysis. Prior studies employ either an OLS regression (Lang et al., 2006; Barth et al., 2008) or a logistic regression (Lang et al., 2003) to test the prevalence of loss-avoidance firms. The assumptions of these tests may differ from the histogram test in that they do not take SLOS into account. We additionally test the prevalence of loss avoidance around JSOX using a logistic model as follows:

$$\begin{aligned} SPOS(1,0)_{it} = {} & \beta_0 + \beta_1 JSOX_{it} + \beta_2 LEV_{it} + \beta_3 SIZE_{it} \\ & + \beta_4 KEI_{it} + Industry\_dummy \\ & + Year\_dummy + \varepsilon_{it}, \end{aligned} \tag{4.8}$$

where, SPOS is a dummy variable (1 = sample in the first interval to the right of zero of the earnings distribution (net income), 0 = otherwise); JSOX is a dummy variable (1 = sample in JSOX period, 0 = otherwise); LEV is total debt over total assets; SIZE is logarithm of total assets; KEI is a dummy variable (1 = sample belongs to *keiretsu* group, 0 = otherwise). We expect a significantly negative coefficient on the JSOX variable as an indicator of a decline in the prevalence of loss avoidance in the JSOX period. We identify SPOS firms based not only on the distribution of net income but also on the distribution of net income before extraordinary items (NIBX) for sensitivity tests.

To test the effect of JSOX on the manipulating method of suspect firms controlling for related factors, we employ logistic regression models to examine EMC as follows:

$$\begin{aligned} SPOS(1,0)_{it} = \beta_0 &+ \beta_1 JSOX_{it} + \beta_2 UAR_{it} + \beta_3 UAR * JSOX_{it} + \beta_4 UINV_{it} \\ &+ \beta_5 UINV * JSOX_{it} + \beta_6 UACCL_{it} + \beta_7 UACCL * JSOX_{it} \\ &+ \beta_8 URD_{it} + \beta_9 URD * JSOX_{it} + \beta_{10} UCAPEX_{it} \\ &+ \beta_{11} UCAPEX * JSOX_{it} + \beta_{12} LEV_{it} + \beta_{13} SIZE_{it} \\ &+ \beta_{13} KEI_{it} + Industry\_dummy + Year\_dummy + \varepsilon_{it}, \quad (4.9) \end{aligned}$$

$$\begin{aligned} SPOS(1,0)_{it} = \beta_0 &+ \beta_1 JSOX_{it} + \beta_2 TACC_{it} + \beta_3 TACC * JSOX_{it} \\ &+ \beta_4 TREAL_{it} + \beta_5 TREAL * JSOX_{it} \\ &+ \beta_6 LEV_{it} + \beta_7 SIZE_{it} + \beta_8 KEI_{it} \\ &+ Industry\_dummy + Year\_dummy + \varepsilon_{it}, \quad (4.10) \end{aligned}$$

4.3.3 Sample and descriptive statistics

The data of this study are the annual accounting information of Japanese firms listed on the Tokyo Stock Exchange extracted from the DataStream databases covering the 15-year period from 2000 to 2014 (inclusive). Financial firms are excluded due to the difference in the business nature and accounting methods which may be

inappropriate for the calculation of unexpected accounts being tested. We group together utilities, communications, and oil and gas industries as they have a small sample size. The final sample consists of 22,669 firm-year observations across seven industries as presented in Table 4.1.

[Table 4.1 about here]

Table 4.2 presents descriptive statistics for the variables being tested and the control variables.

[Table 4.2 about here]

From Panel A of Table 4.2, the frequency of SPOS firms shows a slight decrease from the mean value of around 9% to 8% of the overall sample between JSOX periods. Mean net income increases from around ¥6.5m to ¥7m. For unexpected accruals, the mean (median) values of UAR increases from -0.004 (-0.002) to 0.000 (0.000), UNIV shows no material change, and UACCL decreases from the mean (median) values of 0.002 (0.001) to 0.000 (-0.001). URD and UCAPEX show no changes while investment in R&D and CAPEX increases – R&D increases from around the mean value of ¥9m to ¥10m and CAPEX increases from around ¥14m to ¥15m. Debt decreases as the leverage ratio falls from around 24% to 21%. Firms show some growth in SIZE in the period of JSOX. Regarding K-firms, around 15% of firms belongs to *keiretsu* in both periods. We use information of both horizontal and vertical *keiretsu* firms gathered by Ohsono (1995).

Panel B of Table 4.2 separately presents descriptive statistics of the sample of the small and large firms on the basis of total assets. The frequency of SPOS firms in the large-firm group is around 7% while the number of the small-firm group is around 4%. Large firms have the mean net income of around ¥12m while small firms have around ¥0.82m. The two groups seem to have the same level of unexpected accruals except that the small group has a higher level of UACCL. While there seems to be no significant difference between URD and UCAPEX, large firms invest more in R&D and CAPEX with the mean values of around ¥16m and ¥27m, respectively,

in comparison to those of small firms of around ¥0.73m and ¥1.12m, respectively. The small-firm group has a leverage ratio around 20% while the other group has more debt with a corresponding ratio around 25%. There are around 27% of K-firms presented in the large-firm group and only 5% in the other group.

4.4 Empirical results and discussion

4.4.1 The effect of JSOX on earnings management to avoid losses

This section presents and discusses the results from a histogram analysis and a logistic regression on the effect of JSOX on loss avoidance.

A histogram analysis

[Figure 4.1 and Table 4.3 about here]

Figure 4.1 shows four histograms of unscaled net income with an interval width of 0.31. From Panel A, the left histogram shows a profound zero-earnings discontinuity – a relatively high number of SPOS firms (the interval to the right of zero) relative to that of SLOS firms (the interval to the left of zero) – in the pre-JSOX period. So it is possible that in the pre-JSOX period there are a number of SPOS firms that may have pursued loss avoidance, which is consistent with the prior Japanese studies of Thomas et al. (2004) and Shuto and Iwasaki (2014). The histogram of the post-JSOX period exhibits a somewhat similar pattern of zero-discontinuity. From the histograms, there seem to be insignificant changes in the prevalence of loss-avoidance behaviour after JSOX.

Standardised difference statistics presented in Table 4.3 quantitatively test the significance of the difference between the observed number and the expected number of both SPOS and SLOS firms. The results show that the observed number of SPOS (SLOS) firms is significantly higher (lower) than the expected number at the 1% level for both periods. Though the values are still significant in the post-JSOX period, they are lower than those in the pre-JSOX period for both SPOS and SLOS firms.

Specifically, the statistic of SPOS firms declines from 8.23 in the pre-JSOX to 4.90 in the post-JSOX period and that of SLOS drops from -14.90 to -10.56. The results suggest some expected effects of JSOX on loss avoidance. Note that the number of firms in the two next intervals to the right is also relatively high in relation to that in the fourth interval for both histograms, so it is possible that Japanese firms may have a relatively strong incentive to avoid losses. It may be the case that the business practice of reporting low profits is prevalent in Japan. The histograms and statistical tests with K-firms excluded show somewhat similar results.

Burgstahler and Chuk (2015) highlight the effect of firm size on the extent of earnings management and so we conduct additional tests of sub-groups of large and small firms, partitioning on the basis of total assets.

[Figure 4.2 and Table 4.4 about here]

Figure 4.2 shows the histograms of large-firm and small-firm groups with interval widths of 0.97 and 0.11, respectively. The distributions of large firms in Panel A show the clear discontinuities for both periods. Table 4.4 shows that the standardised statistics of both SPOS and SLOS firms are significant at the 1% level in both periods. However, the statistics decline in the post-JSOX period. The distributions of small firms presented in Panel B also show the clear discontinuities in both periods and the statistic values for SPOS show a decline from 2.66 (significant at the 1% level) to 1.34 (significant at the 10% level). Consistent with the overall analysis, the analysis suggests some desirable effects of JSOX on the loss-avoidance behaviour of Japanese firms, though the degree of such discontinuities is still high especially for large firms.

Multivariate analysis

Table 4.7 presents results from a logistic regression for the effect of JSOX on loss avoidance controlling for related factors.

[Table 4.7 about here]

From Panel A of Table 4.7, the results from model 1 for the overall sample show that the estimated coefficient on JSOX is significantly negative at the 5% level with a marginal effect of around 1% – this suggests that an average sample in the JSOX period is less likely to engage in loss avoidance. Consistently, model 2 shows that the coefficients on JSOX of large firms are significantly negative at the 1% level with a marginal effect around 2%. The regression analysis in Model 3 shows no effect of JSOX on loss avoidance of small firms. From the results, JSOX appears to have a negative effect on loss avoidance. A possible explanation for the JSOX effect on large firms would be that large firms may be the first group to which the regulators pay attention after the passage of JSOX, so they may have greater potential to face more costs if manipulation is detected resulting in a decline in earnings management incentives. Another possible explanation would be that the JSOX may trigger a firm's internal control improvements but since large firms may have more resources, the process of internal control improvement may pay off much sooner.

Based on the histogram analyses and logistic regressions, JSOX appears to have some desirable effect on loss avoidance, especially for large firms. The findings are partly consistent with the findings in the US (Depken and Ouyang, 2006; Cohen et al., 2008; Bartov and Cohen, 2009; Aubert and Grudnitski, 2014; Gilliam et al., 2015). The difference in the effectiveness of JSOX is possibly explained by 1) JSOX is less stringent than SOX and 2) the difference in the institutional factors such as different legal enforcement levels or the business practice of reporting or maintaining a modest profit. To mitigate the effect of extraordinary items on earnings distribution mentioned earlier, we additionally test net income before extraordinary items. The histogram analyses (presented in Figures 4.3, 4.4 and Tables 4.5, 4.6) show similar results. For logistic regressions (presented in Panel B of Table 4.7), we find that JSOX appears to have a negative effect solely on large firms.

4.4.2 Components of earnings management to avoid losses

This section presents and discusses the results from the analysis of EMC.

Univariate analysis

We compare UAR, UINV, UACCL, URD, and UCAPEX of SPOS firms and other firms, treating the latter as the control group. We expect that if SPOS firms use particular EMC to manage earnings their values might be statistically higher than those of other firms. We also compare EMC of SPOS firms between the JSOX periods to investigate changes. Since a firm may use several components together to manage earnings, we also combine EMC into total unexpected accruals (TACC) for accounting manipulation and total investment adjusting (TREAL) for real activity manipulation for the tests. Table 4.8 reports the results from the Mann-Whitney U tests.[16]

[Table 4.8 about here]

From Panel A of Table 4.8, we find that SPOS firms relative to other firms use both accrual and investment adjustment to manage earnings in both pre-and post-JSOX periods and the overall levels of unexpected accruals and unexpected investment show no changes between the JSOX periods. In particular, in the pre-JSOX period UAR, UINV, UACCL, and UCAPEX of SPOS firms are statistically higher than those of other firms at the 5%, 1%, 1%, and 1% levels, respectively. TACC and TREAL of suspect firms are also statistically higher, both at the 1% level. In the post-JSOX period UAR, UACCL, and UCAPEX are statistically higher than those of other firms, all at the 5% level. TACC and TREAL of suspect firms are also statistically higher at the 1% and 5% levels, respectively. Comparing SPOS firms between JSOX periods, we find that UAR significantly increases while UACCL significantly decreases in the post-JSOX period – both are significant at the 1% level. Based on the findings, it is possible to note that for accrual manipulation

[16]We use the Mann-Whitney U test to address the skewness of variables.

alone, firms have several choices and are able to switch from one specific accrual to another as required.

According to Marquardt and Wiedman (2004), the costs of manipulation may be different across specific accounts, so managers may be selective in the methods being used to manipulate earnings in a particular business circumstance. Therefore, Japanese managers may switch from costly accounts to those with lower costs to compensate for increased costs imposed by JSOX (e.g. penalty costs). However, we cannot rule out other possible explanations for switching between accruals. As reported by Barton and Simko (2002), a long-period undervaluation of an allowance will pile up in the balance sheet (resulting in highly overvalued operating assets), which automatically constrains management to manipulate such accounts. If this is the case, management may turn to other specific accruals when a particular accrual has been limited by a long-term manipulation. We find no evidence that SPOS firms alter R&D to manage earnings but rather they are likely to alter CAPEX. It is possible that investment in CAPEX is larger (recall the descriptive statistics) so it provides more room for management to manipulate.

The findings are inconsistent with the findings of prior research in the US (Cohen et al., 2008; Bartov and Cohen, 2009) that report that SOX leads to a decline (an increase) in accounting (real) earnings management. Basically, in both periods Japanese SPOS firms alter both accruals and investment to achieve loss avoidance, suggesting the small effect of JSOX on manipulating methods. The different findings may be caused by the difference between JSOX and SOX. Another possible explanation may be a difference between the perceptions of earnings management as discussed in Chapter 1. While American management may perceive real activity earnings management as more ethical, so they substitute them for accounting methods in the SOX period, Japanese management may perceive both methods as acceptable. The analysis with K-firms excluded also shows more or less similar results (presented in Panel B of Table 4.8).

[Table 4.9 about here]

Table 4.9 presents the results for large and small firms. The findings are qualitatively similar to the findings in Table 4.8. The additional findings are that suspect large firms appear to manipulate both accruals and investment while suspect small firms are more likely to use only accruals. We find some evidence of R&D manipulating by large SPOS firms in the post-JSOX period. A possible conjecture for the different methods used between small and large firms may be that the latter may have a larger amount of R&D and CAPEX than the former which, as discussed earlier, offers more room for manipulation. The descriptive statistics in Panel B of Table 4.2 seem to support the explanation. Both groups also appear to switch from one specific accrual to another between periods.

Multivariate analysis

Table 4.12 presents the results from the logistic models of SPOS on EMC and control variables including leverage, firm size, K-firms, industry- and year-fixed effects.

[Table 4.12 about here]

From Table 4.12, model 1, which tests the overall sample, shows that the coefficients on UINV, UACCL, and UCAPEX are significantly positive at the 1%, 1%, and 10% levels with marginal effect of around 17%, 13%, and 12%, respectively. So a 1-unit increase in UINV would increase the likelihood of an average sample to belong to SPOS group at around 17%, around 13% and 12% for the 1-unit increase of UACCL and UCAPEX, respectively. The results suggest that firms with a high level of unexpected accruals related to inventory and accrued expenses and unexpected CAPEX are more likely to engage in loss-avoidance behaviour. Considering the interact variables of unexpected accounts and JSOX, the coefficients on all interact variables are not statistical significant, implying that JSOX has no significant effect on the level of unexpected accruals and unexpected expenditures. Model 2 reports the results for large firms showing that only the coefficient on UACCL is significantly positive at the 5% level and JSOX has no significant effect on unexpected accrued

expenses as well. We find no evidence of unexpected accounts used by small firms to avoid losses.

The findings from the analysis of combined earnings management components are presented in Table 4.13. Model 1 shows that SPOS firms are more likely to use both methods to avoid losses. Specifically, from Model 1, the estimated coefficients on TACC and TREAL are significantly positive at the 1% and 5% levels with marginal effects of around 5% and 9%, respectively. Considering the interact variables, JSOX appears to have no effect on the unexpected accounts used to manipulate earnings. The results for large firms presented in Model 2 are more or less similar to Model 1. We find no evidence of unexpected accounts used by small firms to avoid losses.

[Table 4.13 about here]

Table 4.13 presents the results from logistic regressions based on NIBX. The findings are more or less the same, except that for large firms there seems to be some desirable effect of JSOX on manipulating methods used to avoid loss. In particular, the coefficients on UAR, UINV, and UACCL are significantly positive at the 1%, 5%, and 10% level with the marginal effect of around 13%, 10%, and 8%, respectively. Considering the interact variables between unexpected accounts and JSOX, it appears that JSOX has a significantly negative effect on UAR and UINV both at the 5% level, suggesting that large firms use fewer accruals related to accounts receivable and inventory in the post-JSOX period. The analysis of TACC and TREAL presented in Table 4.14 shows more or less similar results to those in Table 4.12 except that JSOX has a significant effect on the use of accruals manipulation in large firms to avoid losses.

From the analysis, JSOX mainly seems to have no significant effect on methods used to achieve loss avoidance. Japanese firms, especially large firms, use both accruals and investment manipulation to achieve loss avoidance.

4.5 Summary and conclusion

This chapter tests the effect of JSOX on earnings management to avoid losses in Japan. It also tests the use of specific earnings management components including three specific accruals and two investment accounts that may be used by firms assumed to have a propensity for loss avoidance.

Based on the analysis of discontinuity in the unscaled earnings distribution, JSOX appears to have some desirable effects on the loss avoidance of Japanese firms, especially large firms. The results from the logistic regressions controlling for firm size, leverage, *keiretsu* groups, industry- and year-fixed effects, are consistent with the distribution studies in that JSOX has a significant effect on large firms. The overall findings of the current study partly support the previous research that SOX contributes to a significant decline in earnings management in the US. A possible conjecture for the moderate effects of JSOX may be that JSOX is basically different from SOX – JSOX includes only a few parts of SOX so is less stringent. In addition, it may result from the difference in institutional factors such as legal enforcement levels and/or business practices between the two economies.

The study also finds that firms suspected of having achieved loss avoidance use both accrual manipulation and investment adjustment to avoid losses in relation to other firms. JSOX appears to have no effect on the methods used by suspect firms. We also find that suspect firms switch from one particular accrual to other accruals during JSOX periods, which may result from the different costs of manipulation of related accounts. Interestingly, we find that Japanese firms are less likely to adjust R&D to manage earnings but are more likely to adjust CAPEX. It may be that firms have a higher CAPEX budget so this provides more room for management to manipulate. We also find that small suspect firms are less likely to alter investment in comparison to large suspect firms. It could be the case that small firms have smaller CAPEX and R&D budgets, which partly constrains managerial discretion.

Our study contributes to the extant literature on the effect of SOX-like regulations on loss-avoidance behaviour and on the components of earnings management. In addition, it adds to the ongoing debates about the validity of the methods used to study earnings management to avoid losses.

Table 4.1: Sample distribution

	No. of Observations	Percent
Panel A: Year breakdown		
2000	1,325	5.84
2001	1,383	6.10
2002	1,418	6.26
2003	1,451	6.40
2004	1,500	6.62
2005	1,521	6.71
2006	1,536	6.78
2007	1,546	6.82
2008	1,564	6.90
2009	1,588	7.01
2010	1,604	7.08
2011	1,610	7.10
2012	1,617	7.13
2013	1,619	7.14
2014	1,387	6.12
Total	22,669	100.00
Panel B: Period breakdown		
Pre-JSOX (2000-2008)	13,244	58.42
Post-JSOX (2009-2014)	9,425	41.58
Total	22,669	100.00
Panel C: Industry breakdown		
Basic Materials (1000)	2,539	11.20
Industrials (2000)	7,897	34.84
Consumer Goods (3000)	4,335	19.12
Health Care (4000)	1,071	4.72
Consumer Services (5000)	4,037	17.81
Technology (9000)	2,184	9.63
Other	606	2.67
Total	22,669	100.00

Note:
The industrial grouping is based on International Classification Benchmark (ICB). Other includes Utilities (7000), Telecommunications (6000), and Oil and Gas industries (0001).

Table 4.2: Descriptive statistics

	Pre-JSOX						Post-JSOX					
	N	Mean	Std.Dev.	25%	Median	75%	*N*	Mean	Std.Dev.	25%	Median	75%
Panel A: Descriptive statistics by period												
SPOS	13,244	0.087	0.281	0	0	0	9,425	0.076	0.256	0	0	0
NI (¥Million)	13,244	6.544	20.623	0.387	1.360	4.420	9,425	7.006	22.420	0.417	1.591	5.139
UAR	12,869	−0.004	0.039	−0.018	−0.002	0.010	9,058	0.000	0.043	−0.016	0.000	0.016
UINV	12,608	−0.001	0.025	−0.009	0.000	0.008	8,930	0.000	0.026	−0.008	0.000	0.009
UACCL	12,923	0.002	0.036	−0.011	0.001	0.013	9,066	0.000	0.031	−0.012	−0.001	0.011
URD	7,389	0.000	0.005	−0.001	0.000	0.002	5,809	0.000	0.005	−0.001	0.000	0.002
UCAPEX	10,769	0.000	0.021	−0.008	0.003	0.011	8,458	0.000	0.020	−0.007	0.003	0.011
R&D (¥Million)	9,036	8.915	31.208	0.340	1.167	4.102	6,290	9.880	32.679	0.311	1.133	4.507
CAPEX (¥Million)	13,153	14.005	41.346	0.581	2.002	6.945	9,118	14.816	43.005	0.544	2.044	7.771
LEV	12,114	0.241	0.182	0.085	0.214	0.363	8,641	0.207	0.171	0.058	0.175	0.320
SIZE	13,243	18.217	1.512	17.248	18.058	19.080	9,162	18.316	1.529	17.294	18.160	19.184
KEI	14,616	0.153	0.360	0	0	0	9,744	0.153	0.360	0	0	0

Table 4.2: Continued

	Small firms						Large firms					
	N	Mean	Std.Dev.	25%	Median	75%	*N*	Mean	Std.Dev.	25%	Median	75%
Panel B: Descriptive statistics by firm size												
SPOS	11,195	0.042	0.201	0	0	0	11,198	0.073	0.260	0	0	0
NI (¥Million)	11,195	0.824	1.872	0.229	0.690	1.481	11,198	12.758	29.163	1.407	4.446	12.207
UAR	10,849	−0.002	0.045	−0.019	−0.001	0.014	11,078	−0.002	0.036	−0.016	−0.001	0.011
UINV	10,613	−0.001	0.027	−0.009	0.000	0.009	10,925	−0.001	0.024	−0.008	0.000	0.008
UACCL	10,919	0.002	0.040	−0.013	0.000	0.014	11,070	0.000	0.028	−0.011	0.000	0.010
URD	5,605	0.000	0.005	−0.002	0.000	0.002	7,593	0.000	0.005	−0.001	0.000	0.002
UCAPEX	9,073	0.000	0.024	−0.008	0.004	0.012	10,154	0.000	0.018	−0.007	0.003	0.010
R&D (¥Million)	6,876	0.726	0.866	0.149	0.421	1.013	8,445	16.306	41.572	1.053	3.397	10.774
CAPEX (¥Million)	11,100	1.212	1.560	0.230	0.680	1.608	11,160	27.405	56.404	2.691	6.695	21.240
LEV	9,952	0.202	0.167	0.059	0.166	0.308	10,803	0.250	0.185	0.091	0.230	0.375
SIZE	11,203	17.082	0.800	16.680	17.268	17.701	11,202	19.433	1.102	18.554	19.127	20.040
KEI	11,203	0.054	0.227	0	0	0	11,202	0.265	0.441	0	0	1

Note:
Variable definitions are as follows: SPOS is a dummy variable (1 = a firm that shows a small positive profit, 0 = otherwise). NI is net income. UAR is unexpected accounts receivable. UINV is unexpected inventory. UACCL is unexpected accrued expenses. URD is unexpected R&D. UCAPEX is unexpected capital expenditure. R&D is research and development expenses. CAPEX is capital expenditure. LEV is total debts scaled by total assets. SIZE is natural logarithm of total assets. KEI is a dummy variable for *keiretsu* firms (1 = *keiretsu* firms, 0 = otherwise). The interval width for SPOS of the overall sample is ¥0.31 Million. The interval width for SPOS of small (large) firm group is ¥0.11 Million (¥0.97 Million.). The sample is grouped into large and small firm groups on the basis of total assets. Variables being tested are winsorized at 1% to control for outliers.

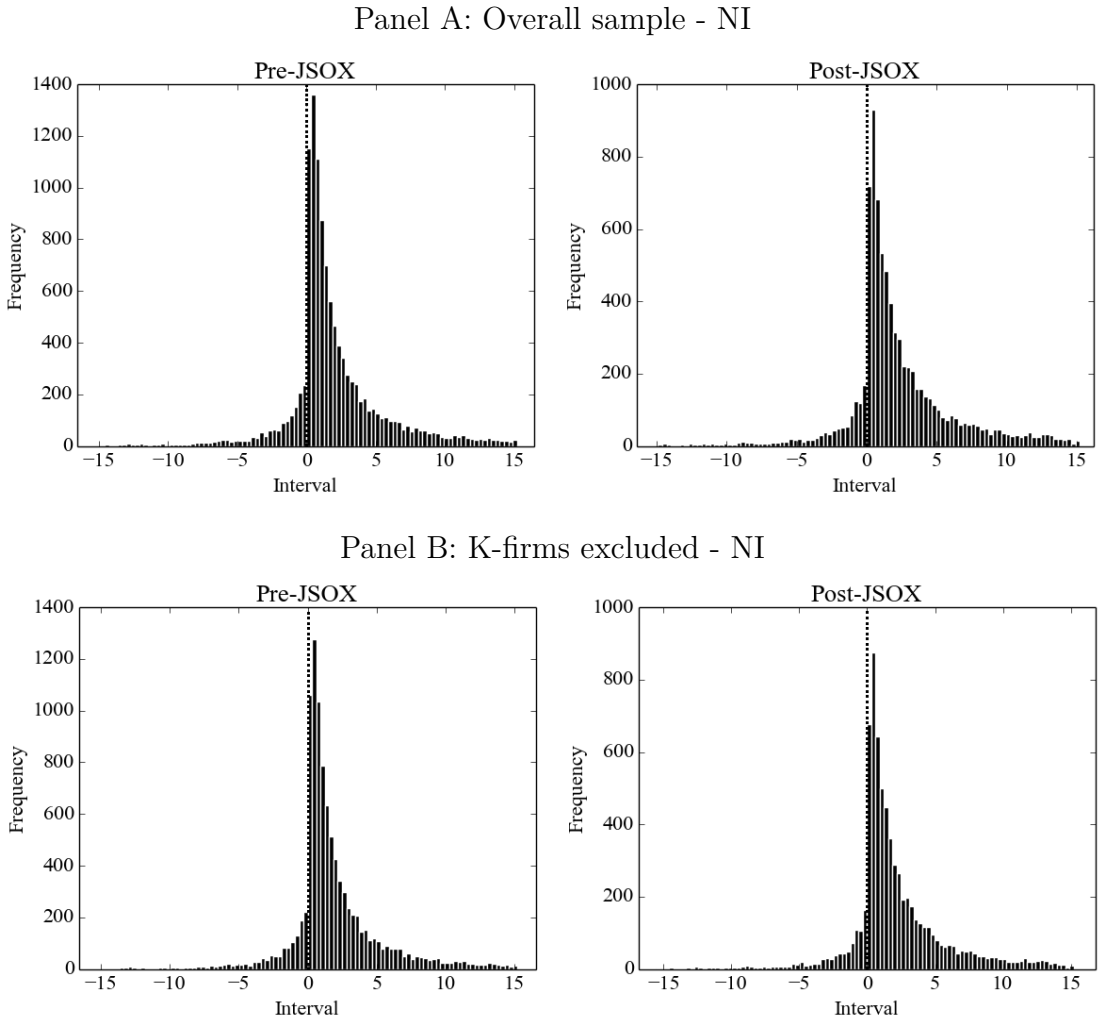

Figure 4.1: Distributions of net income (in million yen). Panel A present the distributions of overall sample with the interval width of 0.31 (¥310,000). Panel B presents the distributions of overall sample with K-firms excluded.

Table 4.3: Statistics of standardised difference - Overall sample - NI

	Pre-JSOX			Post-JSOX		
	N	Small loss	Small Profit	*N*	Small loss	Small profit
Overall sample	13,244	-14.90^{***}	8.23^{***}	9,425	-10.56^{***}	4.90^{***}
K-firms excluded	11,111	-14.20^{***}	7.61^{***}	7,966	-9.94^{***}	4.74^{***}

Note:
*, ** , *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively (one-tailed).

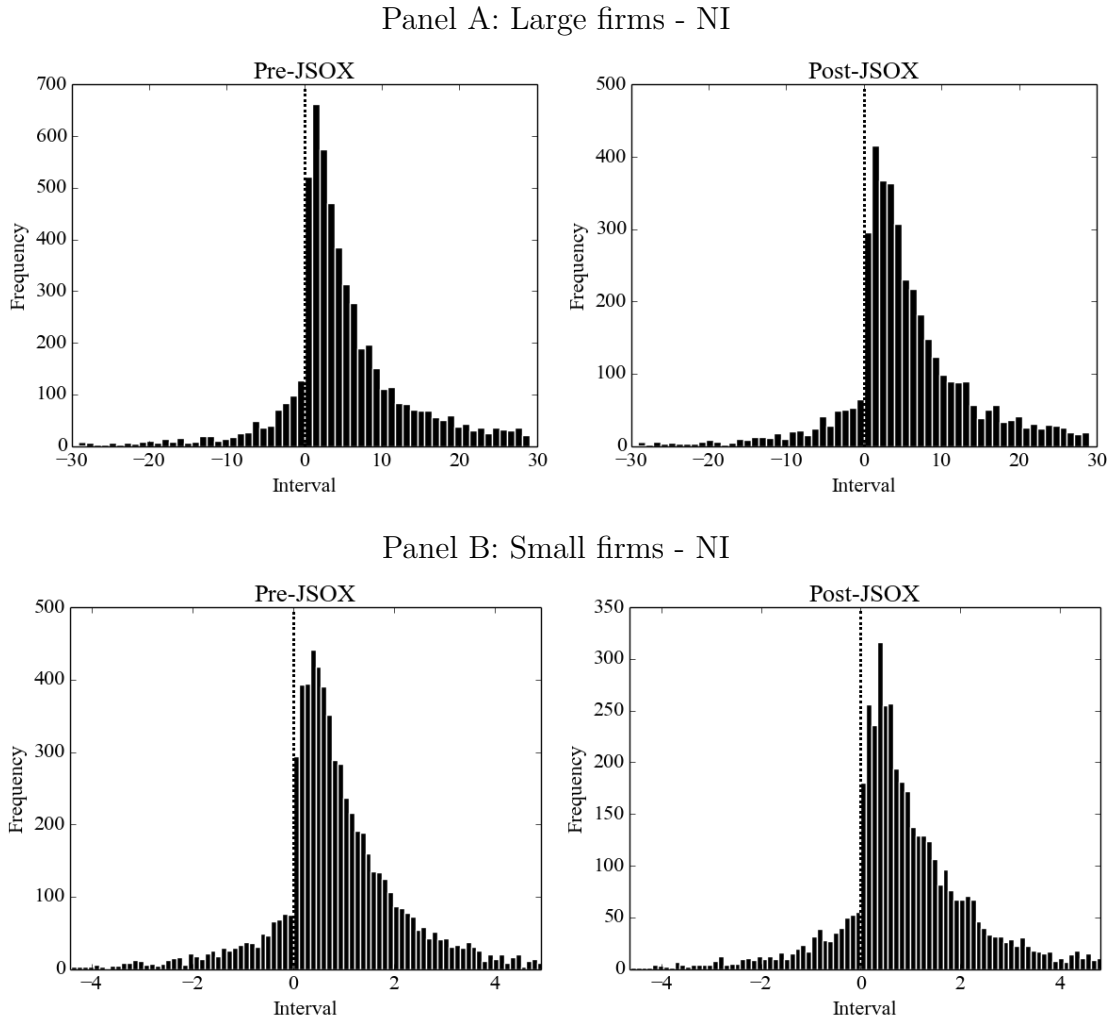

Figure 4.2: Distributions of net income (in million yen) of large and small firms. Panel A presents the distributions of large firms with the interval width of 0.97 (¥970,000). Panel B presents the distributions of small firms with the interval width of 0.11 (¥110,000).

Table 4.4: Statistics of standardised difference - Large and small firms - NI

	Pre-JSOX			Post-JSOX		
	N	Small loss	Small Profit	*N*	Small loss	Small profit
Large firms	6,458	-8.89^{***}	4.32^{***}	4,740	-7.19^{***}	2.47^{***}
Small firms	6,779	-6.90^{***}	2.66^{***}	4,416	-4.63^{***}	1.34^{*}

Note:
*, ** , *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively (one-tailed).

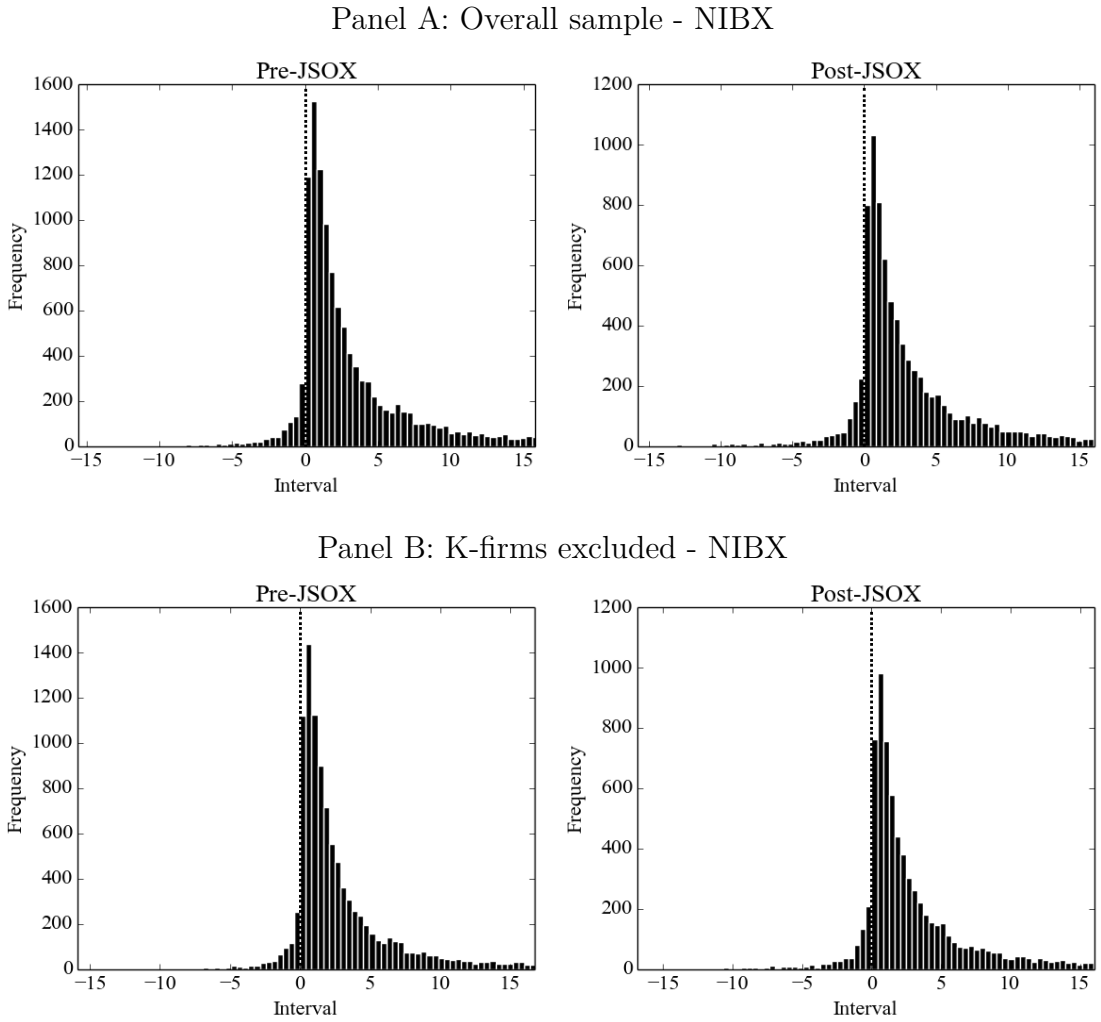

Figure 4.3: Distributions of net income before extraordinary items (in million yen). Panel A presents the distributions of overall sample with the interval width of 0.41 (¥410,000). Panel B presents the distributions of overall sample with K-firms excluded.

Table 4.5: Statistics of standardised difference - Overall sample - NIBX

	Pre-JSOX			Post-JSOX		
	N	Small loss	Small Profit	*N*	Small loss	Small profit
Overall sample	13,243	-12.77^{***}	6.60^{***}	9,426	-9.70^{***}	4.78^{***}
Keiretsu excluded	11,110	-12.62^{***}	6.53^{***}	7,967	-9.55^{***}	4.74^{***}

Note:
*, ** , *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively (one-tailed).

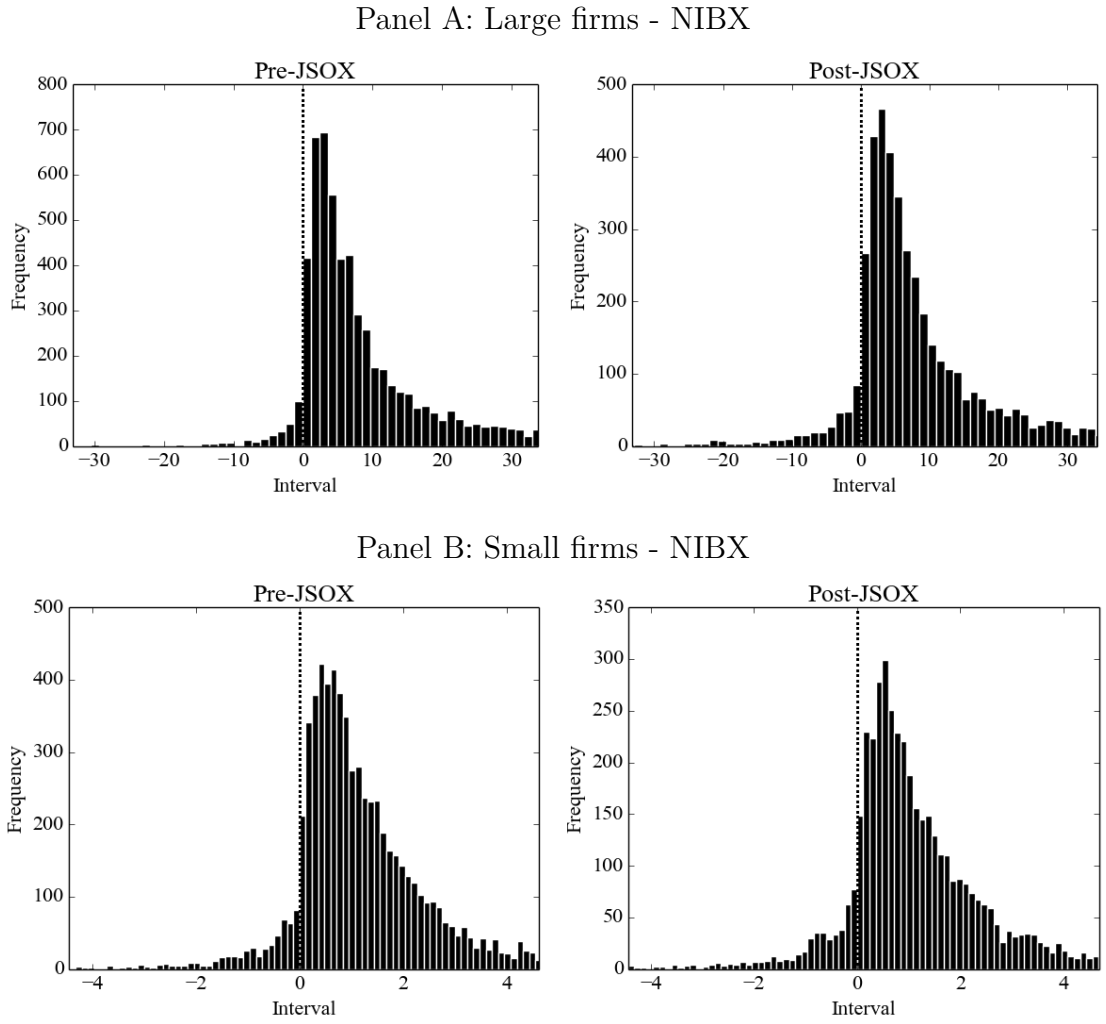

Figure 4.4: Distributions of net income before extraordinary items (in million yen) of large and small firms. Panel A presents the distributions of large firms with the interval width of 1.22 (¥1,220,000). Panel B presents the distributions of small firms with the interval width of 0.12 (¥120,000).

Table 4.6: Statistics of standardised difference - Large and small firms - NIBX

	Pre-JSOX			Post-JSOX		
	N	Small loss	Small Profit	*N*	Small loss	Small profit
Large firms	6,459	-7.44^{***}	0.89	4,740	-4.80^{***}	0.49
Small firms	6,777	-3.78^{***}	0.02	4,417	-2.13^{***}	-0.32

Note:
*, ** , *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively (one-tailed).

Table 4.7: The effect of JSOX on the prevalence of loss avoidance

	Overall Sample			Large firms			Small firms		
	Coef.	z-stat	MEM	Coef.	z-stat	MEM	Coef.	z-stat	MEM
Panel A: Net income									
JSOX	−0.42**	−2.20	−0.01	−0.70***	−3.05	−0.02	−0.44	−1.12	−0.01
LEV	1.99***	12.33	0.07	2.62***	11.85	0.08	1.86***	6.62	0.06
SIZE	−1.13***	−39.06	−0.04	−1.53***	−20.21	−0.05	−0.93***	−15.73	−0.03
KEI	0.45***	4.37	0.02	0.34***	3.21	0.01	0.12	0.46	0.00
Constant	17.26***	33.29		26.02***	18.37		12.41***	11.82	
Industry		incl.			incl.			incl.	
Year		incl.			incl.			incl.	
N		20,745			10,800			9,945	
Pseudo R^2		0.22			0.17			0.09	
Panel B: Net income before extraordinary items									
JSOX	−0.15	−0.76	0.00	−0.91***	−3.27	−0.02	0.19	0.47	0.00
LEV	2.14***	12.79	0.06	2.79***	11.55	0.06	2.12***	6.51	0.04
SIZE	−1.41***	−43.42	−0.04	−1.86***	−19.57	−0.04	−1.11***	−16.46	−0.02
KEI	4.11***	3.59	0.01	0.35***	3.08	0.01	0.10	0.30	0.00
Constant	21.97***	38.04		31.96***	18.03		14.49***	12.10	
Industry		incl.			incl.			incl.	
Year		incl.			incl.			incl.	
N		20,746			10,801			9,945	
Pseudo R^2		0.29			0.20			0.13	

Note:
This table reports the results from estimating the following logistic model:

$$SPOS(1,0)_{it} = \beta_0 + \beta_1 JSOX_{it} + \beta_2 LEV_{it} + \beta_3 SIZE_{it} + \beta_4 KEI_{it} + Industry\_dummy + Year\_dummy + \varepsilon_{it}.$$

JSOX is a dummy variable (1 = a sample in the JSOX period (2009-2014), 0 = otherwise). Other variables are defined in Table 4.2.*, ** , *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively (two-tailed). MEM is the marginal effect at mean.

Table 4.8: Comparison of earnings management components - Overall sample

	Pre-JSOX		Mann-Whitney		Post-JSOX		Mann-Whitney		SPOS		Mann-Whitney	
	Median	Median	z	p-value	Median	Median	z	p-value	Median	Median	z	p-value
Panel A: Overall sample												
	SPOS	Others			SPOS	Others			Pre-JSOX	Post-JSOX		
UAR	0.000	−0.002	1.99**	0.023	0.002	0.000	2.23**	0.013	0.000	0.002	−2.66***	0.004
UINV	0.000	0.000	2.42***	0.008	0.001	0.000	1.09	0.139	0.000	0.001	−0.48	0.316
UACCL	0.003	0.000	4.89***	0.000	0.000	−0.001	2.15**	0.016	0.003	0.000	2.81***	0.002
TACC	0.004	−0.002	4.60***	0.000	0.005	0.000	3.19***	0.001	0.004	0.005	−0.82	0.206
URD	0.000	0.000	−0.48	0.317	0.000	0.000	−0.23	0.410	0.000	0.000	−0.08	0.466
UCAPEX	0.005	0.003	2.70***	0.003	0.005	0.003	2.15**	0.016	0.005	0.005	0.37	0.354
TREAL	0.005	0.003	2.67***	0.004	0.004	0.003	1.87**	0.031	0.005	0.004	0.55	0.292
Panel B: K-firms excluded												
UAR	0.000	−0.001	1.55*	0.060	0.001	0.000	1.68**	0.047	0.000	0.001	−2.28**	0.011
UINV	0.000	0.000	1.64*	0.050	0.001	0.000	0.98	0.163	0.000	0.001	−0.70	0.241
UACCL	0.004	0.000	5.11***	0.000	0.000	−0.001	2.06**	0.020	0.004	0.000	2.98***	0.001
TACC	0.004	−0.002	4.13***	0.000	0.005	0.000	2.68***	0.004	0.004	0.005	−0.48	0.317
URD	0.000	0.000	−0.88	0.189	0.000	0.000	−0.50	0.308	0.000	0.000	−0.32	0.374
UCAPEX	0.005	0.003	2.22**	0.013	0.005	0.003	1.55*	0.061	0.005	0.005	0.41	0.340
TREAL	0.005	0.003	2.12**	0.017	0.004	0.003	1.21	0.114	0.005	0.004	0.59	0.277

Note:
This table reports the results from the Mann-Whitney U tests. All variables are defined in Table 4.2. *, ** , *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively (one-tailed).

Table 4.9: Comparison of earnings management components - Large and small firms

	Pre-JSOX		Mann-Whitney		Post-JSOX		Mann-Whitney		SPOS		Mann-Whitney	
	Median	Median	z	p-value	Median	Median	z	p-value	Median	Median	z	p-value
Panel A: Large firms												
	SPOS	Others			SPOS	Others			Pre-JSOX	Post-JSOX		
UAR	−0.001	−0.001	0.64	0.261	0.002	0.000	1.81**	0.035	−0.001	0.002	−2.82***	0.002
UINV	0.000	0.000	0.37	0.357	−0.001	0.000	−1.96**	0.025	0.000	−0.001	0.63	0.266
UACCL	0.003	0.000	3.72***	0.000	−0.001	−0.001	1.06	0.146	0.003	−0.001	2.47***	0.007
TACC	−0.001	−0.003	1.69**	0.046	0.001	0.000	0.97	0.166	−0.001	0.001	−1.16	0.123
URD	0.000	0.000	−0.63	0.266	0.001	0.000	2.88***	0.002	0.000	0.001	−2.60***	0.005
UCAPEX	0.005	0.003	3.55***	0.000	0.004	0.002	2.91***	0.002	0.005	0.004	0.38	0.352
TREAL	0.005	0.003	3.42***	0.000	0.004	0.002	3.23***	0.001	0.005	0.004	0.07	0.474
Panel B: Small firms												
UAR	0.000	−0.002	1.05	0.147	0.003	0.000	1.98**	0.024	0.000	0.003	−1.89**	0.029
UINV	0.000	0.000	0.94	0.174	0.001	0.000	1.41*	0.079	0.000	0.001	−0.80	0.213
UACCL	0.004	0.001	2.84***	0.002	−0.003	−0.001	1.49*	0.069	0.004	−0.003	1.50*	0.067
TACC	0.006	−0.001	2.63***	0.004	0.007	0.000	2.68***	0.004	0.006	0.007	−0.76	0.224
URD	0.000	0.000	−0.51	0.306	0.000	0.000	−1.19	0.117	0.000	0.000	0.33	0.370
UCAPEX	0.005	0.004	0.29	0.385	0.004	0.004	0.34	0.369	0.005	0.004	−0.20	0.423
TREAL	0.004	0.004	0.29	0.385	0.002	0.004	−0.12	0.452	0.004	0.002	0.08	0.470

Note:
This table reports the results from the Mann-Whitney U tests. All variables are defined in Table 4.2. *, ** , *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively (one-tailed).

Table 4.10: Comparison of earnings management components - Based on net income before extraordinary items

	Pre-JSOX		Mann-Whitney		Post-JSOX		Mann-Whitney		SPOS		Mann-Whitney	
	Median	Median	z	p-value	Median	Median	z	p-value	Median	Median	z	p-value
Panel A: Overall sample												
	SPOS	Others			SPOS	Others			Pre-JSOX	Post-JSOX		
UAR	0.000	−0.002	2.95***	0.002	0.002	0.000	3.26***	0.001	0.000	0.002	−2.77***	0.003
UINV	0.000	0.000	0.84	0.200	0.000	0.000	0.72	0.237	0.000	0.000	−1.18	0.119
UACCL	0.002	0.001	3.32***	0.000	−0.001	−0.001	1.10	0.135	0.002	−0.001	2.62***	0.004
TACC	0.004	−0.002	4.56***	0.000	0.006	0.000	3.45***	0.000	0.004	0.006	−0.79	0.215
URD	0.000	0.000	−1.40*	0.081	0.000	0.000	−0.89	0.187	0.000	0.000	−0.14	0.444
UCAPEX	0.005	0.003	2.52***	0.006	0.005	0.003	2.18**	0.015	0.005	0.005	0.35	0.365
TREAL	0.005	0.003	2.13**	0.017	0.004	0.003	1.60*	0.055	0.005	0.004	0.49	0.311
Panel B: K-firms excluded												
UAR	0.000	−0.001	2.89***	0.002	0.002	0.000	2.73***	0.003	0.000	0.002	−2.23**	0.013
UINV	0.000	0.000	0.34	0.368	0.000	0.000	0.55	0.293	0.000	0.000	−1.24	0.108
UACCL	0.003	0.000	3.36***	0.000	0.000	−0.001	1.24	0.107	0.003	0.000	2.52***	0.009
TACC	0.004	−0.002	4.40***	0.000	0.005	0.000	3.06***	0.001	0.004	0.005	−0.42	0.339
URD	0.000	0.000	−1.00	0.159	0.000	0.000	−1.05	0.149	0.000	0.000	0.01	0.497
UCAPEX	0.005	0.003	2.16**	0.015	0.005	0.003	1.92**	0.028	0.005	0.005	0.24	0.405
TREAL	0.005	0.003	1.91**	0.028	0.004	0.003	1.33*	0.092	0.005	0.004	0.46	0.234

Note:
This table reports the results from the Mann-Whitney U tests. All variables are defined in Table 4.2. *, ** , *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively (one-tailed).

Table 4.11: Comparison of earnings management components - Based on net income before extraordinary items

	Pre-JSOX		Mann-Whitney		Post-JSOX		Mann-Whitney		SPOS		Mann-Whitney	
	Median	Median	z	p-value	Median	Median	z	p-value	Median	Median	z	p-value
Panel A: Large firms												
	SPOS	Others			SPOS	Others			Pre-JSOX	Post-JSOX		
UAR	0.000	−0.002	2.76***	0.003	0.002	0.000	1.98**	0.024	0.000	0.002	−1.61*	0.054
UINV	0.001	0.000	2.87***	0.002	−0.001	0.000	−2.05**	0.020	0.001	−0.001	2.19**	0.014
UACCL	0.002	0.000	1.66**	0.049	0.001	−0.001	2.57***	0.005	0.002	0.001	0.15	0.443
TACC	0.005	−0.003	4.51***	0.000	0.004	0.000	1.92**	0.028	0.005	0.004	−0.08	0.467
URD	0.000	0.000	−0.48	0.316	0.000	0.000	0.44	0.329	0.000	0.000	0.27	0.395
UCAPEX	0.004	0.003	1.47*	0.070	0.005	0.002	2.45***	0.007	0.004	0.005	−0.40	0.343
TREAL	0.004	0.003	1.27	0.102	0.005	0.002	2.42***	0.008	0.004	0.005	−0.51	0.306
Panel B: Small firms												
UAR	0.002	−0.002	2.84***	0.002	0.003	0.000	2.40***	0.008	0.002	0.003	−0.79	0.214
UINV	0.000	0.000	−0.21	0.418	0.001	0.000	0.44	0.329	0.000	0.001	−0.72	0.236
UACCL	0.003	0.001	2.00**	0.023	0.000	−0.001	0.78	0.218	0.003	0.000	1.57*	0.059
TACC	0.009	−0.001	3.49***	0.000	0.010	0.000	2.83***	0.002	0.009	0.010	0.06	0.475
URD	0.000	0.000	−0.06	0.475	0.000	0.000	0.00	0.498	0.000	0.000	−0.33	0.372
UCAPEX	0.003	0.004	−0.04	0.484	0.005	0.004	0.53	0.298	0.003	0.005	−0.71	0.238
TREAL	0.002	0.004	−0.04	0.485	0.005	0.004	0.51	0.304	0.002	0.005	−0.72	0.236

Note:
This table reports the results from the Mann-Whitney U tests. All variables are defined in Table 4.2. *, ** , *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively (one-tailed).

Table 4.12: Logistic regression of earnings management components - NI

	Overall Sample			Large firms			Small firms		
	Coef.	z-stat	MEM	Coef.	z-stat	MEM	Coef.	z-stat	MEM
JSOX	−0.24	−0.23	−0.01	−0.50	−0.76	−0.01	9.85	0.01	0.27
UAR	1.02	0.77	0.03	2.70	1.35	0.07	−0.07	−0.03	−0.00
UAR*JSOX	−0.63	−0.33	−0.02	−1.11	−0.38	−0.03	3.23	0.95	0.09
UINV	6.85***	3.38	0.17	1.81	0.68	0.05	3.04	0.79	0.08
UINV*JSOX	−1.77	−0.61	−0.04	−4.76	−1.25	−0.12	0.86	0.16	0.02
UACCL	5.26***	2.80	0.13	6.90**	2.53	0.17	3.33	0.96	0.09
UACCL *JSOX	1.62	0.57	0.04	−6.52	−1.59	−0.16	0.78	0.15	0.02
URD	0.24	0.02	0.01	5.87	0.35	0.15	−1.33	−0.07	−0.04
URD*JSOX	−4.64	−0.29	−0.11	32.35	1.21	0.80	−25.28	−0.92	−0.69
UCAPEX	4.86*	1.87	0.12	6.61*	1.68	0.16	7.49	1.52	0.20
UCAPEX*JSOX	1.61	0.41	0.04	10.35*	1.66	0.26	5.18	0.70	0.14
LEV	2.17***	9.06	0.05	2.63***	8.37	0.07	−1.68***	3.85	0.05
SIZE	−1.19***	−26.37	−0.03	−1.50***	−15.67	−0.04	−0.86***	−7.91	−0.02
KEI	0.39***	3.12	0.01	0.33***	2.60	0.01	0.26	0.95	0.01
Constant	18.16***	13.62		25.17***	13.01		0.69	0.00	
Industry		incl.			incl.			incl.	
Year		incl.			incl.			incl.	
N		12,978			7,506			5,472	
Pseudo R^2		0.20			0.18			0.07	

Note:
This table reports the results from estimating the following logistic models:

$$\begin{aligned} SPOS(1,0)_{it} = {} & \beta_0 + \beta_1 JSOX_{it} + \beta_2 UAR_{it} + \beta_3 UAR * JSOX_{it} + \beta_4 UINV_{it} \\ & + \beta_5 UINV * JSOX_{it} + \beta_6 UACCL_{it} + \beta_7 UACCL * JSOX_{it} + \beta_8 URD_{it} \\ & + \beta_{10} URD_{it} + \beta_{11} URD * JSOX_{it} + \beta_{12} UCAPEX_{it} \\ & + \beta_{11} UCAPEX * JSOX_{it} + \beta_{12} LEV_{it} + \beta_{14} SIZE_{it} \\ & + \beta_{15} KEI_{it} + Industry\_dummy + Year\_dummy + \varepsilon_{it}, \end{aligned}$$

All variables are defined in Tables 4.2 and 4.7. *, ** , *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively (two-tailed).

Table 4.13: Logistic regression of earnings management components - NI

	Overall Sample			Large firms			Small firms		
	Coef.	z-stat	MEM	Coef.	z-stat	MEM	Coef.	z-stat	MEM
JSOX	0.75	0.74	0.02	−0.42	−0.92	−0.01	10.23	0.02	0.29
TACC	1.69***	2.60	0.05	2.02*	1.66	0.06	1.83	1.64	0.05
TACC*JSOX	0.81	0.79	0.03	−1.21	−0.68	−0.04	1.71	0.97	0.05
TREAL	3.00*	1.92	0.09	6.58**	2.34	0.19	2.35	0.85	0.07
TREAL*JSOX	0.02	0.01	0.00	3.65	0.85	0.11	2.69	0.59	0.08
LEV	2.11***	12.03	0.07	2.81***	11.88	0.08	1.80***	5.69	0.05
SIZE	−1.12***	−35.16	−0.03	−1.51***	−19.11	−0.04	−0.82***	−11.76	−0.02
KEI	0.41***	3.66	0.01	0.31***	2.88	0.01	0.15	0.58	0.00
Constant	15.91***	13.55		25.52***	16.29		−0.19	−0.00	
Industry		incl.			incl.			incl.	
Year		incl.			incl.			incl.	
N		18,950			10,089			8,861	
Pseudo R^2		0.21			0.18			0.08	

Note:
This table reports the results from estimating the following logistic models:

$$\begin{aligned} SPOS(1,0)_{it} = \beta_0 + \beta_1 JSOX_{it} + \beta_2 TACC_{it} + \beta_3 TACC * JSOX_{it} + \beta_4 TREAL_{it} \\ + \beta_5 TREAL * JSOX_{it} + \beta_6 LEV_{it} + \beta_7 SIZE_{it} \\ + \beta_{15} KEI_{it} + Industry\_dummy + Year\_dummy + \varepsilon_{it}, \end{aligned}$$

All variables are defined in Tables 4.2 and 4.7. For this table we combine EMC into total unexpected accruals (TACC) for accounting manipulation and total investment adjusting (TREAL) for real activity manipulation for a regression models. *, ** , *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively (two-tailed).

Table 4.14: Logistic regression of earnings management components - NIBX

	Overall Sample			Large firms			Small firms		
	Coef.	z-stat	MEM	Coef.	z-stat	MEM	Coef.	z-stat	MEM
JSOX	11.66	0.03	0.19	0.19	0.17	0.00	8.27	0.02	0.13
UAR	1.17	0.86	0.02	9.19***	4.07	0.13	4.45	1.45	0.07
UAR*JSOX	1.05	0.55	0.02	−7.20**	−2.29	−0.10	0.87	0.22	0.01
UINV	4.20**	2.05	0.07	6.85**	2.21	0.10	0.47	0.10	0.01
UINV*JSOX	−2.35	−0.81	−0.04	−8.53**	−2.00	−0.12	−2.93	−0.47	−0.05
UACCL	3.98**	2.07	0.06	5.21*	1.66	0.08	4.41	1.00	0.07
UACCL *JSOX	−0.74	−0.26	−0.01	−3.10	−0.70	−0.05	−4.95	−0.82	−0.08
URD	−17.42	−1.55	−0.28	−11.28	−0.58	−0.16	9.50	0.35	0.15
URD*JSOX	3.73	0.23	−0.06	−9.10	−0.32	−0.13	−11.30	−0.34	−0.18
UCAPEX	5.54**	2.06	0.09	2.89	0.67	0.04	0.51	0.08	0.01
UCAPEX*JSOX	−2.96	−0.76	−0.05	12.76*	1.93	0.19	6.78	0.79	0.11
LEV	2.08***	8.26	0.03	2.72***	7.85	0.04	2.29***	4.23	0.04
SIZE	−1.47***	−29.05	−0.02	−1.87***	−15.31	−0.03	−0.94***	−7.46	−0.01
KEI	0.38***	2.84	0.01	0.31**	2.21	0.00	−0.10	−0.26	−0.00
Constant	11.19	0.03		31.12***	12.27		3.22	0.01	
Industry		incl.			incl.			incl.	
Year		incl.			incl.			incl.	
N		12,979			7,506			5,473	
Pseudo R^2		0.26			0.21			0.10	

Note:
This table reports the results from estimating the following logistic models:

$$\begin{aligned} SPOS(1,0)_{it} = {} & \beta_0 + \beta_1 JSOX_{it} + \beta_2 UAR_{it} + \beta_3 UAR * JSOX_{it} + \beta_4 UINV_{it} \\ & + \beta_5 UINV * JSOX_{it} + \beta_6 UACCL_{it} + \beta_7 UACCL * JSOX_{it} + \beta_8 URD_{it} \\ & + \beta_{10} URD_{it} + \beta_{11} URD * JSOX_{it} + \beta_{12} UCAPEX_{it} \\ & + \beta_{11} UCAPEX * JSOX_{it} + \beta_{12} LEV_{it} + \beta_{14} SIZE_{it} \\ & + \beta_{15} KEI_{it} + Industry\_dummy + Year\_dummy + \varepsilon_{it}, \end{aligned}$$

All variables are defined in Tables 4.2 and 4.7. *, ** , *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively (two-tailed). MEM is the marginal effect at mean.

Table 4.15: Logistic regression of earnings management components - NIBX

	Overall Sample			Large firms			Small firms		
	Coef.	z-stat	MEM	Coef.	z-stat	MEM	Coef.	z-stat	MEM
JSOX	12.64	0.03	0.27	0.41	0.53	0.01	10.35	0.02	0.20
TACC	2.25***	3.43	0.05	6.25***	4.59	0.11	3.66***	2.76	0.07
TACC*JSOX	0.44	0.43	0.01	−4.87**	−2.53	−0.09	−0.57	−0.28	−0.01
TREAL	2.74*	1.73	0.06	−0.05	−0.02	−0.00	2.06	0.65	0.04
TREAL*JSOX	−1.49	−0.60	−0.03	7.67*	1.72	0.14	4.24	0.84	0.08
LEV	2.23***	12.33	0.05	2.75***	10.58	0.05	2.16***	5.85	0.04
SIZE	−1.40***	−39.56	−0.03	−1.87***	−18.48	−0.03	−0.94***	−11.78	−0.02
KEI	0.41***	3.43	0.01	0.40***	3.33	0.01	0.13	0.37	0.00
Constant	8.99	0.02		30.86***	15.09		1.39	0.00	
Industry		incl.			incl.			incl.	
Year		incl.			incl.			incl.	
N		18,951			10,089			8,862	
Pseudo R^2		0.28			0.20			0.10	

Note:
This table reports the results from estimating the following logistic models:

$$\begin{aligned} SPOS(1,0)_{it} = {} & \beta_0 + \beta_1 JSOX_{it} + \beta_2 TACC_{it} + \beta_3 TACC * JSOX_{it} + \beta_4 TREAL_{it} \\ & + \beta_5 TREAL * JSOX_{it} + \beta_6 LEV_{it} + \beta_7 SIZE_{it} \\ & + \beta_{15} KEI_{it} + Industry\_dummy + Year\_dummy + \varepsilon_{it}, \end{aligned}$$

All variables are defined in Tables 4.2 and 4.7. For this table we combine EMC into total unexpected accruals (TACC) for accounting manipulation and total investment adjusting (TREAL) for real activity manipulation for a regression models. *, ** , *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively (two-tailed). MEM is the marginal effect at mean.

Chapter 5

Summary and conclusion

This thesis investigates the effect of changes in accounting standards and regulations on earnings management in Asian countries. The main research question of this thesis is to what extent these changes affect the earnings management of Asian firms. The first study investigates the effect of IFRS convergence on discretionary accruals in Thailand. The second study investigates the effect of IFRS on income smoothing in China, Hong Kong, Malaysia, and Singapore. The final study investigates the effect of JSOX on loss-avoidance behaviour in Japan. Our contributions add to the existing literature regarding the effect of the IFRS and SOX-like regulations on many earnings management aspects in an Asian context. It also adds to the literature about quantifying and testing earnings management.

5.1 The effect of IFRS on accounting quality in Thailand

From the univariate tests, we find some evidence that IFRS lead to a decline in discretionary accruals in Thailand. However, based on the regression analysis, the results show no effect of IFRS on discretionary accruals. The analyses show that firm-level factors exhibit a significant relationship with the level of discretionary accruals, including debts and equity issuance. Board size and block shareholders appear to play some role in reducing the discretionary accruals of Thai firms while big-4 auditors, as an external corporate governance mechanism, do not.

At least on the accounting-based proxy, the findings are inconsistent with prior studies (Charoenwong and Jiraporn, 2009; Vichitsarawong et al., 2010) that find an improvement in accounting quality shortly after the crisis. From our study, we find no strong evidence of a decline in discretionary accruals, which does not support prior research that finds that IFRS constrain earnings management (Barth et al., 2008; Chen et al., 2010; Iatridis, 2010; Iatridis and Rouvolis, 2010; Zéghal et al., 2011; Chua et al., 2012).

For the case of Thailand, we suggest that since firm-level factors appear to have a strong negative influence on accounting quality may not be changed easily, policy makers and regulators may require country-level corporate governance to support IFRS and firm-level corporate governance principles. For example, the law regarding the right of minority interest may require improvement and the process of enforcement should be vigorously implemented accordingly.

5.2 The effect of IFRS on income smoothing in Asia

We find Asian firms with a high level of income smoothing in the pre-IFRS period show a significant decline in income smoothing in the post-IFRS period. The findings are consistent with those of Barth et al. (2008), Garcia Osma and Pope (2011) and Liu et al. (2011), that find the negative effect of IFRS on income smoothing in many countries. In addition, firms with a high level of income smoothing exhibit a significant decrease in signed discretionary accruals and an increase in the use of real activity earnings management, especially those related to reducing of costs via overproduction, which is consistent with prior studies (Tan and Jamal, 2006; Ipino and Parbonetti, 2011) who report switching from accounting to real earnings management when accounting choices have been restricted. Firms with less income smoothing appear to use no real activity earnings management though they experience a decrease in income smoothing.

The findings suggest that firms with greater income-smoothing incentives are more likely to turn to real activity in the IFRS period in an attempt to mitigate earnings fluctuation. It is important to note that though income smoothing of firms in this group statistically declines, their income smoothing level is still relatively high in the post-IFRS period in comparison to those with a low income smoothing level. We conclude that compliance with IFRS may lead to a statistical improvement in accounting quality but may not be economically significant. We also find some evidence that strong legal enforcement leads to a stronger effect of IFRS, which is consistent with Daske et al. (2008) and Landsman et al. (2012), but find no evidence that it leads to a prevalence of real earnings management as found in a prior study (Ipino and Parbonetti, 2011). Our tests show that income-smoothing incentives have a strong positive effect on real manipulation in the IFRS period.

In addition, IFRS appear to have different effects on firms with a low level income smoothing, which we assume to have conservative accounting practices. These firms exhibit an increase in income smoothing and discretionary accruals. We conjecture that IFRS may shift these firms from conservative to neutral accounting practices which result in more true and fair views of reported earnings.

5.3 The effect of Japanese-SOX on earnings management to avoid losses in Japan

From the earnings-distribution analysis we find some evidence of a desirable effect of JSOX on loss avoidance in Japan – the loss-avoidance degree exhibits a decline in the post-JSOX period. Consistently, the additional tests from the logistic regression models controlling for debt, firm size, *keiretsu* firms, indicate a negative effect of JSOX on loss avoidance, especially for large firms. The findings are partly consistent with the US findings (Lobo and Zhou, 2006; Cohen et al., 2008; Bartov and Cohen, 2009; Aubert and Grudnitski, 2014; Gilliam et al., 2015). A possible explanation for the different degrees of effectiveness may be that 1) JSOX is less stringent in

relation to SOX or 2) there is a difference in the institutional factors, such as the enforcement levels and/or the business practices of Japanese firms, for reporting or maintaining modest profits.

We find that, in both pre- and post-JSOX periods, loss-avoidance firms use both accrual and investment manipulation to manage earnings in relation to other firms. Focusing on only suspect firms, there are no changes in the methods used to achieve loss avoidance – firms use both methods for their purposes. The findings are inconsistent with prior US studies (Cohen et al., 2008; Bartov and Cohen, 2009) that report a decline in accounting and an increase in real earnings management after SOX. The different findings may be due to, as already mentioned, the difference between JSOX and SOX. Another possible explanation may be the perception of earnings management methods, in that Japanese management perceive both methods as acceptable while American management accept only real manipulation as ethical.

Furthermore, we find loss-avoiding firms appear to switch from one specific accrual to another between the JSOX periods to manipulate earnings. It is possible that Japanese managers may turn to other particular accounts, perceiving them as having lower costs in order to compensate for the potentially increased costs imposed by JSOX (e.g. penalty costs). In addition, we find that firm size affects the methods used to avoid reporting losses. Specifically, small firms are likely to use only accruals while larger firms use both accruals and investment, which supports the proposal of Burgstahler and Chuk (2015) about the effect of firm size on the extent of earnings management.

JSOX appears to have some desirable effects on the prevalence of loss avoidance in Japan but not on the manipulating methods used to achieve such goals. Accruals still seem to be crucial tools because there are many sets of accounts which management utilise to switch from one specific accrual to another. As well as adding to the literature about the effect of SOX-like regulations in Asian context, the study also

contributes to the debates about the validity of research design regarding earnings management to avoid losses.

5.4 Potential limitations and future research

Research investigating one country at a time such as Chapters 2 and 4 may relax the confounding effect of country-level institutional factors. However, Chapter 3 which studies four countries may suffer the problem of confounding variables, especially those related to country-level, though we have attempted to control for country-level factors by using the legal enforcement level.

Our studies heavily rely on regression models, not only to compute earnings management proxies but also to analyse the effect of IFRS and JSOX. The findings may be biased in some sense from the problems of outliers and omitted-variables so we have conducted many sensitivity tests and/or attempted to control for outliers and related factors.

In addition, the assumption of clean revenues in calculating unexpected specific accruals in Chapter 4 may be problematic because the revenues of some firms may be contaminated by real manipulation or premature revenues, or both.

As evidenced in Chapter 1, the effect of big-4 auditors on accounting quality in Thailand has raised an interesting question about the quality of auditors in the region. The study can be extended by focusing on the quality of auditors across Asian countries to gain insight into the role of auditors in the process of financial reporting during the IFRS period in this region. Though many Asian countries have adopted IFRS, based on the findings of Chapter 3, there has been incomparability in the level of income smoothing across sub-groups. Therefore, gaining some insight about the overall effect of IFRS may not be adequate to understand accounting quality under the IFRS regime. The comparability aspect of accounting quality after the adoption of IFRS may be a potential issue that can be investigated in the future.

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Appendix A

Thai Accounting Standards

Table A.1: Thai Accounting Standards before Financial Crisis of 1997

No	Description	Superseded by
TAS 1	Fundamental Accounting Assumption	Framework
TAS 2	Accounting Policies	TAS 35
TAS 3	Extraordinary Items	TAS 39
TAS 4	Accounting Change	TAS 39
TAS 5	Earnings Per Share	TAS 38
TAS 6	Revenue Recognition	TAS 37
TAS 7	Accounting for Hire Purchase for Lessor	ED Lease
TAS 8	Construction Contracts	TAS 49
TAS 9	Property, Plant and Equipment	TAS 32
TAS 10	Depreciation	TAS 32
TAS 11	Doubtful Account and Bad Debt	–
TAS 12	Accounting for Marketable Securities	TAS 40
TAS 13	Related Party Disclosures	TAS 47
TAS 14	Accounting for Research and Development Activities	TAS 51
TAS 15	Capitalization of Borrowing Cost	TAS 33
TAS 16	Current Assets and Current Liabilities	TAS 35
TAS 17	Accounting for Investments	TAS 40
TAS 18	Accounting for Investments in Subsidiaries and Associations	TAS 45
TAS 19	Consolidated Financial Statements	TAS 44
TAS 20	Accounting for Business Combination	TAS 43
TAS 21	Contingencies and Events after the Balance Sheet Date	TAS 52,53
TAS 22	Valuation and Presentation of Inventories	TAS 31
TAS 23	Information to be Disclosed in Financial Statements	TAS 52
TAS 24	Reporting Financial Information by Segment	TAS 50
TAS 25	Statement of Cash Flow	-
TAS 26	Revenue Recognition in Real Estate Business	-
TAS 27	Disclosures in the Financial Statements of Financial Institutions	-
TAS 28	Accounting for Convertible Debt and Debt Issued with Warrant	TAS 48
TAS 29	Accounting for Lease	ED Lease
TAS 30	The Effect of Foreign Currency Translation	-
TAS 31	Inventories	-

Table A.2: Revised Thai Accounting Standards

No	Description	Based on	Effective Date
–	Framework for the Preparation and Presentation of Financial Statements	IASB Framework	25-Feb-99
TAS 32	Property, Plant and Equipment	IAS 16	1-Jan-99
TAS 33	Borrowing Costs	IAS 23	1-Jan-99
TAS 34	Troubled Debt Restructuring	SFAS 15 and 114	30-Sep-98
TAS 35	Presentation of Financial Statements	IAS 1	1-Jan-99
TAS 36	Impairments of Assets	IAS 36	1-Jan-99
TAS 37	Revenue Recognition	IAS 18	1-Jan-99
TAS 38	Earnings Per Share	IAS 33	1-Jan-99
TAS 39	Net Profit or Loss for the Period, Fundamental Errors, and Accounting Changes	IAS 8	1-Jan-99
TAS 40	Accounting for Investments in Debt and Equity Securities	IAS 39 SFAS 115	1-Jan-99
TAS 41	Interim Financial Statements	IAS 34	1-Jan-00
TAS 42	Accounting for Investment Companies	AICPA Industrial Guide	1-Jan-00
TAS 43	Business Combination	IAS 22	1-Jan-00
TAS 44	Consolidated Financial Statements and Accounting for Investment in Subsidiaries	IAS 27	1-Jan-00
TAS 45	Accounting for Investments in Associates	IAS 28	1-Jan-00
TAS 46	Financial Reporting of Interests in Joint Ventures	IAS 31	1-Jan-00
TAS 47	Related Party Disclosures	IAS 24	1-Jan-00
TAS 48	Financial Instruments : Disclosure and Presentation	IAS 32	1-Jan-00
TAS 49	Construction Contracts	IAS 11	1-Jan-01
TAS 50	Segment Reporting	IAS 14	1-Jan-02
TAS 51	Intangible Assets	IAS 38	1-Jan-04
TAS 52	Events after the Balance Sheet Date	IAS 10	1-Jan-04
TAS 53	Provision, Contingent Assets and Contingent Liabilities	IAS 37	1-Jan-04
TAS 54	Discontinuing Operations	IAS 35	1-Jan-06
TAS 55	Accounting for Government Grants and Disclosures of Government Assistance	IAS 20	1-Jan-04
TAS 56	Income Taxes	IAS 12	1-Jan 07
–	Exposure Draft : Leases	IAS 17	-

Table A.3: Revised Thai Accounting Standards - Effective as at March 2013

No	Description
Panel A: Based on IAS and IFRS	
–	Framework (Revised 2009)
TAS 1	Presentation of Financial Statements (Revised 2009)
TAS 2	Inventories (Revised 2009)
TAS 7	Statement of Cash Flows (Revised 2009)
TAS 8	Accounting Policies, Changes in Accounting Estimates and Errors (Revised 2009)
TAS 10	Events After the Balance Sheet Date (Revised 2009)
TAS 11	Construction Contracts (Revised 2009)
TAS 12	Income Taxes
TAS 14	Segment Reporting
TAS 16	Property, Plant and Equipment (Revised 2009)
TAS 17	Leases (Revised 2009)
TAS 18	Revenue (Revised 2009)
TAS 19	Employee Benefits
TAS 20	Accounting for Government Grants and Disclosure of Government (Revised 2009)
TAS 21	The Effects of Changes in Foreign Exchange Rates (Revised 2009)
TAS 23	Borrowing Costs (Revised 2009)
TAS 24	Related Party Disclosures (Revised 2009)
TAS 26	Accounting and Reporting by Retirement Benefit Plans
TAS 27	Consolidated Financial Statements (Revised 2009)
TAS 28	Investments in Associates (Revised 2009)
TAS 29	Financial Reporting in Hyperinflationary Economies
TAS 31	Interests in Joint Ventures (Revised 2009)
TAS 33	Earnings per Share (Revised 2009)
TAS 34	Interim Financial Reporting (Revised 2009)
TAS 36	Impairment of Assets (Revised 2009)
TAS 37	Provisions, Contingent Liabilities and Contingent Assets (Revised 2009)
TAS 38	Intangible Assets (Revised 2009)
TAS 40	Investment Property (Revised 2009)
TFRS 2	Share-based Payment
TFRS 3	Business Combinations (Revised 2009)
TFRS 5	Non-current Assets Held for Sale and Discontinued Operations (Revised 2009)
TFRS 6	Explorations for and Evaluation of Mineral Resources
TFRS 8	Operating Segments
Panel B: Self-developed Thai Accounting Standards	
TAS 101	Bad Debts and Allowance for Bad Debts
TAS 103	Disclosure in Bank and Finance Business
TAS 104	Troubled Debt Restructuring
TAS 105	Accounting for Investments in Debt and Equity Securities
TAS 106	Accounting for Investment Companies
TAS 107	Financial Instruments : Disclosure and Presentation

Source: These appendixes were gathered from the website of the Government Gazettes of Thailand and the website of the Federation of Accounting Professions of Thailand.

Appendix B

Rule of Law

Table B.1: Rule of Law Scores

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Average
China	−0.41	−0.47	−0.43	−0.49	−0.55	−0.45	−0.34	−0.32	−0.33	−0.39	−0.49	−0.42
Hong Kong	1.24	1.53	1.59	1.61	1.53	1.51	1.48	1.48	1.54	1.55	1.56	1.51
Malaysia	0.50	0.57	0.59	0.57	0.53	0.50	0.40	0.49	0.53	0.52	0.51	0.52
Singapore	1.44	1.61	1.73	1.76	1.63	1.64	1.64	1.60	1.68	1.73	1.77	1.66

Source: info.worldbank.org