Earnings persistence, value relevance, and earnings timeliness: The Case of Thailand

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ABSTRACT

This research aims to investigate the enhancement of accounting quality in Thailand after adopting International Financial Reporting Standards (IFRS) in its domestic accounting system. The accounting quality consists of three properties of earnings– earnings persistence, value relevance and earnings timeliness. This research examines the improvement of accounting quality after the IFRS adoption in Thailand by expanding the conditioning institutional factor to include the magnitude of book-tax differences. In addition, the relationship between the Thai accounting quality and firm governance systems is investigated.

The results reveal that the accounting quality, including earnings persistence and value relevance, has been improved after the IFRS adoption in Thailand. The earnings timeliness is observed in Thai firms, but it has been declined after the IFRS adoption. The results also indicate that the improvement of accounting quality after the IFRS adoption in Thailand is varied according to the magnitude of book-tax differences. This research finds that the firm governance system is related to the improvement of accounting quality in Thai settings. This research concludes that the adoption of IFRS has generally improved accounting quality in Thailand. The book-tax difference contains significant information about accounting quality in Thai settings. And, the firm governance system plays an important role in accounting quality after the IFRS adoption in Thailand.

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TO MY PARENTS

Chapter 1
Introduction

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1.1 Introduction

Without question, financial reporting plays a multiple role in the business world. For instance, it not only represents corporate financial and/or non-financial information required by any legislative regulators which firms have to deal with, but also can be used as a medium to communicate between the firm and related parties, i.e. creditors, investors and analysts. Financial information shown on the corporate report is thus of interest to stakeholders and can affect the user who relies on that information. Back in 1968, Ball and Brown (1968) attempted to discover the association between accounting numbers and share returns; the essential role of financial reporting has occupied a great deal of researchers' attention to investigate whether financial reporting provides useful information for stakeholders in terms of decision making and predictability. Specifically, as reported by a growing amount of accounting literature in the area of financial reporting, recent research studies around the world have focused on and been aware of the quality of accounting information disclosed on the corporate financial report.[1] Generally speaking, financial information users have expected to receive a certain level quality of information to achieve their objectives that vary according to the group of users. In the meantime, business competition is a major constraint for the firm to disclose all their information to the public. This ambivalence between information generators (business entities) and users can distort the information quality in general, as suggested by the economic theory that information asymmetry between firms – as insiders, and users – as outsiders, exists in the real world (Spence 1973). Nevertheless, there is a structural mechanism initiated to mitigate the information gap between a firm's insiders and outsiders, i.e. corporate governance systems (Dechow and Schrand 2004, pg.102).

[1] Among others, for example, Ding, Hope, Jeanjean and Stolowy (2007) employed cross-country data to compare the use of domestic accounting standards and international accounting standards in 30 countries. Prather-Kinsey (2006) investigated accounting information for firms in South Africa and Mexico. Ball and Shivakumar (2005) examined the quality of financial reporting in UK firms. Habib (2004) studied accounting information quality in Japanese firms.

Thai Accounting Framework defines fundamental qualitative characteristics in four categories, including understandability, relevance, reliability, and comparability. From the accounting empirical and anecdotal evidence, accounting information providing such benefits as the ability to incorporate economic consequences, relevancy or predictability to information users is considered as useful or good quality. Consistent with the fundamental qualitative characteristics in the Thai accounting framework and growing literature, this thesis aims at investigating accounting information quality by interpreting 'quality' of accounting information in three well-known forms, including the persistence of accounting summary numbers (to estimate the reliability), relevancy (to estimate the relevance) and timeliness. More details about these forms of quality will be explained later.

This thesis depicts that the accounting regime is an important parameter affecting the quality of accounting information. In a particular accounting environment, i.e. Thailand, accounting information quality can be affected by significant factors – accounting rules and other influencing factors. Accounting rules are viewed as the direct descriptor on accounting information quality whilst such necessary factors, other than accounting rules, as laws, the market regulator and structure, politics, information quality monitoring mechanism and errors, are considered as indirect parameters. To prepare financial reporting, firms are required to follow procedures stated by accounting rules. Broadly speaking, accounting rules consist of two main components: on the one hand, mandatory rules specifying accounting procedures the firm must follow, i.e. firms must identify depreciable vs. non-depreciable assets, and on the other leaving the choice to the firm, otherwise termed the voluntary aspect, i.e. the appropriate depreciation method is subject to the firm's discretion. Accounting rules formally indicated in accounting standards eventually play an important role for corporate financial reporting preparations. Since financial information quality can be analysed by examining corporate reported information presented on the firm's financial reporting which is prepared according to accounting rules in each country, changes in accounting standards ultimately affect the result of reported accounting numbers, leading to the direct alteration of the quality of accounting information. This argument is supported by Ding et al. (2007), who suggest that financial reporting quality is determined by accounting standards. Additionally, firms can employ the voluntary component in the accounting standard in either a pessimistic sense – to garble their financial information – or an optimistic sense – to incorporate their true economic consequences.

As well-documented by previous research studies, accounting standards as compulsory requirements of financial reporting can immensely influence the corporate accounting information when accounting standards have substantially been changed.[2] And, indirect parameters, such as laws (i.e. common vs. civil laws), politics (i.e. politic-connected vs. non-politic- connected firms), monitoring mechanisms (i.e. independence audit committee or audit committee components), market rules (i.e. regulations of the Stock Exchange), the market economic structure (i.e. well-developed market vs. emerging market) and errors (fraud vs. management/human errors) can cause difference of accounting information quality across firms and countries.[3] Accordingly, this thesis chooses to explore accounting information quality in Thailand because Thailand has developed accounting-related policies to improve Thai accounting information quality.

This thesis examines the improvement of accounting information quality in general characteristics. However, to be more specific, accounting information quality is investigated after the reform of accounting standards in Thailand. As aforementioned, indirect parameters substantially influence the accounting

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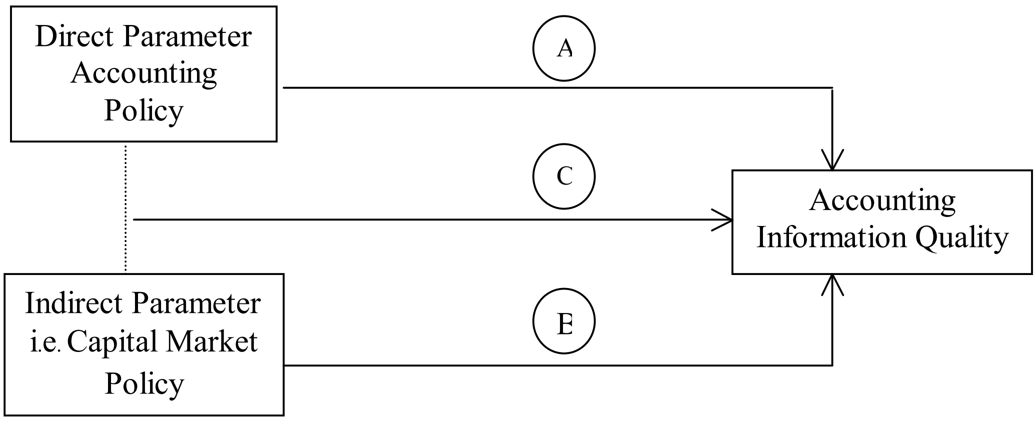
[2] Several prior works have examined the value-relevance of accounting reforms in various countries, i.e. Czech Republic (Hellstrom 2006), South Africa and Mexico (Prather-Kinsey 2006), Poland (Gornik-Tomaszewski 2001) and Spain (Giner and Rees 1999). Other than the accounting reform, Ashbaugh and Pincus (2001) found that the change in accounting policies is positively associated with the reduction in analyst prediction errors.

[3] i.e. Ball, Kothari and Robin (2000). Ding et al. (2007) suggested that accounting systems in countries could be improved not only by accounting standards but also the development of economic functions, i.e. the financial market. Nevertheless, Leuz (2003) added the empirical evidence about different accounting policies applied in the identical economic functions by concluding from German new market evidence that International Accounting Standards (IASs) and US GAAP provide no different quality that information asymmetry and market liquidity across firms were not significantly affected by using different accounting policies.

information quality. According to the existing literature, one major factor influencing accounting quality is the corporate governance system (Dechow and Schrand 2004, pg.102). As shown in Figure 1.1, prior empirical research has discovered the effect of either accounting policies or institutional factors on the quality of accounting information. Point A indicates that prior studies examine the relationship between accounting quality and accounting policy. Point B shows the prior research investigating the relationship between institutional factors, i.e. corporate governance, and accounting quality. Point C indicates the research studies that estimate the relationship among accounting policy, institutional factors, and accounting quality. More details about why this thesis investigates accounting quality in Thailand will be explained later. This chapter presents statement of the research problem in section 1.2 and statement of the general hypothesis in section 1.3. Motivation of the study and contribution to the knowledge are explained in section 1.4 and 1.5, respectively. The last section is the structure of the study.

Figure 1.1 Factors Influencing Accounting Information Quality



A: Research studied by Hellström (2006), Prather-Kinsey (2006), Yang, Ronhrbach and Chen (2005), Leuz (2003), Chen, Chen and Su (2001), Gornik-Tomaszewski and Jermakowicz (2001), Bao and Chow (1999), and Giner and Rees (1999)

B: Research studied by Davis-Friday, Eng and Lin (2006), Ballas and Hevas (2005), Bushman, Chen, Engel, and Smith (2004), Ball, Robin and Wu (2003), Ely and Pownall (2002), Arce and Mora (2002), Bartov, Goldberg and Kim (2001a), Fan and Wong (2002), Jung and Kwon (2002), Vafeas (2000), and Graham, King and Bailes (2000)

C: Research studied by Ahmed and Duellman (2007); Ding et al. (2007) and Bushman et al. (2004)

1.2 Statement of the Problem

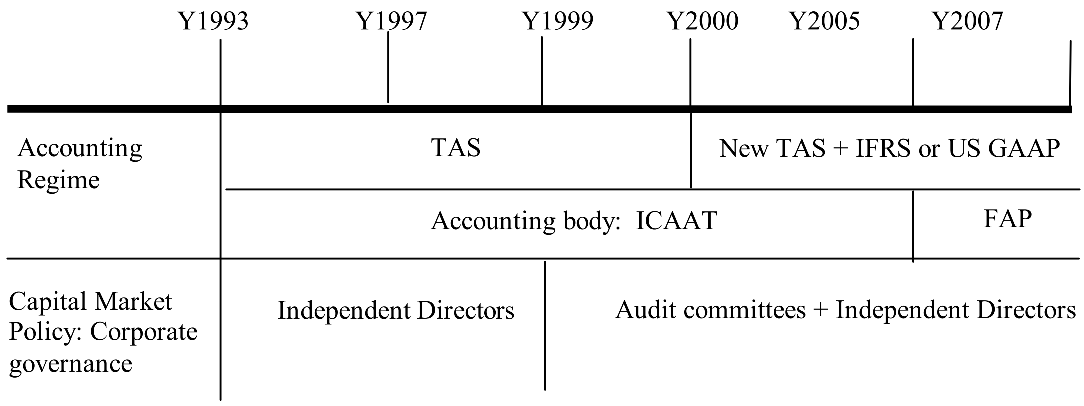
It is clear that Thailand was devastated by the 1997 financial economic crisis after the floatation of the Thai Baht on 2nd July 1997. Massive economic shocks had severely attacked private firms. The main reason for the collapse of the Thai economy was the scale of foreign debt (Graham et al., 2000). Thailand, thus, had to join the financial rehabilitation programme of the International Monetary Fund (IMF). One essential part of the financial rehabilitation was to improve Thai accounting standards. Before the 1997 financial crisis, Thai firms had been using the Thai Accounting Standard (TAS) published by The Institute of Certified Accountants and Auditors of Thailand (ICAAT). On 4th May 2000, the Thai government enacted a new accounting law, the Accounting Act 2000, to regulate all firms in the country. According to the Accounting Act, on 28th December 2000, 21 out of 31 accounting standards were abolished and superseded by 19 new accounting standards. For the fiscal year ended 2000, there were 29 accounting standards in use and in 2005 three accounting standards were in force for the fiscal year ended 2005. As a result, the total of 32 accounting standards are currently in effect at the fiscal year ended 2006. Thai Accounting Standards had been substantially amended by the accounting body and legitimately used by the firm to increase the international quality of accounting information and practice in Thai business. Most new Thai accounting standards converge with the International Financial Reporting Standards (IFRS) published by the International Accounting Standards Committee (IASC) into Thai accounting system. Thai accounting reform started from the fiscal year ended 2000 as from that point Thai firms had to employ new accounting standards. It should be noted that the use of new accounting standards is compulsory for all listed firms in Thailand.

For listed firms' accounting procedures, the Stock Exchange of Thailand (SET) has regulated listed firms to follow TAS. Since currently the business transaction is more complicated and share trading has been exposed to foreign investors leading to the increasing need for accounting information, especially in terms of quality, TAS did not cover those complicated business transactions. SET therefore enacts the regulation that when no Thai accounting guidelines can be applied for any issues, the listed firm must employ accounting guidelines published by the International Accounting Standards Committee (IASC) and the American Institute of Certified Public Accountants (AICPA), respectively. In consequence, the listed firm employs TAS as a minimum requirement for its accounting procedures. SET later enforced high penalties for firms not preparing their accounts in line with accounting guidelines, starting from the financial year ended 1997. As a result, before 1997 Thai firms had employed TAS for their accounting system. Thai fundamental accounting principles have been reformed due to IFRS-harmonised new accounting standards since 2000. Nevertheless, the regulation of using IFRS or US GAAP for some transactions which are not covered by the new TAS has still been in force. From 1997 until now, IFRS or US general accepted accounting principles have been applied for corporate financial reporting when the new TAS does not cover any particular transactions.

Other than accounting reform, another progressive development encouraging business information quality in Thailand is that SET has required all listed firms to constitute an audit committee to improve corporate governance in Thailand since 2nd July 1999. However, corporate governance in Thailand was firstly introduced in 1993 by requiring listed firms to establish at least two independent directors on the board (Connelly and Limpaphayom, 2004). Thus, from 1999, listed firms have been required to organise both an audit committee and independent directors. This crucial responsibility of Thai firms should principally stimulate the quality of financial reporting in Thailand as one binding duty of the audit committee is to provide quality financial reporting.

In conclusion, financial reporting in Thailand, presently, should be ameliorated by two ingredients: accounting standards and corporate governance through the audit committee. This analysis, hence, has been attracted by at least two reasons: 1) the first constituent brings this research to focus on the quality of accounting information as predominantly investigated by prior research studies for the case of accounting reform and 2) the other element of interest is the effect of corporate governance system that attempts to reinforce the improvement of accounting information usefulness. Figure 1.2 presents the events of accounting reform and new corporate governance policy.

Figure 1.2 Accounting regime and corporate governance



TAS – Thai Accounting Standards
IFRS – International Financial Reporting Standards
ICAAT – Institute of Certified Accountants and Auditors of Thailand
FAP – Federation of Accounting Professions

As Thailand has reformed its accounting standards, accounting information, therefore, should be of higher quality compared to the past. This thesis attempts to study the quality of accounting information in Thailand because there were significant changes in the accounting system. The principal research problem of this thesis is to investigate:

Principal research problem

"whether the quality of accounting information is altered in the Thai accounting regime and capital market environments between pre- and post-adoption of accounting standards."

As described earlier, indirect parameters are essential factors affecting the quality of accounting information. From the principal research question, whether or not the alteration of accounting information after changes in accounting standards is observed, the change in accounting standards probably will not be the only factor inducing the alteration. It is of interest to determine whether the indirect parameter induces the change in accounting quality in Thailand. Following prior research, this thesis considers that among other factors, firm governance mechanism is a major candidate in terms of encouraging the quality of accounting information. Therefore, this thesis proposes another research question to support the investigation of the principal research question:

Supporting research question

"whether the firm governance system affects the quality of accounting information in Thailand."

The link between the principal research problem and supporting research question is due to the fact that the improvement of accounting quality during IFRS post-adoptions can be varied among firms. Thus, this thesis proposes that the variation of the enhancement of accounting quality among firms is potentially induced by the variation of firms' governance systems.

To respond the principal research problem, this thesis divides the analysis into two parts for each attribute of accounting quality. The first part relates to the investigation of the alteration of accounting quality during accounting reforms. The second part of this study is to examine the effect of firm governance on the quality of accounting information. As suggested by Ding et al. (2007), not only accounting standards but also economic functions are significant for the development of accounting systems; the combination of both parts provides additional evidence to the accounting literature in emerging market countries. The next four sections (1.2.1–1.2.4) introduce the main areas of analysis to respond to the research problem and its supporting question.

1.2.1 Accounting Quality

Prior studies focus on the analysis of earnings, as a summary accounting measure, when determining accounting quality (among others, Sloan 1996; Dechow and

Dichev 2002; Barth, Landsman and Lang 2008). In general, earnings are of high quality if they can represent current firm economic performance or can be used by analysts to predict future performance of the firm (Dechow and Schrand 2004). Following prior literature, the study of earnings quality can be found in three main areas, including earnings persistence, value relevance and earnings timeliness.

Earnings persistence is a form of accounting quality. Earnings are of high quality when they are persistent. This is due to the fact that when earnings are of high persistence, they can be used as a predictor for the future performance of the firm. A downside of earnings persistence is the possibility that earnings can be manipulated by the firm. The value relevance analysis is the study of the relationship between the market value and accounting numbers, indicating that the higher the relationship, the higher the value relevance of accounting numbers. In consequence, higher value relevance represents higher earnings quality. One problem for the value relevance analysis relates to the empirical model used for the analysis because the model/method is open-ended. Earnings timeliness investigates whether accounting numbers can capture economic consequences in a timely fashion. Earnings are of higher quality if they can capture economic events in a timelier fashion. A major problem for earnings timeliness is that it is difficult to find a measure for economic consequences.[4] Furthermore, the three types of earnings quality can be viewed in terms of accounting-based or market-based analyses. Earnings persistence is categorised as accounting-based analysis whilst value relevance is classified as market-based analysis. For earnings timeliness, it can be viewed in terms of either market-based or accounting-based (through accrual information) analysis. Hence, this thesis attempts to investigate those three perspectives of earnings quality.

1.2.2 Accounting Quality and New Accounting Standards

For decades, Thailand has developed its own accounting standards to proxy underlying economic events. Before coming into force, new accounting standards

[4] It should be noted that earnings timeliness is divided into conditional and unconditional timeliness of earnings. More details will be explained in relating chapters.

established by the accounting standards setter (ICAAT) must receive the approval of the Board of Supervision of Auditing Practices (BSAP) under the Ministry of Commerce. Accounting standards setting in Thailand is therefore under public (government supervision) rather than private enforcement (accountants and auditing professions oversee themselves). Due to the financial crisis in Thailand, an outcome of the massive shock is the government's decision to not only reform the accounting standards formulated on IFRS and US GAAP to meet higher quality of accounting information but also reorganise the accounting standard establisher.[5]

In terms of accounting quality, the principal research problem has been built upon three key previous works. Graham et al. (2000), Ball et al. (2003) and Davis-Friday et al. (2006) attempted to explain the quality of accounting information in Thailand. They investigate earnings quality for Thai firms in terms of value relevance and timeliness. Despite establishing its own accounting standards, Ball et al. (2003) commented that reported earnings in Thailand had conformed closely to tax-based accounting income because of being under a government mandate even though there were substantial forces from the IASC and moderate influences from UK accounting (Ball et al. 2003, pg.240). Ball et al. (2003) argued further that tax-based accounting information (precisely, income) in Thailand causes Thai accounting information to be less sensitive to changes of economic consequences (i.e. market value changes). They concluded that among emerging markets, including Hong Kong, Malaysia and Singapore, Thailand had the lowest information transparency, representing the lowest quality of accounting information during the testing period between 1984 and 1996. Because Ball et al. (2003) did not include in their samples when Thailand experienced the financial crisis of 1997, Davis-Friday et al. (2006) documented that during the period of the 1997 economy downturn; the value-relevance of earnings information in Thailand

[5] On 29th January 2005, the Federation of Accounting Professions (FAP) was officially formed and took over both the duty and authority of ICAAT and BSAP, transferring from public to private enforcement of accounting standards settings. Consequently, new accounting standards generally should bring higher quality of accounting information in Thailand.

from 1996 to 1997 had decreased and there was significant association between book value and market value of the firm as this finding was also observed in the well-developed market (i.e. US). Furthermore, Davis-Friday et al. (2006) categorised the Thailand accounting system as an IFRS-based accounting, not a tax-based accounting income system. In addition to the study by Davis-Friday et al. (2006), Graham et al. (2000) indicated the Thai accounting information was value-relevant during the period 1992 – 1998.

Ball et al. (2003) summarised that earnings in Thai firms cannot capture economic events in a timely fashion. Three explanations account for these counterintuitive results:

1) Even though Thai accounting rules are closely based on tax code, the market is able to value this information, especially when economic circumstances has considerably altered[6],
2) As postulated by the prior empirical work that lower sensitive accounting information based on tax-based accounting income does not timely reflect underlying economic performances during normal economic circumstances[7], if Thai dormant accounting information is able to incorporate economic consequences[8], the accounting number will probably be obscured and it draws further investigation (for example, the Thai accounting system is not based on tax purposes but on well-structured accounting systems – i.e. the IFRS-based system), or
3) The Thai market perceives the torpid accounting information and interprets it differently from what has been done by the investor in well-developed markets.

[6] Davis-Friday et al. (2006) and Graham et al. (2000) evidenced the value-relevant book value and earnings in Thailand during the economy distress.

[7] Ball et al. (2003) argued that the Thai accounting system before the Thai economic crisis (during the period 1984 to 1996) was less sensitive in capturing economic change.

[8] In their conclusions, Graham et al. (2000) argued that Thai accounting information had value relevance during their testing period between 1992 and 1998. Davis-Friday et al. (2006) supported their findings.

This thesis investigates the improvement of accounting quality in Thailand in two aspects. First, the persistence of earnings is analysed. The persistence of earnings is a study of earnings predictability. Previously, Thailand had been used the rule-based accounting system, that Thai firms were not required to perform forecasting measurements, i.e. expected future cash flows. The Thai accounting standard setter claims that the new accounting standard as the principle-based accounting system provides more reliable accounting information relative to the old accounting standard. Second, this thesis analyses the value relevance of accounting information. The accounting information is considered to be useful when users (i.e. investors) can use it for decision making. In terms of the capital market investment, share prices reflect the market's expecion on firm's net cash flows. When implementing the new accounting standard in Thailand, accounting information should be more useful because it reflects more firms' true performance that is expected by the market. In addition to the earnings persistence and value relevance, this thesis investigates the existence of earnings timeliness in financial statements that is an additional quality that the new accounting standard prefers the firm to employ. More details are explained in related chapters.

This thesis expands the investigation of the earnings persistence in Thailand by including an institutional factor in the analysis.[9] In addition to the persistence of earnings, Graham et al. (2000) and Davis-Friday et al. (2006) investigated the variation of the left-hand side whether reported earnings were capitalised by share prices; accounting information quality is a function of market value as dependent variable and accounting numbers – book value and earnings as independent variables. However, this thesis basically assumes that the economy remains unchanged but the accounting system has been altered. The analysis of accounting quality in this study, in turn, deals with the change in accounting standards for book value and earnings calculations rather than the effect of

[9] Pincus, Rajgopal and Venkatachal (2007) investigate accrual anomaly in 21 countries, including Thailand during 1994–2002. The published research about earnings persistence as a part of accrual anomaly analysis in Thailand can be found in their work.

economic downturns. Since IFRS-convergence is anticipated to improve the quality of accounting information, IFRS should be fully embedded in the Thai accounting regime. The value relevance analysis in this thesis also includes the institutional factor in the investigation. Finally, this thesis investigates the timeliness of earnings by using different existing regression models and incorporates the institutional factor in the investigation. The institutional factor used in this study is the difference between book income and taxable income (or book-tax differences). More details will be explained in section 1.2.4. Figure 1.3 depicts the main research analysis (Part I).

1.2.3 Accounting Quality and Firm Governance

Accounting standards alone are not sufficient conditions to be used for the estimation of accounting information quality in terms of the ability in reflecting economic income or losses (this quality is known as earnings timeliness) (Ball et al. 2003). This argument should be applied to the other two earnings attributes of quality – earnings persistence and value relevance. This thesis investigates further about influencing factors other than accounting standards affecting accounting information quality by analysing the relationship between accounting quality and firm governance systems.

Figure 1.3 Research focus (Part I): Accounting quality and accounting regime

<table>
<tr><th>Period</th><th>Before 1998</th><th>Y1998</th><th>Y2000</th><th>Y2005</th><th>Y2007</th></tr>
<tr><td>Accounting Standard</td><td colspan="2">TAS</td><td colspan="3">New TAS + IFRS or US GAAP</td></tr>
<tr><td>Accounting Body</td><td colspan="3">ICAAT</td><td colspan="2">FAP</td></tr>
<tr><td>Accounting Regime</td><td colspan="2">Tax-based system</td><td colspan="3">GAAP-based system</td></tr>
<tr><td>Research Focus - Part I</td><td colspan="5">The improvement of accounting information quality is anticipated during IFRS post-adoption in Thailand.</td></tr>
</table>

TAS – Thai Accounting Standards; FAP – Federation of Accounting Professions; IFRS – International Financial Reporting Standards; ICAAT – Institute of Certified Accountants and Auditors of Thailand

A considerable amount of empirical research studies have explored the role of corporate governance on accounting information quality in terms of accounting information value-relevance and earnings timeliness.[10] Because the corporate governance in itself does not directly affect accounting numbers which are proxies of underlying economic contents, this study views 'corporate governance' as an indirect parameter fostering financial information quality overall. Nevertheless, one distinctive duty of the audit committee in Thai firms is for the accuracy and sufficiency of information presented on financial reporting.[11]

One example of the relationship between corporate governance systems and accounting quality is the connection between corporate governance and firm valuation process (the value relevance). The connection between corporate governance and firm valuation process can be found through accounting reliability.[12] As one of three committees is the financial reporting expert, this audit committee's expertise and responsibility discourage the firm's manager to manipulate accounting information, i.e. reported earnings.[13] Thus, if corporate governance through audit committees can reduce the degree of accounting information manipulation, the accounting number should be more reliable.[14]

[10] For example, Goncharov, Werner and Zimmermann (2006) examined the value relevance of corporate governance on firm valuation process. Fan and Wong (2002) and Jung and Kwon (2002) studied the role of ownership structure affecting earnings. Vafeas (2000) examined the effect of board structure on earnings. Ahmed and Duellman (2007) study the relationship between earnings timeliness and corporate governance systems.

[11] Qualifications and Duties of Audit Committees, Notification of Stock Exchange of Thailand No. 1, 1999.

[12] This thesis views reliability in a general sense as unconditional accounting conservatism, i.e. income/expense recognition or increase/decrease of asset values are to be performed according to the condition indicated in the accounting principles. Whelan and McNamara (2004) documented that when earnings are unreliable, the value relevance will shift from earnings to book value information; when book values are unreliable, the value relevance will shift from book value to earnings information.

[13] For example, the corporate governance system enforces firms to write-off assets if all conditions indicated in the accounting principles are met.

[14] It is unavoidable to question whether or not the reliability of accounting information is problematic and should be determined before estimating the effect of audit committee on accounting information quality (specifically the value relevance). It is due to the fact that the audit committee and the information quality is not directly connected. Bao and Bao (2004, pg. 1526) quoted the argument of Dechow and Skinner (2000) that earnings management causes management incentive which finally is linked to the firm's share price. A significant effect of earnings management on financial reporting has not been found in prior literature (Bao and Bao 2004) because with reference to the efficient market hypothesis earnings management is not

Incidentally, as with the notion that Thai accounting information is sluggish due to the close link to income tax laws, the injection of corporate governance policy may not fully impact on accounting numbers unless the accounting measurement method has served for the demand of users, i.e. investors, creditors or analysts. On the other hand, if the Thai accounting system is an IFRS-based system, the corporate governance policy will be one fostering mechanism for accounting information quality prepared for public purposes, i.e. investment in the capital market. Even though Thai financial reporting is more likely to be based on tax rules, the second part of this study is to investigate whether the firm governance system, i.e. audit committee, impacts on accounting information quality in Thai settings. This is motivated by Dechow and Schrand (2004, pg.102) who argue that the corporate governance system encourages the value relevance of accounting information. In addition to the value relevance analysis, this thesis applies this notion to the analysis of earnings persistence and earnings timeliness.

In sum, this thesis attempts to find a relationship between accounting quality and firm governance systems. If the relationship is observed, the firm governance system will be one factor inducing the variation in accounting quality in Thai settings. In other words, the analysis in part I attempt to investigate the enhancement of accounting information quality during IFRS post-adoption periods relative to pre-adoption periods. If findings report variations in the improvement of accounting information quality among firms, this thesis considers that such variations are potentially induced by the firm governance system.

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important when there is full disclosure and small cost/effort to access the information of management incentive (Dechow and Skinner 2000 quoted in Bao and Bao 2004, footnote 4, pg.1526). It infers that the market will be able to fully capture accounting information reliability. Particularly, in the long run, this thesis considers that the market will be able to price differently between firms with and without earnings manipulation. For these reasons, the existing empirical research with regard to the value relevance investigation (among others, i.e. Goncharov et al. 2006 and Vafeas 2000) has directly incorporated corporate governance components into the value-relevance fundamental analysis in a long-window period by estimating the interaction-effect of earnings and corporate governance factors on the firm's share price or return. Such existing research did not investigate the reliability before examining the value relevance of accounting information. Therefore, based on the existing study this thesis directly investigates the relationship between accounting quality (earnings persistence, value relevance and earnings timeliness) and corporate governance systems.

Consequently, Figure 1.4 depicts the analysis (Part II) to support the principal research problem (Part I).

Figure 1.4 Research focus (Part II): Accounting quality and firm governance

Period	Before 1999	Y1999	Y2000	Y2007
Corporate Governance	Independent Director	Independent Director + Audit Committee		
Accounting Regime	From the result of Part 1, the Thai accounting regime can be either 1) tax-based income accounting or 2) IFRS-based accounting.			
Accounting Quality	The enhancement of accounting information quality during IFRS post-adoption is expected.			
Research Focus – Part II	There is a relationship between accounting quality (earnings persistence, value relevance and earnings timeliness) and firm governance.			

1.2.4 The Use of Book-Tax Differences

In general, accounting income is classified as income calculated from accounting standards. Accounting income will be adjusted to agree with tax rules for income tax calculations. Accounting income (or reported earnings) is, thus, different from taxable income. The difference between book income and taxable income is defined as book-tax differences. The larger book-tax difference indicates the higher deviation between book income and taxable income, implying that GAAP rules are more likely to be employed for financial reporting relative to tax rules.

As described by prior research, Thailand is considered as a tax-based accounting income system. It indicates that Thai firms are more likely to use tax rules for financial reporting preparations relative to GAAP rules. One potential consequence from using the tax-based accounting income system is a lower quality of accounting information generated by the firm because accounting information is to serve government policy (tax collections) rather than the capital market.

Another argument is about cost associated from the difference between book income and taxable income. Firms in the tax-based accounting income environment probably tend to reduce costs incurred from re-stating accounting income prepared by GAAP to taxable income for tax payments. Cost reductions would be beneficial for investors.

It should be noted that tax rules are more restrictive than GAAP rules, i.e. penalties involved for the violation of tax rules. Accounting income prepared by tax rules should be more persistent relative to accounting income prepared by GAAP when setting everything else constant. Therefore, the tax-based accounting income system induces a predictability of accounting information.

According to above views and arguments, it is problematic for inferences to be made from the difference in book income and taxable income. This study views that IFRS-convergence alters the Thai accounting regime. If Thai firms are more likely to employ IFRS for financial reporting, the Thai accounting regime should be transitioned from a tax-based to a GAAP-based accounting income system. To observe the transition of accounting regime for Thai settings, this thesis proposes the use of book-tax differences.

In addition to the accounting regime transition, this study aims at investigating the quality of accounting in Thailand. Because the prior literature suggests that the GAAP-based accounting income system facilitates a higher quality of accounting information relative to the tax-based accounting income system, the transitioning of the accounting regime to the GAAP-based system should induce a better quality of accounting information in Thailand as a consequence. The book-tax difference is employed to evaluate the variation of accounting quality among Thai firms. Even though IFRS has been adopted, some firms probably still employ tax rules for their financial statements. The book-tax differences, brings this empirical investigation to a firm-level analysis. The rationale of the use of book-tax difference is to determine the incentive of the firm. The book income and taxable income in Thailand are calculated by using a same basis which is the accrual basis. Thus, the book income and taxable income should be moved in the same direction. The gap between the book-tax difference has been driven by the temporary difference and/or permanent difference. Although the book and taxable income are caluculated by the accrual basis, the rule for taxable income calculation is more restricted than accounting standards. New accounting standards based on the principle-based accounting system allow firms to have more opportunities to do accounting dicretions. Thus, if holding the taxable income constant, firms who intend to manage book income by increasing the book income, the gap between book income and taxable income will be larger. On the other hand, the gap between book income and taxable income will be smaller if firms intend to decrease their book income. However, this thesis argues that it is less likely for firms to decrease their book income. It is due to the fact that book income is likely to be low because of the accounting conservatism. At the other point of view, if holding book income constant, firms who have aggressive tax activities are more likely to have low taxable income. Then, the book-tax difference for this case will be larger. By these reasons, this thesis employs the book-tax difference to proxy firms' incentives. This thesis will incorporate book-tax differences into the analysis of all three perspectives of accounting quality (earnings persistence, value relevance and earnings timeliness). Because the relationship between book-tax differences and each attribute of accounting quality is different, more explanations will be presented in related chapters.

1.3 Statement of the General Hypothesis

This section explains the development of three general hypotheses to respond to the principal research problem. More specific hypotheses for each perspective of accounting quality will be elaborated in particular chapters. This thesis defines accounting quality as earnings persistence, value relevance and earnings timeliness; this is consistent with a large number of prior studies. Accounting information is a proxy to represent unobservable underlying economic constructs. Information users demand useful economic constructs for their decision making or relevancy before considering what and how a proxy of economic constructs is determined (Maines and Wahlen 2006). Maines and Wahlen (2006) suggest that accounting information relevance stimulates measurement and reporting reliability. However, they further argue that information reliability is an essential but not adequate characteristic for the efficient use of applicative information. Because of the different perspectives of reliability and relevancy, it is controversial to differentiate as to whether reliability or relevancy is more important.

According to the statement of the Chairman of the International Accounting Standards Committee of Foundation Trustees (IASC Foundation Annual report 2006, pg.4), IFRS convergence brings high quality standards to countries that adopt them. This statement implies that the adoption of IFRS should provide better quality accounting information. Although more than 100 countries around the world have adopted IFRS in their accounting systems,[15] there are only a few research studies which examine the transition of accounting standards. As a principles-based accounting system, IFRS allows firms to use their discretion. However, Dechow and Schrand (2004, pg.102) suggest that IFRS encourages value relevance. Most prior studies investigate the improvement of accounting quality after IFRS-adoption through analysis of value relevance. The results of these studies, however, are mixed and inconclusive (i.e. Prather-Kinsey 2006; Barth et al. 2008).

In this study, I address whether accounting quality is enhanced when converging the domestic accounting system to international accounting standards. I employ Thai data for the analysis as it has adopted IFRS for several years and now these new accounting standards should be fully implemented. Analysing a single country minimises the variation of market environment (Leuz 2003). In addition, although they use the same set of accounting standards, accounting quality can be varied across countries due to the dispersion of domestic investors (Alford et al. 1993). Graham et al. (2000) find that the value relevance of Thai book values and

[15] Report of the Chairman of the IASC Foundation Trustees, International Accounting Standards Committee Foundation Annual Report 2006, pg.2.

earnings declined during the financial crisis. However, Davis-Friday et al. (2006) report that the value relevance of earnings declined but the value relevance of book values increased during the financial crisis. Prior studies suggest that Thai accounting information is value-relevant and the value relevance of the Thai accounting summary measures reflects economic consequences. It is controversial whether IFRS brings a higher quality of earnings than domestic accounting standards due to country-specific factors (Barth et al. 2008). Nevertheless, based on Barth et al. (2008), I have an ex ante prediction that earnings quality is enhanced after the accounting system change. As a result, the first general hypothesis in an alternative form is as follows:

General hypothesis 1

Accounting quality is enhanced after IFRS adoption.

Prior research provides evidence of accounting quality in different accounting regimes (Alford et al. 1993; Ali and Hwang 2000). Existing studies suggest that accounting information in code law countries is less sensitive to economic income and loss, implying a lower accounting quality (Ball, Kothari and Robin 2000; Ball et al. 2003; Ball and Shivakumar 2008). For example, Ball et al. (2003) argue that code law system countries are more likely to employ tax-based accounting systems that have a low ability to capture economic outcomes. Burgstahler, Hail and Leuz (2006) show that the number of firms in countries using tax rules for financial reporting purposes engaged in earnings management is greater than that in countries which use GAAP-based income. As a result, earnings informativeness is lower for countries where firms have large book-tax conformity.

In terms of the relationship between book income and taxable income, Guenther, Maydew and Nutter (1997) argue that it is difficult for firms to employ different accounting methods to increase taxable income or tax deductions, without increasing revenues or expenses in financial statements. For example, the estimated expense of warranty claims can be expenses in financial reporting, but it cannot be a tax deduction unless economic performance has occurred. The condition in references to economic performance is sufficient, but not necessary for financial statement purposes (Guenther et al. 1997). In addition, high book-tax conformity violates stock exchange rules and increases potential costs, i.e. high tax payment and information loss (Hanlon, Laplante and Shelvin 2005; Hanlon, Maydew and Shevlin 2008). Guenther et al. (1997) argue that the book-tax difference occurs because of the underlying different incentives between financial and tax accounting. Accounting conservatism attempts to detect firms which understate expenses or overstate revenues; on the other hand, tax rules detect understated revenue and overstated expense. Mills (1998) reports that Internal Revenue Service audit adjustments increase as book-tax differences increase. This implies that book income information reflects tax activity.

Due to the different law and tax policies, firms in the tax-based accounting system may employ accounting standards in different ways from firms in the GAAP-based accounting system. The adoption of IFRS in tax-based accounting environments versus a GAAP-based accounting system possibly affects accounting quality differently (Ali and Hwang 2000). In GAAP-based accounting income systems, at the level of a given firm's performance, reported earnings can be varied through different accounting treatments used. The book-tax difference in GAAP-based accounting income system has twofold: i) assuming that all firms had used the same tax strategy, at the level of a given firm's performance, book-tax differences in GAAP-based accounting income systems reflect the management's intention of using accounting standards and ii) on the other hand, assuming that all firms had used the same accounting treatment, at the level of a given firm's performance, the difference of book income and taxable income reflects the level of aggressiveness in tax activities. In tax-based accounting income system, at the level of a given firm's performance and tax strategy, firms are more likely to use tax rules for reported earnings. However, it is possible that tax rules do not cover all accounting transactions; book-tax differences still exist.

In this thesis, I investigate accounting quality in Thai firms by partitioning firms according to the magnitude of book-tax differences between the pre- and post-adoption period. I use book-tax differences to distinguish firms' incentives in two areas; the use of accruals and tax activity. All else being constant, the argument is that new accounting standards implemented in the Thai tax-based accounting system will enlarge the difference between book income and taxable income due to the increasing opportunity to use discretionary accruals (Dechow and Schrand 2004, pg.113-114). However, the larger book-tax difference during post-adoption periods may be generated by aggressive tax planning. When comparing between earnings manipulation and tax activity in Thai settings, there is a higher variation in engagement in managing accruals among firms because aggressive tax planning is limited by law enforcement and tax audit and adjustment (Mills 1998).

In addition, I employ book-tax differences to construct firm portfolios because: i) the study of accounting quality and accounting system transition has not investigated the change in patterns of book-tax differences when the accounting system has been changed, and ii) in a tax-based accounting income system, IFRS adoption results in larger book-tax differences, at an unchanged level of tax activity. The larger book-tax difference reflects either the implication of principles-based accounting or management's incentives in the area of accruals, if tax activity is held constant. However, it should be noted that smaller book-tax differences in the post-adoption period are not free from management discretions. New principles-based accounting standards allow firms to have more opportunity to perform more accruals. It will be problematic if the management is likely to perform opportunistic or informative earnings management to increase, decrease or smooth reported earnings. For example, Tucker and Zarowin (2006) suggest that informative earnings management is observed through income smoothing.

Based all above arguments, the second general hypothesis in an alternative form is as follows:

General hypothesis 2

Accounting quality is varied according to the magnitude of book-tax differences.

Accounting quality is also influenced by the indirect parameter as aforementioned. Based on the general hypothesis 2, if the variation in accounting quality among firms is observed, this thesis proposes that a firm's governance system is a potential factor inducing the variation in accounting quality. Therefore, this leads to the third general hypothesis stating in an alternative form.

General hypothesis 3

There is an association between accounting quality and firm governance systems, influencing the variation in accounting quality among firms.

It should be noted that the analysis is divided into three perspectives of accounting quality. More detailed explanations about the development of hypotheses for each perspective, including earnings persistence, value relevance and earnings timeliness, are introduced in chapter 4 (H.4.1 – 4.3), 5 (H.5.1 – 5.3) and 6 (H.6.1 – 6.2), respectively. It also should be noted that general hypotheses 1 and 2 are to respond to the principal research problem whereas general hypothesis 3 is to respond to the supporting research question.

A summary of all research questions and alternative hypotheses is presented as follows:

Principal research problem

"whether the quality of accounting information is altered in Thai accounting regime and capital market environments between pre- and post-adoption accounting standards."

General hypothesis 1

Accounting quality is enhanced after IFRS adoption.[16]

Hypothesis 4.1 (H.4.1):

Earnings are of higher persistence after the adoption of IFRS in Thailand.

Hypothesis 5.1 (H.5.1):

The value relevance of accounting summary measures is enhanced after the adoption of IFRS in Thailand.

General hypothesis 2

Accounting quality is varied according to the magnitude of book-tax differences.

Hypothesis 4.2 (H.4.2):

When comparing between pre- and post-adoption periods, earnings persistence is related to book-tax differences

Hypothesis 5.2 (H.5.2):

When comparing between pre- and post-adoption periods, the value relevance is related to book-tax differences.

Hypothesis 6.1 (H.6.1):

Earnings timeliness is more pronounced when Thai listed firms exhibit larger book-tax differences.

Supporting research question

"whether the firm governance system affects the accounting information quality in Thailand."

[16] It should be noted that general hypothesis 1 is applied to the analysis of earnings persistence and value relevance but not the timeliness of earnings. It is due to the fact that the earnings persistence and the earnings timeliness have an opposite perspective. In particular, the earnings timeliness will be less likely for firms with higher persistence of earnings relative to firms with lower persistence of earnings. Therefore, if the alternative hypothesis 4.1 is not rejected, the earnings timeliness will be less likely after the adoption of IFRS in Thailand.

General hypothesis 3

There is an association between accounting quality and firm governance systems, influencing the variation in accounting quality among firms.

Hypothesis 4.3 (H.4.3):

Earnings persistence varies according to the firm governance system in Thailand.

Hypothesis 5.3 (H.5.3):

The value relevance varies according to the firm governance system in Thailand.

Hypothesis 6.2 (H.6.2):

There is a positive association between firm-specific conservatism measures and book-tax differences in Thai settings.

1.4 Motivation of the Study

First of all, the motivation for this study is to investigate whether accounting quality is generally improved by new accounting standards in Thailand by expanding it to include an institutional factor – the magnitude of book-tax differences. Thailand, as a rule-based accounting income country, has changed its accounting system by adopting International Financial Reporting Standards (IFRS) since 2000. These accounting standards should now be fully embedded.

In the Accounting Act. (2000), it clearly states in the footnote of the Act that accounting principles and practices in Thailand were out of date and did not support the change in economic circumstances. Therefore, Thai accounting system must be updated. By these reasons, this thesis attempts to examine whether accounting quality has been enhanced after IFRS adoption in Thailand by focusing on a long-window period. This thesis investigates the improvement of accounting quality in two main aspects – the persistence of earnings and the value relevance of accounting information. In addition to the analysis of improvement of accounting quality, this thesis investigates the existence of earnings timeliness in Thai settings.

Next, it should be noted that prior studies had explored accounting quality in a single market (Ball and Shivakumar 2005; Leuz 2003). This research focuses on the improvement of accounting quality in the Thai accounting system due to at least four reasons. Firstly, as IFRS are expected to be applied for all countries, firm specific and institutional factors, i.e. business culture and system, economic circumstances and the tax system vary and can influence the effectiveness of IFRS implementation in the country. In addition, the effects of these factors are not easily identified on the implementation of IFRS in domestic countries. Focusing on accounting quality in one market can minimise the variations of market incentive and economic environment. Secondly, it is of interest to investigate the IFRS adoption in the country where their financial reporting is greatly influenced by the domestic tax system. This allows me to explore the pattern of the accounting income system when it has been moved from the tax-based to GAAP-based accounting income system. Thirdly, firms must absorb costs incurred by the adjustment process in terms of tax payments calculated from GAAP-based financial statements. If Thai firms are likely to avoid high costs incurred from the adjustment for tax payments, they will be more likely to keep employing the tax-based accounting income system. If Thai firms are to keep using their tax-based accounting income system, the significant enhancement of accounting quality after IFRS adoption should be less likely. The change in pattern of accounting income system provides an overview picture of the use of IFRS in Thailand. Lastly, because Thai firms' financial reporting is largely based on income tax rules, the investigation of Thai firms' accounting quality allows this thesis to estimate the deviation between book income and taxable income (or book-tax differences) and use the alteration in book-tax differences as proxy to obtain more insightful information about the discretion of firms' insiders. This is due to the fact that new accounting standards still allow for firms' discretion, and a prior study suggests that the magnitude of book-tax differences reflects accounting quality (Hanlon 2005).

In addition to applying the use of book-tax differences in the study of accounting quality in Thai settings, this thesis proposes that the firm governance system plays an important role in terms of inducing the quality of accounting information in Thailand. This is motivated by the prior study (Dechow and Schrand 2004) as aforementioned.

Lastly, to the best of my knowledge, this is the first study investigating the enhancement of accounting quality after IFRS adoptions in Thailand by expanding the conditioning institutional factor to include the magnitude of book-tax differences. This thesis considers that the magnitude of book-tax differences is a useful proxy when estimating the development of accounting systems in Thai settings because: i) this thesis uses the magnitude of book-tax differences to observe the Thai accounting system whether it has been transitioned from the tax-based to GAAP-based accounting income system; and ii) new Thai accounting standards as principles-based systems are likely to provide room for more accounting discretion relative to old accounting standards as rule-based systems. The scale of book-tax differences should reflect such discretion.

1.5 Contributions to the Knowledge

This research investigates accounting quality in the Thai accounting regime. Accounting quality is defined by three long-window perspectives, including the persistence of earnings, the value relevance of accounting information and the timeliness of earnings information. Exiting studies evidence the change in accounting quality after IFRS adoptions in different countries. The main contribution of this study is to add existing published literature that has been silent on the analysis of accounting quality in Thailand. In particular, this thesis contributes to the knowledge in different aspects as follows.

Firstly, this research adds to the literature in terms of accounting quality in Thailand, on which prior research has been silent. A number of research studies have examined accounting quality in developed countries (i.e. Barth et al. 2008). However, existing published research has been silent on investigating earnings persistence and timeliness in Thai capital market.

Secondly, this research analyses accounting quality after the accounting change in Thailand. Prior research studies investigate the value relevance of Thai accounting information during financial crisis in Thailand. Theoretically, those research studies conjecture that accounting information reflects the change in economic circumstances. In particular, the left-hand side of the value relevance analysis (market value of the firm) is assumed to be substantially altered. However, this thesis focuses on the change in the Thai accounting system (earnings and book value information has been changed) and attempts to examine whether Thai accounting information prepared by new accounting standards are useful to the market. Specifically, in terms of the value relevance analysis, this thesis examines whether the market responds to the change in Thai accounting information prepared by new accounting standards.

Thirdly, this thesis observes the change in Thai accounting regime during IFRS post-adoption. This observation is essential for accounting standard setters in Thailand. Even though IFRS has been adopted in a tax-based accounting income system, a firm’s incentive to employ tax rules for financial reporting may exist. Any attempts performed by accounting standard setters to adopt IFRS in Thailand are meaningless if it appears that Thai firms still employ tax rules for financial statements.

Next, this thesis employs the book-tax difference to determine the transition of the Thai accounting regime and the change in Thai accounting quality during IFRS adoptions. The book-tax difference has been employed to examine accounting quality in only US firms, but this thesis employs the book-tax difference to investigate accounting quality in non-US firms. Additionally, the published literature has been silent on incorporating book-tax differences to the analysis of earnings timeliness in Thai settings.

In addition to examination of the improvement of accounting quality in Thai firms, this research investigates whether firm governance systems induce the variation in accounting quality among Thai firms. This investigation adds to existing literature and suggests that indirect parameters are not futile but rather that they are necessary tools to encourage the use of accounting standards, then leading to the enhancement of accounting quality in Thailand.

Lastly, balanced-panel data are employed for the analysis of earnings persistence and value relevance for Thai settings. A number of prior studies have employed firm-year observations. It should provide more powerful inference for the study of accounting quality when using a longitudinal dataset.

1.6 Structure of the Study

The remainder of the thesis is divided into six chapters:

Chapter 2

The background of the Thai accounting regime and capital market is introduced in chapter 2. It describes IFRS adoption in Thailand and the accounting-related policy of the Thai capital market.

Chapter 3

The theoretical framework for each perspective of accounting quality is explained in chapter 3. In addition to the theoretical framework, this chapter discusses the existing literature. The review of literature relates to the persistence of earnings, the value relevance of accounting information, the timeliness of earnings, the use of book-tax difference and the study of accounting quality in different settings of firm governance systems.

Chapters 4

Chapter 4 presents an investigation of earnings persistence. Specific hypotheses are explained and developed. The panel dataset has been used for the main investigation. However, all firm-year observations are applied to support the main analysis. In addition, the association between earnings persistence and firm governance factors are examined.

Chapters 5

Chapter 5 presents an investigation of the value relevance of earnings and book value. Like Chapter 4, detailed hypotheses are elaborated. The main analysis employs the longitudinal dataset during 1995 – 2004. All firm-year observations are applied for the robust check. This chapter also presents the association between the value relevance and firm governance factors.

Chapters 6

The study of earnings timeliness is presented in Chapter 6. More detailed hypotheses are identified. Firm-year observations are examined in different models. The investigation of unconditional earnings conservatism and firm governance factors is presented in this chapter.

Chapter 7

The last chapter is the conclusion of the study. It discusses findings from the study, recommendations and suggestions for future research.

Chapter 2

Thai Accounting Environments

Chapter 2
Thai Accounting Environments

2.1 Introduction

This study aims at understanding accounting information quality and the accounting regime when there are changes in the Thai accounting system and the association between corporate governance and accounting information in Thailand. This chapter elaborates the development of the accounting system in Thailand to provide the background information about the Thai accounting system. Thailand has been using accounting laws since 1962. The change in accounting laws causes several impacts on accounting environments in Thailand, i.e. accounting standard reforms, accounting body reorganisations, and accounting professions and education. This chapter focuses only on the discussion about the impact of accounting laws on changes in accounting information quality in Thailand. In addition to the Thai accounting system, this chapter covers the Thai capital market and its accounting-related regulations. In particular, the Stock Exchange of Thailand (SET) is the other regulator whose rules, i.e. corporate governance policy, also affect accounting quality. This chapter is organised by an exploration about accounting laws presented in section 2.2. It moves on to the Thai accounting body (section 2.3), Stock Exchange of Thailand (section 2.4), and Thai accounting standards (section 2.5). A discussion of the Thai accounting system is presented in section 2.6 and the last section, 2.7, is the chapter summary.

2.2 Thai Accounting Laws

The history of Thai accounting laws in Thai language is provided by Federation of Accounting Professions (FAP).[17] In 1937 (2480 B.E), the first Thai accounting law was drafted by a pioneer, Luang Dhamri-isranuwat, to promote Thai accounting professions to be legally acknowledged and supported by the Thai Government as with other professional bodies in the country. However, the

[17] http://www.fap.or.th/fap/?q=node/21 [accessed 18th October 2007]

number of Thai accountants who were members of the Thai accounting body at that time was rather small. The first necessary mission thus was to increase the number of Thai accountants; therefore, the accounting education had been provoked rather than attempting to establish the accounting law during that time. This led to the suspension of the first draft until 1962 (2505 B.E). During the period without an accounting law to regulate the Thai accounting profession, in 1948 (2491 B.E) Thai accountants had gathered and formed themselves as the Institute of Certified Accountants and Auditors of Thailand (ICAAT), a self-regulated organisation. The ICAAT was mainly regulating accounting practices and issuing Thai Accounting Standards (TAS) after the Auditor Act 1962 was promulgated.

In 1962 (2505 B.E), the Thai Congress sanctioned the first accounting profession law which was officially known as the "Auditor Act – 1962 (2505 B.E)." Regarding the Auditor Act, the new government entity known as the Board of Supervision of Auditing Practices (BSAP) was established to formally regulate accounting practices in Thailand. Several main duties of BSAP were auditor license authorisation and accounting practice promotion as well as ICAAT supervision. ICAAT was consequently under the mandate of BSAP. Publishing the Thai Accounting Standards (TAS) under the authorisation of BSAP was the major responsibility of ICAAT. After the long term use of the Auditor Act, there were several attempts to revise the 1962 Act to update complex business transactions, since the economic and business situation had significantly changed over time. Until 2004 (2547 B.E), the long-term effort, primarily because of many changes in new Thai government, was ultimately successful by authorising the Accounting Professions Act 2004 (2547 B.E) promulgated officially on 23rd October 2004, leading to the withdrawal of the Auditor Act 1962. An additional result, according to the Accounting Professions Act 2004, was the discontinuation of ICAAT.

Nevertheless, the foremost purpose of the Accounting Professions Act (previously the Auditor Act) has been to promote and regulate auditors, i.e. certifying financial statements rather than accounting practitioners, i.e. book-keeping. In 1972 (2515 B.E) the Revolution council released the Notification of the Revolutionary Council No. 285 (1972, 2515 B.E) to regulate book-keeping for companies in Thailand, for instance, which transactions must be journalised and what details must be shown in accounting records. Thus, since 1972, there were two accounting Acts in effect: one was responsible for auditing professions and the other regulated accounting services. In 1997, Thailand had deteriorated after the financial bubble burst, resulting later in the collapse of the Thai economy. The Thai Government decided to improve the accounting system by authorising a new accounting Act, namely the Accounting Act 2000 (2543 B.E), and finally terminated the Notification of the Revolutionary Council No. 285. In sum, there are now two accounting laws in effect, which are the Accounting Act 2000 and the Accounting Professions Act 2004. Table 2.1 presents the summary of the development of accounting laws and accounting bodies in Thailand.

Table 2.1 Accounting Laws and Accounting Body Development in Thailand

Year 1937	Year 1948	Year 1962	Year 1972	Year 2000	Year 2004
Provocation of Accounting Education	Establishment of ICAAT	Auditor Act and Establishment of BSAP	Notification of the Revolutionary Council No. 285	**Accounting Act (In Force)**	**Accounting Professions Act (In Force)**
			1997 Financial Crisis	Withdrawal of Notification of the Revolutionary Council No.285	Discontinuation of ICAAT and withdrawal of Auditor Act

Note: ICAAT = Institute of Certified Accountants and Auditors of Thailand
BSAP = Board of Supervision of Auditing Practices

2.3 Thai Accounting Body

In 1948, the Institute of Certified Accountants and Auditors of Thailand (ICAAT) was officially established, principally to encourage accounting practices and issue as well as revise accounting standards. After ICAAT had been run for more than fifty years, it was discontinued and, in 2005, the Federation of Accounting Professions (FAP), a new juristic body, assumed the responsibilities from its former body (ICAAT) under the authority of the Accounting Professions Act 2004. FAP is committed to[18]

- *Maintaining the international level of accounting profession standards, qualities and ethics*
- *Regulating auditors and accountants to perform accounting services in accordance with accounting profession standards and laws*
- *Promoting education and training and provide consultation for accounting practitioners and issue accounting practical guidelines*
- *Coordinating with international organisations for the exchange of accounting knowledge and experience, and promote the role of FAP to regional and international recognition*
- *Encouraging the development and use of financial reporting to improve reliability and transparency and promote good governance*
- *Participating in the prescription of laws and regulations relating to the accounting professions*
- *Improving harmonisation and cooperation to maintain the accounting professions, and*
- *Promoting good governance in the Federation of Accounting Professions*

In addition, the Act constitutes the independent accounting standard board which has responsibilities for setting exposure draft and Thai Accounting Standards. Those standards must be authorised by the BSAP before coming into force, however.[19] Further information about FAP can be found on the website http://www.fap.or.th.

2.4 Stock Exchange of Thailand (SET)

Details in English about the establishment of the Stock Exchange of Thailand (SET) can be found on the website http://www.set.or.th. This thesis focuses only

[18] Federation of Accounting Professions, Missions. [online] Available from: http://www.fap.or.th/about/index.php?id=2 [accessed 18th October 2007]

[19] Securities and Exchange Commission, Thailand (2007), Implementation of the IOSCO Objectives and Principles of Securities Regulation: Principle 16. [online] Available from: http://www.sec.or.th/sec/iosco/Content_0000000755.jsp?categoryID=CAT0000014&lang=th [accessed 18th October 2007]

on the important SET rules affecting Thai accounting renders of the firm where their shares are publicly traded in the capital market.

First of all, the Second National Economic and Social Development Plan (1967-1971, 2510 B.E – 2514 B.E) instituted for the first time a systematic security market in order to mobilise additional funds to support industry and national economic development. SET, established in 1974 by the Securities Exchange of Thailand Act 1974 (2517 B.E), set out official securities trade in Thailand since 30th April 1975. Becoming a dynamic stock exchange in 1992, a supervisory authority, the Securities and Exchange Commission (SEC) was organised in conformity with the new law – the Securities and Exchange Act (SEA) 1992 (2535 B.E). This movement has encouraged the Thai capital market into a further step by separating the capital market supervised by SEC from the money market which had until then been under the responsibilities of Bank of Thailand (BOT). With respect to SEA-1992, the Thai capital market has been developed by partitioning the market into a primary market for the initial public offering (IPO) securities and a secondary market where both are under the oversight of SEC. SET has divided the securities trading board into a main board and a foreign board since 1987. The foreign board is primarily for foreign investors who would like to have their names registered on company's shares that they hold. Foreign investors can hold shares traded on the foreign board only. Trading on the foreign board provides privileges for foreign investors who are limited by Thai commercial laws to hold only a certain percentage of shares in Thai firms, i.e. right to buy new shares offerings and receive dividends. Above all, foreign investors are able to trade securities on the main board but only through their brokers who will hold shares on their behalf; and, as regards trading on the main board, they are not entitled to receive those privileges. On 21st June 1999, SEC initially operated a new securities market – the Market for Alternative Investment (MAI) to support and strengthen as well as mobilise additional capital for small and medium-sized enterprises (SMEs) in Thailand. The website of MAI for more details is http://www.mai.or.th. MAI also has both main and foreign boards.

Consequently, Thailand has run two securities markets – SET and MAI since 1999.

In 1993, corporate governance was formally instigated to listed firms by requiring the appointment of two independent directors. The corporate governance was reformed in 1999, that SEC has required all listed companies on both trading markets constituting at least three members on the audit committee in accordance with the Code of Best Practice for Directors of Listed Companies, which was initially enacted in the same year. Therefore, since 1999 firms with shares trading on the Thai stock market have organised corporate governance including at least three members of the audit committee and two independent directors. Table 2.2 shows summary information about Thai capital market development.

Table 2.2 Thai Capital Market Development

Thai Capital Market		
Supervisory Entity: Securities and Exchange Commissions (SEC)		
	Stock Exchange of Thailand (SET)	Market for Alternative Investment (MAI)
Securities trade commencing year	1975	1999
Trading boards	Main board and Foreign board Foreign board commencing in 1987	
Good governance enacting year	1993 and 1999	1993 and 1999
Requirements for the listed company	Shareholder equity fully paid at least Thai Baht (THB) 300 Million (~£4.3 Million) - At least 1,000 minor shareholders - At least three audit committees - Accounting Standards required	- Shareholder equity fully paid at least Thai Baht (THB) 20 Million (~£290,000) - At least 300 minor shareholders - At least three audit committees - Accounting Standards required

2.5 Thai Accounting Standard (TAS)

After establishing ICAAT in 1948, Thailand published accounting standards for business entities performing in the country. Before 2004, Thai Accounting Standards (TAS) were published by ICAAT under BSAP mandates. Although FAP has undertaken the duties of ICAAT since 2004, the accounting standards must still be authorised by BSAP as a government entity before officially being in force. However, BSAP does not have duty about the content in Thai accounting standards.

Thailand modified TAS many times to meet the change in economic and business events. Nevertheless, those changes did not considerably reform the Thai accounting system until Thailand had been massively shocked by the burst of the Thai economic bubble in 1997. The collapse of the economy in 1997 accelerated to ameliorate TAS a few years later. Following the financial crisis, the Accounting Act 2000 was promulgated, and by the authorisation of the Act, on 26th December 2000 the Notification of BSAP No. 42/2000 was announced, to declare what TAS must be applied for Thai firms. Before 1997, there were 31 accounting standards being used. The Notification indicated the withdrawal of 21 accounting standards with the remaining ten accounting standards being retained, including TAS No. 7, 11, 14, 24, 25, 26, 27, 29, 30, and 31. With reference to its announcement, BSAP announced 19 new accounting standards from 1st January 2000, including TAS No. 32–49 and the Accounting Framework. In 2005, another three new accounting standards were in enforcement. By the fiscal year ended 2006, there were 32 accounting standards in use. This considerable amendment of accounting standards has been reckoned as the first substantial accounting reform in Thailand since 1948. As clearly expressed in the Accounting Act 2000, this accounting reform is to initiate the quality of accounting information in Thai businesses. Since the new TAS mostly complied with selective International Financial Reporting Standards (IFRS)[20] published by IASC to suit Thai business, this implies that the reform has submitted accounting information quality for international recognition.

Although TAS is applied for all firms in Thailand, in its Notification No. 10/1998 (2541 B.E) and Policy Statement on Code of Best Practices of Directors of Listed Companies, SEC has regulated and specified accounting standards especially for

[20] IFRS, during that period, was formerly named International Accounting Standards (IAS).

firms listed on the stock exchange by stating that in the event of no Thai accounting guidelines covering the existing issue, IFRS or US GAAP can be employed, respectively. This is due to the fact that TAS does not cover some other complicated transactions, i.e. accounting for income tax. Listed firms in Thailand must employ accounting guidelines published by the International Accounting Standards Committee (IASC) and the American Institute of Certified Public Accountants (AICPA), respectively. This regulation, with penalties, has been strictly in effect since the company financial year ended 1997. In consequence, the publicly traded firm in Thailand utilises TAS as a minimum requirement for its accounting procedures and SEC rules have also been compulsory. A tabular summary presenting a comparison of TAS and IFRS is presented in Appendix 1.

In conclusion, FAP is currently recognised as an authority organisation for accounting practices in Thailand. However, SET also regulates the accounting rule for publicly share trading firms. Therefore, listed firms have to perform accounting procedures in conformity with both organisations. It should be noted that TAS is considered as a basis standard for all firms doing business in Thailand.

2.6 Discussion of the Thai Accounting System

Most empirical studies in international accounting policy (i.e. among others, Ball, Kothari and Robin 2000; Bartov et al. 2001a; Arce and Mora 2002) have argued about the difference between code law and common law regime and their effect on accounting information. For example, Ball et al. (2000) reported that in more than 40,000 firm-year samples for the period 1985–1995, on average, timely and conservative accounting incomes in code law countries, including France, Germany and Japan, were significantly less than those in common law countries, including Australia, Canada, the US and the UK. They argue that political group, payout policy through dividends, manager's discretion and tax system are factors leading to the less timely and less conservative accounting income in code law countries.

However, recently IFRS has been harmonised in many countries around the world, including Thailand as a code law and tax-based accounting income country. This adoption should provide and encourage better quality accounting information. However, even though IFRS has been harmonised in domestic accounting systems, this thesis considers that IFRS adoption is a part of many influencing factors stimulating accounting information quality in IFRS-adopted countries, i.e. ownership structure (i.e. Fan and Wong 2002; Jung and Kwon 2002; Hovey, Li and Naughton 2003 and Wang 2006) and corporate governance mechanism (i.e. Beekes et al. 2004; Bushman et al. 2004; and Goncharov et al. 2006). It is essentially of interest to investigate whether their empirical inference (i.e. Barth et al. 2008) can be applied to Thai settings.

One major point considered by this thesis is the institutional problem in Thai settings. As Thailand has long been a tax-based accounting income system, Thai firms have used tax rules for reporting their financial statements (Ball et al. 2000). A priori conjecture views the Thai accounting regime as a tax-based accounting income system because of the structure of its accounting standard settings. If accounting income is based on tax purposes, accounting income is likely to be less sensitive to economic reality. Nevertheless, IFRS adoption in Thailand is to promote accounting information quality. Thus, the IFRS adoption should help to bring about a better quality of accounting income in Thai firms. If this is the case, Thailand's accounting regime should move to a well-developed accounting system after the IFRS adoption.

Regardless of presenting true economic outcomes on their financial statements, firms are unlikely to change their accounting policies as long as those policies are allowed by accounting standards because of the potential cost incurred from the change. On the other hand, firms are likely to employ GAAP rules rather than tax rules probably because of the demand from market, i.e. creditors or domestic and foreign investors, or the intention to present the true value of the firm. Thus, it is of interest to explore whether the Thai accounting system has actually been reformed. Much of prior research (i.e. Ball et al. 2000 and Barth et al. 2008) investigates the improvement of accounting quality by comparing pre- and post-IFRS adoption or studying in international contexts. Even though this thesis examines the general enhancement of accounting quality in a single emerging market, namely Thailand, it is not only to examine the change in accounting quality during IFRS post-adoption in Thailand but attempts to investigate whether the change in accounting quality during IFRS post-adoption is varied according to firms' incentives as well. This thesis employs the book-tax difference as a proxy of firm's incentives. This attempt should provide better understanding about IFRS adoption and the use of IFRS in Thailand.

2.7 Chapter Summary

This chapter explains the Thai accounting system and its capital market environment. Thailand has recently adopted the international accounting standard for its business. This adoption attempts to promote a quality of accounting information in Thailand. Not only has the accounting system been reformed but also Thai security markets have reinforced the attempt to improve accounting information quality in Thailand by regulating the use of accounting standards and the constitution of audit committees in publicly held firms. This thesis is interested in exploring whether accounting information quality in Thailand has been improved after these several endeavours or whether Thailand only uses these activities as labels. On the contrary, if an improvement in accounting information quality in Thailand has not been observed, one can argue that IFRS adoption may not be suitable for some particular countries, especially countries that have been using tax rules for financial reporting purposes for a long time, i.e. Thailand.

Chapter 3
Theoretical Framework and Literature Review

Chapter 3
Theoretical Framework and Literature Review

3.1 Introduction

This chapter comprises two main parts: the theoretical framework and the review of existing literature. In part I (section 3.2), the theoretical framework is divided into five sections. The first three sections (section 3.2.1 – 3.2.3) describe related approaches of three earnings properties, consisting of earnings persistence, the value relevance (or accounting valuation) and the timeliness of earnings. In addition to earnings properties, the explanation of book-tax differences (section 3.3.4) and firm governance system (section 3.3.5) are presented. The first part of this chapter provides background about earnings quality, the book-tax difference and corporate governance. The second part of this chapter presents the review of related literature (section 3.3). Consistent with part I, the related research for earnings persistence, the value relevance and earnings timeliness is presented in sections 3.3.1 – 3.3.3, respectively. Sections 3.3.4 – 3.3.5 present prior study of book-tax differences and firm governance system, respectively. The last section (section 3.4) is a chapter summary.

3.2 Theoretical Framework

The first part of this chapter explains existing theoretical approaches used in prior literature. This thesis divides accounting quality in three categories: earnings persistence, value relevance and earnings timeliness. Among three aspects of accounting quality, much prior research performs analysis of value relevance and earnings timeliness. Even though earnings persistence has been explored in accounting research for decades, the theoretical explanation of earning persistence is still debated in various aspects, i.e. the determinant of earnings persistence. Among three earnings qualities, the value relevance analysis has been widely used by prior research when investigating the change in accounting systems. The most influential approach for value relevance analysis has been explained and presented by Ohlson (1997). However, the debate on the usefulness of accounting information to explain firm values has been an ongoing process. The third property of earnings quality, earnings timeliness or accounting conservatism, has been extensively explored in the literature. A number of accounting research studies about earnings timeliness were published after Basu (1997) defined conditional accounting conservatism as the different recognition of bad news and good news and used stock returns to proxy economic consequences. Much of following research has employed his approach for the study of conditional accounting conservatism. In addition to those three accounting qualities, this section explains the use of book-tax differences and the theoretical approach of the firm governance system.

3.2.1 Theory of Earnings Persistence: The Predictive Approach

One property of earnings that is widely debated among accounting research studies is the persistence of earnings. Generally speaking, the persistence of earnings (summary measures) reflects the quality of accounting. In terms of analysts' forecast ability, higher persistence of earnings induces higher predictability of earnings because forecasting errors should be reduced according to the persistence of earnings. A recent study (Dichev and Tang 2009) suggests that knowledge about the predictability of earnings is still debated.

The earnings persistence estimation performed in this thesis is to measure the predictability of current earnings information on future earnings; the theory applied to this analysis is known as the predictive approach (Riahi-Belkaoui 2000, pg.332).[21] For financial statement preparations, there are alternative accounting methods that firms are allowed to employ. To reduce the difficulty of evaluating those alternative accounting methods, the predictive approach is utilised to differentiate accounting choice by investigating the predictability of particular accounting methods. The predictive approach is to measure the prediction ability of accounting methods due to the fact that accounting information must facilitate

[21] The predictive approach described throughout this section is based on Riahi-Belkaoui (2000, pg.332-333) and italics are from the original.

the decision-making of the user. Riahi-Belkaoui (2000, pg.332) suggests that two criteria should be considered. First, the model employed by the user is descriptive rather than normative. Therefore, *it is difficult to identify and define all the decision models.* The second is about the absence of *a criterion for the choice of relevant information*.

With regard to the predictive approach, prior accounting studies have attempted to measure whether earnings are persistent by using several methods, including a time-series analysis, fundamental analysis and economic determinants.

3.2.1.1 A Time-Series Analysis

A time-series analysis is a method of prediction of economic events and examines temporal statistical dependencies in a data set (Riahi-Belkaoui 2000, pg.333). Freeman, Ohlson and Penman (1982) suggest that changes in earnings cannot be predicted, meaning that future earnings can either decline or increase. Accounting researchers attempt to predict future earnings by using a time-series model. A time-series analysis suggests that "*an estimate of the expected earnings of firms is based on the past earnings series"* (Foster 1977). The specified model used to estimate future earnings is (Sloan 1996):

$$\text{Earnings}_t = \beta_0 + \beta_1 \text{Earnings}_{t-1} + \varepsilon_t \tag{3.1}$$

3.2.1.2 Fundamental Analysis

The knowledge about fundamental analysis in this section is based on the view expressed by Penman (1992). Valuation has been extensively explored in the literature. The classical approach to value a firm is that the present value is a function of future expected dividends. Firms' payoffs must be predicted to determine the present value. Thus, price relies on future dividends but observed dividends do not inform as to price (Penman 1992). In addition, dividend policy is independent from firm value according to the Miller and Modigliani dividend irrelevancy proposition. Penman (1992) considers that dividend payout is the event which occurs after closing accounting summary measures, earnings and book value. Therefore, earnings and book value must be summarised before the payout policy comes into action. Therefore, the prediction of future earnings (book value) is essential for the present value estimation. There are two approaches to price the firms, consisting of pricing current earnings and pricing book value. First, pricing current earnings suggests that *accounting earnings are not value attributes but information about value attributes (future dividends)* (Penman 1992). Pricing current earnings is derived as:

$$P_t + d_t = \phi X_t \qquad (3.2)$$

where ϕ is a price/earnings (PE) ratio; P is share price; d is dividend and X is earnings. Second, pricing book value is derived as:

$$P_t = B_t \qquad (3.3)$$

where B is book value.

Thus, fundamental analysis suggests that we must know what future earnings and book value will be next year/in the future. Empirical evidence shows a significant relationship between future earnings and fundamental signals, including inventory, gross margin, effective tax rate, earnings quality, and labour force (Abarbanell and Bushee 1997).

3.2.1.3 Economic Determinants

According to economic theory, a set of relatively constant, i.e. firm-specific characteristics, induces firms' earnings generating process in a persistent basis (Baginski, Lorek, Willinger and Branson 1999). Lev (1983) argues that a random walk hypothesis reports the persistence of earnings 'on average'. When the persistence of earnings in an individual firm is identified, the behaviour of such earnings persistence differs from the on average random walk process. He further argues that stability of earnings was found when employing cross-sectional rankings of book rate of return (ROE). This considerable stability of earnings process is due to economic determinants (Lev 1983). If accounting techniques affect firms' earnings generating process, the effect will be examined by the parameter estimated in a time series model (Watts 1972 quoted in Lev 1983). In a similar vein, if the impact of economic factors is found in firms' earnings generating process, the explicit relationship between economic factors and earnings generating process must be identified.[22] At least four observable economic factors are commonly used and identified (Baginski et al. 1999), that these economic traits induce the persistence of earnings, including firm size, product-type, barriers-to-entry and capital intensity.

In conclusion, the persistence of earnings is to predict future earnings, facilitating decision-making to the user. A time-series analysis is to measure the property of earnings at an average level whilst the economic determinants approach attempts to identify the property of earnings at an individual firm level.

3.2.2 Theory of Accounting Valuation

The website of The International Accounting Standards Board (IASB),[23] an independent, privately-funded accounting standard-setter, states that the principal objectives of IASB are *"to develop a single set of high quality, understandable, enforceable and globally accepted international financial reporting standards (IFRSs) through its standard-setting body, the IASB; to promote the use and rigorous application of those standards; to take account of the financial reporting needs of emerging economies and small and medium-sized entities (SMEs); and to bring about convergence of national accounting standards and IFRSs to high quality solutions."* During the past decade, many countries have adopted their

[22] *"for example, that a change in depreciation method is generally associated with a change in capital intensity (e.g., a large investment in fixed assets leads managers to a switch from straight-line to the accelerated depreciation method). If the degree of capital intensity affects the time-series properties of earnings, it would be erroneous to attribute an observed change in the earnings time-series model to the switch in depreciation method."* (Quoted from the original, Lev 1983).

[23] http://www.iasb.org/The+organisation/IASCF+and+IASB.htm. [online access 2 January 2010].

accounting system in alignment with IFRS. This convergence have essentially attracted global academic researchers' attention to explore whether the IFRS-harmonisation brings better quality of accounting measures to explain underlying economic constructs in their countries. The IFRS adoption has been growing all around the world, i.e. Europe (Spain, Czech Republic, Poland and UK), North America (Mexico), Africa (South Africa), and Asia (Thailand).

In case of accounting reforms or accounting changes, one competent theory widely used in academic empirical research is the fundamental analysis. In accounting-based analysis, the fundamental analysis refers to the study of firm valuation process. According to Kothari (2001, pg.109), *"it (fundamental analysis) aids our understanding of the determinants of value, which facilitates investment decisions and valuation of non-publicly traded securities"* (parentheses not in original). A branch of fundamental analysis in accounting-based research is valuation analysis. Broadly speaking, valuation theory holds to the determination of intrinsic value of share prices compared to current share price. The valuation analysis is mainly the study of whether information is useful or value-relevant. In particular, value-relevance research investigates the relation between market value as dependent variable and a set of accounting measures (Holthausen and Watts 2001). An accounting measure is identified as "value relevant" if it is significantly associated with the dependent variable (Beaver 2002). Kothari (2001, pg.173) proposes that the theory is required to support the value relevance analysis. Consistent with Kothari's argument, Holthausen and Watts (2001) argue that the value-relevance analysis lacks descriptive theory to draw inferences for accounting standard settings but they conclude that two theories are inferred from the value-relevance study: direct valuation theory and inputs-to-valuation theory. The next two sections (3.2.2.1 and 3.2.2.2) are devoted to the explanation of these theories based on the work of Holthausen and Watts (2001).

As criticised in prior theoretical literature, the value relevance study is considered as descriptive statistics without a reasonable conceptual explanation. For example, Verrecchia (1998, quoted in Lee, 1999) argued that a valuation study is *"a very simple idea…with no economic context."* Nevertheless, like other research areas, value-relevance study, a long-history investigation, is controversial (Beaver 2002). In his presidential lecture, given at the 2001 American Accounting Association Annual Meeting, Beaver (2002) contributed to the value-relevance literature about the conceptual explanation of value-relevance research. In this speech, Beaver said that the theoretical description about value-relevance research consists of the combination of valuation model and contextual accounting arguments. The valuation and contextual accounting argument is described in section 3.2.2.3.

In sum, the accounting valuation theory includes three theories: direct valuation theory, input-to-valuation theory and the valuation and contextual accounting argument. The valuation model is elaborated in section 3.2.2.4.

3.2.2.1 Direct Valuation Theory

Direct valuation theory refers to either the investigation of the association between share market value changes or levels and earnings or book values of equity or measurement of share market value changes or levels by using accounting earnings and book values of equity. The theory contains two features: i) the association approach and ii) the measurement approach (Holthausen and Watts, 2001 footnote 4). These approaches have absolutely different concerns. The association approach refers to the usefulness of accounting measures and the relevant statistics of this approach is the R^2. The measurement approach focuses on the accuracy of accounting numbers and the relevant statistics is the coefficient of accounting information relative to its predicted value.

3.2.2.2 Input-to-Valuation Theory

Input-to-valuation theory suggests that accounting plays as an information provider, supporting input-information to investors in the firm valuation process. In other words, input-to-valuation theory is a selection process to facilitate a decision of what accounting measure or potential accounting number among existing alternatives provides better results in valuing firms. An incremental association study is an example which is based on an input-to-valuation theory.

3.2.2.3 The Valuation and Contextual Accounting Argument

Beaver (2002) suggests that although lacking a general theory of accounting to explain accounting-based valuation research, valuation models plus contextual accounting arguments can be used for the explanation of the conceptual foundation of value-relevance study, i.e. the contextual accounting argument of the economic substance (asset vs. obligation) of pension contracts between employers and employees that its interpretation depends on the benefit plan, or the contextual accounting argument of the use of fair value vs. historical costs in the prediction process. The valuation model performs by discriminating price when a different argument is used.

3.2.2.4 Valuation Models

This section summarises valuation models normally employed by researchers to provide background knowledge in terms of value relevance analyses. This attempts to provide theoretical background in the form of econometric rather than descriptive explanations.

The formula of valuation models being presented in this section is based on prior literature, including Beaver (2002), Dechow, Hutton and Sloan (1999), Kothari (2001), Lee (1999), Lippitt and Mastracchio (1993) and Penman (2006). The most pervasively known and understandable valuation model is the dividend-discounted model (DDM). Another valuation model with a similar concept of

DDM is a discounted cash flow valuation model (DCF). Several transformations have been made to DDM. Products of DDM include the earnings capitalisation model (Fama and Miller 1972, quoted in Kothari 2001) and the residual income valuation model (Ohlson 1995, quoted in Lee 1999). Most valuation models are based on DDM because of their essentially identical assumptions, basically consisting of: i) growth rate and ii) long time horizon. These qualities require the "best guess" for implementing the models.

Discounted Dividend Model (DDM)

Discounted dividend model is rather straightforward in calculating the value of companies. It estimates the value of firms by discounting the firm's dividend in perpetuity. Two features must be determined to calculate the value of companies: forecast of dividend and discount rate. The descriptive formula is:

Firm value = Expected future dividend discounted by the discount rate

The descriptive formula is presented in mathematical form:

$$P_0 = \frac{d^*_1}{r_1} + \frac{d^*_2}{r_2} + \frac{d^*_3}{r_3} + \ldots \qquad (3.4)$$

where P_0 is share price at time 0,
d^* is expected future dividend at time 1,2,3,…, and
r is a discount rate at time 1,2,3,…

Gordon (1962, quoted in Kothari 2001) simplified DDM by adding a growth rate. Assuming the discount rate (r) is fixed over time and the dividend growth (g) is at the constant rate $g < r$, then

$$P_t = \frac{(d^*_{t+1})}{(r - g)} \qquad (3.5)$$

where P_t is share price at time t,

d^*_t is expected future dividend at time t,
r is a discount rate (the required rate of returns), and
g is a growth rate.

Discounted Cash Flow Valuation Model (DCF)

Similar notions of DDM are applied to derive a discounted cash flow valuation model. However, rather than using expected future dividend to determine firm value, accounting cash flow is used instead. This model, therefore, embeds accounting policy through cash flow calculation. The present value of cash flow in perpetuity is used to determine firm value and calculated by:

$$P_t = \frac{(CF^*_{t+1})}{(r - g)} \tag{3.6}$$

CF^* = Cash flow from operations – Cash investment

where P_t is share price at time t,
CF^*_t is expected cash flow at time t,
r is a discount rate (weight average cost of capital)[24], and
g is a growth rate.

Earnings Capitalisation Model (ECM)

Earnings capitalization model (ECM) determines firm values by dividing the adjusted accounting earnings by a capitalisation factor. Like DDM and DCF that dividend and cash flow continue indefinitely, ECM assumes that the earnings are continuing value, relating to long time horizon. A difficult task for this model is the estimation of a capitalisation factor (Pratt, 1989 quoted in Lippitt and Mastracchio 1993) and this becomes problematic. Nevertheless, a capitalisation factor can be obtained from the market or built up from a computation of risk free rate and risk premium to derive an appropriate rate (Lippitt and Mastracchio

[24] The weighted average cost of capital (WACC) should be employed as the discount rate for this case. It is due to the fact that cash flows include both debt and equity; cost of debt and cost of equity are appropreate factors. In terms of discounted dividend model (DDM), the discount rate is the rate required by investors because intvertors expect to receive dividend paid by the firm.

1993). Lippitt and Mastracchio (1993) documented that the accounting earnings used for the calculation in this model are adjusted for the item that reduces unrealistic numbers, i.e. non-recurring item such as depreciation. The formula of ECM is:

$$V = \frac{ER}{I} \tag{3.7}$$

where V is firm value estimate,
ER is adjusted earnings, and
I is a capitalisation factor.

Residual Income Model (RIM)

Lee (1999, pg.415, footnote 4) documented that the residual income model was an early study of financial economists, for instance, Preinreich (1938) and Edwards and Bell (1961). However, the model has recently received enormous attention from both academics and investment houses after Ohlson (1995, quoted in Kothari 2001) revived the model by incorporating rigorously impressive assumptions. The residual income model is a valuation model that estimates the value of the company by calculating from capital and all the present value of future wealth-creating activities (Lee 1999). Lee (1999) noted that future wealth-creating activities (or future wealth values) are also known as 'residual income (or abnormal earnings),' the difference amount between earnings and its cost of capital in the period. To derive the equation form:

$$\begin{aligned} \text{Firm value} &= \text{Capital + Present value of all future wealth values} \\ &= \text{Capital + Present value of all residual income} \end{aligned} \tag{3.8}$$

Based on Ohlson (1995),

$$\chi_t^a = \chi_t - (r_e * b_{t-1}) \tag{3.9}$$

where χ_t^a is residual income at time t,

χ_t is earnings at time t,

r_e is the cost of equity capital, and

b_{t-1} is book value (or capital) at time t–1.

RIM in a version different from the predated one defines that the value of the company is a function of current book value and the discounted present value of future abnormal accounting earnings (Kothari 2001, pg.176). Ohlson (1995, quoted in Kothari 2001) has imposed appealing components to the earlier version of the residual income model and this modified model is often known as the Edwards-Bell-Ohlson (EBO) model (Lee 1999). Lee (1999) noted that the EBO model persuasively triggers the study of the association between accounting measures and firm value. However, the model does not incorporate accounting features (or financial reporting) in the equation (because the model still relies on future expected value of abnormal accounting earnings). Lee (1999) noted that EBO is equivalent to the combination of dividend-discounting model and the clean surplus relation (CSR). Lee (1999, pg.416, footnote 5) documented that *"Clean surplus accounting requires that all gains and losses affecting book value are also included in earnings; that is, the change in book value from period to period is equal to earnings minus net dividends ($b_t = b_{t-1} + NI_t - d_t$)."* The EBO equations can be derived as follows:

Dividend-Discounting Model in reduced form:

$$P_t = \sum_{i=1}^{\infty} \frac{E_t(d_{t+i})}{(1+r_e)^i} \tag{3.10}$$

Clear Surplus Relations define as:

$$b_t = b_{t-1} + \chi_t - d_t \tag{3.11}$$

Rewritten equation (3.11), then

$$d_t = b_{t-1} + \chi_t - b_t \tag{3.12}$$

Substitute d_t in (3.10), then

$$P_t = \sum_{i=1}^{\infty} \frac{E_t(b_{t+i-1} + \chi_{t+i} - b_{t+i})}{(1+r_e)^i} \qquad (3.13)$$

Rewritten equation (3.13), then

$$P_t = b_t + \sum_{i=1}^{\infty} \frac{E_t(\chi_{t+i} - (r_e * B_{t+i-1}))}{(1+r_e)^i} - \frac{E_t(b_{t+\infty})}{(1+r_e)^{\infty}} \qquad (3.14)$$

The last term in equation (3.14) is assumed to be zero as it is diminishing; then deriving equations (3.15) or (3.16)

$$P_t = b_t + \sum_{i=1}^{\infty} \frac{E_t(\chi_{t+i} - (r_e * B_{t+i-1}))}{(1+r_e)^i} \qquad (3.15)$$

$$P_t = b_t + \sum_{i=1}^{\infty} \frac{E_t((ROE_{t+i} - r_e) * B_{t+i-1})}{(1+r_e)^i} \qquad (3.16)$$

Substitute equation (3.9) to (3.15), then

$$P_t = b_t + \sum_{i=1}^{\infty} \frac{E_t(\chi^a_{t+i})}{(1+r_e)^i} \qquad (3.17)$$

where P_t is share price for period t,

d_t is dividend for period t,

b_t is book value for period t,

$E_t[.]$ is expectation based on information available for period t,

χ^a_{t+1} is residual income at time t+1,

r_e is the cost of equity capital assuming constant through time, and

ROE_{t+i} is the after-tax return on book equity at time t+1.

Equation (3.17) is using forecasts abnormal earnings, that this feature is theoretically not different from the dividend-discounting model in terms of using the best guess to estimate the forecasts. Ohlson (1995, quoted in Lee 1999) thus developed the model by formulising two assumptions: i) imposing a time-series structure on the abnormal earnings, and ii) introducing information other than abnormal earnings (or other information or non-accounting information).

The time-series abnormal earnings and non-accounting information process are specified an autoregressive process with one lag (AR1) or modified AR(1). Kothari (2001) noted that the autoregressive process in abnormal earnings has the economic intuition that *"competition will sooner or later erode above-normal returns (i.e., positive abnormal earnings) or firms experiencing below-normal rates of returns eventually exit."* And, the other information represents a rich set of implications, formalising the notion that prices do not only reflect the transaction-based, historical-cost earnings but also other information (Kothari 2001).

These specifications simplify the Ohlson valuation model to estimate firm value by using current-period accounting measures due to the autoregressive process instead of using future expected value (Lee 1999). This imposing method introduced by Ohlson (1995, quoted in Lee 1999) is known as "linear information dynamics" (LID). An appealing feature in the EBO model is that it relaxes forecasts of abnormal earnings that can be obtained from any process (Kothari 2001) that is more direct, i.e. analysts' forecasts of earnings, rather than computing from the discounted present value of earnings or cash flow (Lee 1999). LID maps accounting measures to valuation model. The autoregressive process of earnings and other information is defined as follows (Dechow et al. 1999):

$$\chi^{a}_{t+1} = \omega\chi^{a}_{t} + V_t + \varepsilon_{1,\,t+1} \tag{3.18}$$

$$V_{t+1} = \gamma V_t + \varepsilon_{2,\,t+1} \tag{3.19}$$

where χ_t^a is the abnormal earnings (or residual income) at time t,

V_t is other information,

ε is unpredictable mean zero error term, and

γ and ω are persistence parameters.

According to Lee (1999), equations (3.18) and (3.19) are model's assumptions, not propositions. Testing the assumptions of linear information dynamics may be fruitless because one does not obtain much benefit from rejecting the assumptions (Kothari 2001). In addition, these assumptions logically follow the basics of economic definitions (Lee 1999). The variables in equations (3.12) and (3.13) are specified as an autoregressive process with one lag (AR1) or modified AR(1). γ and ω are both imposed to be non-negative and less than 1. Lee (1999) noted that with this process, we can determine the firm value by using current period accounting measures rather than forecasts of the value.

According to the model, LID assumes that accounting methods are unbiased, meaning that there is no effect of accounting choice on firm value estimation. Kothari (2001) elaborated that different accounting method will be reflected in accounting current book value and earnings and future expected earnings. Kothari (2001) explained this limitation issue as: i) the model, like DDM, is not useful for the purpose of financial reporting, ii) analysts' forecasts also use accounting choice for their abnormal earnings estimation,[25] and iii) if future abnormal earnings are viewed as economic rents,[26] accounting choice will become important.

[25] This thesis considers that accounting choice has already been embedded in analysts' forecasts that result in forecasted earnings, therefore accounting choice affects the valuation process in the form of forecasted earnings.

[26] Schoemaker (1990, pg.1179) documented that "To Pareto and Marshall *(economic)* rents referred to the difference between a resource's payments in its best and second best use (see Alchian 1988; Rumelt 1987)." (italics not in original) According to the accounting perspective, economic rents refer to the use of different accounting treatments to provide different consequences, i.e. the pooling of interest method vs. the purchase method for a merger (Kothari 2001).

The residual income model in equation (3.17) plus LID assumptions in equation (3.18) and (3.19) can derive:

$$P_t \quad = \quad b_t + \alpha_1 \chi_t^a + \alpha_2 V_t \tag{3.20}$$

where $\alpha_1 = \omega/(1 + r_e - \omega)$

$\alpha_2 = (1 + r_e)/(1 + r_e - \omega)(1 + r_e - \gamma)$

From the above equations, RIM has been derived from dividend-discounting model. However, accounting information is embedded to dividend-discounting model only through clean surplus relations (equation 3.11). Feltham and Ohlson (1995 and 1996, quoted in Lee 1999) have modified LID and allowed *"current book value to provide information about future residual income."* In the modified LID, assets are separated into the net operating assets and net financial assets of the firm. This allows the role of conservative accounting on valuation model (Lee 1999). For example, book value can be defined as cash balance in the firm and earnings are non-cash balance excluding dividend; the usefulness of accrual accounting can be estimated which results from clean surplus relations (Dechow, Hutton and Sloan 1999). In addition, other information or V_t can be imposed to be zero (Stober 1999) if one is concerned only with accounting measures and firm valuation relationship or it is rather difficult to be estimated (see Dechow et al. 1999 to the estimation of V_t).

Price Level and Return Regressions

In the value relevance study, many research studies have used price level model and/or return regression for their analysis and the models have been adopted and designed in several versions to fit the research question (i.e. among others Barth, Beaver and Landsman 1998; Burgstahler and Dichev 1997; and Collins, Maydew and Weiss 1997). Lee (1999) noted that those empirical studies often credited Ohlson (1995) for implementing these models. Price level and return regressions are often employed for panel data in the analysis. They are defined as follows, respectively:

$$P_{it} = \alpha_o + \alpha_1 b_{it} + \alpha_2 x_{it} + \varepsilon_{it} \quad (3.21)$$

$$Rt_{it} = \alpha_o + \alpha_1 b_{it} + \alpha_2 x_{it} + \varepsilon_{it} \quad (3.22)$$

where P_{it} is share price of firm i, for period t,
Rt_{it} is share return of firm i, for period t,
b_{it} is the reported book value of firm i, for period t,
x_{it} is the reported earnings of firm i, for period t, and
ε_{it} is unpredictable mean zero disturbance term.

From equation 3.21 and 3.22, the parameter, α_2, is also known as earnings response coefficient (ERC).[27]

To distinguish the use of price level and return (first difference) models, Beaver (2002) suggested that when the research design is to estimate what accounting measures are reflected in firm value, price level will be appropriate. However, return regressions are used to determine the change in firm value over a specific time period; time is of importance when using return model. The value relevance models, price level and return regressions, are often employed to estimate share mispricing when accounting policy has been changed (or when accounting treatments are different) by comparing the explanatory power of the model before and after the change in accounting policy (or comparing the difference of explanatory power between alternative accounting methods) (see Holthausen and Watts 2001; Kothari 2001). Other than using book value and earnings as independent variables, some research papers include other information as regressors (i.e. Martinez 2003; Ely and Pownall 2002; and Dontoh, Radhakrishnan and Ronen 2004).

[27] Collins, Maydew and Weiss (1997, pg.45, footnote 8) noted that price level regression was adopted from Ohlson (1995) model by taking out the discounting earnings term $(1 + r_{it})/r_{it}$ from the original model, according to Maydew's (1993) finding that *"allowing discount rates to vary across firms does not significantly improve the explanatory power of the model."* (Italics from original, quoted from Collins et al. 1997, footnote 8).

Kothari (2001) documents that accounting-based valuation model is derived from dividend-discounting model which is attributed to Williams (1938, quoted in Kothari 2001). The basic theory of dividend-discounting model applies to the market value of the firm to equal the present value of expected future dividend-discounted at risk-adjusted expected rate of return (Kothari 2001). As financial statements principally serve investment purposes (Barth et al. 2001, quoted in Holthausen and Watts 2001),[28] researchers have long been searching if accounting data are relevant for equity investment. Penman (1992, quoted in Lee 1999) triggered market-based research to consider the fundamental analysis while most empirical research papers focused on information flows in the capital market, i.e. empirical testing in the area of efficient market hypothesis. Mounting of value relevance analyses can be observed after a parsimonious model, Ohlson (1995) and Feltham-Ohlson (1995) residual income model (Kothari 2001, pg.175). Lee (1991) documents that RIM is already determined as a standard technique in many investment firms after four years of RIM being presented (see also O'Hanlon and Peasnell 2002). This thesis considers that the valuation analysis has recently caught stakeholders' attention because of: i) easily to implement model and ii) understandable models with rigorous assumptions.

In conclusion, the value relevance analysis attempts to investigate the relevancy of accounting information. Even though there is no accounting theory supporting the valuation process, the valuation method is useful for the investigation of accounting changes. One issue about the valuation process is that the valuation model is open-ended, i.e. other information being incorporated into the equation 3.20 is subject to information users.

3.2.3 Theory of Earnings Timeliness

The relevance and reliability are limited by timeliness. If firms have waited to gather all information before presenting to the public, such information is

[28] Holthausen and Watts (2001) argue that there are several users of financial statements other than equity investors that accounting standard setting has to be concerned with.

probably very reliable but not relevant. On the other hand, if firms present information to the public without sufficient information, the reliability of such information may be reduced. Timeliness is one attribute of accounting measures (Watts 2003a). Ball et al. (2000) define timeliness of accounting income as the ability of earnings to incorporate returns which occurred in the same period. Timely financial reporting can be thought of as timely accounting recognition presented on financial statements. Accounting recognition of firms' future changes has two general ideas: deferred and timely recognition (Ball and Shivakumar 2005a). Accounting recognition is viewed as 'conservative' when firms recognise losses in more timely manner than gains. A prominent work of Basu (1997) views accounting conservatism as "*capturing accountant's tendency to require a higher degree of verification for recognising good news than bad news in financial statements*". A consequence of accounting conservatism is "*the systematic undervaluation of the entity's net assets (equity) relative to their economic value*" (Givoly, Hayn and Natarajan. 2007).[29]

Conservatism can be defined as: conditional or unconditional (Beaver and Ryan 2004). Beaver and Ryan (2004) detail the definition of conditional and unconditional conservatism as follows:

Unconditional conservatism

Unconditional conservatism (or *ex ante or news independent*) refers to *aspects of the accounting process that are determined at the inception of assets and liabilities yield expected unrecorded goodwill*, i.e. accelerated depreciation. A primary motivation for unconditional conservatism is the difficulty of valuing certain economic assets and liabilities.[30]

Conditional conservatism

Conditional conservatism (or *ex post or news dependent*) means that *book values are written down under sufficiently adverse circumstances but not written up*

[29] Italics in original.
[30] Italics in original.

under favourable circumstances, with the latter being the conservative behaviour, i.e. *lower cost or market value of accounting for inventory and impairment accounting for long-lived tangible and intangible assets*. A primary motivation for conditional conservatism is to counterbalance managers' perceived incentives to report upward-biased accounting numbers when adverse events have occurred.[31]

3.2.3.1 Contracting Theory

Roychowdhury and Watts (2007) argue that no theory has been derived to explain asymmetric timeliness. However, Watts (2003a) has attempted to explain accounting conservatism in a formal way by proposing 'contracting theory'. Contracting theory argues that a number of economic reasons generate conservatism. Conservatism is caused by following reasons (Holthausen and Watts 2004; Roychowdhury and Watts 2007):

1. Debt and management contract purposes: conservatism defers income recognition to ensure that firms' resources are allotted appropriately to parties according to the precedence of claims. For instance, the recognition of income could induce a higher dividend payment, generating the wealth transfer from lenders to shareholders. Earnings-based compensation to management is deferred to be recognised until the management performance is captured by earnings. Conservatism reduces the incentive of management to overstate earnings for their own benefit.
2. Litigation costs and regulator pressures: earnings or assets overstatement can cause a lawsuit compared to understatement of those components. However, greater costs for the overstatement of earnings and net assets are borne by accounting regulators (Roychowdhury and Watts 2007), i.e. the lack of revaluation method of fixed assets in accounting standards (Watts 2003).
3. Book income and corporate income taxes: higher reported income could cause higher income tax. Thus, conservatism through deferred income

[31] Italics in original.

recognition may be used to lower the present value of taxes. Conservatism may encourage the use of tax accounting method for financial reporting purposes.[32]

In light of the assumption of the efficient market, the information asymmetry approach can be used for explaining accounting timeliness. Information asymmetry between firms and the market generates a demand for an income component (Ball et al. 2000). Ball et al. (2000) argue that *"accounting income thus incorporates only the subset of available value-relevant information that is independently observable, whereas economic income incorporates information that is not independent of managers, such as plans and forecasts."*

3.2.3.2 Earnings Timeliness Models

<u>*Market-based model*</u>

Beaver et al. (1980, quoted in Kothari 2001) derive that *"the information set reflected in prices is richer than that in contemporaneous accounting earnings."* Kothari (2001) further explains that share returns reflect the present value of future net cash flows expected by the market. Accrual processes used for earnings determination incorporate the information captured by price changes with multiple-period lags up to four years (Basu 1997). This notion infers share prices leading earnings. Ball et al. (2000) derive a linear specification accounting income-determination model by hypothesising that accounting income is a function of economic income:

$$Y_{it} = (\Delta V_{it}, \Delta V_{it-1}, \Delta V_{it-2}, \Delta V_{it-3}, \ldots, V_{it}) \qquad (3.23)$$

where Y denotes accounting income and ΔV denotes economic income. If ΔV is independent over time, then it is simplified to:

[32] Guenther et al. (1997) investigate this issue and provide evidence of using the tax accounting method for financial reporting purposes (Quoted from Holthausen and Watts 2001).

$$Y_{it} = g_j\,(\Delta V_{it}, \eta_{it}) \tag{3.24}$$

where η_{it} is disturbance term incorporating lagged changes in market value (ΔV_{it-1}, ΔV_{it-2}, ΔV_{it-3}, …). After dividing model (3.24) with opening market value (V_{it-1}), then earnings yield ($NI_{it} \equiv Y_{it}/V_{it-1}$) and annual rate of return ($R_{it} \equiv \Delta V_{it}/V_{it-1}$) are obtained. Then, a linear model is (Ball et al. 2000):

$$NI_{it} = \alpha_1 + \alpha_2 R_{it} + \zeta_{it} \tag{3.25}$$

Model (3.25) is reverse regression because the leading variable is treated as explanatory variable and the lagging variable is treated as dependent variable. OLS standard errors and test statistics are better specified for the reverse regression (Beaver et al. 1980, quoted in Basu 1997).

Basu (1997) provides an explanation of asymmetric earnings timeliness. The recognition of gains (good news) requires a higher degree of verification; a portion of current good news is recognised this period and the remainder will be recognised in future periods. In contrast, current bad news is more likely to be fully recognised in the current period. Thus, *earnings is predicted to be more strongly associated with concurrent negative unexpected returns, proxying for 'bad news', than positive unexpected returns, which proxy for 'good news'* (Basu 1997).

From model (3.25), to specify the negative returns-earnings association, model (3.25) is modified to:

$$NI_{it} = \beta_0 + \beta_1 RD_{it} + \beta_2 R_{it} + \beta_3 R_{it} * RD_{it} + \varepsilon_{it} \tag{3.26}$$

where RD_{it} is a dummy variable; = 1 if $R_{it} < 0$, = 0 otherwise.
For bad news recognition, R^2 and slope coefficient is higher than those for good news recognition.

Accruals-based model

Ball and Shivakumar (2005a) argue that when there is new information, the current and future period cash flows will be revised in the current period. This implies that the current period revision in current and expected future cash flows is positively correlated. They further argue that "*timely gain and loss recognition is based on expected not realised cash flows, and therefore is accomplished through accruals.*" The accruals-based asymmetric model arises because economic gains occur when they are realised whilst economic losses are recognised on a timely fashion as unrealised transactions against income. Therefore, the positive correlation between cash flows and accruals is more pronounced in the case of economic losses relative to economic gains. The model is operationalised in the following way:

$$AC_{it} = \beta_0 + \beta_1 DCF_{it} + \beta_2 CF_{it} + \beta_3 DCF_{it} * CF_{it} + \varepsilon_{it} \quad (3.27)$$

where AC_{it} is accruals;

CF_{it} is cash flows from operation; and

DCF_{it} is a dummy variable; = 1 if $CF_{it} < 0$, = 0 otherwise.

Mean reverting model

The property of earnings persistence differs from that of earnings timeliness (Basu 1997). If earnings information persists, it will not be likely to capture economic outcome on a timely basis. Basu (1997) explains that negative earnings are transitory. Based on earnings timeliness, negative earnings are more likely to reverse in the next period of time. Based on Ball and Shivakumar (2005), the model is performed as follows.

$$\Delta NI_{it}/TA_{it-1} = \alpha_0 + \alpha_1 D_{it} + \gamma_0 \Delta NI_{it-1}/TA_{it-2} + \gamma_1 D_{it} * \Delta NI_{it-1}/TA_{it-2} + \varepsilon_{it} \quad (3.28)$$

where ΔNI_{it} is change in net income;

TA_{it} is total assets; and

D_{it} is a dummy variable; = 1 if $\Delta NI_{it-1} < 0$, = 0 otherwise.

3.2.3.3 Firm-Specific Measurement of Accounting Conservatism

Base on Givoly and Hayn (2002), there are several measures for firm-specific accounting conservatism. Firm-specific measurement of accounting conservatism is also known as unconditional accounting conservatism. First, the accumulation of net negative accruals over time is an indication of conservatism. Because accruals tend to reverse in future periods, the consistence of negative accruals over several periods indicates firms' conservatism. Second, earnings asymmetric timeliness suggests that economic losses are recognised timelier than economic gains. Therefore, the measure of unconditional conservatism can be identified by a negatively skewed earnings distribution. Third, the recognition of anticipated losses induces an increase in variability of the earnings series. Thus, the variability of the earnings distribution is an indication of conservatism. A final measurement of unconditional accounting conservatism is the ratio of markets value divided by book values (market-to-book ratio). The ratio indicates that relative under- or overstatement of assets (and liabilities) captured by the market compared to book. The higher ratio indicates more conservatism, understating assets and overstating liabilities.[33]

In conclusion, earnings timeliness is one property of accounting quality. It is still arguable that the existing literature has attempted to search for a proxy to measure the earnings timeliness. Givoly et al. (2007) suggest that information environment is an influencing factor for the timeliness of earnings.

3.2.4 Book-Tax Differences

Book-tax differences (BT) are defined as the deviation between book-income (earnings) and taxable income. Book income is calculated according to GAAP whilst taxable income is computed based on tax codes. For Thailand, both book

[33] It should be noted that in terms of finance, the market-to-book ratio can be interpreted as growth of the firm. When the market expectation of the company value is greater than the company's book value (i.e. if the ratio is greater than 1), this means that the maket anticipates the good future of such company. In terms of accounting reserch, however, the market-to-book ratio for this case is used as proxy for unconditional conservatism rather than growth and the larger ratio indicates the higher conservatism.

and taxable income are prepared by using an accrual basis. Nonetheless, there are tax exemptions inducing the book-tax difference in Thailand, i.e. depreciation methods or allowance account for bad debt. The book-tax difference can be divided into two categories, permanent and temporary difference.

Permanent differences are reflected in current differences between book and taxable income and the difference will not be deferred to or recovered in future periods. For example, Thai tax rules allow firms to depreciate the value of executive cars as taxable expenses (through depreciation expenses) when the cost of each car is not greater than one million Thai baths (~£18,200). The greater amount of £18,200 is non-tax deductible expenses. Therefore, this transaction generates permanent book-tax differences, that book income is lower than taxable income, all else being constant. Another example of permanent difference is the reserve account, e.g. an allowance account for bad debt. For Thailand, the allowance account for bad debt is realised as expenses against book income in the current period but it is a non-taxable expense.

Temporary differences are incurred according to the timing difference, that book income and taxable income recognise an accounting transaction in different periods of time. The temporary difference can be divided as a deferred tax asset or deferred tax liability. The deferred tax asset will be used as taxable expenses whilst the deferred tax liability will be realised as taxable income in future periods. For example, in Thailand, bad debt expense is realised as expenses against book income in current profit and loss statements. Nonetheless, the amount of bad debt is used to consider whether the bad debt will be used as taxable expenses in the current period. For the low amount of bad debt,[34] bad debt will be realised as taxable expenses when the dispute of bad debt is filed before the court as a prima facie case. For the high amount of bad debt, there must be a verdict from the court against debtors; this event is known as a deferred

[34] It should be noted that for Thailand, the rule for bad debt for financial firms differs from that for non-financial firms (see Thai Tax Code: Ministerial Regulations No. 186 (1991 (2534 B.E)).

tax asset. Deferred tax assets also include the event that firms realise revenue as taxable income in the current period but defer the recognition of revenue as book income to future periods. Thus, deferred tax assets induce the lower book income relative to taxable income in the current period.

For a deferred tax liability, firms defer the expense recognition in their book accounts to future periods but capitalise expenses as taxable expenses in the current period. For example, in Thailand, tax rules allow firms to depreciate fixed assets, e.g. machine and equipment, over at least five accounting periods. However, firms depreciate those fixed assets over ten accounting periods in their book accounts but five accounting periods for tax calculations. In addition to expenses recognitions, firms defer the recognition of taxable income but realise revenue in their current book income. With all else being constant, the deferred tax liability, thus, induces the lower taxable income relative to book income.

The connection between book-tax differences and accounting quality

In terms of the relationship between accounting quality and book-tax differences, temporary differences play a more important role relative to permanent differences. Accounting discretions rendered by firms' insiders against restrictive tax rules induce more timing (temporary) differences in book income and taxable income relative to permanent differences. In terms of the relation between book income and taxable income, Guenther et al. (1997) argue that it is unlikely for firms to use different accounting methods to increase revenues or tax deductions for tax purposes without increasing revenues or expenses in financial statements. For example, the estimated expense of warranty claims can be expenses in financial reporting but cannot be tax deductible unless economic performance has occurred. The condition in reference to economic performance is sufficient but not necessary for financial statement purposes (Guenther et al. 1997). Guenther et al. (1997) further argue that the book-tax difference incurs because of the underlying different incentive between financial and tax accounting.

Accounting conservatism discourages firms to understate expenses or overstate revenues whilst for the government income, the tax rules detect understating revenue and overstating expense. Mills (1998) supports empirical evidence on this argument by reporting that Internal Revenue Service audit adjustments increase as book-tax differences increase. This implies that book income reflects tax activity. This thesis considers that the book-tax difference can be employed to differentiate incentives of a firm's insiders.

However, the use of GAAP can be subject to management discretion and tax rules, i.e. measurement methods, are more concrete than GAAP. The stringent condition of tax rules creates timing book-tax differences (Hanlon 2005). Regardless of the ability to capture economic consequences, the use of more restrictive/less subjective rules, or tax rules, should report small changes in earnings from this period to the next period. Because of this small alteration, using tax rules for financial reporting purposes facilitates the accounting numbers predictability, i.e. higher earnings persistence improves predictability. Hanlon (2005) summarises that firms with large book-tax differences have lower accounting quality in terms of earnings persistence than firms with small book-tax differences. However, it is a trade-off when conforming between book and taxable income. When using tax rules for financial statement purposes, Hanlon et al. (2005) report a 50 per cent loss in the explanatory power of reported earnings. Book-tax conformity incurs tax costs, i.e. audit adjustment and tax examination, and non-tax (financial reporting) costs, i.e. debt covenant violation (Mills and Newberry 2001). Mills and Newberry (2001) report the evidence that between public and private firms, public firms have generally higher non-tax costs that result in larger book-tax gap.

Nevertheless, the use of book-tax differences as proxy of firm' incentives is problematic because book-tax differences can either exemplify discretion in reported income or tax activities (Ayers, Jiang and Laplante 2009; Desai and Dharmapala 2007). Guenther et al. (1997) find that firms defer income recognition in their financial statements when they are required to use the accrual method for tax purposes. That finding suggests the impact of management intention on financial reporting. Desai and Dharmapala (2007) suggest that the magnitude of book-tax differences is a signal of overall tax planning ability. Ayers et al. (2009) find that the information content of book income is not different between high tax planning firms and other firms but the information content of tax income is lower in high tax planning firms than in other firms. In addition, they report that compared to book income information, tax income information in low earnings quality firms has higher ability to explain firm performance than that in high earnings quality firms.

Those studies suggest that large book-tax differences can be derived from either over-reported earnings or aggressive tax planning activity. In addition, Calegari (2000) finds that firms with relatively high book-tax conformity increase debt ratios and minimise income-increasing accruals to achieve tax management and firms with relatively low book-tax conformity employ discretionary accruals by increasing income to accomplish financial reporting purposes (i.e. to avoid debt covenant violation). Mills and Newberry (2001) argue that small book-tax difference may be derived from the incentive to report higher book income resulting in increasing tax income because firms are perhaps willing to forfeit tax dollars. The use of income-increasing accounting practice results in both higher book and taxable income. If this is the case, Mills and Newberry (2001) suggest that it is difficult to find predicted results.

Based on the above discussion, the market is able to use book-tax differences to determine incentives of a firm's insiders. However, the information contained in book-tax differences must be interpreted with caution. The larger (or smaller) magnitude of book-tax differences does not necessarily imply that earnings are of low (high) quality because those scales of book-tax differences are sensitive to a firm's discretions.

3.2.5 Firm Governance System

For the firm governance mechanism, agency theory is a prominent theory that a large number of research studies have utilised. The firm governance system is a monitoring mechanism organised by the firm to mitigate potential problems, i.e. conflict of interests. This section presents descriptive explanations about agency theory and discussion of agency problems and accounting quality.

3.2.5.1 Agency Theory

In a well-known work of theory of the firm and agency costs by Jensen and Meckling (1976), they propose that agency problems occur in a relationship between two parties. One party is defined as an agent and the other is a principal. Agency problems occur when a principal delegates some decision making authority to an agent. Agency theory suggests that decisions made by an agent may not maximise both agents' and principals' interests; instead of that managers are likely to act in their self-interest. To secure the principals' interests, principals may have to bear some costs to be certain that an agent will not be likely to take more benefits from the company or harm the principals' welfare.

The agency theory is formed because the authors view a company as a culmination of complex contractual relationships. Stakeholders in a company, e.g. managers, shareholders, or creditors, have their own objectives that may not be the same. For instance, with all being equal, company's managers in a highly profitable company are more likely to maximise their own benefits by taking company resources whilst shareholders expect managers to pay more dividends. If managers have tended to pay more dividends, creditors are not likely to agree with this policy because creditors would like to be certain that managers and shareholders do not consume all company's assets and leave nothing for claims at the end. To balance all objectives in a company is also complicated. Due to the conflict of interests, the authors suggest that a possible means of balancing objectives of all parties is contracts. In a company, there are varieties of conflict domains (Quiry, Dallocchio, Le Fur and Salvi 2005, pg.647), such as managers and shareholders, the management and employees, or creditors and shareholders. Each domain uses contracts to mitigate conflicts and risk, leading to contractual relationships between parties. Consequently, a company is a nexus of contracts. For example, the relationship between managers – as agents and shareholders – as principals can be under employment contracts while the relationship between managers – as agents and creditors or bondholders – as principals can be bound by debt contracts. However, contracting incurs costs known as agency costs.

Agency costs

Agency costs are incurred from the attempt to alleviate agency problems. These costs are higher in a company with severe agency problems. More severe agency problems can be found in a company with large free cash flow (Jensen 1986). This is because managers may use large free cash flow and waste it in various activities rather than paying it to shareholders. Jensen and Meckling (1976) indicate that agency costs consist of monitoring costs, bonding costs, and residual loss.

Monitoring costs

Monitoring costs include an agent's compensation, any legal fees which relate to the employment contract, audit fees, budgeting, or even operating rules, etc. Monitoring costs paid to agents aim to respond to agents' interests, to improve agents' performances, or to reduce agents' decisions which would harm the principals' interests. Monitoring costs are usually set up in the first instance by principals and principals bear the costs. However, the costs can be adjusted later in some cases depending on the contract. For example, if managers as agents have low performance, this will lead to the decrease in their remunerations. In this circumstance, agents bear the costs instead. Thus, monitoring costs are borne by either agents or principals depending on situations. Monitoring costs should have negative relation with agents' remunerations. For example, if principals have to pay more monitoring costs to control agents' behaviour, compensation paid to agents may be reduced. In addition, agents with different reputations will not be rewarded at the same levels. Principals may have to pay high monitoring costs for agents with less or bad reputation because they are not certain that the agents will be able to make high profits; or such agents may utilise large resources from the firm. As a result, rewards are decreased when monitoring costs increase. Another example is a relationship between managers as agents and bondholders as principals. In this case, managers act on behalf of shareholders. Managers and bondholders are bound by a debt contract. In general, risk incurs immediately after lending. To protect risk, bondholders can increase the interest rate or adjust the term of loans. Risk occurs when bondholders feel that managers try to transfer wealth to shareholders, e.g. paying high dividends, or try to exploit assets in place and leave nothing to bondholders, e.g. selling property.

Bonding costs

One duty of managers as agents is that they should balance both shareholders' and bondholders' interests. To do so, managers must set up schemes to show that they are acting for both interests. Costs incurred from setting up this system are called bonding costs. Bonding costs can be pecuniary or non-pecuniary, e.g. time and effort. Bonding costs relate to costs of any actions set by agents to guarantee principals that they act in principals' best interests. The cost incurred from accounting information disclosure is an example of bonding costs. Bonding costs are borne by agents. Agents disclose financial information to show that decisions are made on behalf of principals' interests. If accounting information shows that managers maximise shareholders' interests, shareholders are expected to reward managers. Thus, agents not only bear bonding costs but also can receive benefits from the costs. Agents incur bonding costs only when they find that these costs reduce the monitoring costs they bear. They will stop incurring bonding costs when the net increment wealth which they generate equals the perquisites given up, or in other words when the marginal increase in the bonding costs equals the marginal reduction in the monitoring costs (Godfrey, Hodgson and Holmes 2000, pg.320).

Residual loss

Although monitoring and bonding costs aim to mitigate agency problems, they cannot reduce agency costs to zero. Residual loss occurs because the agency problems cannot be completely managed by the contract in every detail. The left-over costs from the attempt to diminish agency problems are the residual loss. For example, managers waste company's resources in a way that shareholders may not agree with, e.g. lavishing electric power or other utilities; the contract probably does not include these concerns.

3.2.5.2 Agency Problems and Accounting Quality

The agency theory provides several ways to lessen agency costs. First, Jensen and Meckling (1976) suggest that if managers hold shares in a company, conflict of interests between managers and shareholders will decline. For an exaggerated example, if managers hold 100 per cent of shares in a company, this should reduce agency costs to zero, all else being constant. To obtain a high percentage shareholding, managers may have to use all personal properties or borrow debt to acquire all shares. Accordingly, even though managers can own all shares in a company, doing so is not costless, especially in a large company. In terms of accounting quality, higher managerial ownership could reduce the quality of accounting information probably because of less demand from the market (Lafond and Roychowdhury 2008). Rather than deterring the quality of accounting information, an alternative explanation is that accounting information of the firm with high managerial ownership should reflect the true value of the firm because of less pressure from the market and less conflict of interest.[35] According to portfolio theory, risk or managers' wealth is not diversified due to investing in only one company. Crutchely and Hansen (1989) suggest that managers will require an increase in remunerations to compensate for poor diversification. Shareholders may want to hold a certain number of shares for economies of scale or reducing agency costs. If shareholders want to hold a large number of shares to reduce agency costs, they would be confronted with poor diversification and high

[35] See Wang (2006) about the discussion of market demand and ownership structure.

costs. Therefore, they may reduce shareholding size and accept some agency costs. In some cases, managers do not hold shares in a company but they have a good relationship with shareholders. Agency problems in this case may not be rigorous. As a result, it is difficult to determine whether accounting quality varies positively or negatively with these agency problems.

Second, Jensen and Meckling (1976) and Jensen (1986) suggest that debt financing can reduce over-investment. Instead of wasting cash in non-profitable ways, a company with high free cash flow can finance more debt and use free cash flow to pay interest. Therefore, rather than paying cash back to shareholders, managers are bound to pay creditors interest from debt financing. One obvious benefit from debt financing is that interest expenses are a taxable deduction whilst dividends are not tax deductible. An important function of shareholders is to monitor managers issuing more debt. If managers issue more debt, agency problems between managers and shareholders can be reduced. However, debt financing will probably raise agency problems between shareholders and bondholders instead. In the case of debt borrowing, managers as agents act on behalf of shareholders. The conflict of interests between shareholders and bondholders will also generate agency costs. Shareholders may be more likely to invest in high risk projects or to dilute properties that will harm bondholders' asset securities. Shareholders can take any high risk projects because they have limited liabilities equal to the unpaid amount of shares held. To manage the risk, bondholders may adjust contracts by increasing interest or making the term of loans shorter. Another problem about the use of debt financing is that debt financing is associated with bankruptcy costs. If a company generates high debt, there is potential for a company to go bankrupt. For all these reasons, using debt financing to reduce agency costs is not costless. In addition, it can be viewed that an agency cost of equity (managers and shareholders) is shifted to an agency cost of debt (shareholders and bondholders). In terms of accounting quality, debt financing may require firms to disclose sufficient information. In addition, bondholders may be able to access inside information better than outside shareholders. The demand from debt financing, thus, induces higher accounting quality. On the other hand, firms may retain to disclose sufficient information requested by debt financing, i.e. in case of firms going bankrupt.

To alleviate agency costs, Easterbrook (1984) suggests that paying higher cash dividend will reduce agency costs. If a company has high profits and sufficient funds from operations, it can pay high cash dividends. The opposite is also true in a company with low profits and insufficient funds. If a company is not able to generate high profits but intends to pay high dividends, it must obtain funds from other sources, e.g. selling assets, borrowing or issuing new equities. Crutchely and Hansen (1989) suggest an interesting view that paying high dividends can reduce agency costs because of the chance that a company will have to raise funds from external sources, by issuing more shares, increases. When the number of shares increases, a company will be overseen by external organisations, e.g. stock exchange, banks, or large investors. This watchdog would bring managers to act in line with shareholders. Moh'd, Perry and Rimbey (1995) document that according to Rozeff's work, a company will try to reduce agency costs by a new set of costs, binding managers to act in the outside investors' interests. Dividend payment is considered as bonding cost. This means that if managers are forced to employ external funds for the dividend payment, agency costs must be reduced and new information must be revealed to secure the new funding. Easterbrook (1984) argues that dividend payment leads to third-party audit, e.g. the market or leverage buyout (Brealy, Myers and Allen 2005, pg.871), which motivates managers to reveal information and reduce agency costs. One reason is that if companies have had dividend payment lower than the level expected from the market, other investors may force out managers by taking some action, e.g. taking over. In addition, shareholders may bear the cost of external funds in relation to benefits they receive from dividend payment. For instance, a company with 100 per cent of equity in its capital structure should have a severe agency problem between managers and shareholders. If the company changes the proportion of its capital structure by adding some debt, bondholders will take a role as principals who could help shareholders. However, shareholders bear the cost of issuing debt since the company must use some cash flow for interest payment rather than using it all in dividends.

The "third party watchdog" plays an important role to mitigate agency costs. Firms' insiders are forced by the market to provide useful information. Accounting disclosure is one means for firms' insiders to communicate with the third party. The requirement of accounting disclosure is based on the degree of agency costs. The requirement of high quality of accounting disclosure is not costless. For instance, if managers' remunerations are tied up with firm performances, managers are more likely to report information to increase their benefits; high compensation to managers must be paid to obtain good quality of accounting disclosure.

For above discussions, there are several factors influencing firms' insiders to reveal useful information. One of those factors is a corporate governance system. Even though a corporate governance system is not a direct tool used for financial statement preparation, the corporate governance system requires firms' insiders to reveal a certain type of information to the public. Therefore, a strong corporate governance system is more likely to induce firms providing a good quality of accounting disclosure relative to a weak corporate governance system. Existing evidence suggests that firm governance systems relate to accounting quality, among others Bushman et al. (2004), Beekes et al. (2004) and Lara, Osma and Penalva (2007).

In conclusion, agency theory suggests that conflict of interest is a major factor, leading to agency problems or moral hazards. Agency problems can be reduced by bearing some agency costs. Agency costs are borne by agents or principals depending on the situation. Several ways to reduce agency problems are costly, especially in large companies. Accounting disclosure is another channel to alleviate agency costs. Firm governance systems are essential to induce firms providing a good quality of accounting information. However, it is difficult to predict whether accounting quality through accounting information disclosure positively or negatively varies with the monitoring mechanism.

All the above discussions have explained accounting theories and approaches relating to three perspectives of accounting quality, including earnings persistence, the value relevance of accounting information and the timeliness of earnings. In addition, it explains the importance of book-tax differences and firm governance mechanism and its agency problems. In addition to the descriptive explanations, the previous sections have explicated the model employed by the existing literature to examine accounting quality. The next section will discuss the review from existing accounting research.

3.3 Literature Review

This part of the chapter presents reviews from existing literature. The literature review is divided into five sections. The first three sections present a summary of three earnings properties and discussion gathered from the literature review. The next two sections summarise the literature about book-tax differences and firm governance relating to those three properties of earnings. It should be noted that the conventional statistic level, if any, through the literature review, is acknowledged unless specified.

3.3.1 Prior Study of Earnings Persistence

A time series property of earnings

Dichev and Tang (2009) investigate the association between earnings volatility and earnings predictability. Earnings predictability is estimated through a time series property of earnings, indicating that more earnings persistence, the higher earnings predictability. They hypothesise that earnings volatility is negatively associated with earnings predictability. They construct deciles rank of firms according to the volatility of earnings, accruals, earnings, and the volatility of cash flows. Then, deciles 1 and 10 form quintile 5 (extreme volatility), deciles 2 and 9 form quintile 4, and so on. By using a random walk model, findings report that the earnings persistence is lower for quintile 5 and higher for quintile 1, supporting the hypothesis. They also estimate the earnings persistence and earnings volatility over a long horizon period of time. Findings suggest that the persistence coefficient of earnings is deteriorated over the 5-year prediction horizon. In addition, the quicker deterioration of earnings persistence is observed over the 5-year prediction horizon for the highest earnings volatility firms relative to the lowest earnings volatility firms.

Sloan (1996) argues that a random walk model that regresses current earnings on past earnings weights cash flows and accruals component in earnings attributes equally. Thus, earnings are decomposed to cash flows and accruals in a random walk model to investigate the predictability of cash flows and accruals on future earnings. By regressing future earnings on current cash flows and accruals, findings suggest that the persistence of earnings attributable to the accrual is smaller than the persistence of earnings performance attributable to the cash flow. In his research, further investigation is to determine whether the different properties of the accruals and cash flows components of earnings are captured in the stock price. By using Mishkin method, the market prices the accrual higher than the cash flow whilst the persistence of earnings performance attributable to the accrual is lower than the persistence of earnings performance attributable to the cash flow. The author concludes that the market fails to anticipate the higher (lower) persistence of earnings performance attributable to the cash flow (accrual) until that information affects future earnings.

Fairfield, Whisenant and Yohn (2003) extend Sloan's work by investigating whether the lower persistence of accruals is driven from the profitability or growth in accruals. They propose that 'growth' is a factor inducing the lower persistence in accruals. They argue that "*diminishing marginal returns on investments arise when firms exploit their most profitable investment opportunities before undertaking less profitable investments. Alternatively,* *increasing marginal returns on divestment arise when firms divest their least profitable investments.*" Both scenarios refer to diminishing marginal returns. They suggest that based on diminishing marginal returns and conservative accounting, *firms investing more in net operating assets during year t will experience lower one-year-ahead ROA relative to other firms, ceteris paribus* (Fairfield et al. 2003). They regress one-year-ahead ROA on the one-year growth in net operating assets (GrNOA) and current ROA. By using the dataset 30-year period, they find that the relationship between one-year-ahead ROA and GrNOA is significantly negative, suggesting that accounting conservatism and diminishing marginal returns deteriorate the one-year-ahead ROA on the new investment. However, comparing between current and long-term net operating asset growth, they predict that accruals and growth in long-term net operating assets have equivalent incremental relations with one-year future ROA after controlling for current ROA. They regress the one-year-ahead ROA on the one-year long-term net operating asset growth (GrLTNOA), accruals and current ROA. Their findings support theirs prediction that the negative relationship between GrLTNOA and the one-year-ahead ROA and the negative relationship between accruals and the one-year-ahead ROA are found and they are not statistically different.

Richardson, Sloan, Soliman and Tuna (2006) argue that other than growth component as proposed by Fairfield et al. (2003), accrual estimation error (accounting distortion) is an important factor inducing the lower persistence of accruals. They decompose accruals into 'growth' and other (or so-called efficiency distortions). They regress the one-year-ahead ROA on accruals and current ROA. Consistent with Sloan (1996) and Fairfield et al. (2003), the relationship between the one-year-ahead ROA and accruals is significantly negative. They decompose accruals to sales growth, changes in efficiency (changes in net operating asset turnover ratio divided by net operating asset turnover ratio) and the interaction between sales growth and changes in efficiency (sales growth multiplied by change in efficiency). They find that the relationship between growth and the one-year-ahead ROA is negative. Also, the relationship between efficiency and the one-year-ahead ROA is negative. However, the negative coefficient of efficiency component is larger than the negative coefficient of growth component. Another work by Richardson, Sloan, Soliman and Tuna (2005) suggests that less reliable of accruals leads to low persistence of accruals. They decompose accruals into different categories, including total accruals, change in working capital, change in current operating assets, change in current operating liabilities, change in non-current operating assets, change in non-current operating liabilities, change in financial assets, change in financial liabilities, change in short term investments, and change in long term investments. They regress the one-year-ahead ROA on accruals and accrual components and suggest that the low reliability of accruals induces the low persistence of accruals.

Dechow, Richardson and Sloan (2008) examine the persistence of earnings performance attributable to cash flows, extending the work of Sloan (1996). The cash component of earnings is decomposed to changes in the annual cash and short-term investment balance, net cash distributions to equity holders (dividends and repurchases less equity issuances), net non-interest cash distributions to debt holders (debt repayments less debt issuances) and the sum of net cash distributions to shareholders and net non-interest cash distributions to debt holders. Their findings are consistent with the results reported by Sloan (1996) that the persistence of earnings performance attributable to accruals is smaller than the persistence of earnings performance attributable to free cash flows. In addition, the persistence of the sum of net cash distributions to shareholders and net non-interest cash distributions to debt holders is larger than the persistence of changes in annual cash and short-term investment balance. As predicted by the authors, the persistence of net cash distributions to equity holders is larger than the persistence of net non-interest cash distributions to debt holders. This is consistent with a priori expectation that firms are more likely to maintain cash distributions to equity holders unless there is a persistence in future cash flows, then cash distributions to equity holders will be increased.

Earnings persistence and fundamental analysis

Abarbanell and Bushee (1997) investigate whether changes in fundamental information induce subsequent changes in earnings information. They regress future earnings changes on current earnings changes and fundamental signals. They employ fundamental signals based on the work of Lev and Thiagarajan (1993). Fundamental signals are based on change information, including inventory, accounts receivable, capital expenditure, gross margin, selling and administrative expenses, provision for doubtful receivables, effective tax rate, earnings quality (measured by LIFO or FIFO), audit qualification (measured by qualified and unqualified audit) and labour force (measured by the ratio of sales divided by a number of employees). The increase in inventory and accounts receivable is realised as 'bad news' because of difficulties in generating sales, inducing the negative relationship between firm values and inventory and accounts receivable changes. A negative relation with returns is expected for changes in capital expenditures. Firm values are negatively related to the decrease in the gross margin, the effective tax rate, labour force and the increase in administrative costs. LIFO inventory method is viewed as a positive signal because the authors state that relative to FIFO earnings, LIFO earnings are more sustainable or closer to economic earnings. Their findings support a priori expectations, suggesting that fundamental information affects earnings property.

Earnings persistence and economic determinants

An earlier research about the association between economic determinants and earnings persistence was performed by Lev (1983). Lev (1983) investigates a time series property of earnings conditional on economic determinants. The research regresses earnings persistence on economic factors as driving forces for change. Economic determinants include product type, competition, firm size, and capital intensity. Product type is divided to durables vs. non-durables and services, measured by different industries. Since the consumption pattern of non-durables and services is relatively stable compared to durables. Earnings persistence, therefore, is more pronounced for non-durables and services relative to durables. Barriers-to-entry is used to determine the competition. Barriers-to-entry are defined as 'a cost of producing.' As noted by the author, existing firms are likely to charge prices close to marginal costs to deter further entry. For example, high barriers-to-entry industries consist of crude petroleum, brewers, distillers, etc. Low barriers-to-entry industries consist of mining, construction, meat packers, dairy products, etc. Earnings persistence is more pronounced for monopolist firms relative to competitive firms because of the instability of the industrial structure and price wars in competitive firms. Firm size is employed to determine firm growth. Large firms tend to have low growth rate relative to small firms, inducing more stability in profitability through time. Therefore, earnings persistence is more pronounced for large firms relative to small firms. Capital intensity is the ratio of depreciation divided by fixed capital charges (i.e. interest expenses) to sales. Smoother earnings series of low capital intensive firms is expected relative to high capital intensive firms. This study uses three different earnings for earning persistence estimation, including change in earnings, change in return on equity, and change in sales. Findings reveal that earnings persistence is associated with the economic determinant as expected.

Baginski et al. (1999) investigate the relationship between earnings persistence and economic determinants for 162 firms with complete data during the period 1967–1990. They use five different orders of autoregressive and moving-average model to measure persistence coefficients by regressing future earnings on current earnings. Then the obtained coefficient is regressed on economic determinants. They propose that earnings persistence is positively related to firm size and barriers-to-entry but negatively related to product type and capital intensity. Findings support their hypothesis except for firm size.

Freeman et al. (1982) investigate the predictability of book rate of return (the ratio of net earnings divided by shareholders' equity) in future earnings. They hypothesise that book rate of return is a mean reverting process and changes in book rate of return correlate with changes in earnings. The low (high) book rate of return implies that earnings are temporarily depressed (unusually good). They estimate 30 individual firms (time-series) and pooled data during the period 1946–1977. Findings support their hypothesis.

Discussion of earnings persistence

From prior studies, it appears that the persistence of earnings is an important property. Researchers have attempted to identify the determinant of earnings persistence by using fundamental analysis, a time-series approach or economic determinants. Although the persistence of earnings induces a predictability of earnings, the persistence of earnings is sensitive to earnings manipulation, i.e. smoothing earnings. It is rather difficult to identify whether firms tend to smooth theirs earnings or earnings are persistent. One important point about the study of earnings persistence is researchers have attempted to search for the determinant of earnings persistence. Earnings information is not only investigated at the integrated level, i.e. annual earnings, but also decomposed to earnings components, i.e. cash flow and accruals. These attempts are to identify factors inducing the persistence of earnings information. It should be noted that even though accruals mitigate noise in cash flows (Ball and Shivakumar 2005b), prior research finds that the persistence of earnings performance attributable to accruals is lower than the persistence of earnings performance attributable to cash flows. In summary, at least two criterions can be raised from the study of earnings persistence. The first is about the method used to identify the persistence of earnings, i.e. by using the statistical approach or by searching for the determinant inducing earnings persistence. The second is about the subject of the study, i.e. aggregated earnings information (annual/quarterly earnings), deflated earnings information (book rate of return) or the earnings component (cash flow and accruals).

3.3.2 Prior Study of the Value Relevance Analysis

The value relevance analysis uses financial data to determine the market value of the firm. There is a question as to whether or not the information set provided by financial statements is useful, as it is generally known that forecast data are far more complex beyond the ability of current GAAP to hold. In general, share price reflects a richer data set than accounting numbers. For example, share price reflects future profit of the firm while earnings account for only historical data in accordance with accrual basis. Thus, there is delay reflecting on earnings. Kothari (2001, pg.172) suggests that *"unless current accounting rules are changed dramatically, it is unlikely that financial statements in themselves will be particularly useful or accurate indicators of market value."* "Change" in this statement might be the change in financial reporting concepts. For instance, financial reporting guidelines had changed revenue recognition from matching concept to the other concept that could have captured any effect as much as the market value does. In another interpretation, it might be the change in accounting guidelines as a whole. For example, the adoption of new accounting standards can change several existing accounting treatments to reflect and capture more information than the past. A growing empirical research papers when accounting policy has been reformed should support this Kothari's statement. Generally speaking, new accounting standards should provide more useful information and/or more accuracy than previous standards. Most empirical papers have employed the fundamental analysis through price and/or return model in their analysis to explore this conjecture. This section summarises empirical papers about the value relevance of accounting information in terms of accounting policy or financial environment changes in many countries and other related empirical studies that implement the firm valuation process in their studies.

<u>Accounting Changes Across Countries</u>

China

Chinese stock markets, Shanghai Stock Exchange and Shenzhen Stock Exchange, have traded both A-share and B-share; A-share is traded by domestic investors while B-share is opened for foreign investors to hold Chinese shares. Chinese firms with B-share issues are required to present their financial reporting according to IAS guidelines, while this regulation is not applied to A-share-only firms. Chen, Chen and Su (2001) studied the value relevance of accounting information in Chinese firms where both IAS- and Chinese GAAP-based vs. Chinese GAAP-only financial reporting was mandated. By including all companies from both stock exchanges during the period 1991–1998, there were 428 firms representing 2,976 firm-year observations. They employed both price and return regressions to estimate the association between share prices and accounting measures, book value and earnings. The study subdivided the data set according to positive/negative earnings, size, earnings persistence (through changes in and high vs. low earnings) and liquidity of shares and included interaction effects with dummy variable in the regressions rather than running the regressions twice in each subgroup. Overall, their results reported that book value and earnings were value-relevant with the explanatory power ranging from 10 to 61 per cent from before-1995 to 1998. The market weighted higher value to A-share financial reporting than A- and B-share financial reporting. In addition, the usefulness of accounting numbers in each subgroup was obtained as expected. For instance, the value relevance of earnings was found in positive earnings firms; the opposite was also true for loss-making firms. This thesis considers that an additional examination could be performed in their study, i.e. stock exchange effect as to the difference in general characteristic of stock exchanges (as stated by the authors that different currency is used in two stock exchanges).

Bao and Chow (1999) also estimated the usefulness of book value and earnings in B-share firms by regressing B-share price on book value and earnings prepared according to Chinese GAAP and IAS separately. Their results reported that book value and earnings prepared according to IAS were value relevant greater than those prepared according to Chinese GAAP. The study of Bao and Chow (1999) and Chen et al. (2001) is identical. However, the later work used A-share price data while Bao and Chow (1999) employed B-share price data as dependent variable. Bao and Chow (1999) reported stronger relation between B-share price and IAS-based accounting measures while Chen et al.'s (2001) results of the relation between A-share price and IAS-based accounting measures were not strongly pronounced.

This thesis considers that the inconsistent findings between two are not surprising because foreign investors in B-share price have used IAS-based information, therefore higher association should be found comparing the association between A-share price and IAS-based information, that domestic investors have not used IAS-based information. This thesis also interprets from these two papers that it is crucial that financial reporting users select what information fits their purposes. Thus, one essential inference from the papers is that standard settings have to think about the group of financial reporting users who are directly affected by financial reporting before developing accounting standards.

Rather than using the price model, Haw, Qi and Wu (1999) defined that annual share return is a function of changes in annual earnings. Based on their 1,158 A-share Chinese firms from both stock exchanges for the period 1994–1997, findings showed that earnings were value-relevant for domestic investors. They also estimated a short window period by defining that three-day market-adjusted returns around earnings announcements are a function of changes in annual earnings. The result also reported that earnings were value-relevant. This study, however, estimated stock exchange and industry effects and found that the results remained unchanged.

In 1998, China had used historical cost method (HCM) for all assets and lower cost or market value method (LCM) for a specific class of assets, but A-share firms could voluntarily use LCM. However, since 2000, LCM has been applied for all firms and assets. Yang, Rohrbach and Chen (2005) thus estimated the value relevance and reliability of accounting information in terms of LCM adoption in China. The study included all Chinese firms in their data set, making a total of 320 (balanced panel) firms during the period 1998 to 2001. The study applied both a balance sheet approach and an income statement approach in the examination. The balance sheet approach uses book value as independent variable regressing on market value of the firm and the income statement approach is firm earnings regressing on share returns.

This study not only estimated the value relevance after the adoption of LCM but also examined the reliability of accounting measures. The reliability was performed by assuming that reliable accounting measures led to smaller errors in the valuation model; the smaller residuals resulted in a more appropriated model that was evidenced by the better explanatory power of the model. This study finally compared the explanatory power by applying J test and Cox test. Both the balance sheet and income statement approach evidenced that LCM was not high value-relevant in 2001 (10.5 and 11.5 per cent, respectively) compared to that in 1998 (15.1 per cent and 14.9 per cent, respectively). In addition, the coefficient estimates of the proxy of LCM/HCM differences reported the strongest impact on firm values, in 1998, of the voluntary use of LCM, meaning that LCM was more value-relevant when firms selected this method. The results also reported the decrease in reliability of using LCM.

In sum, contrary to the authors' view, the results did not show strong improvement of quality in using LCM for Chinese firms. The confounding results could be noise in data as claimed by the authors. This thesis considers that the study does not argue when LCM was coming into force for all firms; the decrease in value relevance could come from a reason that no comparison (between LCM and HCM firms) can be made by financial reporting users. In other words, when all firms are using the similar accounting method, information users cannot distinguish the quality of accounting information between one firm and another.

Czech Republic

Hellström (2006) examined the validity of the value relevance methodology by investigating economic transition in the Czech Republic during the period 1994 to 2001 when the Accounting Act in Czech Republic was amended in January 1998. The study designed its research method by comparing results with the value-relevance benchmark. The author selected Swedish firms as a value-relevance benchmark because of a relatively similar in general characteristics, i.e. population and German- and French-influenced accounting system, between two countries. Balanced panel data consisting of 72 non-financial Czech firms were grouped by two periods before (1994–1997) and after (1998–2001) the year of the Accounting Act amendment, i.e. 1998. Each group was compared to the benchmark that was also separated according to those periods.

To examine the validation of value relevance models, the study employed four different such models, including price model, return model, log regression model, and hedge portfolio model.[36] Results were obtained by R^2 comparison in each period and revealed that the value relevance of accounting information was increased after the Accounting Act amendment. R^2 increased by ranging from 2–12 per cent after the use of the new Accounting Act in 1998. However, in price model, earnings had lost their value relevance by decreasing from 3.36 to 2.43 while book value had increased its value relevance from 0.19 to 0.32. This study rather differs from other accounting reform studies because the benchmark is added, leading to the question of whether or not the benchmark is essential, and choosing a benchmark is crucial. In addition, the sample size is rather small so that the study does not report if the sample size can be generalised for the Prague Stock Exchange.

Germany

Jermakowicz, Prather-Kinsey and Wulf (2007) investigate the value relevance of accounting information in German firms when adopting IFRS or US GAAP for

[36] Log regression model is a logarithm price model and hedge portfolio model is earnings return in short and long-term periods.

the financial reporting process. They employ DAX-30 companies for this investigation. Based on their questionnaire survey, even though IFRS will be fully implemented for consolidated financial statement for German firms in 2005, many DAX-30 companies converge to IFRS or US GAAP before 2005, i.e. 10 per cent of these firms employ German GAAP in 1997 but the percentage of using IFRS or US GAAP increases to 63 per cent in 2004. This suggests that DAX-30 companies converge to IFRS or US GAAP in different periods of time before IFRS will be in force for all firms. They employ the firm valuation model to determine the value relevance of accounting information by comparing before and after IFRS or US GAAP adoption. Their findings suggest that during the period 1995–2004, the value relevance of earnings and book value information substantially improves from 1.2% to 66.5% after IFRS or US GAAP adoption in DAX-30 companies. They further examine the determinant of IFRS or US GAAP adoption in the firm. They set that the adoption is a function of firm performance, size, leverage, ADR listing and an increase in share value during the year. Their results suggest that the adoption is related to leverage, firm size and ADR listing.

Poland

In Poland, the Accounting Act has been amended in 1990, 1994 and 2000. The study, performed by Gornik-Tomaszewski and Jermakowicz (2001), investigated a relation between accounting information and market value during the period 1996–1998 in Polish firms. By using balanced panel data, 77 firms taken from all industries were included and examined. The study partitioned the data according to industry sector, performance (reported profit) and size (trading board). Results showed adjusted R^2 ranging from 60 to 70 per cent, leading to the conclusion that there was a relation between share price and accounting information, earnings and lagged book values. In addition, book value provided higher incremental value relevance than did earnings, 20 and 11 per cent respectively.

South Africa and Mexico

Prather-Kinsey (2006) proposed good motivation in its research whether or not developed-country accounting standards are appropriated for developing countries. This study investigated the value relevance of accounting information for South Africa and Mexico. In South Africa, its accounting policy has adopted eleven IAS during the period 1998 to 2000. The study used 262 firm-year observations of all industry sectors in 1998 and 2000 and developed regression model that market capitalisation is a function of book value and earnings, that all variables were weighted by book value. The explanatory power in 1998 (93 per cent) was higher than in 2000 (79 per cent), meaning that IAS convergence in South Africa did not increase but decreased value relevance in IAS-converged accounting information.

For Mexico, IAS and US GAAP were adopted during the period 1998–2000. By using the above regression, results revealed that the explanatory power increased by 14 per cent from 1998 (71 per cent) and 2000 (85 per cent) in 164 firm-year observations. However, the study applied an additional test to compare adjusted R^2 by using the Vuong test. The obtained result showed no statistically significant difference in the adjusted R^2 between 1998 and 2000.

These findings should encourage accounting standard setters to understand the characteristics of countries who are likely to adopt IAS for financial reporting in their own country. In addition, as argued by Holthausen and Watts (2001), valuation analysis is unlikely to be useful for standard settings. This thesis considers that the study of accounting information value-relevance in South Africa and Mexico can respond to their opinion in this regard.

Spain

Giner and Rees (1999) examined the effect of the Spanish accounting reform to investigate whether the quality of accounting information increased. In 1990, “true and fair view” was added to the Spanish accounting system. They examined

735 non-financial Spanish firm-year observations during the period 1986–1995 by using price model. They enhanced the model by incorporating dummy variable and dividend policy to examine the interaction-effect during the reform. Their results showed the slight improvement of explanatory power following accounting reforms. In addition, earnings suffered from the decrease in their value relevance after the reform (i.e. from 6.33 to 3.72 and incremental value decreased from 15.8 per cent during the period 1986–1989 to 10 per cent during the period 1990–1995) while book value gained higher value relevance (i.e. from 0.18 to 0.72 and incremental value increased from 0.9 per cent during the period 1986–1989 to 11.2 per cent during the period 1990–1995). This study added other information, dividend policy, in the price model and found that dividend policy had higher value relevance compared to book values and earnings with the slope coefficient ranging from 10 to 14. Naceur and Goaied (2004) also found more pronounced of dividend policy in the valuation process in Tunisia.

Tunisia

Tunisia is another country that has reformed its accounting and financial market. Naceur and Goaied (2004) documented that there have been several accounting and financial market reforms in Tunisia since 1989. Although there were many changes in accounting and financial markets, the study examined whether value relevance of earnings, book values, dividend policy, debt and capital expenditure was improved in general rather than investigating the effect of those changes. By using unbalanced panel data of 30 firms (239 firm-year observations) from all industry sectors during the period 1984–1997, they estimated the value relevance by hypothesising that share price is a function of book values and earnings. In their enhanced model, they incorporated dividend policy, debt and investment (proxy by capital expenditure) as regressors in the model. The data were also subgrouped by market capitalisation and return on equity. Their findings reported that accounting information through book values, earnings and dividends was value-relevant. The slope coefficient of earnings (1.37) was more highly pronounced than that of book values (0.157) but dividend policy provided strongest impact on the market value with its slope coefficient 17.55. This dividend policy mispricing found by this study is consistent with Rees' findings that a statistically significant mispricing on dividend policy can be observed in the UK market (Rees, 1997).

Barth et al. (2008) estimate whether accounting quality has been improved in 21 countries that adopt IFRS. They compare accounting quality between firms employ IFRS and firms do not employ IFRS (matched firms) in the same country and year during 1994 – 2003, comprising 1,895 firm-year observations for 327 firms. A priori prediction is that the accounting quality for IFRS firms is better than the accounting quality for non-IFRS firms. For the value relevance, at first stage, they regress share price on industry and country fixed-effect indicator variables. This stage should mitigate the potential problem about the variation in industry– and country–specific effects. Then, they use the residual from the first stage as dependent variable. They regress the residual on book value and net income per share. As expected, the explanatory power (R^2) of IFRS firms (0.4010) is greater than R^2 of non-IFRS firms (0.3016) during IFRS post-adoption periods. The explanatory power of IFRS and non-IFRS firms is not statistically different during IFRS pre-adoption periods. For only IFRS firms, the value relevance during IFRS post-adoption periods (0.4010) is greater than IFRS pre-adoption periods (0.2820).

Impact of Market Environments on the Value Relevance of Accounting Information

Bartov et al. (2001a) investigated the information content of earnings and cash flow and estimated whether the usefulness of earnings and cash flow is universal. The problem was built on the different characteristics of economic and financial markets between Anglo-Saxon countries, including in their study the US, the UK and Canada, and non-Anglo-Saxon countries, including Germany and Japan that were used in their samples. The financial market in Anglo-Saxon countries weights heavily on the capital market investment or market-oriented countries while creditors, i.e. banks, play a major role in driving the economy for non-Anglo-Saxon countries. In addition, taxation systems and stakeholders in those countries are also varied. These various characteristics could result in different accounting measures, i.e. the opportunistic use of earnings. The study selected manufacturing and distribution industry firms during the period 1987–1996 from those countries, consisting of 710 firms (3,950 firm-year observations) in total. By using return regression and comparing the explanatory power by the Vuong test, they reported a superior value relevance of earnings over cash flow for the US, the UK and Canada but not for Germany and Japan. However, incremental value relevance of earnings was obtained in all countries; cash flow incremental value-relevance was observed in all countries except Canada. These results concluded that earnings had no superior value relevance compared to cash flow although many empirical research papers found higher importance of accrual earnings than cash flow.

Relatively similar to the work of Bartov et al. (2001a), Arce and Mora (2002) estimated the value relevance of earnings and book value across European countries, including UK, the Netherlands, Belgium, France, Germany, Italy, Switzerland and Spain. Other than investigating the difference of value relevance of accounting information across countries, this study tended to examine whether the value relevance of underlying accounting numbers was different between market-oriented (UK and the Netherlands) and creditor-oriented countries (Belgium, France, Germany, Italy, Switzerland and Spain). With their price level valuation model, they estimated the incremental value relevance and compared the explanatory power examined by the Vuong test. The result from their data set, including 22,436 non-financial firm-year observations of those countries altogether during the period 1990–1998, did not support the hypothesis that there was difference in value relevance of accounting information between common law and code law countries. The value relevance of book value and earnings could be observed in Belgium, France and the Netherlands with about 10 to 14 per cent of explanatory power. The value relevance of those accounting numbers was very low, in particular Germany, at 0.5 per cent. In addition, overall book value and earnings provided incremental value-relevant, giving additional information to the market.

However, the usefulness of accounting measures, in particular accounting income, in Arce and Mora (2002) was very low for the UK (0.8 per cent) and Germany (zero per cent) compared to the results (12-16 per cent and 3-4 per cent for the UK and Germany, respectively) reported by Bartov et al. (2001a). These studies derived a similar conclusion about lower value relevance in non-Anglo-Saxon countries compared to Anglo-Saxon countries. Nevertheless, this thesis considers different findings possibly resulting from: i) price vs. return model may yield different results due to larger noise in price data; and ii) there might be industry specific effect as shown in the work of Ballas and Hevas (2005) because Bartov et al. (2001a) estimated only two sectors while the other study investigated all industry sectors.

The above research papers have investigated the value relevance of accounting information in cross-country or cross-industry effects. The following two papers that will be discussed next are examining the accounting information value-relevant when dramatic changes in the economy. The research papers include Graham et al. (2000) and Davis-Friday (2006).

Graham et al. (2000) and Davis-Friday et al. (2006) have studied accounting information quality in terms of the value relevance in Asian countries, including Thailand. The first research paper by Graham et al. (2000), to the best of my knowledge, is the first paper that straightforwardly tests accounting numbers in Thailand. Graham et al. (2000) estimated whether Thai accounting information was value relevant during the 1997 financial crisis, forcing the Thai government to devalue its currency. By examining a Thai quarterly data set from 1992 to the first quarter of 1998, they reported both relative and incremental value relevance. The study employed quarterly data of accounting earnings and book value which the authors claimed were more volatile than fiscal year-ended data because of non-audited vs. audited data. With reference to price regression, their findings reported that share prices can be explained by both book value and accounting earnings, although investors put a slightly higher weight to book value (9 per cent) than accounting earnings (5 per cent).

The study also focused its investigation on four quarters before and after July 1997, the period of economic turmoil in Thailand. Results reported significant changes in accounting earnings' value-relevance in general; the explanatory power of earnings decreased from 39 to 16 per cent after the 1997 financial crisis. Earning value-relevance was relatively volatile (decreasing 23 per cent) compared to book value value-relevance (decreasing 5 per cent). The authors argued that the market expected negative earnings were not continued due to the sign of earnings coefficient estimated shift from positive (i.e. 7.02) to negative (i.e. -0.16) after the crisis.[37] The study also separated the test according to profit- and loss-firms before and after the crisis.

However, the study by Graham et al. (2001) did not explain about the intercept terms. Both book value and earnings had less explanatory power to capture share price in accordance with the larger intercept term. The intercept term coefficient was -5.68 (p-value = 0.2915) before and 10.76 after the crisis while the coefficient estimates of book value were 0.93 and 0.84, and those of earnings were 7.02 and – 0.16 before and after the crisis, respectively. This implies that before the crisis, the market relied heavily on individual accounting numbers but after the crisis accounting numbers had very much less important roles, as shown on a very larger intercept term compared to the past, especially in profit-firms. But, for loss-firms the intercept term was changed from 9.36 to -0.25 (p-value = 0.9628),

[37] According to Graham et al. (2001), Ohlson model suggests that earnings have value relevance according to abnormal return. For the case of negative earnings, positive signs of the coefficient estimate of earning should be obtained before and after the crisis, meaning that the market expects that negative earnings are persistence. Therefore, the sign of valuation coefficient was changed from positive to negative before and after the crisis, respectively, implying that negative earnings should reverse back to positive earnings after the financial crisis.

implying that accounting numbers play an important role after the crisis, i.e. investors probably pay attention to liquidity values in negative-earnings firms (Graham et al. 2000).

A recent study of Thailand accounting information value-relevance by Davis-Friday et al. (2006) revealed that the value relevance of book value increased while that of earnings decreased between 1996 and 1997. Their findings are consistent with those of Graham et al. (2000). Barth et al. (1998, quoted in Davis-Friday et al. 2006) suggested that during the economic downturn, the value relevance of book value increases while that of earnings decreases. These findings imply that Thai accounting measures reflect economic consequences, especially during the economic deterioration and are supported by the suggestion of prior research. In their study, Davis-Friday et al. (2006) categorised Thailand as an IAS-based accounting system and Korea is only one from the other three Asian countries in the analysis, including Indonesia, Malaysia and Thailand, where its accounting system is based on tax law. On the other hand, Ball et al. (2003) argued that Thailand is one of the countries where the accounting system relies on tax laws. This disagreement raises an issue of whether the accounting regime in Thailand is based on IAS or tax laws. The review of related literature with regard to accounting regime in Thailand will be discussed in the next section as this thesis takes the transition of accounting regime to another account that it is conceptually different from the value relevance study of accounting information.

The Importance of Other Information in Firm Valuations: Other Implications of the Value Relevance Analysis

As aforementioned, not only accounting measures but also other information is reflected on firm values according to the assumption proposed by Ohlson (1995). In the earlier sections, accounting changes and market environment effects are explored. This section documents the importance of other information observed by empirical studies in terms of the valuation analysis.

Firm specific attributes

Martinez (2003) investigated whether firm-specific attributes, including size, debt and life cycle (measured by market-to-book value), were reflected on firm share prices by testing the French data set of 918 firm-years observations during the period 1994–2001. The study used share returns as dependent variables and accounting numbers as independent variables, including earnings and cash flow. In addition, the study adopted the quadratic model by incorporating non-linear information as independent variables. It partitioned the data according to the degree of total assets, leverage and market-to-book. Findings revealed that size, debt and maturity/growth significantly affected the firm valuation process, and cash flow did not provide additional information beyond earnings. Additionally, non-linear specifications increased the explanatory power of accounting measures.

Rather similar to Martinez (2003) in terms of estimating specific-effects, Ballas and Hevas (2005) use in-depth knowledge of economic environment (other than accounting information) concerning the reported numbers. Contributing to prior research papers that examined national difference effects on accounting information, they investigated micro feature attributes to provide a better understanding of specific features affecting the firm valuation process. The tested attributes were regulation and industry effects on the usefulness of earnings and book value across European countries, including France, Germany, the Netherlands and the UK during the period 1995–2003, including the total of 5,957 firm-year observations with seven different industries. They employed price regression to determine the association between market value of the firm and accounting measures, abnormal income and book value. By partitioning the data set in accordance with specific characteristics, including cross-country and cross-industry differences, their findings reported the importance of industry differences that impacted on earnings and book value. By constituting the current abnormal return as a function of previous abnormal return, they found statistically significant earnings persistence in all countries and industries. In addition, they revealed that lagged book value was significantly associated with the current book value. In their study, they predicted market valued by estimating forecasting errors in accordance with industry and country effects. They included accrual effect (net income less operating cash flow) to the price model as other information and the result showed an improvement of the explanatory power from 66 to 70 per cent and 70 to 72 per cent for cross-country and cross-industry data sets, respectively. In addition, the prediction errors were smaller with reference to industry. This implies that industry effect is essential for the value relevance analysis in terms of prediction process.

Other research which uses knowledge of economic surroundings (other than accounting information) concerning the reported number is the work of Ely and Pownall (2002). Ely and Pownall (2002) studied accounting information quality in terms of value-relevance for Japanese firms who are and who are not cross-listed in the US to determine the effect of stakeholder-related incentive. The Japanese financial market, like other markets in code law countries, depends heavily on the bank and creditor system rather than the shareholder system. The authors expected a stronger relation between share price and accounting numbers, book value and earnings, in cross-listed firms than non-cross-listed firms because the shareholder- or market-oriented environment focuses primarily on firms' performance more than the creditor-oriented system.

The authors matched cross-listed firms and non-cross-listed firms by using industry and revenue. They analysed and provided insightful descriptive characteristics of two different types of these firms, i.e. ownership concentration, bank's roles and the role of foreign institute. By selecting 23 cross-listed firms coupled with 23 matched firms from 1988 to 1996, they reported from price and deflated price regressions that the value relevance of earnings and book value was higher in cross-listed firms. In addition, their findings revealed a smaller intercept term of non-cross-listed firms, interpreting that earnings and book value in non-cross-listed firms did not play an important role in explaining share price when compared to those in cross-listed firms.

This study applies the use of industry and macroeconomic data to determine firm value as indicated by Kothari (2001). These considerations are essential for fundamental analysis; Beaver (2002) also suggests that in-depth knowledge of accounting institutions and the specific characteristics of accounting measures is demanded for value relevance research. However, this thesis considers that some other points may be concerned. First, matching selection process is crucial when it is used to search for a benchmark. Barber and Lyon (1996) suggested that matching firms with industry and pre-event performance (i.e. return on assets or many years pre-performance of return on sales) is well-specified rather than using industry alone. And, second, 14 firms were listed on the NASDAQ and another nine were listed on the NYSE. Stock exchange effects might impact the result due to differences in stock exchange rules.

Non-financial information

Dontoh et al. (2004) proposed that the decline of value relevance in US firms from 1983 to 2000 could be derived from non-financial information, namely trading activity effects. The study fitted several variables, i.e. analysts' forecast revision, trading and outstanding common shares, trading volume, and cross-section mean trading volume in many equations. First, they regressed share prices on book value and earnings to obtain the explanatory power. Then the explanatory power was used as dependent variable and regressed on the cross-section mean trading volume. The study predicted that if the association between share price and accounting numbers were perfect, the declining value relevance should be due to non-financial information. If this is the case, the increasing noise in non-financial information raises noise in share prices, leading to declining explanatory power. Therefore, non-financial information should be associated with the explanatory power and share price. Their results supported their theoretical predictions that the declining value relevance of book value and earnings was associated with non-financial information. They suggested that future value relevance studies should detect this information to make a proper inference.

Predictability

Ali, Hwang and Trombley (2003) noted that one major concern about fundamental analysis is whether residual income model, in particular value-to-price ratio (hereafter V/P) is sensitive to risk proxies in the process of abnormal return prediction because prior research found the ability of V/P to predict abnormal return but argued that this effect may be due to risk factor omissions. They investigated this concern and whether there is temporary market mispricing effect in V/P strategy or omitted risk factors drive the predictability of V/P. Value (V) is calculated by book value and the present value of forecasted return on equity relying on two periods and V/P is dividing V by share price (P). By the estimated V/P, US data were formed to five quintile portfolios at the end of June each year over the 1976–1997 period.

First, the study estimated the mispricing effect of V/P. The authors postulated that *"because asset pricing models do not predict forecasted return over short window period, if abnormal returns to the V/P strategy are due to omitted risk factors, then future abnormal returns should not be concentrated around the earnings announcement periods."* They expected that market mispricing effect is observed when abnormal returns that were significantly larger than zero around earnings announcement date. The study estimated the relation between ranking quintile of V/P and future return with controlled size effect and compared the degree of abnormal return between earnings announcement (3-day abnormal returns) and non-announcement (63-day abnormal returns) periods. Findings revealed that V/P strategy was due to mispricing effect.

Second, because prior analyses suggested that the ability of V/P to predict abnormal returns was due to omitted risk factor, the study investigated whether incorrect measurement or risk factor omission related to the abnormal returns predictability of V/P. The study regressed V/P on several risk factors, including systematic (beta) and non-systematic risks (share price variability), market price risk, leverage firm risk, financial distress risk, and information environment risks which were proxied by size, number of analysts, variation of analysts' earnings forecasts, stability of past return on assets and industry cost of capital. Another three risks were also included: book-to-price ratio, I/B/E/S long-term growth predictions and estimated anticipated return. Next, the study regressed future returns on V/P and those risk factors. If the association is significant after controlling the risk factors, then it suggests that omitted risk factors do not drive V/P effect. The study reported significant positive association between V/P and future returns although controlling for risks. This implies that V/P prediction ability is not due to omitted risk factors. Additional calculations for V/P were also performed by using another two different formulas according to Dechow et al. (1999) and Gode and Mohanram (2001) (quoted in Ali et al. 2003).

Ashbaugh and Pincus (2001) examined whether the adoption of IAS provides better earnings predictability in cross-country data, including Australia, Canada, Denmark, Finland, France, Hong Kong, Japan, Malaysia, Norway, Singapore, Spain, Sweden, and Switzerland, for the period of 1993 (before and after 1 January 1993). They expected that analysts' earnings forecasts would change after the IAS adoption; the predictability of earnings could be either increased or decreased after the adoption. By indexing disclosure requirements and measurement methods for each country, they defined forecast errors (the absolute value of the difference between analysts' earnings forecasts and reported earnings) are a function of those factors and added number of analysts and market value of equity as control variables. They estimated both in level and change models. Overall, findings reported that earnings forecast errors decreased after the adoption, implying less variation in disclosure and measurement methods.

Test of accounting differences

Zhao (2002) employed a fundamental analysis to estimate the value relevance of different accounting methods for research and development (R&D) information across four countries, including France, Germany, the UK and the US. There are two alternative accounting methods for R&D – the full cost and the successful cost. Germany and the US (exclusive of the software company) have used the full cost by expensing all R&D costs; this method is considered as conservative method. The other two countries, France and the UK, allow firms to defer and amortise successful R&D costs. The study was concerned with the public report of R&D costs and amortisation because this information could be confidential. Thus, the study was interested in the incremental value relevance for disclosing R&D costs and allocation costs. By testing the data of four countries for the period 1990–1999, the study used the price model and added other information, including estimated R&D costs and allocation costs, R&D accounting methods and different law systems to the model. The explanatory power of the association between share price and accounting measures, including book value and earnings, was increased when R&D cost information was added. In addition, the allocation R&D costs were incremental value-relevant for France and UK samples, not for full-cost countries.

Zhao (2002) investigated the value relevance of R&D information across countries and industries, meaning that reporting environments, i.e. legal regulations, and industry could affect their analysis. On the other hand, another study about successful and full cost methods is the work of Bryant (2003) that focuses on only the US oil and gas industry. This reduces the potential problem of the market difference and industry effect. By using price and return regressions, Bryant (2003) added the present value of future net cash flows of oil and gas reserves as another explanatory variable to the models. The sample of 112 firms for the period 1994–1996 was examined, separated into 64 successful-cost firms and 48 full-cost firms. The study calculated as-if book value and income for each sample group. In particular, for successful-cost (full-cost) firms, their actual book value and income is re-constructed to obtain full-costs (successful-costs) as if these firms had been using full-cost (successful-cost) method. This method allows the comparison of different accounting methods within the same firm by comparing the explanatory power of the regression from actual numbers and from as-if numbers. This approach reduces self-selection bias but share price is assumed to remain unchanged during the testing period. This assumption can reduce the power of the test as well. The study found that full-cost method has superior value relevance to successful method; this finding was inconsistent with the past finding where the cross-firm approach was used. In addition, the study found that the higher value relevance of full-cost method was derived from earnings rather than book value.

Test of alternative book value and earnings and cash flow information

Brown and Sivakumar (2003) attempted to investigate whether earnings prepared by analysts and firm's manager had similar properties to reported earnings according to GAAP. They hypothesised that the higher the value relevance, the more useful the information. They defined the value relevance in terms of predictive ability of earnings, relative valuation and the information content. Based on US data for the period 1989–1997, first, the study obtained earnings prepared by analysts and managers and compared them to earnings reported in financial statements by evaluating which number provided more accurate prediction from the last fourth quarter earnings to the first next quarter earnings. By using mean and binomial tests, they reported that reported earnings were less value-relevant in terms of predictive ability of next quarter earnings than earnings adjusted by managers and analysts. Second, according to the price model, they separated out earnings, independent variables into two figures according to analysts and manager's earnings and reported earnings. The relative valuation analysis supported the first result that reported earnings were lower value-relevant compared to the others. Third, they regressed 3-day and 63-day cumulative abnormal returns on changes in alternative earnings. The result from the third method also supported the first one that reported earnings did not play an important role in value-relevance compared to the other two earnings.

Abad, Laffarga, Garcia-Borboolla, Larrán, Piãero and Garrod (2000) studied whether the value relevance of book value and earnings reported in consolidated or parent company reporting were different in Spanish firms. From 1991, Spain's accounting system has required publicly held firms to render consolidated financial statements under the parent company approach by disclosing relevant information in the parent company accounts.[38] The study attempted to report whether the value relevance was altered when alternative book value and earnings were used to estimate firm valuation. Based on 474 Spanish firm-year observations for the period 1991–1997, the study defined annual share price as a function of a set of annual book value and earnings information. Because Spanish firms report only minority interests, to compare alternative book value and earnings, the study estimated as-if book value and earnings by including self-constructed goodwill based on available information. Their results revealed that the disclosed information in the parent company accounting was value relevant while other information was not value relevant.

Two major drawbacks of this analysis: i) the authors have not cautioned about unchanged share price. Because the study assumed the full entity approach being used and performed self-calculated goodwill, then share price could reflect this information if this approach had been actually used, resulting in the alteration of the existing share price that the authors employed for the whole analysis and ii) different from other value relevance studies, this study uses year-end share price. In other words, the study did not allow time for share price to capture information. It is not clear in the study that using year-end share price can reflect the consolidated financial reporting that should be released at least after the fiscal year-end date.

Charitou, Clubb and Andreou (2000) investigated the relative value relevance of accounting earnings and cash flow in Japanese firms for the period 1985–1993. The analysis also estimated the incremental value relevance of cash flow and earnings during the period of earnings transition. Their motivation is derived

[38] The authors defined three different consolidated financial statements as: "a) the parent company approach, which excludes minority interest from the book value of equity of the group, b) the entity approach, which includes *currently reported* minority interest into the book value of equity of the group, and c) the full entity approach, which includes the book value of equity of the group the minority interest reported plus the estimated minority interest share of purchased goodwill."

from the fact that Japanese business is heavily based on creditor orientation rather than the stock market. In addition, earnings and financial information are not important for economic decisions. Based on 6,662 firm-year observations, they found that earnings and cash flow were value-relevant at much the same level as found in the US market. The finding was revealed by different return regressions that used annual share returns as dependent variable while the level of and change in earnings and cash flow were used as independent variables. They estimated earnings persistence by calculating the degree of absolute changes in earnings divided by price and ranked the earnings persistence. Their findings supported that during the earnings transition, cash flow had higher incremental value-relevance than earnings.

Disclosure quality

Kang and Pang (2005) estimated the quality of disclosure level through its value relevance. High value relevance is high quality of disclosure. Based on non-US firms in 41 countries whose shares were traded on the US stock exchange for the period 1993–1999, they employed price model by estimating the association between share price in the US and home-country reported accounting numbers, including book value and earnings. The disclosure level was proxied by economic development: emerging vs. developed countries. Findings revealed that emerging market countries required more disclosure to obtain more transparency and quality of accounting information.

Discussion of Value-Relevance Studies

It appears that value relevance analysis has been widely used by researchers when investigating the change in accounting system. After exploring empirical studies with regard to the value relevance analysis, some conclusions can be made. First, the fundamental analysis can be separated into relative information value-relevance and incremental information value-relevance. Mainly, the explanatory power or R^2 is compared to determine whether or not accounting numbers estimated by alternative accounting treatments provide different usefulness levels to the market. In accounting-based research, the alternative accounting number estimation can be derived from accounting treatment differences or accounting policy changes. Value-relevance analysis can be used to determine whether the different determination method is useful. In addition, value-relevance analysis can be used to compare the usefulness of accounting information, which is known as incremental value analysis. Although researchers view that the value analysis is just a joint test between relevance and reliability (Barth et al. 2001), it is a useful tool to distinguish accounting numbers in some magnitude or the impact of accounting system changes as a whole in terms of accounting information quality. Because the valuation model has been silent on accounting choice, it is a practical means for estimating how better different accounting methods can explain economic consequences by comparing the explanatory power of each data set.

Second, price and return models have often been utilised in the study of value relevance. These models are understandable and rather practical in terms of proxies implemented for the models' estimation. For example, rather than using forecasted abnormal returns, users can replace reported earnings for the forecasted data. However, each model has drawbacks because the model has a different quality and they are interpreted differently, as suggested by Beaver (2002), depending on 'time.' Return model is suitable for a specific time period. Furthermore, Martinez (2003) points to the non-linear relationship when using return model. Future research should take these points into account.

Third, to compare the explanatory power, prior research uses the Voung test for the comparison. Some studies use J-test and Cox-test. Other than these methods, some studies compare the association between the market value and accounting information by revising the calculation of the explanatory power with the Cramer methodology (Barth et al. 2008; Harris, Lang and Moller 1994). These tools are added and provide a stronger support for the inference.

Fourth, price and return models are practical and easily to be modified. As performed by many empirical studies, modified regressions provide more insightful about the analysis, i.e. adding dividend policy or non-financial information. This helps future research to think about the choice of variables to be included. Since most value relevance studies have investigated the different explanatory power between alternative accounting treatments, two or more treatments will be compared. Therefore, the models are straightforward allowing the research design to add dummy variables or run the regression twice. In addition, the residual income model can be augmented and applied for practitioners. For instance, O'Hanlon and Peasnell (2002) derive the theoretical link between the residual income model and the economic value added (EVA) used by the consulting firm Stern Stewart & Co.[39]

Finally, it is rather interesting that empirical studies have included financial sector in their sample data set, i.e. Naceur and Goaied (2004), when using price valuation model. This might be an exception for the valuation model because accounting choice does not affect the model. Thus, although financial sector has different or more complicated accounting method, the valuation model, according to its assumption, is not affected by the difference. Moreover, the special characteristics of financial-sector firms can be captured by other information in the valuation model assumed to be zero. Therefore, it is possible to include financial-sector firms in the analysis. However, this thesis considers that although the assumption is intuitive, the empirical inference should be interpreted with care.

In summary, the study of value relevance of accounting information has extensively caught accounting researchers' attention. Although there is no

[39] O'Hanlon and Peasnell (2002) began with the residual income-based valuation relationship (RIVR see pg. 231 which is similar to equation 3.17 presented in this study). And, they derived the residual income book value relationship (RIBR, see Proposition 1 pg. 233). Then, they derived the excess value created (EVC) over multi-period interval from incorporation to time t (Proposition 2 for the beginning at time 0 and Proposition 3 for the beginning at some date) by combining RIVR and RIBR.

theoretical explanation to back up this area of study, it is widely accepted by accounting researchers that the study of value relevance facilitates users' decision making. For example, the user perceives information differently when firms employ different accounting methods.

3.3.3 Earnings Timeliness

The remaining type of accounting quality to be discussed is earnings timeliness. This section reviews the existing literature relating to the asymmetric timeliness of earnings and the study of firm-specific accounting conservatism. For the first research paper, Ball and Shivakumar (2005a) compare accounting conservatism between public and private firms in the UK. The a priori expectation is that there is less demand for financial reporting quality required in private firms relative to public firms. Thus, accounting conservatism is more likely for public firms relative to private firms. In this study, the authors examine accounting conservatism by employing market-based model and introducing the use of accrual-based model to determine accounting conservatism. They employ the dataset during the period 1990–2000, resulting in 141,649 private and 6,208 public firm-years. They determine accounting conservatism by estimating the differential mean reversion in earnings changes, suggesting that negative earnings changes tend to reverse in the next period whilst positive earnings changes tend to persist. Their findings report that public firms have more accounting conservatism relative to private firms. They use the accrual-based earnings timeliness to measure accounting conservatism and their findings are consistent with results obtained from the market-based earnings timeliness model. The result is robust when controlling for size, industry and leverage. This is the first study proposing the time-series measurement of earnings timeliness by not interpreting bad news as negative stock returns.

Roychowdhury and Watts (2007) investigate the relation between market-to-book and the earnings timeliness measure estimated by Basu's model. The motivation of this study is driven by a negative relation between the two measures as this association is predominantly documented in the literature Givoly et al. (2007) evidence the negative relationship between Basu's earnings asymmetric timeliness and firm-specific accounting conservatism measures). However, the authors argue that at the starting point when equity is issued to the market, the book and market value is equal. Book value records partial gains and delays some gains to be accounted in the next period. However, losses will be fully recognised in the current period. This induces the difference between market value and book value. They argue that the positive relation between Basu's earnings timeliness measure and market-to-book should be observed in a long horizon period of time rather than in a short or single time period. Based on 45,664 firm-years during the period 1972–1999, they incorporate market-to-book into Basu's earnings timeliness model. They employ forward and backward accumulated earnings and stock returns instead of single-year earnings and stock returns. The coefficient of the integrated variable between backward accumulated returns and the year-end market-to-book ratio is positive, suggesting that market-to-book is positively correlated to Basu's earnings timeliness measure. The result suggests that Basu's earnings asymmetric timeliness model is more powerful when employing accumulated earnings and returns for an analysis.

Barth et al. (2008) estimate the good/bad news recognition in 21 countries that adopt IFRS. They compare the good/bad news recognition between firms employ IFRS and firms do not employ IFRS (matched firms) in the same country and year during 1994 – 2003, comprising 1,895 firm-year observations for 327 firms. A priori prediction is that IFRS-Firms should recognise good/bad news more freguently than non-IFRS firms. They find that during IFRS pre- and post-adoption periods the good/bad news recognition is not statistically different in both IFRS and non-IFRS firms. In addition, the good/bad news recognition during IFRS pre-adoption periods is not statistically different from the good/bad news recognition during IFRS post-adoption periods for IFRS firms.

Conservatism and auditors

Krishnan (2007) examines whether earnings conservatism has been improved for former clients of Arthur Andersen. The author hypothesises that earnings conservatism should be improved for former clients of Arthur Andersen because such firms are more likely to protect their reputation and reduce potential litigation risk. The dataset includes 865 former clients of Arthur Andersen; 91 clients switched to a non-big-four auditor in 2002. Based on the market-based earnings asymmetric timeliness model, findings suggest that earnings conservatism has been improved for former clients of Andersen from 2001 to 2002. Particularly, earnings conservatism for former Houston-Based Andersen clients has been significantly increased following switching to a big-four auditor in 2002. However, earnings timeliness has not been improved during these two periods for former Andersen clients switching to non-big four auditors. Further findings in this paper also suggest that negative earnings changes have been generally reversed between those two periods for former Andersen clients; the reversal of negative earnings indicates the timeliness of earnings to capture economic consequences. In addition, the author employs accrual-based earnings timeliness model to support the main finding.

Conservatism and debt

Beatty, Weber and Yu (2008) investigate the relationship between accounting conservatism and debt. This study is motivated by the question of whether the agency costs of debt affect the modification of conservatism in the firm's financial reports. For example, income escalators are more likely at the high agency costs of debt. Five different firm-specific accounting conservatism measures are employed in this study, including market-to-book, the coefficient of the interaction of negative returns with returns, the difference between the skewness in cash flows and earnings, accumulated non-operating accruals and the sum of firm's rank for each of these five measures. They regress the lending contract modification which is equal to 1 if this contract modification is made, zero otherwise, on accounting conservatism measures and other variables, i.e. the maturity of loan, the interest rate spread, loan type, debt rating, ROA, size and growth. The contract modification is required only when a percentage of positive net income is added to net worth thresholds. They also regress the conservatism measure on income escalator with other control variables. Based on the dataset during the period 1994–2004 with 2,164 observations, their findings report that income escalators positively vary with accounting conservatism, suggesting that lenders' demands for conservatism are satisfied by reporting conservatism and conservative contract modifications.

Whilst Beatty et al. (2008) estimate unconditional conservatism and debt, Hsu, O'Hanlon and Peasnell (2010) examine conditional conservatism and financial distress during the period 1989 – 2005 with 21,513 US firm-year observations. They determine financial distress by using two measures – Black-Scholes-Merton (BSM) score and the Altman (1968) Z Score. They employ three piecewise regression models, including the market-based model, the negative earnings change model and the accrual-based model. They interact financial distress measures through explanatory variables. They find a positive association between conditional conservatism and both of their measures of financial distress. They also note that this positive relationship arises mainly from the accruals component of earnings rather than the cash flow component.

Institutional factors and earnings timeliness

Ball et al. (2003) examine accounting income property in terms of the ability of earnings to capture economic consequences in East Asian countries, including Hong Kong, Singapore, Malaysia and Thailand during the period 1984–1996. Based on Basu's earnings asymmetric timeliness model, their findings suggest that earnings asymmetric timeliness in four Asian countries is lower than that for common law countries, including Australia, Canada, the UK and the USA. They also examine accounting income property by evaluating through the persistence of earnings changes. According to Basu (1997), the negative change in earnings is viewed as transitory and will be reversed in the next period. The positive change in earnings is viewed as more permanent relative to the negative change in earnings. The reversion of negative changes in earnings implies asymmetric income-conservatism. The coefficient estimated when regressing changes in earnings on negative changes in earnings is, thus, negative. Their findings suggest that among four Asian countries, negative earnings changes in Singapore are more transitory than positive earnings changes. Negative earnings changes for four Asian countries relative to common law and code law (Germany, France, and Japan) countries are less transitory than positive earnings changes.

Ball et al. (2000) investigate accounting conservatism among 18 countries during the period 1985 – 1995. They compare conditional accounting conservatism between common and code law countries in different aspects, including accounting regulations, securities law, dividend, cash flows and debt. Based on the market-based earnings asymmetric timeliness model, findings suggest that accounting conservatism is higher in common law countries relative to code law countries due to greater sensitivity to economic losses. They suggest that the timelier economic loss recognition brings quicker analysts' attentions and facilitates the monitoring mechanism of managers as well as induce necessary actions, i.e. binding leverage and dividend restrictions more quickly or monitoring bonuses for employees and managers.

Beuselinck and Manigart (2007) investigate earnings timeliness in Belgian unquoted companies during the period 1985–1999. They incorporate an institutional factor to determine earnings timeliness by using private equity ownership concentration. They argue that the incentive of private equity investors to monitor financial reporting closely is high when those investors hold a small proportion of equity in the unquoted company. Nonetheless, the relationship can be positive since private equity investors who hold a large percentage of equity influence the company to produce high quality of financial reporting due to the reputation of the investors. Thus, they conjecture that the earnings timeliness for private equity backed companies is negatively or positively related to the proportion of equity held by private equity investors. They incorporate the percentage of equity held by the investor in the market-based and accrual-based earnings asymmetric timeliness models. Their findings suggest that earnings timeliness is lower when the private investor holds a large percentage of equity but higher when the private investor holds a small percentage of equity in the unquoted company.

Bushman and Piotroski (2006) investigate whether economic institutional factors induce differential accounting conservatism among countries. The economy institutional factor used in their study includes legal regime, judicial system, securities law, political economy and tax regimes. They separate legal regimes according to civil and common law. The judicial system is obtained from the rating of judicial impartiality reported in the Economic Freedom of the World's 2002 annual report. Basically, a strong judicial system induces more accounting conservatism. They use the securities law based on the study of La Porta et al. (2003). They use risk of expropriation assets by the state and state-owned enterprises to measure the political economy. The marginal tax rate is used to measure tax regimes. Based on 38 countries during the period 1992–2001, they employ market-based earnings asymmetric timeliness model with incorporating the economy institutional factor for main analyses and accrual-based model for robustness tests. Their findings suggest that high quality judicial systems and strong securities law induce more ability of earnings to capture bad news. Low risk of expropriation of assets by the state and low state ownership of enterprises encourage earnings to recognise bad news in a more timely manner than good news. The speed to recognise bad news is higher for the civil law country with high state involvement in the economy relative to low state involvement whilst the speed to recognise bad news is lower for common law countries with high state involvement in the economy.

Gassen, Fulbier and Sellhorn (2006) incorporate unconditional conservatism and income smoothing to investigate earnings conservatism in 23 countries during the period 1990–2003. They employ market-to-book ratio and 5-year backward accumulated accruals to measure unconditional conservatism and the ratio of 5-year standard deviation of earnings divided by 5-year standard deviation of cash flows to measure income smoothing. They predict that unconditional conservatism and income smoothing reduce earnings asymmetric timeliness. They find that market-to-book ratio and income smoothing are negatively correlated with earnings asymmetric timeliness based on Basu's model. However, a positive relation between the accumulated accrual and earnings asymmetric timeliness is found. Their analysis investigates accounting conservatism across countries, but they do not detect the difference in institutional factors among countries, i.e. economic environment. They only separate the analysis according to common law and code law countries.

Jindrichovska and Mcleay (2005) investigate earnings asymmetric timeliness in 317 Czech Republic firm-years during the period 1993–1999. Based on Basu's earnings timeliness model, they find that earnings timeliness is less likely for the sample firm. Although they repeat the regression analysis by separating the sample firm into bad news and good news, no significant result is observed during the sampling period.

Lara and Mora (2004) investigate accounting conservatism in common law and code law European countries. They compare accounting conservatism in the UK using common law with that in other countries using code law, including Belgium, France, Germany, Italy, the Netherlands, Spain, and Switzerland. They employ two accounting conservatism measures: book value and earnings asymmetry. They hypothesise that book value or balance sheet conservatism is greater for code law countries relative to the UK whilst earnings asymmetric timeliness is higher in the UK relative to code law countries. These opposite hypotheses are driven by the different attribute of the market demand, that the UK is a market-oriented country whilst the other countries are creditor-oriented countries. They employ the dataset during the period 1987–2000. Based on valuation model and earnings asymmetric timeliness model incorporating an indicator variable to capture the difference in conservatism between UK and the code law countries, their findings support the hypotheses. They suggest that the lower balance sheet conservatism in the code law countries is induced by more pronounced earnings persistence. However, they did not compare the persistence of earnings between the UK and code law countries. The higher earnings asymmetric timeliness in the UK is induced by the demand from the dispersion of shareholders.

Lin and Chen (1999) conduct a survey analysis to investigate accounting conservatism in China after the conservatism approach has been introduced in China after 1993. Since China has long been historically a socialist economy, accounting practices were mostly controlled by the government. The rejection of implementing accounting conservatism may rise. 800 survey questionnaires were sent out in 1998 to 150 Chinese firms. The survey questionnaire was sent to general managers or heads of finance and accounting sections and financial statement users, including government agencies, bank credit and loan officers, security analysts, and audit firms, as well as university professors. The response rate was 26.1%. Findings suggest that most related parties in using financial statements support the development of accounting conservatism in China except for the government which tends to support the existing accounting system.

Pope and Walker (1999) examine earnings asymmetric timeliness in the US and the UK. Based on Basu's earnings asymmetric timeliness model, they derive five different measures of conservatism, including the ratio of bad/good news regression model slope parameters, the ratio of adjusted R^2 statistics for bad/good news regression models, sensitivity to bad news less sensitivity to good news, sensitivity to bad news, and average earnings/(lagged price) bias. They compare the earnings timeliness between US and UK firms during the period 1976–1992. They employ two different earnings in their estimation of conservatism, including ordinary earnings and earnings after extraordinary items. They expect that earnings after extraordinary items are more sensitive to bad news if extraordinary items are employed to eliminate bad news from ordinary earnings. Their findings suggest that UK firms are more likely to categorise bad news earnings components as extraordinary items relative to US firms. These findings suggest that earnings measures are essential for the analysis of relative conservatism in different accounting regimes. Thus, inferences are sensitive to the earnings measure.

Raonic, Stuart and Ioannis (2004) investigate earnings timeliness for 492 European firms during the period 1987–1999, including Belgium, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, Spain, Sweden, Switzerland and the UK. The data must be available for each firm for at least two consecutive years. To investigate earnings timeliness, they include three pieces of information: index of disclosure items in annual report, stock market attribute, and legal (enforcement) system. They employ Basu's earnings asymmetric timeliness model by including the three pieces of information as additional independent variables and integrating the three pieces of information in the model. Their findings suggest that earnings timeliness is observed in their samples except for France, Norway, Sweden and Switzerland. They find that disclosure and legal system are positively correlated with earnings information. When incorporating stock market attribute and legal system in the model, findings report that the ability of earnings to capture bad news varies with the stock market or legal system. This research computes a score for the three pieces of institutional information, however they do not clearly explain whether the higher score reflects more accounting conservatism. For example, the authors explain only that the market index for Germany (score = 5) is least important relative to Switzerland (score = 24.8), which is most important.

Van der Meulen, Gaeremynck and Willekens (2007) study earnings timeliness in German firms when the German firm can employ either US GAAP or IFRS for their financial statements. They use the sample firm from 2000–2002, including

313 observations. They divide the sample firm into two groups then perform the regression analysis. Based on Basu's earnings timeliness model, they find insignificant results for the model's coefficient representing earnings timeliness. In addition, they use the explanatory power to determine earnings timeliness that the higher explanatory power indicates that earnings capture bad news on a timely fashion. They find that IFRS and US GAAP used by the German firms are indifferent in terms of the ability of earnings information prepared by those two accounting standards to capture economic consequences on a timely basis.

Discussion of earnings timeliness

From prior studies, the earnings asymmetric timeliness has been widely used in existing accounting research. It appears that the notion of earnings asymmetric timeliness differs from the notion of earnings persistence. Earnings asymmetric timeliness delays the recognition of good news; good news will be allocated to future periods of time. It indicates that positive earnings tend to be persistent. On the other hand, earnings asymmetric timeliness recognises bad news in the current period but not future periods. The negative earnings changes tend to reverse in future periods of time (Basu 1997). The market-based earnings asymmetric timeliness model based on Basu (1997) is a predominant method widely used by researchers. However, prior studies find that Basu's earnings asymmetric timeliness has a negative relation with firm-specific (unconditional) conservatism, i.e. book-to-market ratio. There is no complete empirical explanation to measure accounting conservatism. Two criteria should be made from the review of the literature. Firstly, it is still problematic about the proxy being used to measure accounting conservatism, i.e. the proxy for economic consequences. Second, institutional factors play important roles in the timeliness of earnings, i.e. country specific factors. In addition to those criteria, earnings components are significant information sources for the analysis of earnings timeliness. For example, Hsu, O'Hanlon and Peasnell (2010B) report that the asymmetric timeliness of earnings varies when different earnings components are employed. The explanatory power from their estimations (adjusted R^2) is ranging from 8.51% to 14.74% when earnings are measured by clean surplus earnings and operating profit, respectively.

3.3.4 Book-Tax Differences and Accounting Quality

This section summarises existing research studies that employ book-tax differences to determine accounting information quality of the firm. Even though prior research incorporates firm-specific and institutional factors, i.e. market-to-book ratio and legal system, to estimate earnings timeliness, it appears that book-tax differences have not yet been employed by the existing study. A review of literature is presented as follows.

Earnings informativeness and book-tax differences

Hanlon et al. (2005) estimate about the information loss if financial accounting income is conformed to taxable income. The expectation is that accounting income prepared by GAAP (or book income) should have information content relative to taxable income because of the different objectives between book income and taxable income. However, the authors suggest that if investors use taxable income as a benchmark to evaluate book income, then taxable income will have incremental information content. Based on the data during the period 1983 – 2001, they compare market returns from the change in book income and taxable income. They separate the comparison by using the sign from the change in book income and taxable income and the sign and magnitude from the change in book and taxable income. Findings suggest that book income is more useful for investors relative to taxable income because book income provides an average annual return greater than taxable income. Next, they compare the relative information content by using the explanatory power. They regress stock returns on changes in book income and taxable income separately. Their findings report that book income has higher information content than taxable income. Last, they estimate the incremental information content. They regress stock returns on book income and taxable income. They find that the coefficient estimate for book income and taxable income is .55 and .28, respectively. This suggests that the market appears to rely more on book income relative to taxable income. In addition, they suggest from the findings that if the same accounting rule is used for calculating both book income and taxable income, the information content would be loss.

Hanlon et al. (2008) examine a decrease in earnings informativeness if book-tax conformity increases. They use firms that are forced to convert from cash method to accrual method for tax calculation and control firms that use accrual method for tax calculation during the entire period of the study. By using the ERC model, they set an indicator variable for the converting firm and control firm. And, an indicator variable is introduced to capture the difference in the time period between pre- and post-cash and accrual method conversion. They integrate all indicator variables with changes in earnings. Stock returns are used as a dependent variable. A priori expectation is that information loss should be observed at an increase in book-tax conformity. Their findings suggest that the earnings informativeness declines after firms are forced to use accrual method for tax purposes, implying that book-tax conformity reduces the value relevance of earnings information. They also match converting firms and control firms by using sales growth. The findings remain consistent.

Ayers et al. (2009) estimate the informativeness of taxable income. They conjecture that taxable income is less informative for high tax-planning firms relative to other firms, and taxable income is more informative for firms with lower earnings quality relative to book income. They compare the information content of book income and taxable income. They regress returns on change in taxable income and on change in pre-tax book income separately. They obtain the explanatory power from the return-taxable income regression divided by the explanatory power from the return-book income regression. The higher ratio suggests that taxable income is more informative than book income. They define high tax-planning firms when those firms have low effective tax rate calculated over five-year periods, $t - 4$ through t. They define low earnings quality firms by using abnormal accruals – the difference between total accruals and modified Jones model normal accruals. The highest 20 percent of absolute abnormal accruals in each year is classified as low earnings quality. Based on 50,760 firm-years during 1983–2002, their findings are consistent with their hypotheses. Taxable income is more informative for high-tax planning firms relative to other firms, and taxable is more informative than book income for low earnings quality firms. They also estimate the incremental explanatory power of taxable income. They regress returns on change in pre-tax book income and change in taxable income. The explanatory power from return-book-taxable income regression and the explanatory power from return-book regression are compared to determine the incremental explanatory power of taxable income. They find the incremental information content of taxble income.

Financial reporting and book-tax differences

Guenther et al. (1997) investigate a shift of financial reporting preparation when firms change from cash method to accrual method according to the change in tax rules in 1986. Before 1986, firms were allowed to use cash method for tax purposes. However, accrual method was enacted for all firms after 1986. In their study, they compare the sample firm that previously used cash method pre-1986 and accrual method post-1986 and the control firm that has been used accrual method since 1986. Pre-1986, relative to the control firm, the sample firm was more likely to accelerate (defer) revenues (expenses) around the fiscal year end because taxes were paid when cash was received. However, during post-1986, the incentive of revenue (expenses) acceleration (deferral) should decline when accrual method was enacted for tax purposes for the sample firm relative to the control firm. The sample and control firm include 66 firms for each group. The control firm is matched by SIC code. According to univariate test, the higher ratio of accounts receivable divided by accounts payable and the higher ratio of sales divided by expenses suggest that the sample firm accelerates revenue recognition greater than the control firm. They employ three ratios as dependent variables, including those two ratios and the ratio of cash receipts divided by cash disbursements. They regress those ratios on the inventory-incentive ratio – the ratio of inventory divided by total assets. Their findings are consistent with the result from the univariate test, suggesting that firms are more likely to defer income when accrual method is used for tax purposes.

Mills and Newberry (2001) examine tax cost and non-tax cost influencing book-tax differences between public and private firms. Tax costs refer to costs associated with tax examinations. Firms that report large book income but low taxable income are more likely to have high tax costs, i.e. audit adjustments. Non-tax costs refer to costs associated with financial reporting. Firms that conform book income and taxable income to reduce tax costs incurred are more likely to confront with non-tax costs, i.e. decreasing in firm value, debt covenant violation or managers' compensation when the compensation is tied with book income. The book-tax conformity occurs due to firms' tendency to reduce book income to conform taxable income. They investigate the relationship between book-tax differences and some factors including profit and loss, debt constraints and bonus plan thresholds by using public and private firms. They conjecture that: 1) public firms report higher book income relative to taxable income than private firms during profit periods, 2) public firms report higher book losses relative to tax losses than private firms, and 3) in the period of profit, the relationship between book-tax differences and debt ratio is weaker for public firms relative to private firms because public firms are more likely to meet the requirement of debt obligations. Also, they investigate the relationship between book-tax differences and bonus plan among public firms only. Based on 9,187 firm-years during the period 1981–1996, they regress book-tax differences on several variables, i.e. debt, tax credit, industry, bonus threshold and size. They use an indicator variable to separate public and private firms. Their findings suggest that among income (loss) firms, public firms report larger positive (negative) book-tax differences than do private firms. They find a stronger relation between book-tax differences and debt in private firms relative to public firms. They expect that managers tend to use income-decreasing procedures when their bonus plans upper or lower bounds are binding, and income-increasing procedures when there is no binding for these bonus plans. Their findings support this expectation. However, the finding is sensitive to the threshold level.

Earnings persistence and book-tax differences

Hanlon (2005) investigates whether earnings persistence varies according to the scale of book-tax differences. The dataset during the period 1994–2000 is partitioned to three groups, including small, large positive and large negative book-tax differences. A priori expectation is that small book-tax difference firm-years is of higher persistence than large positive and large negative book-tax difference firm-years. By using a random walk model, indicator variables are included to estimate the difference between sample groups. Findings suggest that firm-years with large negative and positive book-tax differences have considerably less persistent earnings than firm-years with small book-tax differences. The study also decomposes earnings information to cash flows and accruals. Results from the regression of earnings on cash flows and accruals support the prior finding that earnings are of lower persistence for firm-years with large book-tax differences relative to small book-tax differences. The study further estimates the market expectation on book-tax difference information. By using Mishkin methodology, findings suggest that book-tax differences are used by investors to infer lower persistence in accruals for firm-years with large positive book-tax differences. The market overestimates the persistence of accruals attributable to earnings performance for firm-years with large negative book-tax differences. The study also examines the relationship between abnormal returns and pre-tax accruals. The relationship between large negative (positive) book-tax differences and stock returns is significant (insignificant). This finding supports the result obtained from the Mishkin test that the market perceives rationally about large positive book-tax differences but irrationally for relative to large negative book-tax differences.

Schmidt (2006) investigates the earnings persistence when earnings are decomposed into earnings excluding tax changes and tax change component. Earnings excluding tax (ATE) changes refer to pre-tax earnings multiplied by (1 – effective tax rate). Tax change component (TCC) refers to pre-tax earnings multiplied by change in effective tax rate. He regresses the one-year-ahead earnings on ATE and TCC. He finds the positive relation between the future earnings and TCC, suggesting that tax changes are not transitory. He extends TCC component by decomposing TCC into the initial tax change (quarter 1) component of earnings and the revised tax change (quarter 2, 3 and 4) component of earnings. He finds that the relationship between the one-year-ahead earnings and the initial tax change is significantly positive. The persistence between the one-year-ahead earnings and the revised tax change component of earnings declines as the year progresses. He concludes that tax change information is not transitory, and the initial and revised tax change has differential persistence and forecasting implication.

In conclusion, the book-tax difference is a useful means to differentiate the incentive of the firm. However, the book-tax difference must be interpreted with caution. Many research studies in the well-developed market employ book-tax differences to identify accounting quality. However, research studies conducted in the emerging market have rarely used book-tax differences as the institutional factor.

3.3.5 Firm Governance and Accounting Quality

This section presents a summary from the existing research in terms of firm governance and accounting quality. It appears that prior research has widely explored the effect of firm governance systems on accounting quality. Prior studies have employed various firm governance factors in their analyses, i.e. ownership structure or audit committee. Most studies find that firm governance systems play an important role in accounting quality and they cause variation in accounting quality among firms. The review of literature is presented as follows:

Value relevance

Corporate governance system

Goncharov et al. (2006) investigate whether the value relevance of accounting information has improved after changes in corporate governance code in Germany. The first version of corporate governance code in Germany was introduced in 2002. It was amended during the period 2002–2006. They measure the deviation of the recommendations given by the code and the actual compliance with the code and use the absolute deviation number as a proxy for the compliance with corporate governance code. Based on 122 observations (61 firms) in 2002 and 2003, they employ the firm valuation model and ERC model by including the proxy of the corporate governance code to determine the value relevance. In their study, they correct an endogeneity problem by identifying factors deriving the compliance with the code. Then they calculate Inverse Mills ratio and include it in the valuation models. After controlling for the endogeneity problem, their findings suggest that the market positively values firms according to the degree of compliance with the corporate governance code.

Board structure

Vafeas (2000) investigates the quality of boards and the quality of firms' financial reports. The relation between board structure and the informativeness of earnings has been debated extensively in the literature. The author predicts that the relationship between stock returns and earnings positively varies according to a number of outside directors serving on a firm's board. However, the decrease in this relationship is observed when the proportion of outside directors on a firm's board increases. In addition, this study expects a negative relation between the value relevance of information and board size for a firm's board with a moderate to large number of members. The study defines that stock returns are a function of earnings information and different board compositions and structures. Based on the dataset during the period 1990–1994 of 307 large firms listed on the Forbes compensation survey, findings report no relation between the value relevance of earnings information and board compositions. However, the higher value relevance of earnings information is observed for firms with smaller size of firms' board (five members on a board).

Ownership structure

Fan and Wong (2002) investigate whether earnings informativeness varies according to the ownership structure in East Asia, including Hong Kong, Indonesia, Malaysia, Singapore, South Korea, Taiwan and Thailand during the period 1991–1995. For the ownership structure, they employ ultimate owners and cash flow right associated with the ultimate owner (voting and cash flow right is set at 50%.). They predict that earnings informativeness declines with an increase in the degree of divergence between the controlling owner's voting and cash flow rights. They regress the cumulative stock return on the earnings information and the integrated variable between earnings and ownership structure. Their findings report a negative relation between stock returns and voting rights but a positive relation between stock returns and cash flow rights, suggesting that the higher proportion of voting (cash flow) rights deters (improves) earnings informativeness. The finding supports their prediction.

Jung and Kwon (2002) estimate earnings informativeness and the ownership structure in Korea. They define the ownership structure as the largest shareholder (managing ownership), institutional shareholding and block-shareholding. They employ return-earnings regressions by regressing stock returns on earnings and the integrated variable between earnings and the ownership variables. Their findings report a positive relation between stock returns and those three ownership proxies. The result is robust when including control variables, suggesting that agency costs decline when managing ownership increases. The institutional ownership and blockholders induce earnings informativeness.

Timeliness

Ahmed and Duellman (2007) investigate accounting conservatism and board of director characteristics. For accounting conservatism, they employ firm-specific accounting conservatism measures – accumulative book-to-market and accumulative accruals and earnings asymmetric timeliness. They use five different board characteristics, including percentage of insiders, the separation of CEO and chairman on the board, board size, number of additional directorships held by board members, and outside director ownership. They expect that a strong board induces accounting conservatism. Thus, the relationship between insiders in a board and accounting conservatism is predicted to be negative. The separation of CEO and chairman induces accounting conservatism. The higher outside director ownership induces more accounting conservatism. However, the relationship between accounting conservatism and board size is unclear. In addition, no a priori expectation is set for the relationship between accounting conservatism and number of directorships. After controlling firm characteristics, i.e. size, growth and risk, their findings suggest that accounting conservatism measured by accumulated book-to-market and accumulated accruals is negatively related with the percentage of inside directors on the board but positively related with the percentage of a firm's shares owned by outside directors. Based on Roychowdhury and Watts (2006) and Basu (1997), they employ 3-year backward accumulated earnings for the market-based earnings asymmetric timeliness analysis. Findings support that the higher percentage of insiders on the board induces lower accounting conservatism whilst the higher percentage of outside director ownership induces more accounting conservatism.

Beekes et al. (2004) incorporate corporate governance system to determine the timeliness of earnings in 501 UK firm-years from 1993 to 1995. Based on Basu's asymmetric timeliness of earnings information to capture news, they find that earnings for firms with a large number of outside directors in firms' board tend to capture bad news (through negative stock returns) in a more timely manner than earnings for firms with a small number of outside directors on the board. Their findings are consistent when replacing a number of outside directors by the proportion of non-executive directors and including control variables. They further partition sample firms according to block ownership, managerial ownership, duality of Chief Executive Officer (CEO) and auditor type. They find that non-executive directors induce accounting conservatism with respect to bad news recognition although there is a presence of large external block-holder. Accounting conservatism is less likely when managers own a large percentage of shareholding probably because the conflict of interests between managers and shareholders is less pronounced. Accounting conservatism is more pronounced for firms without CEO duality relative to firms with CEO duality. Since big-five auditors dominate their sample size, by excluding big-five auditees, results remain unchanged, i.e. that accounting conservatism is more likely for firms with outsiders on firms' boards.

Bushman et al. (2004) construct earnings timeliness from an average of three percentile rank earnings attributes. The three attributes are measured from the speed of bad news recognition by earnings information (estimated from Basu's asymmetric timeliness model), the R^2 from Basu's asymmetric timeliness model, and the R^2 from earning response coefficient model. They regress governance structures on earnings timeliness and firm characteristics. The governance structure consists of board structure, equity-based incentives of outside shareholders, equity-based incentives of inside or outside directors or the composition of executive compensation plans. They have no a priori prediction for the relationship between earnings timeliness and board structure because of the multiple roles the board performs. They expect that at the higher complexity of firms, earnings timeliness is negatively correlated with equity-based incentives of outside shareholders, equity-based incentives of inside and outside directors and executive compensation. Findings support their expectations. They find no relationship between earnings timeliness and board size and the percentage of inside directors.

Lara et al. (2007) investigate the effect of board of directors' characteristics and earnings timeliness. They construct an aggregate index for board of directors by using 6-8 different measures, including the proportion of non-executive directors, the proportion of independent directors, CEO duality, number of board meetings, audit committee, a nomination/remuneration committee, executive committee and board size. A lower value of index reflects a weak governance system, that CEO has a high influence over firms' board. Based on 193 Spanish firm-years during the period 1997–2002, findings suggest that relative to a weak governance system, a strong governance system induces the ability of earnings to capture bad news on a timely basis for Spanish firms. They also incorporate a proxy of growth opportunity measured by the market to book ratio in the regression. Findings report that earnings timeliness is less likely for high-growth firms with a strong corporate governance system. They explain that high-growth firms are less likely to have more stringent governance systems but more likely to have insider-dominated boards. They also find that earnings timeliness is more likely when using accrual-based earnings timeliness model, supporting their main analysis.

Others

Byard, Li and Weintrop (2006) examine the association between the quality of financial information and corporate governance systems. They define the quality of financial information as the accuracy of analyst's forecast. The accuracy of analyst's forecast is the difference between the actual and forecasted earnings per share. They hypothesise that the accuracy of analyst's forecast is more likely in better-governed firms since analysts can access better quality firm information. They employ four proxies for the corporate governance system, including the duality of CEO and the chair of the board, board size, the proportion of independent directors on a board, and the proportion of independent directors on the audit committee. They expect that the CEO duality and board size are negatively related to the analyst's accuracy but the proportion of independent directors on the board and the audit committee has a positive relation with forecast accuracy. They employ 3, 6, 9 and 12 months consensus analyst forecast of earnings before the earnings announcement date. Based on 3-year data from 2000–2002, their findings support their predictions, suggesting that the quality of corporate governance system induces the accuracy of earnings forecast by the analyst. This implies that corporate governance system influences accounting information quality.

Other than focusing on the analyst's forecast, Karamanou and Vafeas (2005) examine the effect of corporate governance on different aspects of management earnings forecasts, including the likelihood of a management earnings forecast, the precision of a management earnings forecast, the accuracy of a management earnings forecast, a conservatism of a management earnings forecast, and the market reaction to a management earnings forecast. They employ several attributes of corporate governance systems for the analysis, including the proportion of outside directors on a board, board size, board meeting, insider ownership, institutional ownership, the proportion of audit committee outsiders, the proportion of audit committee with financial expertise, audit committee size, audit committee meeting, bad (good) news that the actual earnings for the period are less (higher) than the consensus forecast, a number of analysts making a forecast in the year within 30 days before the management earnings forecast, the standard deviation of all earnings forecasts made in the 90 days before the management earnings forecast, firm size, industry dummy, and the number of days from the management earnings forecast date to the end of period for which the forecast is made. They examine 275 firms in the Fortune 500 survey that made 1,621 forecasts in 1,274 firm-years during the period 1995–2000. For the likelihood of a management earnings forecast, they compare corporate governance systems between firms who issue at least one earnings forecast in the year and firms who do not. Findings suggest that firms with strong governance systems are more likely to disclose information to outside parties. For the precision of a management earnings forecast, they compare between firms who make point forecast and who give range, open-ended or qualitative forecasts. Findings suggest that well-governed firms conveying negative news to outside parties are more likely to make less precision forecasts. For the accuracy of a management earnings forecast, they employ: 1) the absolute value of the difference between actual earnings and the management forecast and 2) the sign difference between actual earnings and the management forecast. The use of sign difference is to measure forecast bias. Findings suggest that strong corporate governance systems are related to forecast accuracy but not forecast bias. The finding also reports more accuracy when conveying bad news regarding annual earnings, implying more conservatism. For the market reaction to a management earnings forecast, they use the 3-day market adjusted return centered around the forecast announcement date and the change in the consensus analysts forecast from 90 days before and after the management earnings forecast date as dependent variables. Findings suggest that the market positively reacts to the forecast for firms with effective corporate governance systems.

Defond, Hann and Hu (2005) investigate the market reaction on the appointment of financial expertise on audit committees. After the Sarbanes-Oxley Act requires financial expertise on audit committee, it is of interest to determine whether the market values this information. Based on the dataset during the period 1993–2002, they find that the 3-day cumulative abnormal return is 1.3% around the appointment of financial expertise on audit committee and is 2% around the appointment of non-financial expertise on audit committee. They further estimate whether the market reaction on the financial expertise on audit committee depends on an expert on the committee before the appointment of the new director. They regress the 3-day cumulative abnormal return on the expert on the committee before the appointment of the new director. Their findings suggest that before the appointment of the new director, the market reaction on the expert on audit committee is not insignificant, suggesting that the positive market reaction on the appointment of new audit committee with financial expertise does not depend on the expert on the committee before the appointment of the new director. They also find that the 3-day cumulative abnormal return significantly relates to strong corporate governance. Thus, they conclude that this positive market reaction is more likely to be observed in firms with strong rather than weak corporate governance systems.

Lobo and Zhou (2006) also investigate accounting conservatism post-Sarbanes-Oxley Act. They estimate the conservatism by using discretionary accruals and earnings asymmetric timeliness. A priori expectation is that more conservatism is observed post-Sarbanes-Oxley Act. They regress discretionary accruals on several variables, i.e. size, auditor, cash flows, leverage, changes in income, outstanding shares and an indicator variable for pre- and post-Act. Based on 4-year and 2-year balanced panel data before and after the Act, they find that discretionary accruals decline post-Act. Based on an unbalanced panel dataset, they incorporate an indicator variable for pre- and post-Act into Basu's earnings asymmetric timeliness model, they find that the coefficient estimate for integrated variable between bad news and the post-Act is positive, suggesting that conservatism increases post-Act. This study suggests that the corporate governance system induces earnings timeliness.

Hovey, Li and Naughton (2003) investigate the ownership structure and firm's valuation for Chinese firms during the period 1997–1999. They define firm's valuation as firm's performance by using Tobin's Q. They classify the ownership structure according to the top five percentage of shareholding, the percentage of shareholding by the government and the percentage of shareholding by the legal person. They attempt to discover whether there is an association between firm performance and ownership structure. Their findings suggest that firm performance cannot be explained by the ownership structure for Chinese firms. However, the institution ownership plays an important role in terms of monitoring regarding to firm performance.

3.4 Chapter Summary

This chapter presents the theoretical framework and a review of prior studies. Several issues are derived from the review of literature. First, it appears that the literature has been searching for a theory to explain accounting quality. Second, there is no concrete approach to explain the behaviour of accounting quality. Next, since the persistence of earnings is unobservable, a random walk model is the most common method to search for the persistence. In addition, the value relevance is widely employed in the literature to investigate the change in accounting quality after the change in accounting standards. Fifth, it appears that accounting standards are not the only parameter influencing accounting quality but that there are other factors, i.e. the firm governance mechanism and the book-tax difference impact on the quality of accounting information. Sixth, other than the value relevance analysis, it is rare to find the existing research investigating earnings persistence and timeliness in the emerging market. Seventh, the research study conducted in the emerging market has been silent on employing book-tax difference in investigating accounting quality, especially the timeliness of earnings. Last, accounting quality is an important topic largely attracting researchers' attentions around the world.

Chapter 4
Earnings Persistence

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Earnings Persistence

4.1 Introduction

In this chapter, the first property of earnings to be investigated is the persistence of earnings. As aforementioned, the persistence of earnings induces a predictability of earnings. The higher persistence of earnings indicates the higher quality of earnings, encouraging the ability of current earnings information to predict future earnings information. Because this analysis is to examine whether accounting quality has been enhanced after the adoption of IFRS, a priori expectation is that earnings are more persistent during IFRS post-adoption. The improvement of earnings persistence during IFRS post-adoption indicates that earnings are of higher quality. A time-series approach is used for the research methodology. In addition, this analysis employs longitudinal data. Even though the longitudinal data suffers from survivorship bias, the obtained result should be more powerful in terms of the persistence analysis. This chapter is organised as follows. First, this chapter begins with the development of hypotheses in section 4.2. Research methodology and dataset are presented in section 4.3 and 4.4, respectively. The main results and robustness checks are presented in section 4.5 the chapter summary is presented in section 4.6.

4.2 Hypothesis Development

In this chapter, I define accounting quality as earnings persistence. This is consistent with a large number of prior studies (i.e. Sloan 1996; Francis et al. 2004; Hanlon 2005). Earnings persistence in this study is a predictability test of earnings information. Accounting information is a proxy to represent unobservable underlying economic constructs. Information users demand economic constructs for their decision making. Maines and Wahlen (2006) suggest that accounting information relevance stimulates measurement and reporting reliability. However, they further argue that information reliability is an essential but not adequate characteristic for the efficient use of applicative information. Because of the different perspective of reliability and relevancy, it is controversial to differentiate as to whether reliability or relevancy is more important. Prior studies have extensively evidenced accounting quality in these two areas (among others, Sloan 1996; Francis and Schipper 1999; Lev and Zarowin 1999; Francis et al. 2004; Richardson et al. 2005; Schmidt 2006). For earnings persistence, prior studies find current earnings can explain future earnings and accruals information is more persistent than cash flow information (i.e. Sloan 1996; Hanlon 2005). Richardson, Sloan, Soliman and Tuna (2005) highlight that less reliable accrual estimates result in lower earnings' persistence. Schmidt (2006) finds that current pre-tax earnings can explain future earnings. Barth et al. (2008) argue whether IFRS brings a higher quality of earnings than domestic accounting standards due to country-specific factors.

This thesis employs earnings persistence to compare accounting quality between pre- and post-adoption periods based on three reasons. Firstly, the persistence of earnings is a statistical property of earnings (Dechow, Ge and Schrand 2009). The persistence of earnings is the study of the prediction ability of earnings information. The predictability of earnings is an important input for the estimation of usefulness of accounting information (value relevance), suggesting that the higher persistence of earnings induces the higher earnings informativeness. A consequence of earnings persistence is expected to reflect on firms' share prices. Earnings can be decomposed to accrual and cash flows. According to the principle-based accounting system, firms are required to provide their forecasting information, i.e. growth and future of their business. In addition, future cash flows must be predicted and performed (i.e. through asset valuations). The earnings persistence is one method that allows outsiders (i.e. analysts) to determine this classified forecasting information. For example, Li (2008) finds that firms with readable financial statements have more persistence in earnings. It implies that firms with more volatile in accounting information are less likely to provide useful guidance to users (Dechow et al. 2009). In terms of the Thai accounting system, the old Thai accounting standard does not require firms to predict future cash flows. When Thai firms are now required to predict future cash flows according to new accounting starndards, it is more likely to observe the persistence of earnings reflected on financial statements. The earnings persistence facilitates the usefulness of accounting incormaiton (value relevance). The usefulness of accounting information is reflected on share prices, representing firm economic values. Because the share price is the market's expectation on firms' net cash flows, relative to the accounting information prepared by the old accounting standard, the accounting information prepared by the new accounting standards should correspond to more true firm performance that is more useful for decision making. Secondly, Dechow and Schrand (2004) suggest that the corporate governance system plays a significant role when the principle-based accounting system is employed. In terms of the Thai accounting system, when the new accounting standard is in effective, it will force the corporate governance mechanism to have more role and involvement in financial statements preparation. This mechanism, hence, should induce more predictability of accounting information. Thirdly, ones could contend that the earnings in Thai firms based on old accounting standards are more persistent because the firms are not required to forecast future information and they employ historical cost method. This thesis argues that although Thai firms are not required to provide expected future cash flows or they employ historical cost method, accounting information can be less persistent. It is due to the fact that Thai firms can employ different accounting methods based only on their discretions. For example, they can use different valuation methods for the same assets without concerning about the asset's ability to generate cash flows that represents firm performances or use different accounting methods to smooth earnings the the smoothed earnings have low quality (Dechow et al. 2009).

In addition to the above reasons, the persistence of earnings permits researchers to calculate the long run equilibrium earnings of the firm or the permanent earnings (Mueller 1990). The persistence estimate signifies the adjustment of excess earnings to the equilibrium value of earnings. The lower persistence indicates the faster adjustment whiles the higher persistence indicates the gradually adjustment. The calculation of earnings is related to the measurement method specified by accounting standards (Dechow et al 2009). Relative to the old accounting standard, the earnings calculated by the new accounting standard, the IFRS-based system, are more reliable as claimed by the Thai accounting standard setter. Therefore, the current earnings calculated by the new accounting standard are expected to be close to the long run equilibrium earnings comparing with the current earnings calculated by the old accounting standard. As a result, the earnings calculated by the new accounting standard relative to the old accounting standard are of higher persistence, slow adjustment to the equilibrium value.[40] I have a prediction that earnings quality is enhanced after the IFRS adoption in Thailand. As a result, I propose the first hypothesis, stated in alternative forms:

> H.4.1: Earnings are of higher persistence after the adoption of IFRS in Thailand.

Following Guenther et al. (1997), Mills (1998) and Hanlon (2005), book-tax differences (BT) reflect the management's incentive but it is difficult for firms to increase book income without increasing taxable income or increase tax deductions without increasing book expenses. This thesis considers that the cross-section variation in using a tax strategy is lower than the cross-section variation in managing accruals because tax rules are more restrictive than accounting standards. Based on Hanlon (2005), earnings are of lower persistence for firms with large book-tax differences relative to firms with small book-tax differences. In this study, I trace book-tax differences over 5-years before and 5-years after adopting the new accounting standards and partition firms to two groups. Group 1 includes firms whose book-tax differences during post-adoption periods are larger than those during pre-adoption periods (BT – Pre-adoption < BT – Post-adoption). Group 2 includes firms whose book-tax differences during post-adoption periods are smaller than those during pre-adoption periods (BT – Pre-adoption > BT – Post-adoption). I use the two groupings of firms to track overall enhancement of earnings quality. In addition, the book-tax difference in this analysis is used as a

[40] It should be noted that the reliability of earnings information is unobservable and it is considered as a latent variable (Mueller 1990).

proxy to differentiate firms' incentives of using accruals and tax activities. If we hold tax activity constant, the larger book-tax difference reflects over-reported earnings, resulting in lower accounting quality. If we hold earnings management unchanged, the larger book-tax difference reflects high tax planning, resulting in lower accounting quality (Ayers et al. 2009). On the other hand, if we hold tax activities constant, the large book-tax difference reflects high earnings manipulation, resulting in low accounting quality.

Generally speaking, although the sample firms are partitioned according to book-tax differences, the enhancement of earnings persistence should be observed for all firms after IFRS adoptions in Thailand. However, there are two potential explanations about the larger book-tax difference. Firstly, the firm might engage in aggressive tax activities and use accruals for earnings manipulations. Secondly, Dechow and Schrand (2004) suggest that corporate governance is essential when using IFRS, principles-based accounting system. Thus, the corporate governance for firms in group 1 might be weak and probably unable to detect the use of accruals for earnings manipulations, especially after IFRS adoptions. It is possible to anticipate the improvement of earnings persistence for firms in group 2 because the smaller book-tax difference reflects lower manipulation in accounting numbers (Hanlon 2005). Therefore, following the prior study (Hanlon 2005), the expectation is that earnings during pre-adoption periods are of higher persistence than earnings during post-adoption periods for firms with larger book-tax differences (group 1), whereas earnings during pre-adoption periods are of lower persistence than earnings during post-adoption periods for firms with smaller book-tax differences (group 2). However, this anticipation must be interpreted with caution because firms could manage their figures to obtain small book-tax differences. In addition, Hanlon (2005) suggests that it is not clear that a large book-tax difference indicates low earnings persistence. I propose the second hypothesis as follows, stated in the alternative form:

H.4.2: When comparing between pre- and post-adoption periods, the earnings persistence is related to the book-tax difference.

A number of research studies have investigated the association between corporate governance structure and earnings informativeness. For example, Vafeas (2000) concludes that earnings-return relation is found in firms with 5-9 board members. Bushman et al. (2004) conclude that the relationship between earnings timeliness and ownership concentration, equity benefits to executives and reputation of outside directors varies inversely. Fan and Wong (2002) examine ownership structure and earnings informativeness in East Asia and find that low earnings information value-relevance is found in concentrated ownership. Defond et al. (2005) investigate the market reaction after appointing new financial experts as audit committee members and find that the market reacts positively to accounting financial experts but not to general financial experts. Xie et al. (2003) report that the characteristics of audit committee and audit committee activity discourage the management to be involved in earnings management. Chhaochharia and Grinstein (2007) find a significant impact of new corporate governance rules, Sarbanes-Oxley Act, on firm values. Gompers, Ishii and Metrick (2003) report that higher firm value is observed in firms with stronger shareholder rights. Those studies suggest that corporate governance plays an important role in accounting information quality. As stated by Dechow and Schrand (2004, pg.114), *"Clearly, the quality of corporate governance and monitoring of financial reporting will have a significant impact on whether principles-based standards result in higher-quality earnings."* Building from prior studies, I perform the analysis to determine whether there is a relationship between accounting quality and the firm governance system in Thailand. If accounting quality relates to firm governance, I expect that accounting quality should be varied with the firm governance system. I, thus, hypothesise in an alternative form as follows:

H.4.3: Earnings persistence varies according to the firm governance system in Thailand.

4.3 Research Methodology

Consistent with a large body of prior research,[41] a time series analysis is employed to estimate the persistence of earnings by regressing future period earnings on current period earnings. The higher magnitude of coefficient estimates represents higher earnings persistence. Based on prior research, book-tax differences indicate firms' earnings persistence variation probably because of discretion in accruals (Hanlon 2005). The persistence of cash flows and accruals provides more direct test of earnings persistence in firms with different book-tax gaps. Following Sloan (1996) and Hanlon (2005), I decompose earnings to cash flow from operation and accruals. I operationalise the earnings persistence analysis in the following way:

$$EBIT_{it+1} = \beta_0 + \beta_1 EBIT_{it} + \varepsilon_{it} \qquad (4.1)$$

$$EBIT_{it+1} = \beta_0 + \beta_2 CF_{it} + \beta_3 ACC_{it} + \varepsilon_{it} \qquad (4.2)$$

where $EBIT_{it+1}$ ($EBIT_{it}$) is earnings before interest and tax in year t+1 (year t). CF_{it} is cash flow from operation in year t and ACC_{it} is accruals in year t.[42] All variables are deflated by the beginning of total assets to improve cross-section comparabilities. Coefficients of interest include β_1, β_2 and β_3. Higher coefficient estimates reflect more persistence in earnings. Equation (4.1) restricts the persistence coefficients on the accrual and cash components of earnings to be equal whilst equation (4.2) compares earnings persistence when earnings performance is attributable to the accrual and cash components of earnings (Sloan 1996).[43] Following prior studies (Sloan 1996; Hanlon 2005; Schmidt 2006), the

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[41] Francis et al. (2004) investigate earnings attributes and cost of equity. Freeman et al. (1982) and Kormendi and Lipe (1987) investigate the persistence of earnings by using changes in earnings this year as a function of changes in earnings last year. Foster (1977) estimates a time series of quarterly earnings by defining that current year earnings are a function of previous year earnings in the same quarter. Brown and Han (2000) investigate whether investors appreciate the current and future earnings by using a first order autoregressive process to determine earnings information.

[42] ACC = Annual changes in current assets – Annual changes in cash – Annual changes in current liabilities – Depreciation, and CF = Earnings before interest and tax – ACC

[43] This thesis uses the current earnings to estimate one-year future earnings. It is possible to include higher order lags in the eqations. However, those variables have sufficiently small effects

regressions are estimated by using OLS regressions. However, bootstrap standard errors are applied for the statistics inference of coefficients (Athanasakou et al. 2007).[44] More details about the variables used in this analysis are explained in variable definitions.

Firm governance

Firm governance, i.e. company board structure or audit committee,[45] may play a significant role in accounting quality. Generally, agency theory suggests that the firm's agent can affect accounting quality. For example, when an agent's remunerations and benefits are tied up with accounting numbers, the firm's agent is more likely to manage financial reporting. Firm governance should improve accounting quality and minimise agency costs. The thesis examines the firm governance system by mainly focusing on executive board structure. First, this thesis considers that board size (NBO) is one function that is important for firm governance and firm valuation (e.g. Yermack 1996). I measure board size by a number of boards of directors. Based on prior studies,[46] I do not have a priori expectation about the relationship between the earnings quality and board size.

Next, I investigate the relationship between board quality (NBB) and audit committee quality (NB). For board quality, I determine board quality by a number of boards that directors serve as board of director or audit committee in other firms. The higher the number of boards that they serve reflects higher board quality (i.e. reputation). For audit quality, I employ a number of boards that the audit committee serves as board of directors or audit committee in other firms.

on the estimation process (Mueller 1990 pg.106-107).

[44] Some prior studies report the result obtained from OLS pooled-cross section estimation with robust standard error (Sloan 1996; Hanlon 2005).

[45] Audit committee (or independent director is used interchangeably) refers to audit committee and independent director throughout this thesis, and non-audit committee (or non-independent director is used interchangeably) refers to board directors except audit committee and independent director.

[46] It is problematic to predict the relationship between board size and earnings quality. For example, Ahmed and Duellman (2007) argue that the relationship between accounting conservatism and board size is unclear. Byard et al. (2006) expect board size are negatively related to the analyst's accuracy. Bushman et al. (2004) find no relationship between earnings timeliness and board size. Vafeas (2000) expects a negative relation between the value relevance of information and board size for a firm's board with a moderate to large number of members.

Following the measurement of board quality, the higher the number of boards that the audit committee serves should indicate higher audit committee quality. Nonetheless, an alternative explanation for the measurement of board and audit committee quality is that board and audit committee quality declines when directors or audit committee members serve on many boards because of time constraints (see Bushman et al. 2004). Therefore, these proxies are expected to have either a positive or a negative relationship between earnings quality and board (audit committee) quality. No a priori expectation is determined for these two variables.

I include the proportion of audit committee on the board team (RCG) to evaluate firm governance quality. The higher ratio reflects the higher quality of firm governance system. Therefore, the positive relationship between earnings persistence and the proportion of audit committee on the board team is expected. Another explanation is related to the causal relationship, suggesting the relationship between the ratio of audit committee and board size is negative because firms with low-quality earnings are more likely to improve the governance quality. Therefore, a higher ratio of audit committee on the board is observed in those low-quality earnings firms. As a result, no prior prediction is set for this relationship. I operationalise the model in the following way:

$$\begin{aligned} PER_i = \ & \gamma_0 + \gamma_1 NBO_i + \gamma_2 NBB_i + \gamma_3 NB_i + \gamma_4 RCG_i + \gamma_5 YR_i \\ & + \gamma_6 YR*NBO_i + \gamma_7 YR*NBB_i + \gamma_8 YR*NB_i + \gamma_9 YR*RCG_i + \varepsilon_i \end{aligned} \tag{4.3}$$

where PER is the earnings persistence obtained from (β_1) in the equation (4.1) by using OLS regressions with heteroskedasticity-robust standard errors; PER is estimated from five-year window before and after the accounting change. NBO is a median number of boards of director. NBB is a median number of boards that members of board of directors serve as board of directors or audit committee in other firms. NB is a median number of boards that audit committee members serve as board of directors or audit committee in other firms. RCG is a mean proportion of audit committee members on firms' boards. YR is an indicator variable equal to 1 for post-adoption periods (2000–2004), 0 otherwise (1995–1999). OLS estimators with heteroskedasticity-robust standard errors are applied to estimate this model.

Variable definitions

Book-tax differences (BT)

This section provides explanations of book-tax differences. In addition, earnings smoothing measures are calculated to explain descriptive characteristics of the sample firm. I construct firm portfolios by using the pattern of book-tax differences. The book-tax difference is defined as the difference between book income and taxable income. To calculate taxable income, I gross up annual income tax expenses[47] with the actual income tax rate. Annual tax expenses presented on financial statements are affected by temporary and permanent differences between accounting principles and tax rules. These may cause measurement error in tax expenses unless the differences are adjusted to determine accurate tax expenses in each year (Lev and Nissim 2004). In this thesis, I do not separate the timing difference in firms' portfolios because of limitations of tax data reported in Thai financial statements.[48] In addition, I use annual income tax expenses rather than actual income tax paid by cash. However, prior studies find that actual income tax expenses do not change the results obtained from annual income tax expenses (Lev and Nissim 2004). Book-tax differences I use in this thesis are, therefore, not exhaustive. In this study, book-tax differences are not exhaustive proxy to determine firms' incentives whether they have used new accounting standards for preparing financial statements in Thai settings. Book income and taxable income are subject to the management's discretion and tax management, resulting in the magnitude of book-tax differences. Whether book-tax differences are large or small, book-tax

[47] Lev and Nissim (2004) set missing values of investment tax credit as zero. Hanlon (2005) uses total deferred taxes to replace the missing values of federal and foreign deferred tax expenses. In this thesis, to construct the balanced panel dataset, missing values of annual income tax expenses were set to zero.

[48] In addition, IAS12 Accounting for Income Tax is not currently adopted in Thailand.

differences of the two groups of firms can be driven by discrete reporting earnings or aggressive tax management. In addition, IFRS, the principles-based accounting standard, has a twofold purpose; the management uses accruals to increase or decrease earnings quality (Dechow and Schrand 2004, pg.114). Hanlon (2005) suggests that the negative (especially large negative) book-tax difference contains information about earnings persistence. This study uses the average book-tax difference that this method should mitigate the potential problem arisen from negative book-tax differences.

In this study, book-tax differences are calculated by the difference between earnings before interest and tax (EBIT) and taxable income.[49] Taxable income is calculated by dividing income tax expense by the percent of tax rate (the gross-up method) (Lev and Nissim 2004). For the company tax rate in Thailand, all firms doing business in Thailand are subject to pay tax at a flat rate – 30 per cent of taxable income. Special income tax rates are established for listed firms in the stock exchange to attract firms to raise business funds from the capital market in Thailand. New firms entering the stock exchange during the period 2001–2005 are subject to pay company income tax at 25 per cent of taxable income for five consecutive years, beginning from the year of its being listed on the stock exchange. For example, the firms that entered to the stock exchange in 2001 (2005) are subject to pay tax at 25 per cent of taxable income from 2001–2005 (2005–2009) and a 30 per cent tax rate will be applied from 2006 (2010). For the existing firms which have traded their shares on the stock exchange before 2001, taxable income is separated into two parts. The first part of taxable income – 200 million Thai Baht (~ USD 6.30 million) – is subject to 25 per cent tax rate and the amount greater than 200 million Thai Baht is subject to 30 per cent tax rate. This rule is applied for the period 2001–2005. The firm that has branches in foreign countries must include income generated from those countries for income tax

[49] The calculation of book-tax difference is based on company financial statements because taxable income for Thai firms is calculated from company financial statements. This calculation method should obtain more precise book-tax differences and, in turn, reduce some measurement error.

calculation in Thailand whether or not the firm has to pay tax to those foreign countries.

I calculate book-tax differences for the firm portfolios in the main analysis as follows:

$$\text{Annual taxable income} = \text{Annual income tax expenses/Tax rate} \tag{4.4}$$

$$BT_i = \frac{\sum_{t=1}^{5} (\text{Earnings before interest and tax} - \text{Annual taxable income})}{5} \tag{4.5}$$

where BT_i is book-tax differences for firm i and t is 1995–1999 and 2000–2004.

This thesis uses the difference between book income and taxable income as a proxy for firm incentives. In terms of earnings persistence, the large difference between book income and taxable income suggests that the earnings persistence tends to be low whilst the small difference between book income and taxable income suggests that the earnings persistence tends to be high. It is due to the fact that if firms are more likely to use tax rules to calculate earnings, the difference between book income and taxable income is likely to be small. The tax rules are more restricted than GAAP, leading to the small variation in earnings calculation methods. Therefore, the high persistence of earnings is expected for firms with small book-tax differences. Nevertheless, the difference between book income and taxable income can be either positive or negative differences. The large positive and large negative book-tax difference should indicate the low persistence. Hence, ones could argue that the absolute value of book-tax difference should be applied. Nonetheless, this thesis argues that the negative book-tax difference firm includes firms with negative earnings. Li (2008) reports that the earnings persistence of firms with negative earnings tends to be lower than the earnings persistence of firms with positive earnings. Thus, if the absolute value of book-tax differences is applied, it probably causes a potential problem about information loss. In addition to the information loss, the book income and taxable income in Thailand are calculated by the accrual basis. The value of accrual tends to be reversed in the next period of time. This thesis uses a balanced panel dataset. For example, for firm A, this thesis calculates the average book income and taxable income over five years time. This should reflect the reversion of accrual values. If the absolute value of book-tax differences is applied, it probably cause a potential problem about the book income and taxable income are overvalued. The other reason is that based on accounting conservatism, equity value distribution is likely to be going downward or decline. If a firm has tried to manage to increase equity value, resulting in the increasing earnings each year. By using the average book income over many years should help to deal with this issue. For taxable income, the prior literature suggests that tax strategies will be effective when firms exercise tax strategies over several years. Thus, if firms have very aggressive tax activities, taxable income is more likely to be decline over time. By using the average taxable income over many years should help to deal with this issue. If using the absolute value of book-tax difference, the sign is lost and the book-tax difference may be overvalued.

Earnings smoothing measures (EM)

Earnings smoothing measures are to determine whether insiders manage (smooth) their report earnings. The smoothing of reported earnings does not represent the firms' underlying economic performance. On the other hand, it is argued that the lower variation of earnings does improve the predictability of earnings. I calculate earnings smoothing measures to obtain more insightful descriptive information about firms' characteristics. Following Leuz, Nanda and Wysocki (2003), I calculate two earnings smoothing measures of the firm. EM1 is a median ratio of the firm-level standard deviation of earnings divided by the firm-level standard deviation of cash flows. The lower standard deviation of earnings indicates the higher degree to which insiders smooth reported earnings by reducing the variability of reported earnings by accounting methods. Leuz et al. (2003) suggest that the ratio is divided by cash flows from operations to mitigate the difference in the variability of economic performance across firms. EM2 is the Spearman correlation between changes in accruals and changes in operating cash flows. Firms are able to either delay to report current performance or accelerate the reporting of future revenues because of the accrual accounting mechanism. The large magnitude of the correlation indicates the smoothing of reported earnings.

4.4 Data

The initial sample population chosen is based on all non-financial firms with a 31st December financial year-end. They are listed on SET from 1995 to 2004. According to SET, I categorise sample firms into seven industries: agro-business, consumer products, industrial, property and construction, natural resources, services and technology. I use two databases provided by SET to construct datasets. Share prices and financial data from 1994 to 1996 are obtained from Integrated-SET Information Management System (I-SIMS) CD-ROMs while the data from 1997 to 2005 are collected from SETSMART (SET Market Analysis and Reporting Tool).

I use longitudinal data, over a 10-year period from 1995 to 2004. I gather a constant sample of firms that have financial data available from 1994 to 2005. Those sample firms have to govern themselves to respond to accounting changes; this raises a survivorship problem. Even though the analysis of constant sample firms suffers a survivorship bias, reasons for using the constant sample of firms over a ten-year period are that: i) this allows the control of a firm's characteristics in a similar range, i.e. operating cycle, reputation, performance (i.e. they should reach economies of scale) or firm size, ii) some firms entered the capital market after the accounting reform period, especially IPOs. These firms are more likely to meet the market demands of reporting high quality financial data (Ball and Shivakumar 2008). This attrition may induce biased results, iii) the change in firms' incentives can influence accounting quality (Barth et al. 2008). The use of constant samples possibly reduces the level of firms' incentives problems to the same range. For example, the constant sample firm has to maintain its performances to meet the stock listing rules, iv) survivorship problem may induce upward bias. Specifically, survival firms organise themselves to catch up with new accounting rules, i.e. generating transactions to meet the requirement of accounting principles and v) the use of constant sample firm is representing the dynamic change in accounting quality during the sampling period. In this study, I focus on Thailand's accounting system rather than comparing with firms in other countries. This tends to minimise the variation of economic environment and accounting regime that may influence the result (Ball and Shivakumar 2008).

To compare the accounting information quality before and after the adoption of IFRS, I partition the data set according to time scales, 1995–1999 (pre-adoption) and 2000–2004 (post-adoption). In subsamples, I divide the dataset by the magnitude of accumulated book-tax differences. I split and compare accumulated book-tax differences by their mean of 5-years before and 5-years after the accounting change. Dyreng et al. (2008) suggest that tax avoidance is observed in firms that have a low effective tax rate over many years. The average of multiple-year book-tax differences should reflect tax activity. In firm portfolios, group 1 includes firms with larger magnitude of book-tax differences during post-adoption periods (BT-Pre < BT-Post). Group 2 includes firms with a smaller magnitude of book-tax differences during post-adoption periods (BT-Pre > BT-Post).

4.5 Results

The pattern of book-tax differences

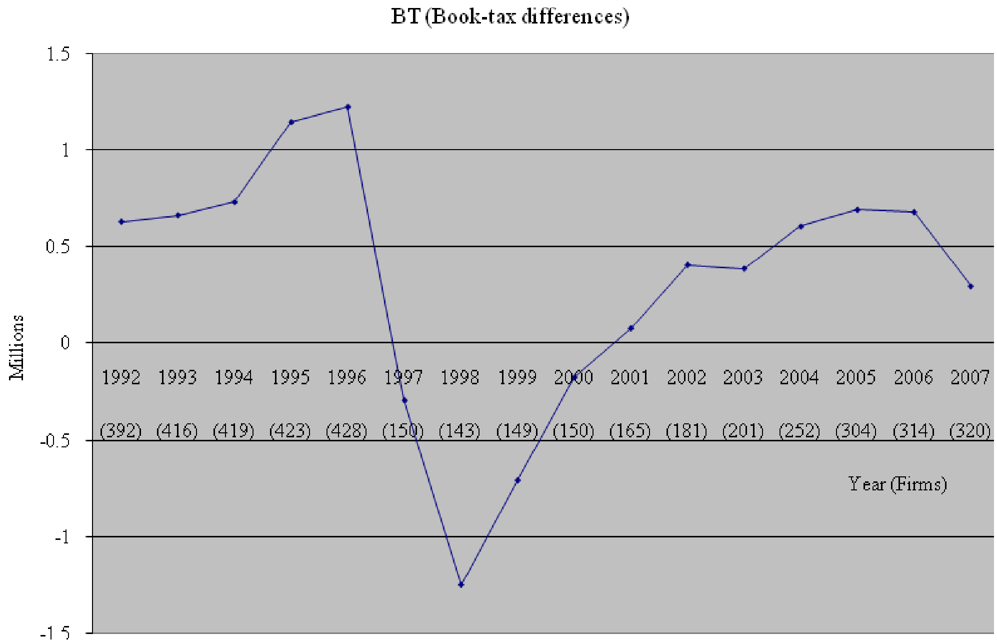
Figures 4.1–4.3 illustrate the pattern of book-tax differences during the period 1992–2007. According to SET, listed firms are grouped into seven industries, including agro-business, consumer products, industrial, natural resources, services, technology and financial sector. After the 1997-financial crisis in Thailand, listed firms with very weak performances are transferred and supervised under the rehabilitation programme. Thus, during the financial crisis, there is another group: rehabilitation. Firms' shares in the rehabilitation programme are not traded until they are removed from the programme. Figure 4.1 shows the book-tax difference for all firm-years whilst Figure 4.2 depicts the book-tax difference when the firms in the rehabilitation programme are excluded; the number of firms each year are shown in parentheses.[50] These graphs have rather identical trends. During the financial crisis, book income is much lower than taxable income as the book-tax difference becomes negative. After 2000, the book-tax difference bounces back to positive and has an increasing trend until 2007. Kruskal-Wallis test is used to compare the book-tax difference over 16 years. It suggests that the book-tax difference in each year is statistically significantly different. When partitioning the book-tax difference to pre- (1992–1999) and post-IFRS adoption (2000–2007), Wilcoxon rank-sum test suggests that the book-tax difference between the two periods is statistically significantly different.

Because of the special and complex characteristics of firms in the financial sector, Figure 4.3 depicts the pattern of book-tax differences for non-financial firms with December year-ended (and excluding the firm in the rehabilitation programme). The graph informs that the book-tax difference is positive on average and has an increasing trend from 1993 to 2007. The book-tax difference in each year is statistically significantly different over 16 years according to Kruskal-Wallis test. In addition, Wilcoxon rank-sum test suggests that the book-tax difference between pre- (1992–1999) and post-adoption periods (2000–2007) is not significantly different. However, the graph shows an increasing trend of book-tax differences during the 16-year period.

Based on Figure 4.3, one potential explanation about the increasing trend of book-tax differences is that new accounting standards as direct tools for book income calculations play an important role in inducing larger book-tax differences. If this is the case, Thailand is likely to transfer from a tax-based accounting income to a GAAP-based accounting income system.[51]

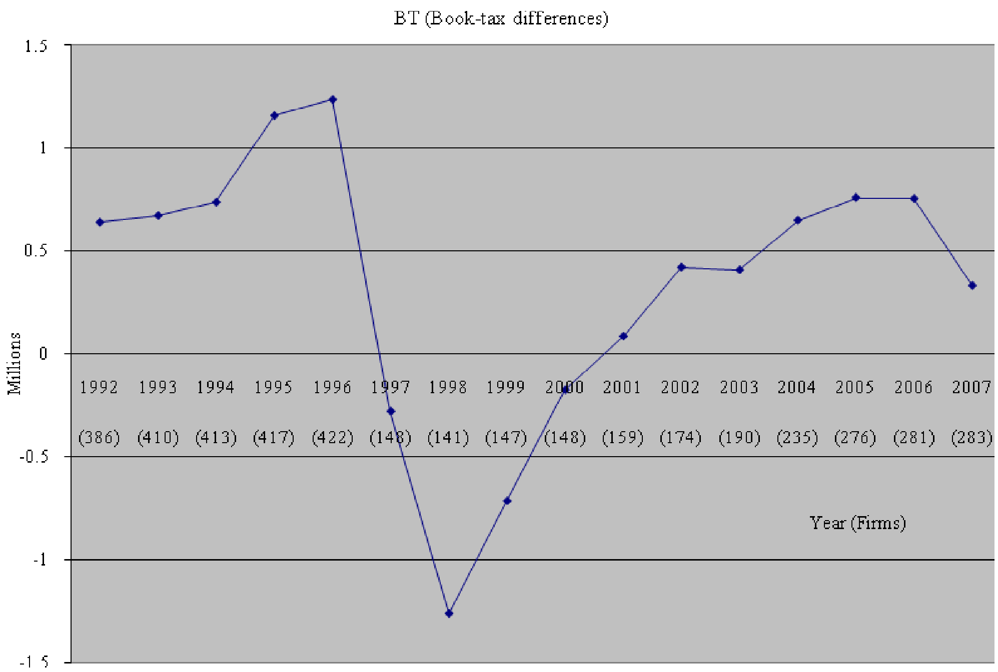
[50] It should be noted that firms with missing values of taxable income are dropped for the calculation of book-tax differences presented on these graphs. For the graphs, a number of observations are quite small during 1997–2004.
[51] Appendix 2 presents the graph of book-tax differences for each industry.

Figure 4.1 Book-Tax Differences (BT): All firm-years



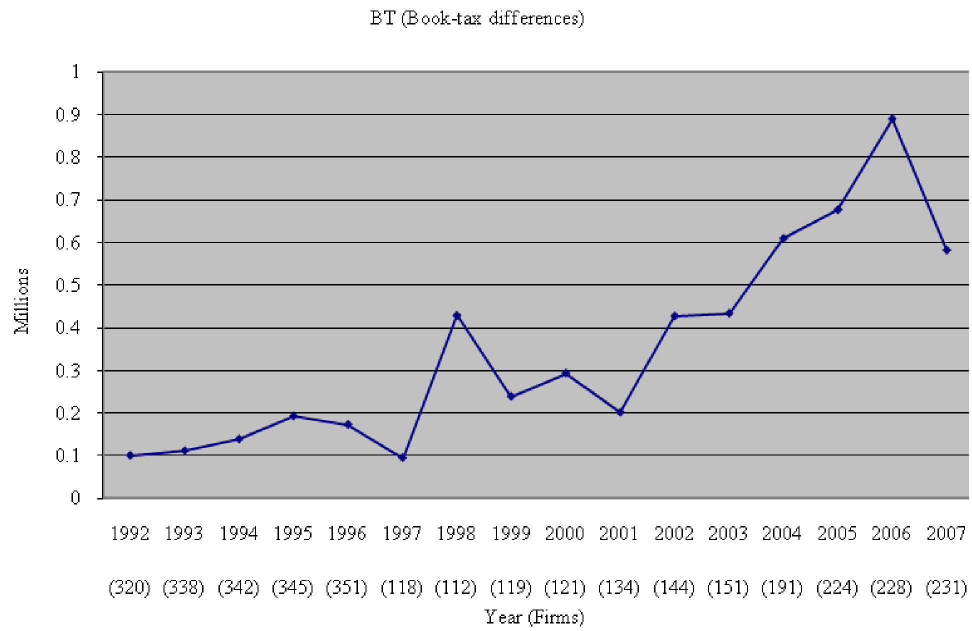
Note: Kruskal-Wallis test: chi-squared = 178.94, p-value = 0.0001
Wilcoxon rank-sum test: z = 7.58, p-value = 0.0000

Figure 4.2 Book-Tax Differences (BT): Firm-years under rehabilitation programme are excluded.



Note: Kruskal-Wallis test: chi-squared = 151.08, p-value = 0.0001
Wilcoxon rank-sum test: z = 5.897, p-value = 0.0000

Figure 4.3 Book-Tax Differences (BT): Non-financial firm-years with December year-ended.



Note: Kruskal-Wallis test: chi-squared = 41.28 p-value = 0.0003
Wilcoxon rank-sum test: z = -0.35, p-value = 0.723

Table 4.1 A distribution of sample firms during the period 1995–2004 based on model (1)

Industry Groups	**Group 1**	**Group 2**	**Total no. of observations (firms)**	**Missing value of taxable income**	**Negative taxable income**
Agro-Business	130	230	360 (36)	113	21
Consumer Products	120	170	290 (29)	86	7
Industrial	150	120	270 (27)	94	7
Property and Construction	240	80	320 (32)	173	14
Natural Resources	40	20	60 (6)	31	4
Services	240	270	510 (51)	163	11
Technology	80	110	190 (19)	91	4
Total observations	1000	1000	2000 (200)	751	68

Descriptive statistics

According to the graph of book-tax differences, the book-tax difference is greatly influenced by firms in the financial sector and the rehabilitation programme. It is very common for empirical research to exclude firms in the financial sector because of its distinct regulations and accounting standards. For firms in the rehabilitation programme, their trading shares are inactive and suspended until the firm can improve their performance. Therefore, I exclude firms in these two groups for this empirical work. Moreover, there are many factors influencing the quality of accounting numbers, i.e. economic environment, firm governance or regulations. To minimise the variation of economic circumstances and to observe the dynamic change in accounting quality in Thai firms, I employ the constant dataset by using surviving firms for which datasets are available over ten years, 1995–2004.

Based on the dataset in 2004, Table 4.1 reports the total number of 200 firms (2000 firm-years) used in this analysis during the period 1995–2004. All firms have remained in their industry during the whole sampling period except that one company has moved from property and construction in 2003 to service group in 2004[52] and two companies have moved from service group in 2003 to consumer products group in 2004.[53] There are 751 observations that taxable income is set to be zero.

In Table 4.2, descriptive statistics report that future and current earnings do not vary among sample firms. Cash flows from operation (13%) are higher than earnings (8.8%) and accruals are negative (-3.9%). These results are consistent with prior studies (i.e. Dichev and Tang 2009). Higher standard deviations indicate large differences in cash flows and accruals among firms. For the firm governance, 17 firms are deleted because of missing data. The persistence of earnings (PER) is on average .20 and largely differs among firms (SD of .757). Firms' earnings are less persistent when the persistence (PER) is negative. On average, there are 15 members on a firm's board (mean of NBO = 15.208). One-third of the firms' board is made up of independent members (mean of RCG = 30.6%). Each member of the firm's board serves as an executive member on 44

[52] Company code #120
[53] Company code #50 and #91

boards in the same year (mean of NBB = 44.39). In addition, each independent member serves as an executive director on 16 boards in the same year (mean of NB = 16.82%).

Table 4.2 Descriptive statistics

	Mean	Median	SD	25th Percentile	75th Percentile	N
$EBIT_{it+1}$	0.072	0.079	0.117	0.029	0.125	2000
$EBIT_{it}$	0.088	0.088	0.107	0.033	0.141	2000
CF_{it}	0.130	0.128	0.185	0.050	0.212	1050
ACC_{it}	-0.039	-0.045	0.169	-0.113	0.027	1050
PER	0.204	0.167	0.757	-0.215	0.678	360
NBO	15.208	14	4.870	12	18	360
NBB	44.393	39	26.659	24	59	360
NB	16.817	13	14.349	6	22	360
RCG	0.306	0.296	0.116	0.214	0.379	360
ROA	0.031	0.037	0.075	-0.007	0.078	360
MKT1	52.2	88.8	171	35	303	360

$EBIT_{it+1}$ ($EBIT_{it}$) is earnings before interest and tax year t+1 (t) scaled by the beginning of total assets; CF_{it} is cash flow from operation in year t deflated by the beginning of total asset; ACC_{it} is the accrual in year t deflated by the beginning of total asset; PER is persistence coefficient (β_1) obtained from the equation: $EBIT_{it} = \beta_0 + \beta_1 EBIT_{it-1} + \varepsilon_{it}$ by rolling five–year window estimations; NBO is number of boards of director; NBB is number of boards that members of board of directors serve as board of directors or audit committee in other firms; NB is number of boards that audit committee members serve as board of directors or audit committee in other firms; MKT1 (00'000'000) is market capitalization. RCG is proportion of audit committee members in board of directors and ROA is return on assets. SD is standard deviation. N is number of observations.

I further perform comparison tests between the two groups of firms to obtain overall characteristics of the sample firms. As presented in Table 4.3, when considering the standard t-test together with Wilcoxon rank-sum test, in Panel A, at the conventional significant level (<5%), t-statistics report that the firms in both groups are not substantially different on average in terms of earnings (EBIT), performance (measured by ROA and ROE) and leverage. But, firm size (measured by TA) for group 1 is larger than firm size for group 2. The rank-sum test suggests that both groups are not different in accruals and ROE.

In Panel B of Table 4.3, the persistence variable (PER) is significantly different between two groups; on average firms in group 1 have higher persistence coefficients than firms in group 2. These two groups are also different in terms of firm governance systems. A number of boards that the board of directors (and audit committee) serves as a board of directors in other firms for firms in group 1 are greater than a number of boards that the board of directors (and audit committee) serves as a board of directors in other firms for firms in group 2 (measured by NBB and NB, respectively). Board size (NBO) and the ratio of audit committee divided by board size (RCG) do not statistically differ between two groups.

To obtain more information about firms' characteristics, I further evaluate whether firms smooth their earnings by using EM1 and EM2. Table 4.4 presents results of the smoothing of reported earnings. EM1 is a median ratio of the firm-level standard deviation of earnings scaled by lagged total assets divided by the firm-level standard deviation of cash flows scaled by lagged total assets. EM2 is the Spearman correlation between changes in accruals scaled by lagged total assets and changes in cash flows scaled by lagged total assets. For full samples, EM1 (higher) and EM2 (lower) suggest that sample firms are more likely to have lower earnings smoothing activity during IFRS post-adoption periods in Thailand. In subgroups, EM1 of both group 1 and group 2 increases after the IFRS adoption in Thailand, suggesting that earnings smoothing activity for both groups declines during post-adoption periods. EM2 of group 1 increases from –0.907 to –0.910, suggesting that firms in group 1 are likely to have higher smoothed earnings during post-adoption periods in Thailand. EM2 of group 2 declines from –0.910 to –0.891, suggesting that firms in group 2 are likely to have lower smoothed earnings during post-adoption periods in Thailand. The result also reports that EM1 of group 1 (0.422) is lower than EM1 of group 2 (0.584) during post-adoption periods, suggesting that the earnings smoothing activity of group 1 is higher than the earnings smoothing activity of group 2. In addition, EM2 of group 1 (-0.910) is greater than EM2 of group 2 (-0.891) during post-adoption periods, suggesting that the earnings smoothing activity of group 1 is higher than the earnings smoothing activity of group 2.

Table 4.3 The mean comparisons of firm's characteristics between two groups

Panel A

Variables	Group	Mean	SE	SD	N	t-test		Wilcoxon Rank-sum test	
EBIT	1	0.084	0.004	0.111	1000	t =	-1.597	z =	-2.869
	2	0.091	0.003	0.104	1000	p =	0.111	p =	0.004
CF	1	0.120	0.008	0.180	540	t =	-1.712	z =	-1.995
	2	0.140	0.008	0.190	510	p =	0.087	p =	0.046
ACC	1	-0.033	0.007	0.167	540	t =	1.294	z =	1.631
	2	-0.046	0.008	0.172	510	p =	0.196	p =	0.103
ROA	1	0.025	0.004	0.119	1000	t =	-0.951	z =	-2.262
	2	0.031	0.004	0.121	1000	p =	0.342	p =	0.024
ROE	1	-0.484	0.340	10.747	1000	t =	-0.858	z =	-1.128
	2	-0.155	0.179	5.672	1000	p =	0.391	p =	0.259
LEV	1	1.701	1.496	47.319	1000	t =	-0.750	z =	2.661
	2	3.160	1.241	39.243	1000	p =	0.453	p =	0.008
TA	1	1.060	0.009	0.275	1000	t =	5.566	z =	11.602
	2	0.515	0.005	0.144	1000	p =	0.000	p =	0.000

Panel B

PER	1	0.321	0.056	0.761	182	t =	2.973	z =	3.182
	2	0.088	0.054	0.738	178	p =	0.003	p =	0.002
NBO	1	15.313	0.355	4.794	182	t =	0.412	z =	0.627
	2	15.103	0.365	4.955	178	p =	0.681	p =	0.531
NB	1	18.692	1.073	14.478	182	t =	2.505	z =	2.956
	2	14.962	1.033	14.015	178	p =	0.013	p =	0.003
NBB	1	47.819	1.903	25.666	182	t =	2.462	z =	3.194
	2	41.005	2.009	27.253	178	p =	0.014	p =	0.001
RCG	1	0.309	0.009	0.117	182	t =	0.596	z =	0.451
	2	0.302	0.008	0.115	178	p =	0.552	p =	0.652

$EBIT_{it}$ is current earnings before interest and tax scaled by the beginning of total assets; LEV is the ratio of total liability divided by the total equity; TA (00'000'000) is the total asset; CF_{it} is current cash flow from operation deflated by the beginning of total asset; ACC_{it} is current accruals deflated by the beginning of total asset; PER is persistence coefficient; NBO is number of boards of director; NBB is number of boards that members of board of directors serve as board of directors or audit committee in other firms; NB is number of boards that audit committee members serve as board of directors or audit committee in other firms; RCG is a proportion of audit committee members in board of directors and ROA is return on assets. SD is standard deviation; SE is standard error and N is number of observations.

Group 1 (2) is firms whose book-tax differences during pre-adoption periods are smaller (larger) than those during post-adoption periods (Group 1: BT-Pre < BT-Post, Group 2: BT-Pre> BT-Post)

Null hypothesis (H_0) defines as no difference in means between two groups. Alternative hypothesis (H_a) is set as the mean of group 1is not equals to mean of group 2.

Table 4.4 Earnings smoothing measures

Variables	Period	Full samples	Group 1	Group 2	N
EM1	Pre (1995–1999)	0.418	0.396	0.469	525
	Post (2000–2004)	0.515	0.422	0.584	525
	N	1050	540	510	1050
EM2	Pre (1996–1999)	-0.909	-0.907	-0.910	420
	Post (2000–2004)	-0.900	-0.910	-0.891	525
	N	945	486	459	945

EM1 is a median ratio of the firm-level standard deviation of earnings scaled by lagged total assets divided by the firm-level standard deviation of cash flows scaled by lagged total asset. The ratio of each firm is calculated. Then the median of EM1 is computed. The small figure of EM1 indicates that firms are more likely to smoothing theirs earnings.

EM2 is the Spearman correlation between changes in accruals scaled by lagged total assets and changes in cash flows scaled by lagged total asset. The large figure of EM2 indicates that firms are more likely to smoothing theirs earnings.

N is number of observations. Group 1 (2) is firms whose book-tax differences during pre-adoption periods are smaller (larger) than those during post-adoption periods (Group 1: BT-Pre < BT-Post, Group 2: BT-Pre> BT-Post).

In conclusion, the earnings smoothing measures report that the earnings smoothing in Thai firms are more likely to decline after the IFRS adoption. The earnings smoothing of group 2 is more likely to be lower than the earnings smoothing of group 1 after the IFRS adoption.

In Table 4.5, I separate correlation analysis due to the difference in the number of observations and the regression models. From Panel A, the correlation shows that future earnings are correlated with cash flows from operation and accruals. In Panel B, the persistence coefficient is relatively positively correlated with firm governance factors, except board size (NBO) and board quality (NBB). Firm size (MKT) is positively correlated with all firm governance factors.

Table 4.5 Correlations: Pearson (Spearman) correlation coefficient on the lower (upper) diagonal

Panel A

N = 1050	$EBIT_{it+1}$	CF	ACC
$EBIT_{it+1}$		**0.3096*****	**0.0663****
CF	0.3062***		**-0.7632*****
ACC	-0.0278	-0.8681***	

Panel B

N = 366	PER	NBO	NBB	NB	RCG	ROA	MKT1
PER		**-0.0418**	**0.0429**	**0.1182****	**0.0986***	**0.1031****	**0.1316****
NBO	-0.0279		**0.7000*****	**0.4150*****	**-0.0525**	**0.0756**	**0.2855*****
NBB	0.0239	0.6883***		**0.6583*****	**-0.0019**	**0.0184**	**0.3623*****
NB	0.052	0.3921***	0.6941***		**0.5627*****	**0.2352*****	**0.3236*****
RCG	0.0999*	-0.1120**	-0.0217	0.4998***		**0.3303*****	**0.1022****
ROA	0.1132**	0.0094	0.0054	0.1414***	0.2656***		**0.2478*****
MKT1	0.1029**	0.1146**	0.2507***	0.1688***	0.0729	0.1121**	

$EBIT_{it+1}$ is future earnings before interest and tax scaled by the beginning of total assets; CF is current cash flow from operation deflated by the beginning of total asset; ACC is current accruals deflated by the beginning of total asset.
PER is persistence coefficient obtained from the equation (1) by rolling five–year window estimations; NBO is number of boards of director; NBB is number of boards that members of board of directors serve as board of directors or audit committee in other firms; NB is number of boards that audit committee members serve as board of directors or audit committee in other firms; MKT1 is market capitalization. RCG is a proportion of audit committee members in board of directors and ROA is return on assets. N is number of observations.
***,**, * Significant at 0.01, 0.05 and 0.10 level, respectively (two-tailed)

Results from univariate tests

From Table 4.6, Panel A, I regress the information sets on years. Book-tax differences for firms in group 1 (on average .7 percentage points increase each year) are greater than that for firms in group 2 (on average 1 percentage point decrease each year). In Panel B, I regress earnings on 10-year periods by using indicator variables. This is to determine whether earnings structure has changed during the IFRS adoption periods. Without other information sources, results indicate that earnings structure for all firm-years significantly declines over time. Specially, earnings of firms in group 2 have substantially declined since 1998. In Panel C, taxable income is regressed on years. The results from panel B and C suggest that during pre-adoption periods, earnings and taxable income tend to decrease. However, during post-adoption periods, the negative sign of coefficient estimates suggests that the decrease in earnings (significant) is greater than the decrease in taxable income (insignificant). When comparing between group 1 and 2, the pattern of earnings and taxable income for both groups follows the same direction (decreasing) during pre-adoption periods. However, during post-adoption periods, the result reports the decrease in earnings but not the decrease in taxable income for group 2 (that the result in Panel C for group 2 is not statistically significant from year 2001). On the other hand, the result reports the decrease in taxable income but not the decrease in earnings for group 1.

In summary, it is rather difficult for firms to reduce taxable income without lowering earnings. Therefore, it is more likely that earnings and taxable income follow a similar direction. The result from univariate tests suggests that during post-adoption periods, on average earnings decline but taxable income does not significantly decline (group 2), implying that it is more restricting to engage in high tax activities to lower taxable income. However, taxable income for group 1 declines significantly whilst earnings are not considerably changed. This implies that firms in group 1 are more likely to engage in earnings manipulation or tax activity relative to firms in group 2. In addition, the result implies that firms in group 1 are more likely to use new accounting standards opportunistically or intentionally to manage earnings relative to firms in group 2.

Results from multivariate regressions

Table 4.7 presents the persistence coefficients of regressions of 1-year future earnings on current earnings. Panel A of Table 4.7 reveals that the persistence coefficient (β_1) is .616 for full samples.[54] Earnings persistence is .560 points during pre-adoption and increases to .684 points during post-adoption periods. Panel B presents the results for subgroups formed on the book-tax difference. Group 1 includes firms whose book-tax differences during pre-adoption periods are smaller than book-tax differences during post-adoption periods. Group 2 includes firms whose book-tax differences during pre-adoption periods are larger than book-tax differences during post-adoption periods. An indicator variable for time (YR) is introduced in the analysis.

[54] Pincus et al. (2007) estimate accrual anomaly in 21 countries, including Thailand. As a part of accrual anomaly analysis, they report the persistence of earnings for Thai firms during the period 1994–2002 is .64. The persistence of earnings for US firms ranges from .652 (Dichev and Tang 2009) and .8 (Sloan 1996).

Table 4.6 Univariate analysis

Panel A: OLS regressions, regressing effective tax rate, discretionary accruals and book-tax differences on time trend.

$V_{it} = \lambda_0 + \lambda_1 YEAR_{it} + \varepsilon_{it}$

	Full samples		Group 1		Group 2	
BT						
λ_0	2.176	(1.62)	-13.039	(-9.19)***	17.39	(8.03)***
λ_1	-0.001	(-1.59)	0.007	(9.22)***	-0.01	(-8.01)***
Adj.R^2		0.001		0.045		0.066
N		2000		1000		1000

Panel B: OLS regression, regressing earnings before interest and tax on indicator variables.

$EBIT_{it} = \theta_0 + \theta_1 Y96_{it} + \theta_2 Y97_{it} + \ldots + \theta_9 Y04_{it} + \varepsilon_{it}$

	Full samples		Group 1		Group 2	
INT	0.130	(23.06)***	0.113	(14.44)***	0.147	(18.87)***
Y96	-0.028	(-3.61)***	-0.030	(-2.63)***	-0.026	(-2.63)***
Y97	-0.052	(-5.13)***	-0.066	(-4.41)***	-0.038	(-2.97)***
Y98	-0.040	(-3.43)***	-0.059	(-3.30)***	-0.020	(-1.48)
Y99	-0.081	(-8.31)***	-0.082	(-5.74)***	-0.080	(-6.22)***
Y00	-0.060	(-6.11)***	-0.036	(-2.71)***	-0.084	(-5.87)***
Y01	-0.047	(-5.34)***	-0.028	(-2.37)**	-0.065	(-5.18)***
Y02	-0.042	(-4.81)***	-0.009	(-0.77)	-0.074	(-5.99)***
Y03	-0.035	(-4.00)***	0.010	(0.91)	-0.080	(-6.48)***
Y04	-0.037	(-3.68)***	0.011	(0.87)	-0.086	(-5.88)***
Adj.R^2		0.031		0.070		0.075
N		2000		1000		1000

Panel C: OLS regression, regressing taxable income on indicator variables.

$TAX_{it} = \theta_0 + \theta_1 Y96_{it} + \theta_2 Y97_{it} + \ldots + \theta_9 Y04_{it} + \varepsilon_{it}$

	Full samples		Group 1		Group 2	
INT	0.055	(13.83)***	0.044	(8.39)***	0.066	(11.36)***
Y96	-0.010	(-1.80)*	-0.007	(-1.02)	-0.012	(-1.55)
Y97	-0.030	(-5.55)***	-0.023	(-3.11)***	-0.037	(-4.74)***
Y98	-0.028	(-5.12)***	-0.025	(-3.43)***	-0.031	(-3.89)***
Y99	-0.026	(-4.60)***	-0.021	(-2.89)***	-0.030	(-3.64)***
Y00	-0.022	(-3.96)***	-0.025	(-3.55)***	-0.020	(-2.33)**
Y01	-0.012	(-1.95)*	-0.020	(-2.67)***	-0.005	(-0.50)
Y02	-0.015	(-2.62)***	-0.019	(-2.71)***	-0.012	(-1.30)
Y03	-0.013	(-2.17)**	-0.015	(-2.10)**	-0.011	(-1.16)
Y04	-0.008	(-1.36)	-0.009	(-1.19)	-0.008	(-0.83)
Adj.R^2		-0.0004		0.017		0.025
N		2000		1000		1000

EBIT is earnings before interest and tax scaled by the beginning of total assets; TAX is taxable income deflated by total assets; BT is book-tax differences scaled by total assets; Y95 (Y96…Y04) is indicator variable equal to 1 for 1995 (1996…2004) and 0 otherwise; YEAR = 1995, 1996,…, 2004 and N is number of observations. In parentheses, *t*-statistics are based on OLS firm fixed-effect estimations with heteroskedasticity-robust standard errors.
Group 1 (2) include firms with larger (smaller) book-tax-differences during post-adoption periods.
***,**,* Significant at 0.01, 0.05 and 0.10 level, respectively (two-tailed)

Panel B of Table 4.7 reports that the persistence coefficient for group 1 (β_1) is .541. The persistence coefficient for group 2 (β_1= .553) is slightly higher than for group 1. The coefficient (β_5) for group 1 is negative and insignificant, indicating that the persistence of earnings for group 1 tends to decrease but not significantly. On the other hand, the coefficient (β_5) for group 2 is positive and significant, indicating that the persistence of earnings for group 2 increases by .245 point after the adoption of IFRS in Thailand.

Panels C and D of Table 4.7 present the persistence coefficients of regressions of 1-year future earnings on earnings performance attributable to cash flows from operation and accruals. Panel C reports that the persistence coefficient of earnings performance attributable to cash flows from operation and accruals is (β_2) .590 and (β_3) .543 points, respectively. The Chi^2 value (7.18) suggests that the persistence coefficient for earnings performance attributable to cash flows from operation is significantly larger that that for earnings performance attributable to accruals. Prior research suggests that earnings management induces the lower persistence of earnings performance attributable to the accrual component of earnings (Sloan 1996). The smaller coefficient on accruals relative to cash flows reflects the higher discretion in accruals, that these findings are consistent with US evidence (i.e. Sloan 1996; Hanlon 2005). The finding from full samples in Panel C suggests that firms are more likely to engage in earnings manipulation.

As compared to pre-adoption periods, the magnitude of coefficient on accruals and cash flows during post-adoption periods is higher (β_2–Pre = .519 vs. β_2–Post = .653 and β_3–Pre = .462 vs. β_3–Post = .615), reflecting the higher quality of earnings information prepared by new accounting standards. The Chi^2 value indicates that the persistence coefficient for earnings performance attributable to cash flows from operation is significantly larger than that for earnings performance attributable to accruals for both periods. Panel D presents the results for subgroups. The persistence coefficients of earnings performance attributable to cash and accrual components for group 1 during pre-adoption are (β_2) .520 and (β_3) .494, respectively. The persistence coefficients of earnings performance attributable to cash and accrual components for group 1 tend to improve but not significant as measured by the positive sign of β_7 and β_8. On the other hand, the results suggest that the persistence coefficients of earnings performance attributable to cash and accrual component for group 2 during pre-adoption are (β_2) .480 and (β_3) .390, respectively and they improve by (β_7) .207 and (β_8) .273, respectively, during post-adoption periods. The results are consistent with the regression of 1-year future earnings on current earnings reported in Panel B. Nevertheless, the persistence coefficients of earnings performance attributable to cash and accrual component during post-adoption periods are not significantly different for both subgroups (measured by the Chi^2 ($\beta_7 = \beta_8$) = 0.67 for group 1 and 1.64 for group 2 is not significant).[55]

In conclusion, earnings are of higher quality in terms of persistence attribute after the change in accounting standards in Thailand. The results support the hypothesis (H.4.1). According to these results, earnings persistence is more pronounced for firms with small book-tax differences relative to firms with large book-tax differences. This is consistent with the prior study (Hanlon 2005). The improvement of earnings persistence during post-adoption periods in group 2 supports the hypothesis (H.4.2). Nevertheless, the persistence of earnings for firms in group 2 must be interpreted with caution because if firms engage in earnings smoothing, their smoothed earnings will not capture underlying economic performances. The descriptive analysis suggests that it is less likely for firms in group 2 to engage in earnings smoothing relative to firms in group 1, and the earnings smoothing activity for firms in group 2 is declined during post-adoption periods. Nevertheless, it is essential for future research to explore whether the persistence of earnings for firms in group 2 involves earnings smoothing.

[55] Pincus et al. (2007) find that the persistence coefficients of earnings performance attributable to accrual component are not significantly different from the persistence of earnings performance attributable to cash component in Denmark, India, Malaysia, the Netherlands, Singapore and Thailand. For Thailand, they report that the persistence coefficients of earnings attributable to cash flow and accrual component are .603 equally.

Table 4.7 OLS estimator with bootstrap standard error is employed for the estimation. *z-statistics* are reported in parentheses.

$$EBIT_{it+1} = \beta_0 + \beta_1 EBIT_{it} + \beta_4 YR_{it} + \beta_5 YR{*}EBIT_{it} + \varepsilon_{it}$$

Panel A: Full samples

	All		Pre-adoption (1995–1999)		Post-adoption (2000–2004)	
β_0	0.018	(3.46)***	0.019	(3.09)***	0.017	(2.00)**
β_1	0.616	(13.8)***	0.560	(11.68)***	0.684	(8.98)***
Adj.R^2	0.321		0.296		0.353	
N	2000		1000		1000	
Model-Chi^2	190.37		136.38		80.64	

Panel B

	Group 1		Group 2	
β_0	0.013	(1.72)*	0.026	(2.56)**
β_1	0.541	(7.99)***	0.553	(7.43)***
β_4	0.031	(3.60)**	0.025	(-1.51)
β_5	-0.031	(-0.40)	0.245	(1.65)*
Adj.R^2	0.368		0.317	
N	1000		1000	
Model-Chi^2	286.43		109.21	

$$EBIT_{it+1} = \beta_0 + \beta_2 CF_{it} + \beta_3 ACC_{it} + \beta_6 YR_{it} + \beta_7 YR{*}CF_{it} + \beta_8 YR{*}ACC_{it} + \varepsilon_{it}$$

Panel C: Full Samples

	All		Pre-adoption (1995–1999)		Post-adoption (2000–2004)	
β_0	0.032	(7.00)***	0.032	(5.56)***	0.033	(4.79)***
β_2	0.590	(13.69)***	0.519	(10.62)***	0.653	(9.55)***
β_3	0.543	(13.11)***	0.462	(9.40)***	0.615	(9.47)***
Adj.R^2	0.322		0.232		0.414	
N	1050		525		525	
Model-Chi^2	189.67		112.82		93.35	
Chi^2 ($\beta_2 = \beta_3$)	7.18***		5.78**		2.64*	

Panel D

	Group 1		Group 2	
β_0	0.028	(4.13)***	0.040	(3.75)***
β_2	0.520	(7.52)***	0.480	(6.36)***
β_3	0.494	(7.24)***	0.390	(4.95)***
β_6	0.020	(1.76)*	-0.018	(-1.21)
β_7	0.058	(-0.50)	0.207	(1.67)*
β_8	0.019	(0.17)	0.273	(2.15)**
Adj. R^2	0.331		0.339	
N	540		510	
Model-Chi^2	125.6		92.14	
Chi^2 ($\beta_2 = \beta_3$)	1.05		4.63**	
Chi^2 ($\beta_7 = \beta_8$)	0.67		1.64	

$EBIT_{it+1}$ ($EBIT_{it}$) is 1-year-future (current) earnings before interest and tax scaled by the beginning of total assets; CF_{it} is current year cash flow from operation deflated by the beginning of total asset; ACF_{it} is current year accruals deflated by the beginning of total asset; YR is an indicator variable equal to 1 for post-adoption period (2000–2005), 0 otherwise (1992–1999) and N is number of observations. Group 1 (2) include firms with larger (smaller) book-tax-differences during post-adoption periods. ***,**,* Significant at 0.01, 0.05 and 0.10 level, respectively (two-tailed). CF = Earnings before interest and tax + Depreciation – (Changes in current asset – Changes in cash – Changes in current liabilities); AC = Earnings before interest and tax – CF. Bootstrap estimation is repeated 1,000 times.

It should be noted that the results reported in Table 4.7 are qualitatively similar when the book-tax difference is calculated from consolidated financial statements.[56] In terms of earnings persistence, this thesis considers that there are at least two potential explanations why earnings persistence for firms in group 1 has not significantly improved during post-adoption periods. Firstly, firms in group 1 possibly engage in tax and earnings management to a higher extent than do firms in group 2. Secondly, because the sample firms do not considerably differ in earnings, leverage or performance, this thesis proposes that the differential earnings persistence between two groups should be induced by the variation in firm governance factors. Therefore, I further explore the relationship between firm governance factors and earnings persistence.

Earnings persistence and firm governance

I compare the characteristics of firms in two groups and find that they do not differ in various financial proxies, including earnings, debt-equity ratio or performance. I therefore analyse whether the earnings persistence is varied according to firm governance systems. I regress earnings persistence on firm governance variables. As reported in Table 4.8, YR in the model is year dummy variable, separating between pre- and post-adoption periods. YR is also interacted with other firm governance variables. Results show that during pre-adoption periods, the relationship between earnings persistence and firm governance variables is not observed for all groups of sample firms. During post-adoption periods, the full sample analysis reveals that earnings persistence is significantly associated with firm governance variables, including NBB, NB and RCG, but there is no relationship between earnings persistence and board size (NBO). The relationship between earnings persistence and NBB is significantly positive, suggesting that high board quality induces high earnings persistence.[57] The

[56] See results in Appendix 3

[57] It should be noted that NBB (NB) in this analysis has twofold meanings. One represents the reputation of the board (audit committee). The board (audit committee) reputation should induce positive relationship between earnings quality and board quality. The other meaning can be interpreted as workloads of the board (audit committee) member. If one board (audit committee) member serves on too many boards, the quality of work would be deteriorated, resulting in low earnings quality. By this interpretation, the relationship between board (audit committee) quality

relationship between earnings persistence and NB is significantly negative, suggesting that earnings quality is deteriorated when audit committee members serve on too many boards. The relationship between earnings persistence and RCG is significantly positive, suggesting that the higher proportion of audit committee in a board induces the higher earnings persistence.

For subgroups, their results are rather consistent. The relationship between earnings persistence and NBB is positive for both groups, but it is statistically significant for group 1 but not statistically significant for group 2. It implies that the board reputation increases the persistence of earnings for firms in group 1 but not for firms in group 2. The relationship between earnings persistence and NB is negative for both groups, but it is statistically significant for group 2 but not statistically significant for group 1. It implies that the work quality of audit committee tends to be low, reducing the persistence of earnings for firms in group 2. The relationship between earnings persistence and RCG is statistically significantly positive for both groups, suggesting that the firm governance quality increases the persistence of earnings in the sample firms.

In conclusion, during pre-adoption periods, the relationship between accounting quality and firm governance systems is not observed, whilst the relationship between them is more pronounced during post-adoption periods. In addition, the finding suggests that the firm governance quality (RCG) is statistically significantly related to the earnings persistence, that the higher proportion of audit committee on a board induces the higher earnings persistence. Overall, the obtained results suggest that earnings persistence is varied according to firm governance systems. This thesis argues that the obtained relationship between the earnings persistence and firm governance variables probably is a factor influencing the difference in earnings persistence between firms in group 1 and firms in group 2. Also, the firm governance plays an important role during IFRS post-adoption periods.

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and earnings persistence should be negative.

Table 4.8 Firm governance and earnings persistence

I regress persistence (PER) on firm governance proxies. I compare the analysis between firms in group 1 and 2 during pre- and post-adoption periods. Year indicator variables are employed for pre- and post-adoption periods. I use median of NBO, NB and NBB and the mean of RCG and control variables for this analysis. OLS estimators with heteroskedasticity-robust standard errors are employed for the regression analysis. t-statistics are reported in parentheses.

$$PER_i = \gamma_0 + \gamma_1 NBO_i + \gamma_2 NBB_i + \gamma_3 NB_i + \gamma_4 RCG_i + \gamma_5 YR_i + \gamma_6 YR{*}NBO_i + \gamma_7 YR{*}NBB_i + \gamma_8 YR{*}NB_i + \gamma_9 YR{*}RCG_i + \varepsilon_i$$

	All		Group 1		Group 2	
INT.	0.643	(1.40)	0.839	(1.54)	0.471	(0.59)
NBO	-0.013	(-0.59)	0.003	(0.10)	-0.016	(-0.41)
NBB	-0.002	(-0.58)	-0.004	(-0.86)	-0.004	(-0.64)
NB	0.019	(1.41)	0.006	(0.42)	0.026	(1.29)
RCG	-1.701	(-1.49)	-1.936	(-1.50)	-1.623	(-0.84)
YR	-1.295	(-2.01)**	-1.476	(-1.62)	-1.395	(-1.43)
YR*NBO	0.001	(0.03)	-0.032	(-0.94)	0.027	(0.62)
YR*NBB	0.013	(2.28)**	0.019	(2.24)**	0.010	(1.22)
YR*NB	-0.035	(-2.44)**	-0.026	(-1.40)	-0.042	(-2.00)**
YR*RCG	4.266	(3.06)***	4.727	(2.55)**	4.286	(2.00)**
Adj. R^2		0.026		0.019		0.027
N		360		182		178

PER is persistence (β_1) obtained from the OLS regression with heteroskedasticity-robust standard errors, rolling five-year window before and after the accounting change: $EBIT_{i,t} = \beta_0 + \beta_1 EBIT_{i,t-1} + \varepsilon_i$, where $EBIT_{i,t}$ and $EBIT_{i,t-1}$ are earnings before interest and tax in year *t* and *t-1*, respectively and ε is the residual. All variables are deflated by the average of total assets. NBO is number of boards of director. NB is number of boards that audit committee members serve as board of directors or audit committee in other firms. RCG is a proportion audit committee members in board of directors. NBB is number of boards that members of board of directors serve as board of directors or audit committee in other firms. YR is an indicator variable equal to 1 for post-adoption periods (2000–2004), 0 otherwise (1995–1999). N are a number of observations.
Group 1 (2) is firms with larger (smaller) book-tax-differences in post-adoption period.
***,**,* Significant at 0.01, 0.05 and 0.10 level, respectively (two-tailed).

Robustness checks

Control variables, including revenue growth (GRW), revenue (REV) and firm size (SIZE) are included in the regression model to mitigate the potential problem of omitted variables (Kraft et al. 2007).[58] In addition to those variables, this study includes industry-adjusted discretionary accruals (DA) in the analysis to control

[58] Kraft et al. (2007) use the growth of sales and sales in their analysis. This study uses the growth of total revenue and total revenue to maintain a number of observations.

for the discretionary accrual.[59] Nevertheless, the sample size is significantly reduced when including DA in the regression of future earnings on current earnings. Therefore, the results are presented separately when DA is included and excluded. As reported in Panels A and B of Table 4.9, the persistence coefficient of earnings (β_5) enhances from pre- to post-adoption periods for full samples. For subgroups, the results are consistent with the results obtained from the main analysis, indicating that the persistence of earnings for group 2 improves during post-adoption periods (β_5 = .256). Panel C and D report the results when earnings are attributable to cash and accrual components. The results reveal the improvement of persistence of earnings performance attributable to cash and accrual components for full samples (measured by β_7 and β_8). The persistence of earnings performance attributable to accrual components improves during post-adoption periods for group 2 (β_8 = .286). Overall results are consistent with the results obtained from the regressions in the main analysis. In addition, the discretionary accrual is not significantly related with future earnings.

Next, the sample periods are expanded by using the balanced panel data from 1992 to 2005, including 2,240 observations (160 constant firms over the periods). Table 4.10 presents the results by regressing 2-year future earnings on current earnings.[60] Panel A–C of Table 4.10 reports the results when 2-year future

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[59] Cross-section modified-Jones model is used for the calculation of discretionary accruals. I calculate accruals by the equation (Jones 1991):
(1) Accruals (TA) = Annual changes in current assets – Annual changes in cash – Annual changes in current liabilities – Depreciation
(2) Cash flow from operation = Earnings before interest and tax – Accruals
The industry cross-section modified-Jones model is calculated as follows:
(3) $TA_i/A_{t-1} = a_1(1/A_{t-1}) + a_2(\Delta REV_i/A_{t-1}) + a_3(PPE_i/A_{t-1}) + \varepsilon_i$
And, discretionary accruals are obtained from the following equation:
(4) $u_i = TA_i/A_{t-1} - [\alpha_1(1/A_{t-1}) + \alpha_2(\Delta REV_i - \Delta REC_i/A_{t-1}) + \alpha_3(PPE_i/A_{t-1})]$
where subscript i refers to six industry groups, including agro & food business, consumer products, industrials, property & construction, services and resources & technology. TA is total accruals; u is the discretionary accruals (DA); ΔREV is revenues in year t less revenues in year t-1; ΔREC is accounts receivable in year t less accounts receivable in year t-1; PPE is gross property plant and equipment; A_{t-1} is total assets at the end of year t-1; ε is the residual and α_1, α_2, and α_3 are cross-section industry-specific parameters obtained from OLS estimates a_1, a_2 and a_3, respectively. a, a_2 and a_3 are estimated by employing entire firm-years listed on the stock exchange of Thailand. PPE and depreciation are obtained from Datastream. All other variables are obtained from SETSMART.
[60] See Table 4.7 for the comparison.

earnings are regressed on current earnings. Panel D–F of Table 4.10 reports the results when current earnings information is decomposed to cash and accrual components. From Panel A–C, the persistence coefficient during post-adoption periods is higher than that during pre-adoption periods. The persistence coefficient for group 1 declines from pre- to post-adoption periods whilst the persistence coefficient for group 2 increases during those periods of time. The magnitude of persistence coefficients when using 2-year future earnings is smaller than that of persistence coefficients when using 1-year future earnings. Also, the adjusted R^2 from 2-year future earnings regressions is smaller than that from 1-year future earnings regressions.

For the regression of 2-year future earnings on earnings performance attributable to cash and accrual components, the results reported in Panel D–F are consistent with the results obtained from 1-year future earnings regressions. The persistence coefficients for full samples and group 2 increase from pre- to post-adoption periods whilst the persistence coefficients for group 1 decrease during those periods of time. The magnitude of persistence coefficient of earnings performance attributable to cash component is higher than that of earnings performance attributable to accrual component for full samples and two subgroups. Nevertheless, the smaller persistence coefficient of earnings performance attributable to accrual component is not statistically significant as revealed by the value of Chi^2.

Table 4.9 OLS estimator with bootstrap standard error is employed for the estimation. *z-statistics* are reported in parentheses.

$$EBIT_{it+1} = \beta_0 + \beta_1 EBIT_{it} + \beta_4 YR_{it} + \beta_5 YR*EBIT_{it} + \sum_{j=1}^{4}\varphi_j K_{j,i,t} + \sum_{j=1}^{4}\delta_j YR*K_{j,i,t} + \varepsilon_{it}$$

Panel A[/a/] – DA excluded

	All		Group 1		Group 2	
β_0	0.008	(0.22)	-0.062	(-1.26)	0.069	(1.47)
β_1	0.506	(9.2)***	0.489	(6.49)***	0.506	(6.26)***
β_4	-0.031	(-0.73)	0.078	(1.36)	-0.079	(-1.16)
$\boldsymbol{\beta_5}$	**0.180**	**(1.99)****	**0.019**	**(0.23)**	**0.293**	**(1.94)***
GRW	-0.017	(-0.97)	-0.031	(-1.14)	-0.008	(-0.38)
REV	0.034	(6.22)***	0.041	(4.63)***	0.027	(3.97)***
SIZE	-0.001	(-0.37)	0.003	(1.12)	-0.004	(-1.45)
YR*GRW	0.006	(0.26)	0.015	(0.49)	0.004	(0.09)
YR*REV	-0.033	(-4.51)***	-0.033	(-3.32)***	-0.027	(-2.45)**
YR*SIZE	0.004	(1.31)	-0.002	(-0.53)	0.005	(1.14)
Adj.R^2		0.338		0.385		0.322
N		2000		1000		1000
Model-Chi^2		424.89		359.28		161.61

Panel B – DA included

	All		Group 1		Group 2	
β_0	0.009	(0.2)	-0.093	(-1.42)	0.099	(1.49)
β_1	0.381	(7.32)***	0.349	(4.81)***	0.362	(4.58)***
β_4	-0.081	(-1.29)	0.094	(1.25)	-0.246	(-2.33)**
$\boldsymbol{\beta_5}$	**0.198**	**(2.34)****	**0.124**	**(1.36)**	**0.256**	**(1.93)***
GRW	-0.008	(-0.43)	-0.008	(-0.25)	-0.003	(-0.13)
REV	0.028	(3.99)***	0.042	(2.78)***	0.019	(2.21)**
SIZE	0.001	(0.23)	0.007	(1.63)	-0.004	(-1.09)
DA	-0.062	(-0.58)	0.043	(0.28)	-0.080	(-0.49)
YR*GRW	-0.003	(-0.11)	0.000	(0)	-0.003	(-0.09)
YR*REV	-0.030	(-3.2)***	-0.041	(-2.46)**	-0.014	(-0.99)
YR*SIZE	0.006	(1.63)	-0.004	(-0.78)	0.015	(2.46)**
YR*DA	-0.006	(-0.05)	-0.119	(-0.66)	0.007	(0.03)
Adj.R^2		0.255		0.290		0.244
N		1040		510		530
Model-Chi^2		251.98		217.16		110.04

Table 4.9 (Cont.)

$$EBIT_{it+1} = \beta_0 + \beta_3 CF_{it} + \beta_4 ACC_{it} + \beta_6 YR_{it} + \beta_7 YR*CF_{it} + \beta_8 YR*ACC_{it} + \sum_{j=1}^{4}\varphi_j K_{j,i,t} + \sum_{j=1}^{4}\delta_j YR*K_{j,i,t} + \varepsilon_{it}$$

Panel C[a] – DA excluded

	All		Group 1		Group 2	
β_0	-0.016	(-0.43)	-0.061	(-1.25)	0.027	(0.42)
β_3	0.453	(7.8)***	0.417	(5.78)***	0.442	(4.92)***
β_4	0.397	(7.13)***	0.403	(5.86)***	0.348	(3.67)***
β_6	-0.028	(-0.55)	0.062	(0.96)	-0.117	(-1.34)
β_7	**0.190**	**(2.01)****	**0.160**	**(1.37)**	**0.217**	**(1.61)**
β_8	**0.208**	**(2.31)****	**0.110**	**(1.04)**	**0.286**	**(2.09)****
GRW	-0.009	(-0.49)	-0.009	(-0.3)	-0.005	(-0.19)
REV	0.033	(4.79)***	0.047	(3.76)***	0.024	(2.59)***
SIZE	0.002	(0.76)	0.004	(1.4)	0.000	(-0.12)
YR*GRW	0.005	(0.23)	0.001	(0.03)	0.024	(0.64)
YR*REV	-0.038	(-4.47)***	-0.046	(-3.24)***	-0.027	(-2.15)**
YR*SIZE	0.004	(1.19)	-0.001	(-0.29)	0.008	(1.57)
Adj.R^2		0.348		0.355		0.350
N		1050		540		510
Model-Chi^2		273.34		211.62		139.91

Panel D – DA included

	All		Group 1		Group 2	
β_0	-0.026	(-0.62)	-0.111	(-1.76)*	0.032	(0.48)
β_3	0.438	(7.65)***	0.374	(4.86)***	0.442	(4.84)***
β_4	0.381	(6.79)***	0.359	(4.85)***	0.348	(3.81)***
β_6	-0.008	(-0.14)	0.126	(1.61)	-0.126	(-1.39)
β_7	**0.198**	**(2.14)****	**0.189**	**(1.39)**	**0.208**	**(1.57)**
β_8	**0.223**	**(2.48)****	**0.139**	**(1.12)**	**0.286**	**(2.13)****
GRW	-0.008	(-0.4)	-0.005	(-0.17)	-0.006	(-0.22)
REV	0.035	(4.82)***	0.061	(3.74)***	0.024	(2.61)***
SIZE	0.002	(0.9)	0.007	(1.87)*	-0.001	(-0.21)
DA	-0.079	(-0.66)	-0.051	(-0.29)	-0.041	(-0.22)
YR*GRW	0.003	(0.11)	-0.002	(-0.06)	0.020	(0.55)
YR*REV	-0.041	(-4.29)***	-0.059	(-3.25)***	-0.027	(-2.09)**
YR*SIZE	0.002	(0.68)	-0.005	(-1.04)	0.009	(1.62)
YR*DA	-0.010	(-0.07)	-0.012	(-0.06)	-0.056	(-0.24)
Adj.R^2		0.343		0.344		0.352
N		1000		500		500
Model-Chi^2		262.31		196.63		138.63

$EBIT_{it+1}$ ($EBIT_{it}$) is 1-year future (current) earnings before interest and tax scaled by the beginning of total assets; Kj,i,t is a vector of firm i's j firm-specific factors, including GRW is the change in total revenue deflated by total asset, SIZE is the natural log of total assets, REV is the ratio of total revenue divided by total assets and DA is industry discretionary accrual; CF_{it} is current cash flow from operation deflated by the beginning of total asset; ACC_{it} is the current accrual deflated by the beginning of total asset; YR is an indicator variable equal to 1 for post-adoption period, 0 otherwise and N is number of observations. Group 1 (2) include firms with larger (smaller) book-tax-differences during post-adoption periods. ***,**,* Significant at 0.01, 0.05 and 0.10 level, respectively (two-tailed). Bootstrap estimation is repeated 1,000 times.

[a] Qualitatively similar results are obtained when the book-tax differences are calculated by using consolidated financial statements (see Appendix 4).

Table 4.10 Robustness checks of the regression of 2-year-future earnings on current earnings.

$EBIT_{it+2} = \beta_0 + \beta_1 EBIT_{it} + \varepsilon_{it}$

Panel A: Full samples

	All		Pre-adoption (1992-1999)		Post-adoption (2000-2005)	
β_0	0.048	(10.24)***	0.047	(6.65)***	0.048	(8.56)***
β_1	0.586	(16.02)***	0.581	(11.65)***	0.600	(11.01)***
Adj. R^2		0.220		0.195		0.275
N		2240		1280		960
Model-Chi^2		256.77		135.61		121.19

Panel B: Group 1

	All		Pre-adoption (1992-1999)		Post-adoption (2000-2005)	
β_0	0.050	(7.48)***	0.041	(4.1)***	0.063	(9.55)***
β_1	0.568	(10.31)***	0.587	(7.71)***	0.526	(7.89)***
Adj. R^2		0.181		0.175		0.201
N		1260		720		540
Model-Chi^2		106.24		59.5		62.18

Panel C: Group 2

	All		Pre-adoption (1992-1999)		Post-adoption (2000-2005)	
β_0	0.045	(7.86)***	0.059	(6.54)***	0.034	(4.03)***
β_1	0.609	(13.86)***	0.549	(9.51)***	0.658	(8.14)***
Adj. R^2		0.287		0.212		0.351
N		980		560		420
Model-Chi^2		192.03		90.42		66.25

$EBIT_{it+2} = \beta_0 + \beta_3 CF_{it} + \beta_4 ACC_{it} + \varepsilon_{it}$

Panel D: Full samples

	All		Pre-adoption (1993-1999)		Post-adoption (2000-2005)	
β_0	0.042	(9.18)***	0.047	(7.56)***	0.038	(5.94)***
β_2	0.573	(14.52)***	0.530	(10.72)***	0.626	(10.98)***
β_3	0.540	(12.7)***	0.523	(9.96)***	0.553	(8.55)***
Adj. R^2		0.248		0.213		0.298
N		1066		574		492
Model-Chi^2		211.46		115.92		127.72
Chi^2 ($\beta_2 = \beta_3$)		3.16*		0.08		6.16**

Panel E: Group 1

	All		Pre-adoption (1993-1999)		Post-adoption (2000-2005)	
β_0	0.045	(9.26)***	0.035	(5.3)***	0.063	(7.52)***
β_2	0.545	(13.14)***	0.612	(10.64)***	0.424	(6.49)***
β_3	0.514	(10.81)***	0.611	(9.62)***	0.312	(4.13)***
Adj. R^2		0.226		0.288		0.157
N		559		301		258
Model-Chi^2		173.95		113.47		52.66
Chi^2 ($\beta_2 = \beta_3$)		1.71		0.00		9.62***

Panel F: Group 2

	All		Pre-adoption (1993-1999)		Post-adoption (2000-2005)	
β_0	0.039	(5.34)***	0.065	(5.91)***	0.022	(2.4)**
β_2	0.594	(9.73)***	0.432	(5.58)***	0.750	(8.41)***
β_3	0.560	(8.87)***	0.423	(5.09)***	0.707	(7.01)***
Adj. R^2		0.261		0.130		0.404
N		507		273		234
Model-Chi^2		94.69		31.23		73.54
Chi^2 ($\beta_2 = \beta_3$)		1.65		0.06		1.12

$EBIT_{it+2}$ ($EBIT_{it}$) is 2-year-future (current) earnings before interest and tax scaled by the beginning of total assets; CF_{it} is current year cash flow from operation deflated by the beginning of total asset; ACF_{it} is current year accruals deflated by the beginning of total asset; YR is an indicator variable equal to 1 for post-adoption period (2000 – 2005), 0 otherwise and N is a number of observations. Group 1 (2) include firms with larger (smaller) book-tax-differences during post-adoption periods. ***,**,* Significant at 0.01, 0.05 and 0.10 level, respectively (two-tailed). CF = Earnings before interest and tax + Depreciation – (Changes in current asset – Changes in cash – Changes in current liabilities); AC = Earnings before interest and tax – CF. OLS estimator with bootstrap standard error is employed for the estimation repeated 1,000 times. *z-statistics* are reported in parentheses.

Next, the robustness check is performed by analysing the persistence of earnings for all firm-years. In addition, the samples are sub-grouped by using the book-tax difference. Each year, the book-tax difference is divided into two groups – small (BT1) and large (BT2) book-tax differences. Following prior research (Hanlon 2005), the persistence of earnings for firms with small book-tax differences is expected to be higher than the persistence of earnings for firms with large book-tax differences. To form the subgroups, outliers, all missing data, the negative annual income tax and negative book-tax difference are excluded from the analysis. 2-year and 1-year future earnings are employed for the analysis. Table 4.11 presents the regression of 1-year (Panel A–C) and 2-year (Panel D–F) future earnings on current earnings. By controlling for industry fixed effects, Panel A of Table 4.11 reports the regression of 1-year future earnings on current earnings, indicating that the persistence of earnings increases from pre- to post-adoption periods for full samples. The enhancement of earnings persistence is also observed in two subgroups, indicating that the earnings persistence is higher after IFRS adoption in Thailand. Panel B and C report that during post-adoption periods the magnitude of earnings persistence for small book-tax differences firms (BT1: β_1 = .701) is higher than that of earnings persistence for large book-tax differences firms (BT2: β_1 = .686). The results are consistent when regressing 2-year future earnings on current earnings as reported in Panel D – F of Table 4.11. The results reveal the improvement of earnings persistence and the magnitude of persistence coefficient for BT1 (β_1 = .653) is slightly higher than that of persistence coefficient for BT2 (β_1 = .644). The adjusted R^2 is lower for 2-year future earnings regressions relative to 1-year earnings regressions.

Table 4.11 The regression of future earnings on current earnings for all firm-years.

$EBIT_{it+\tau} = \beta_0 + \beta_1 EBIT_{it} + \varepsilon_{it}$

Panel A: Full samples, $\tau = 1$

	All		Pre-adoption (1992-1999)		Post-adoption (2000-2006)	
β_0	0.019	(9.51)***	0.016	(5.51)***	0.024	(8.3)***
β_1	0.653	(41.71)***	0.632	(30.57)***	0.680	(28.09)***
Adj. R^2		0.425		0.413		0.462
N		4218		2342		1876
F-stat		1739.45		934.60		789.00

Panel B: BT1, $\tau = 1$

	All		Pre-adoption (1992-1999)		Post-adoption (2000-2006)	
β_0	0.026	(8.54)***	0.024	(6.22)***	0.030	(6.05)***
β_1	0.665	(28.7)***	0.641	(22.33)***	0.701	(18.85)***
Adj. R^2		0.484		0.487		0.506
N		1469		924		545
F-stat		823.77		498.73		355.44

Panel C: BT2, $\tau = 1$

	All		Pre-adoption (1992-1999)		Post-adoption (2000-2006)	
β_0	0.018	(4.71)***	0.014	(3.03)***	0.027	(4.06)***
β_1	0.681	(24.48)***	0.666	(19.96)***	0.686	(13.77)***
Adj. R^2		0.374		0.375		0.387
N		1461		919		542
F-stat		599.37		398.42		189.48

Panel D: Full samples, $\tau = 2$

	All		Pre-adoption (1992-1999)		Post-adoption (2000-2005)	
β_0	0.031	(12.42)***	0.024	(7.29)***	0.043	(11.14)***
β_1	0.593	(29.24)***	0.591	(22.96)***	0.587	(18.09)***
Adj. R^2		0.274		0.284		0.304
N		3791		2287		1504
F-stat		855.12		527.27		327.36

Panel E: BT1, $\tau = 2$

	All		Pre-adoption (1992-1999)		Post-adoption (2000-2005)	
β_0	0.040	(9.02)***	0.039	(7.01)***	0.044	(6.79)***
β_1	0.623	(18.77)***	0.595	(14.66)***	0.653	(13.44)***
Adj. R^2		0.310		0.294		0.405
N		1335		901		434
F-stat		352.26		214.95		180.6

Panel F: BT2, $\tau = 2$

	All		Pre-adoption (1992-1999)		Post-adoption (2000-2005)	
β_0	0.027	(4.89)***	0.024	(3.29)***	0.040	(4.63)***
β_1	0.645	(15.72)***	0.628	(11.74)***	0.644	(10.43)***
Adj. R^2		0.210		0.215		0.254
N		1328		897		431
F-stat		246.99		137.78		108.74

$EBIT_{it+\tau}$ is τ-year-future earnings before interest and tax scaled by the beginning of total assets and τ = 1 and 2; $EBIT_{it}$ is current earnings before interest and tax scaled by the beginning of total assets and N is number of observations. BT 1 (2) include firms with small (large) book-tax-differences. Extreme values 1% from top and bottom percentiles are excluded. ***,**,* Significant at 0.01, 0.05 and 0.10 level, respectively (two-tailed). OLS estimator with industry fixed effect and heteroskedasticity-robust standard errors is employed for the estimation. *t-statistics* are reported in parentheses.

Table 4.12 presents the regression of future earnings on earnings performance attributable to cash and accrual components. For full samples, Panel A reports that the persistence of earnings performance attributable to cash and accrual components declines during post-adoption in Thailand. Also, the persistence of earnings attributable to accrual components is higher than that of earnings attributable to cash components for all sub-periods. In Panel D, results report the improvement of the persistence of earnings attributable to cash components during post-adoption periods (β_2 = .498 vs. .560) for full samples. The persistence of earnings attributable to accrual components slightly declines during post-adoption periods (β_3 = .507 vs. .504) for full samples.

For subgroups, Panel B reports that the persistence of earnings performance attributable to cash components increases (β_2 = .597 vs. .652) but the persistence of earnings performance attributable to accrual components declines (β_2 = .605 vs. .582) during post-adoption periods for firms with small book-tax differences (BT1). Panel C reports that the persistence of earnings performance attributable to cash and accrual components declines during post-adoption periods for firms with large book-tax differences (BT2). Nevertheless, for 2-year future earnings regressions presented in Panel E and F, the result reports that the persistence of earnings performance attributable to cash and accrual components increases for both subgroups. In addition, the magnitude of coefficient estimates for BT1 (small book-tax difference firms) is higher than the magnitude of coefficient estimates for BT2 (large book-tax difference firms). In addition, the results report the deterioration of adjusted R^2 when using 2-year future earnings compared with 1-year future earnings.

Table 4.12 The regression of future earnings on earnings performance attributable to cash and accrual components for all firm-year.

$EBIT_{it+\tau} = \beta_0 + \beta_2 CF_{it} + \beta_3 ACC_{it} + \varepsilon_{it}$

Panel A: Full samples, $\tau = 1$

	All		Pre-adoption (1993-1999)		Post-adoption (2000-2006)	
β_0	0.032	(7.47)***	0.027	(5.33)***	0.034	(6.75)***
β_2	0.551	(14.0)***	0.560	(13.59)***	0.542	(10.57)***
β_3	0.567	(14.36)***	0.577	(13.8)***	0.552	(9.95)***
Adj. R^2		0.355		0.341		0.370
N		2989		1170		1819
F-stat		106.48		98.1		57.04

Panel B: BT1, $\tau = 1$

	All		Pre-adoption (1993-1999)		Post-adoption (2000-2006)	
β_0	0.032	(8.35)***	0.033	(5.34)***	0.034	(6.93)***
β_2	0.638	(22.34)***	0.597	(14.1)***	0.652	(17.02)***
β_3	0.610	(18.71)***	0.605	(13.9)***	0.582	(11.89)***
Adj. R^2		0.470		0.470		0.485
N		946		431		515
F-stat		249.7		104.72		154.26

Panel C: BT2, $\tau = 1$

	All		Pre-adoption (1993-1999)		Post-adoption (2000-2006)	
β_0	0.022	(4.8)***	0.016	(2.65)***	0.032	(4.79)***
β_2	0.679	(19.98)***	0.666	(15.05)***	0.643	(12.75)***
β_3	0.681	(18.82)***	0.701	(15.42)***	0.615	(11.12)***
Adj. R^2		0.403		0.438		0.379
N		935		425		510
F-stat		203.55		124.77		81.25

Panel D: Full sample, $\tau = 2$

	All		Pre-adoption (1993-1999)		Post-adoption (2000-2005)	
β_0	0.040	(11.96)***	0.040	(9.08)***	0.043	(9.38)***
β_2	0.547	(19.36)***	0.498	(14.76)***	0.560	(13.66)***
β_3	0.527	(18.82)***	0.507	(15.59)***	0.504	(11.73)***
Adj. R^2		0.283		0.272		0.327
N		2499		1100		1399
F-stat		192.2		124.04		94.89

Panel E: BT1, $\tau = 2$

	All		Pre-adoption (1993-1999)		Post-adoption (2000-2005)	
β_0	0.044	(9.85)***	0.052	(7.16)***	0.040	(7.47)***
β_2	0.594	(18.46)***	0.496	(10.04)***	0.659	(15.59)***
β_3	0.554	(14.48)***	0.485	(8.98)***	0.584	(10.28)***
Adj. R^2		0.360		0.297		0.463
N		832		419		413
F-stat		170.83		51.14		129.58

Table 4.12 (Cont.)

Panel F: BT2, $\tau = 2$

	All		Pre-adoption (1993-1999)		Post-adoption (2000-2005)	
β_0	0.037	(6.39)***	0.041	(4.52)***	0.040	(5.18)***
β_2	0.616	(15.06)***	0.553	(8.69)***	0.621	(10.79)***
β_3	0.547	(12.19)***	0.513	(8.62)***	0.539	(7.43)***
Adj. R^2		0.240		0.210		0.311
N		824		414		410
F-stat		114.74		39.99		69.28

$EBIT_{it+\tau}$ is τ-year-future earnings before interest and tax scaled by the beginning of total assets and τ = 1 and 2; CF_{it} is current year cash flow from operation deflated by the beginning of total asset; ACF_{it} is current year accruals deflated by the beginning of total asset; BT 1 (2) include firms with small (large) book-tax-differences. Extreme values 1% from top and bottom percentiles are excluded. ***,**,* Significant at 0.01, 0.05 and 0.10 level, respectively (two-tailed). CF = Earnings before interest and tax + Depreciation – (Changes in current asset – Changes in cash – Changes in current liabilities); AC = Earnings before interest and tax – CF. OLS estimator with industry fixed effect and standard error is employed for the estimation. *t-statistics* are reported in parentheses.

The next analysis partitions all firm-years according to firms' industry groups. The industry is categorised in seven groups: agro-business, consumer products, industrial, property and construction, natural resource, service and technology. Depreciable assets are considered as a main channel for firms to manage accrual components (i.e. Jones 1991). The industry is categorised into two main groups: high depreciable assets and low depreciable assets. An indicator variable (IND) is introduced to capture the difference between two groups. High depreciable assets (IND = 0) include property and construction, natural resources and technology whilst low depreciable assets (IND = 1) include agro business, consumer products, industrial and service. Other variables are interacted with the indicator variable. Panel A of Table 4.13 reports that during post-adoption periods, the persistence coefficient of earnings for low depreciable groups is higher than that for high depreciable groups (η_2 = .14). This result implies that firms with high depreciable assets are more likely to manage their earnings resulting in a high variation in earnings information relative to firms with low depreciable assets. In other words, IFRS adoptions in Thailand allow firms with high depreciable assets to exercise more accounting discretion relative to firms with low depreciable assets. When decomposing earnings information to cash and accrual components, Panel B of Table 4.13 reports that the persistence coefficients of earnings performance attributable to cash (η_3 = .135) and accrual (η_4 = .063) components are higher for firms with low depreciable assets relative to firms with high depreciable assets during post-adoption periods.

Table 4.13 All firm-year analysis partitioning by industry

Panel A: $EBIT_{it+1} = \beta_0 + \beta_1 EBIT_{it} + \eta_1 IND_{it} + \eta_2 IND{*}EBIT_{it} + \varepsilon_{it}$

	All		Pre-adoption (1992-1999)		Post-adoption (2000-2007)	
β_0	0.038	(4.23)***	-0.031	(-1.25)	0.087	(7.83)***
β_1	0.502	(15.21)***	0.548	(12.98)***	0.157	(2.84)***
η_1	-0.001	(-0.11)	0.104	(2.87)***	-0.038	(-2.45)**
η_2	-0.051	(-1.27)	-0.194	(-3.59)***	0.140	(2.06)**
Adj. R^2		0.476		0.460		0.604
N		4218		2342		1876
F-stat		201.59		94.07		22.63

Panel B[/*/] : $EBIT_{it+1} = \beta_0 + \beta_2 CF_{it} + \beta_3 ACCT_{it} + \eta_1 IND_{it} + \eta_3 IND{*}CF_{it} + \eta_4 IND{*}ACC_{it} + \varepsilon_{it}$

	All		Pre-adoption (1993-1999)		Post-adoption (2000-2007)	
β_0	0.330	(7.91)***	0.394	(6.12)***	0.135	(2.44)**
β_2	0.341	(7.35)***	0.454	(6.8)***	0.106	(1.71)*
β_3	0.036	(0.64)	-0.088	(-0.99)	0.115	(1.67)*
η_3	0.016	(0.26)	-0.158	(-1.71)*	0.135	(1.71)*
η_4	0.049	(15.09)***	0.050	(8.74)***	0.063	(17.83)***
Adj. R^2		0.481		0.426		0.570
N		2989		1170		1819
F-stat		35.81		17.88		11.46

$EBIT_{it+1}$ ($EBIT_{it}$) is 1-year-future (current) earnings before interest and tax scaled by the beginning of total assets; CF_{it} is current year cash flow from operation deflated by the beginning of total asset; ACF_{it} is current year accruals deflated by the beginning of total asset; IND is an indicator variable equal to 1 for low depreciable assets firms, 0 otherwise and N is number of observations. Extreme values 1% from top and bottom percentiles are excluded. ***,**,* Significant at 0.01, 0.05 and 0.10 level, respectively (two-tailed). CF = Earnings before interest and tax + Depreciation – (Changes in current asset – Changes in cash – Changes in current liabilities); AC = Earnings before interest and tax – CF. OLS estimator with firm fixed effect and standard error is employed for the estimation. *t-statistics* are reported in parentheses.

[/*/]It should be note that the indicator variable of industry (IND) is dropped from the analysis in Panel B because STATA drops this variable to avoid ambiguous results might be occurred (See STATA manual).

Lastly, I examine an additional test for investigating the relationship between firm governance and earnings persistence. In this sensitivity test, explanatory variables are divided into three factors, consisting of corporate governance factors (CF), fundamental factors (FF) and market activity factors (MF). In addition to board structure (NBO and RCG) and board quality (NBB and NB), I include auditor indicator (AUD) to distinguish between big four auditing firms and non-big four auditing firms and foreigners' shareholding indicator (FORE) to identify if firms' shares are held by foreigners. A priori expectation is that big four auditing firms should provide high accounting quality measured by the persistence of earnings and firms with high accounting information quality should attract foreigners to hold shares in those firms.

For fundamental factors, I add firm performance (COS, GRW and MARGIN) and size (MKT) into the investigation. I include firm performance to detect whether the capacity to manage resources is varied among firms. With reference to the political costs hypothesis (Watts and Zimmerman 1978), wealth transfers between various groups can be affected by the power of the political sector. Firms use several means to reduce reported earnings and avoid political costs. As suggested by the political costs hypothesis, firms with high political costs have high incentives to choose accounting standards which provide lower earnings due to tax. I use the market capitalisation to detect this potential cost (Watts and Zimmerman 1978). However, a priori prediction for firm performance and size is not determined.

The last factor is to control for market activity by including a number of outstanding shares (SHARE) and shares turnover volume (TURN). Again, there is no a priori prediction for these two variables. I evaluate the persistence and firm governance systems between firms in group 1 (BT – Pre < BT – Post) and group 2 (BT – Pre > BT – Post) from pre- to post-adoption periods. As reported in Table 4.14, Panel A presents results from full samples. Some firms have been dropped from the analysis because of missing data. Findings show no relationship between the earnings persistence and all three factors. When comparing between pre- and post-adoption periods, the corporate governance factor is related to the persistence of earnings during post-adoption periods. In post-adoption periods, findings show that the ratio of audit committee to board size (RCG) becomes positive and significant, suggesting that audit committee induces a high quality of accounting quality in terms of earnings persistence. In addition, NB is negative and significant, suggesting that earnings persistence is deterred when audit committee serves as executive boards in too many firms during the same year.

Panel B of Table 4.14 reports results for firms in group 1 whose book-tax differences during pre-adoption periods are lower than those during post-adoption periods. Findings are consistent with the results obtained from full samples. In post-adoption periods, the persistence of earnings is positively related to the ratio of audit committee to board size (RCG) whilst there is no relationship between the persistence of earnings and corporate governance factors during pre-adoption periods. Panel C of Table 4.14 reports results for firms in group 2 whose book-tax differences during pre-adoption periods are higher than those during post-adoption periods. Again, findings are consistent with the result obtained from full samples and group 1. The corporate governance factor becomes important during post-adoption periods, as suggested by the statistically significant results. The result shows that the persistence of earnings is positively related to the ratio of audit committee to board size (RCG). Firms employing big-four auditing firms are more likely to have higher earnings persistence (measured by AUD). In addition, NB is negative and significant, implying that the persistence of earnings declines when audit committee serves as executive boards in too many firms.

In conclusion, these findings imply that board (NB) and corporate governance (RCG) quality play a significant role and impact accounting quality in terms of earnings persistence during post-adoption periods. The higher numbers of boards that audit committee serves as board of directors in other firms during post-adoption periods induce the lack of earnings persistence in the firm whilst the larger ratio of audit committee to board size induces the higher persistence of earnings.

Table 4.14 Robustness checks: Firm governance and earnings persistence

$$PER_i = \gamma_0 + \sum_{j=1}^{6} \gamma_j CF_{j,i} + \sum_{j=1}^{5} \varphi_j FF_{j,i} + \sum_{j=1}^{2} \delta_j MF_{j,i} + \varepsilon_i$$

Panel A: Full samples

	Pooled			Pre-adoption (1995-1999)			Post - adoption (2000-2004)		
	Coef.	t value	p value	Coef.	t value	p value	Coef.	t value	p value
γ_0	-0.116	-0.36	0.717	0.443	0.76	0.446	-0.701	-1.42	0.159
Governance factors									
NBO	-0.005	-0.45	0.650	0.009	0.37	0.714	-0.014	-0.92	0.357
NBB	0.002	0.75	0.451	-0.004	-1.02	0.309	0.007	1.52	0.131
NB	-0.003	-0.61	0.544	0.022	1.65	0.101	**-0.014**	**-1.87**	**0.064**
RCG	0.852	1.64	0.101	-1.299	-1.04	0.301	**2.336**	**2.88**	**0.005**
AUD	0.101	1.10	0.271	0.011	0.08	0.936	0.158	1.51	0.134
FORE	-0.105	-1.15	0.253	-0.149	-1.07	0.285	-0.032	-0.27	0.787
Fundamental factors									
COS	0.053	0.19	0.853	-0.369	-0.88	0.380	0.402	1.26	0.211
GRW	-0.099	-0.29	0.774	0.323	0.63	0.529	-0.010	-0.02	0.981
INV	-0.099	-0.39	0.699	-0.426	-0.97	0.333	-0.164	-0.56	0.574
MKT	0.000	1.54	0.125	0.000	-0.08	0.939	0.000	1.15	0.251
MARGIN	0.020	0.12	0.906	0.108	0.47	0.640	0.339	0.81	0.417
Market activity factors									
SHARE	-0.024	-0.97	0.334	0.000	0.02	0.987	**-0.128**	**-2.12**	**0.035**
TURN	0.000	1.23	0.220	**0.004**	**2.29**	**0.024**	0.000	-0.10	0.923
Adj. R^2			0.009			-0.003			0.185
N			324			162			162

Panel B: Group 1

	Pooled			Pre-adoption (1995 - 1999)			Post - adoption (2000 - 2004)		
	Coef.	t value	p value	Coef.	t value	p value	Coef.	t value	p value
γ_0	0.683	1.44	0.152	0.797	1.01	0.316	0.094	0.12	0.903
Governance factors									
NBO	-0.010	-0.73	0.468	0.021	0.65	0.519	-0.023	-1.12	0.266
NBB	0.001	0.18	0.861	-0.006	-1.11	0.272	0.009	1.18	0.241
NB	-0.002	-0.32	0.753	0.012	0.67	0.503	-0.012	-1.06	0.291
RCG	0.198	0.25	0.799	-1.369	-1.03	0.308	**2.231**	**1.69**	**0.097**
AUD	0.038	0.27	0.787	0.144	0.61	0.547	-0.147	-0.85	0.400
FORE	-0.057	-0.48	0.631	-0.124	-0.73	0.470	0.055	0.32	0.751
Fundamental factors									
COS	-0.385	-1.11	0.269	-0.647	-1.21	0.232	-0.161	-0.35	0.727
GRW	0.047	0.09	0.931	**0.730**	**1.77**	**0.082**	-0.475	-0.93	0.355
INV	0.096	0.34	0.738	-0.211	-0.56	0.578	0.298	0.97	0.338
MKT	**0.000**	**2.77**	**0.006**	0.000	-0.11	0.914	**0.000**	**4.98**	**0.000**
MARGIN	-0.126	-0.68	0.497	0.019	0.09	0.926	-0.927	-1.53	0.130
Market activity factors									
SHARE	-0.050	-1.41	0.161	-0.011	-0.66	0.509	**-0.135**	**-1.88**	**0.065**
TURN	0.000	1.28	0.201	0.002	1.28	0.206	0.000	-0.03	0.974
Adj. R^2			0.027			-0.091			0.282
N			156			78			78

Panel C: Group 2

	Pooled			Pre-adoption (1995 - 1999)			Post - adoption (2000 - 2004)		
	Coef.	t value	p value	Coef.	t value	p value	Coef.	t value	p value
γ_0	-0.791	-1.64	0.102	0.594	0.53	0.595	**-1.444**	**-2.06**	**0.043**
Governance factors									
NBO	0.017	0.91	0.365	0.013	0.31	0.756	0.003	0.12	0.906
NBB	0.000	-0.01	0.992	-0.010	-1.39	0.169	0.006	1.04	0.300
NB	-0.005	-0.59	0.554	0.029	1.26	0.213	**-0.017**	**-2.05**	**0.044**
RCG	**1.460**	**2.05**	**0.042**	-2.452	-1.09	0.279	**2.596**	**2.74**	**0.008**
AUD	0.037	0.29	0.770	-0.188	-0.97	0.336	**0.292**	**1.88**	**0.064**
FORE	-0.079	-0.54	0.592	-0.116	-0.53	0.599	-0.021	-0.14	0.888
Fundamental factors									
COS	0.247	0.46	0.645	-0.306	-0.32	0.753	0.812	1.45	0.152
GRW	-0.026	-0.04	0.966	-0.055	-0.04	0.967	0.489	0.99	0.327
INV	**-7.594**	**-2.55**	**0.012**	**-5.872**	**-1.79**	**0.078**	-10.225	-1.39	0.169
MKT	0.000	0.7	0.484	0.000	0.31	0.754	0.000	-0.17	0.868
MARGIN	**1.057**	**1.73**	**0.086**	**1.912**	**2.05**	**0.044**	1.573	1.53	0.130
Market activity factors									
SHARE	0.020	1.21	0.226	0.011	0.61	0.544	**-0.105**	**-1.85**	**0.069**
TURN	0.000	0.63	0.530	**0.006**	**1.78**	**0.080**	0.000	-0.52	0.602
Adj. R^2			0.019			0.014			0.096
N			168			84			84

PER is persistence (β_1) obtained from the OLS regression with heteroskedasticity-robust standard errors, rolling five-year window before and after the accounting change: $EBIT_{i,t} = \beta_0 + \beta_1 EBIT_{i,t-1} + \varepsilon_i$, where $EBIT_{i,t}$ and $EBIT_{i,t-1}$ are earnings before interest and tax in year *t* and *t-1*, respectively and ε is the residual. All variables are deflated by the beginning of total assets.

CF = NBO is number of boards of director. NB is number of boards that audit committee members serve as board of directors or audit committee in other firms. RCG is a proportion audit committee members in board of directors. NBB is number of boards that members of board of directors serve as board of directors or audit committee in other firms. AUD is an indicator variable equal to 1 for big four (five) auditing firms, 0 otherwise and FORE is an indicator variable equal to 1 for firms whose shares are held by foreign shareholders, 0 otherwise.

FF = COS is the ratio of cost of sales divided by sales. GRW is the change of total revenue divided by total assets. INV is the average inventory divided by sales. MKT is the market capitalization and MARGIN is the ratio of net earnings divided by sales.

MF = SHARE is the ratio of a number of shares issued divided by number of listed shares and TURN is the ratio of share turnover volume.

N is number of observations. OLS regressions with heteroskedasticity-robust standard errors are applied for the estimation. Group 1 (2) is firms with larger (smaller) book-tax-differences in post-adoption period.

4.6 Chapter Summary

This chapter presents the analysis of earnings persistence in Thailand. In the analysis, earnings are also decomposed to cash flow and accrual components. By using the longitudinal data, the results show that earnings persistence (estimated by both earnings and earnings performance attributable to cash flows and accruals) was enhanced after Thailand has adopted IFRS since 2000. These findings support the hypothesis (H.4.1) that earnings persistence is enhanced after the IFRS adoption in Thailand.

In addition, this analysis partitions the dataset into two groups according to their magnitudes of book-tax differences. The data are categorised according to the change in book-tax difference between pre- and post- IFRS adoption periods in Thailand. The findings show that earnings persistence for firms whose book-tax differences become larger during post-adoption periods (Group 1) is reduced whilst earnings persistence for firms whose book-tax differences become smaller during post-adoption periods (Group 2) is increased. This finding supports the hypothesis (H.4.2).

However, the results must be interpreted with caution. Firstly, firms with high earnings persistence may engage in the earnings smoothing. If firms are smoothing their earnings, the reported earnings will not reflect firms' underlying economic performance. From the descriptive analysis, the earnings smoothing activity is less likely for group 2 relative to group 1. In addition, the smoothed earnings for firms in group 2 is more likely to decline from pre- to post-adoption periods. This descriptive result should support the result that earnings persistence for firms in group 2 is higher during post-adoption periods. Secondly, the improvement of earnings persistence can be varied according to industry. The robustness check reveals that earnings persistence has not been enhanced for natural resource and high-tech firms. One explanation is that intangible assets and research and development costs may influence reported earnings. Thirdly, the persistence of earnings is a statistical property of earnings. It is not a direct link between accounting measurement methods and earnings quality. It is more important for future research to search for indicators to directly link between measurement methods and earnings quality to determine more insight about earnings information.

This thesis argues that firm governance factors may induce the variation in earnings persistence. Thus, the relationship between earnings persistence and firm governance factors is examined. The result shows that audit committee and corporate governance quality are related to the earnings persistence. These findings support the hypothesis (H4.3) that earnings persistence varies according to firm governance system, especially during post-adoption periods in Thailand. However, this thesis does not detect the expertise of audit committee that may impact on accounting quality. Future research may examine about the relationship between expertise of audit committee and earnings quality in Thailand.

Chapter 5
The Value Relevance of Earnings and Book Values

Chapter 5
The Value Relevance of Earnings and Book Value

5.1 Introduction

The previous chapter reports the analysis of accounting quality in terms of earnings persistence. Earnings persistence is to analyse the prediction ability of earnings information. In particular, the previous chapter examines whether current earnings are able to predict future earnings at the aggregated level. The findings from the previous chapter suggest that earnings are more persistent after the adoption of IFRS in Thailand. This chapter will present another aspect of the accounting quality, namely the value relevance. It studies the association between firm value and accounting summary measures, including book value and earnings. This area of study is to investigate firms' performance (through contemporaneous share prices or returns) based on past measures (book value) or current performances (reported earnings). The value relevance analysis attempts to explain whether accounting numbers have facilitated users' decision making. The consequence of the value-relevant study, hence, refers to the study of whether corporate financial information is useful.

In accounting-based valuation study, the fundamental analysis and valuation study[61] determines that "*in an efficient market, firm value is defined as the present value of expected future net cash flows, discounted at the appropriate risk-adjusted rate of return*" (Kothari 2001, pg.109). A firm's current performance shown in its financial statements has become an important input to the market's assessment of the firm's future net cash flows and the firm's market valuation. The fundamental study expects a temporal relation between current financial performance and future cash flows, as well as a contemporaneous relation between financial performance and share return or share price. The major concern of the fundamental analysis and valuation is aimed at identifying share mispricing

[61] In the study of information content of the accounting number, the event study, a short-window study, is another widely-used method in empirical work.

for investment purposes. Since valuation analysis focuses on forecasts of future revenues, expenses, earnings and cash flows, one contends that financial statements prepared by current accounting guidelines do not provide adequate summary statistics for the forecast number. Kothari (2001, pg.172), however, argued that financial statements in themselves are likely to be useful and accurate indicators of market value when current accounting guidelines can capture economic outcome.

In capital market research, Beaver (2002) argued that value-relevant accounting research is a promising application study. The value relevance of accounting information ascertains whether the accounting data are useful for valuing the firm by studying the association between the accounting data and share prices (Holthausen and Watts 2001). Lee (1999) argued that accounting information in the firm valuation process is presumed to be superior in a normative sense because the accounting data, appearing as independent variables, have provided value relevance to explain contemporaneous share return or share price determined as the dependent variable. By these notions, a number of prior empirical studies (i.e. Barth et al. 2008) exploring accounting changes being occurred in many countries have employed the fundamental analysis. This thesis also interprets value-relevant information in this sense by investigating whether value-relevant accounting information used to explain corporate share prices or returns has been improved after the IFRS adoption in Thailand. The improvement of value-relevant accounting information should encourage the investment in Thai capital market.

Thailand, as one of emerging market countries, has long been developing its stock exchange to support Thai business and economy. However, as is common for emerging market countries, Thailand's stock exchange can be considered as a less efficient stock market. This reduces the ability of the share price to capturing news exposed to the market, according to the anticipation of efficient market hypothesis. Even though the assumption of the value relevance analysis requires that the market must be efficient, prior empirical studies of value relevance have been silent on this matter (Aboody, Hughes and Liu 2002). As presented in Chapter 3, much of prior research examines the value relevance of accounting information in emerging market countries.

The remainder of this chapter is organised as follows. The development of hypotheses is presented in section 5.2. Research methodology, data and results are presented in section 5.3–5.5, respectively. Section 5.6 presents chapter summary.

5.2 Hypothesis Development

In this thesis, I address whether value relevance is enhanced when converging the domestic accounting system to international accounting standards in Thailand. The hypothesis has been built from prior accounting research studies. Graham et al. (2000) find that the value relevance of Thai book values and earnings declined during the financial crisis. However, Davis-Friday et al. (2006) report that the value relevance of earnings declined but the value relevance of book values increased during the financial crisis. Prior studies (Graham et al. 2000; Davis-Friday et al. 2006) suggest that Thai accounting information is value-relevant and the value relevance of the Thai accounting summary measures reflects economic consequences. It is controversial whether IFRS brings a higher quality of earnings than domestic accounting standards due to country-specific factors (Barth et al. 2008). In terms of the Thai accounting system, previously Thai accounting standards had employed historical cost methods for preparing financial statements. After the change in accounting system in Thailand, Thai firms are required to employ fair value accounting system. For example, the firm is required to estimate expected future cash flows (i.e. asset valuations). Based on this requirement, the new accounting system in Thailand should increase the usefulness of accounting information because it facilitates investors' decision making. In terms of the investment in capital market, share prices reflect the market's expectation of net cash flows. Thus, accounting information prepared by the new accounting standard is informative for investors (Dechow and Schrand

2004) because it contains information about future cash flows required by the market. As a result, the new accounting standard improves accounting quality in terms of the value relevance of accounting information. In addition, based on Barth et al. (2008) and the previous discussion in Chapter 4 about the improvement of earnings quality after the IFRS adoption in Thailand, I have a priori prediction that the value relevance of accounting numbers is enhanced after the accounting system change. I propose the following hypothesis, stated in an alternative form.

H.5.1: The value relevance of accounting summary measures is enhanced after the adoption of IFRS in Thailand.

Francis and Schipper (1999) suggest that strong contemporaneous association between accounting numbers and stock price performance or market value reflects higher value relevance of accounting information. I measure the association of those variables by using the explanatory power (R^2).[62] In addition, following Francis and Schipper (1999) and Lev and Zarowin (1999), I interpret earnings response coefficients (ERC) for the firm's valuation process. Even though the value relevance of accounting numbers and earnings persistence views accounting quality in different ways, both are indicators of accounting quality. Prior studies report the value relevance of accounting information in different countries. For example, Alford, Jones, Leftwich and Zmijewski (1993) find that the value relevance of accounting information for Belgium, Canada, Hong Kong, Ireland, Japan, Norway, South Africa, and Switzerland is inconclusive, as compared to the value relevance of US accounting information. Arce and Mora (2002) find that value relevance in the UK, a common law country, is lower than that in Belgium and France, code law countries. Bartov et al. (2001a) find a superior value

[62] Harris et al. (1994) report the R^2 to evaluate the value relevance of accounting numbers in German firms vs. US firms. Graham et al. (2000) use the R^2 to estimate the Thai value relevance. Dechow (1994) compares the association between returns and earnings and the association between returns and cash flows by using the R^2. Francis and Schipper (1999) indicate the use of R^2 in the value relevance analysis but the adjusted R^2 is reported in their results. In this thesis, I will use the R^2 to evaluate the value relevance in Thai firms (Van der Meulen et al. 2007), unless specified.

relevance of earnings over cash flow for the US, the UK and Canada but not for Germany and Japan. Ali and Hwang (2000) find that the value relevance of accounting numbers is lower for bank-oriented countries and for countries when tax rules influence financial reporting. When using tax rules for financial statement purposes, Hanlon et al. (2005) report a 50 per cent loss in the explanatory power of reported earnings. Hanlon et al. (2008) find that the increase in book-tax conformity reduces earnings informativeness measured by earnings response coefficients. The implication of these prior studies suggests that the value relevance of earnings is lower in the tax-based accounting income system.

Consistent with the analysis of earnings persistence, the sample firms will be partitioned according to the pattern of book-tax differences (BT). Group 1 includes firms whose book-tax differences during pre-adoption periods are smaller than those during post-adoption periods (BT – Pre-adoption < BT – Post-adoption). Group 2 includes firms whose book-tax differences during pre-adoption periods are larger than those during post-adoption periods (BT – Pre-adoption > BT – Post-adoption).[63] Based on Hanlon et al. (2008), ERC is influenced by both bias (f) and noise (e). In the absence of noise and bias, ERC is normalised equal to 1, an unbiased estimate. I apply this structural model to develop the hypothesis.[64]

Recall that IFRS adoption improves the value relevance of accounting summary measures (Barth et al. 2008; Dechow and Schrand 2004, pg.102). Accordingly, in the absence of noise and bias, accounting changes introduce increasing ERC in post-adoption periods. In subsamples, if the two groups of firms use new

[63] As previously discussed in Chapter 4 equation 4.5, this thesis calculates the book-tax difference by using the average value of book-tax differences over a 5-year period rather than the absolute value of book-tax differences. Furthermore, because the negative book-tax difference firm contains the firm with negative earnings, Hayn (1995) reports that the value relevance for negative earnings firms is significantly lower than the value relevance of positive earnings firms. Thus, if using the absolute value of book-tax differences, the problem of information loss may occur.

[64] Hanlon et al. (2008) summarise that

$$b = ((1+f)\mathrm{cov}(x_t, x_t))/((1+f)^2\sigma_x^2 + \sigma_e^2) = ((1+f)\sigma_x^2)/((1+f)^2\sigma_x^2 + \sigma_e^2).$$

b = ERC, X_t = earnings, e = noise, and f = bias. When e and f = 0, then b = $\sigma_x^2/\sigma_x^2 = 1$.

accounting standards to convey firms' performance (bias = 0), ERC in post-adoption for both groups of firms increases (at noise = 0). Nevertheless, if bias and noise in pre-adoption periods of the two groups of firms are held to be equal, in post-adoption periods at bias = 0 and noise > 0, noise in post-adoption periods for firms in group 1 (i.e. being of higher tax activity) is higher than noise in post-adoption periods for firms in group 2 (i.e. being of lower tax activity). As a result, the increase in earnings informativeness for firms in group 1 is lower than the increase in earnings informativeness for firms in group 2. In addition, as it is difficult to reduce taxable income and simultaneously increase book income (Guenther et al. 1997), in post-adopton periods, noise is still lower for firms in group 2 even if the two groups of firms engage in earnings manipulation (either bias < 0 or > 0 results in noise (group 2) < noise (group 1)). I propose the next hypothesis as follows, stated in the alternative form.

> H.5.2: When comparing between pre- and post-adoption periods, the value relevance is related to the book-tax difference.

As previously discussed about the important role of firm governance systems and accounting quality in Chapter 4, I attempt to explore the relationship between value relevance and firm governance system. Based on the hypothesis H.4.3 in Chapter 4, I hypothesise in the alternative form that:

> H.5.3: The value relevance varies according to the firm governance system.

5.3 Research Methodology

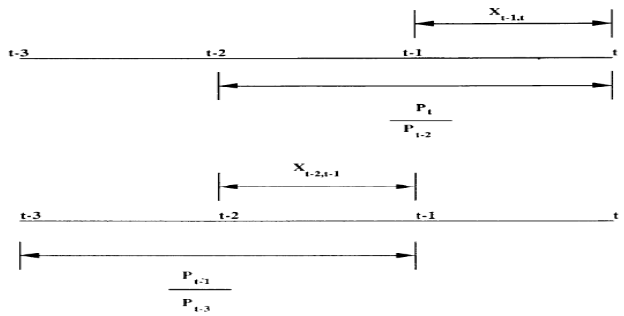
In general, the method used to estimate the value relevance of accounting information is open-ended. This thesis employs a long-window study for value relevance analysis. Following Francis and Schipper (1999) and Lev and Zarowin (1999), I define value relevance as the association between accounting numbers and market values (and returns). I also interpret the earnings response coefficient

(ERC) for value relevance analysis. I operationalise the ERC model in the following way.

$$R_{it} = \alpha_0 + \alpha_1 EPS_{it} + \alpha_2 \Delta EPS_{it} + \varepsilon_{it} \qquad (5.1)$$

where R is 15-month returns[65], 3-months after the financial year-end adjusted by the dividend at the end of financial year-end t;[66] EPS is earnings per share deflated by the beginning of share price; ΔEPS is changes in earnings per share deflated by the beginning of share price. I estimate equation (5.1) and obtain the association between share returns and the level and change of earnings. The stronger association reflects higher investors' responses to reported earnings. The sum of (α_1 + α_2) *reflects the average change in the stock price associated with a dollar change in earnings* (Lev and Zarowin 1999). Lev and Zarowin (1999) suggest that a low slope coefficient refers to a low response from the market to reported

[65] From the prior literature, the returns are calculated from the start of financial year to 6-months (Harris et al. 1994), 5-months (Gordon 2001 and Bartov et al. 2001a), 3-months (Francis and Shipper 1999) after the financial year. 15-month returns are calculated based on the notion that prices lead earnings. Kothari and Sloan (1992) propose the calculation of returns by using the overlapping period. They calculate the returns from one year before the financial year to the end of the financial year. For example, when a firm engages in a long term sales contract at the beginning of year t-2 and promises to deliver goods at the beginning of year t-1. The market expects the future cash flows from this event at the time when the firm engages in the contract but earnings start to account this transaction from year t-1. Therefore, the market expectation has been adjusted to this event in year t-2. See the below figure.



Source: Kothari and Sloan (1992) Page 148.
With 1-year overlapping period of return calculation, they report that estimated earnings response coefficient (ERC) is very close to the predicted ERC when using time-series, cross-section and panel data. A potential problem by using this calculation is a serial correlation. However, the results are qualitatively similar when using 1-year overlapping period adjusted by the Cochrane-Orcutt method and the normal OLS. Kothari and Sloan (1992) conclude that the return calculation with overlapping periods provides more powerful results. In addition to 15-month returns, 12-month returns are applied and their results are presented in Appendix 5.

[66] Following prior studies, i.e. Harris et al. (1994) and Lev and Zarowin (1999), R_t denotes $[(P_t - P_{t-1}) + D_t]/P_{t-1}$.

earnings because the investor's belief is that reported earnings are probably transitory or manipulated. A large change in share price associated with reported earnings reflects investors' belief that reported earnings are permanent. Accordingly, low (high) slope coefficient reflects low (high) informativeness of reported earnings.

In addition, I employ a price model for the value relevance analysis. Based on the prior research previously described in Chapter 3, I employ Ohlson's price valuation model. I operationalise the model in the following way:

$$P_{it} = \gamma_0 + \gamma_1 EPS_{it} + \gamma_2 BVPS_{it} + \varepsilon_{it} \quad (5.2)$$

where P is stock price 3 months after the financial year-end (Francis and Schipper 1999); EPS is earnings per share and BVPS is book value per share. All three variables are scaled by the beginning of share price. Consistent with the estimation in equation (5.1), I run equation (5.2) to obtain the association between market value and accounting numbers. I also compare the explanatory power by using the Cramer procedure (Cramer 1987, Lang, Raedy and Wilson 2006 and Lang, Raedy and Yetman 2003) as derived by Harris et al. (1994).[67] OLS firm fixed effect estimators with heteroskedasticity-robust standard errors are applied to estimate equation (5.1) and (5.2).

Based on the discussion in Chapter 4, I regress the value relevance on firm governance variables to determine the relationship between firm governance systems the informativeness of accounting numbers. The model is operationalised as follows:

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[67] z-statistics are computed as (see footnote 38, Harris et al. 1994):

$$\frac{R_1^2 - R_2^2}{\sqrt{\sigma^2(R_1^2) + \sigma^2(R_2^2)}}$$

, where σ^2 is obtained from the Cramer procedure (Cramer 1987). I am grateful to Professor Mars (J.S) Cramer for providing the GAUSS syntax to run the Cramer procedure.

$$VR_i = \beta_0 + \beta_1 NBO_i + \beta_2 NBB_i + \beta_3 NB_i + \beta_4 RCG_i + \beta_5 ROA_i + \beta_6 MKT_i + \varepsilon_i \quad (5.3)$$

where VR is value relevance obtained from the explanatory power (R^2) obtained from equation (5.1) or earnings response coefficients (ERC); both are calculated by using 5-year window before and after the IFRS adoption. NBO is a median of number of boards of directors. NBB is a median of number of boards on which members of board of directors serve as board of directors or audit committee in other firms. NB is a median of number of boards on which audit committee members serve as board of directors or audit committee in other firms. RCG is a mean of a proportion of audit committee members in board of directors. Control variables include return on assets (ROA) and market capitalization (MKT). OLS estimators with heteroskedasticity-robust standard errors are applied to estimate the equation (5.3). As already discussed in Chapter 4, a priori expectations about the relationship between value relevance and firm governance factors are not determined.

5.4 Data

I use non-financial firms listed on SET during the period 1995–2004. All sample firms have December financial year-ended. There are 120 constant firms (1200 firm-years) for the analysis of earnings response coefficient and 97 constant firms (970 firm-years) for price model analysis. Table 5.1 presents a distribution of firms classified by their industry. Consistent with the data constructed in Chapter 4, group 1 includes the sample firms whose book-tax differences during pre-adoption periods are smaller than book-tax differences during post-adoption periods (BT-Pre-adoption:1995–1999 < BT-Post-adoption: 2000–2004), whilst group 2 includes the sample firms whose book-tax differences during pre-adoption periods are larger than book-tax differences during post-adoption periods (BT-Pre-adoption: 1995–1999 > BT-Post-adoption: 2000–2004). All firms in this analysis have been in the same industry group for the whole testing period. To calculate the book-tax difference, the missing value of taxable income will be set to zero.

Table 5.1 A distribution of sample firms in each industry

Panel A: ERC model

Industry	Group 1	Group 2	No. of observations (firms)	Missing value of taxable income	Negative taxable income
Agro-Business	80	140	220 (22)	67	1
Consumer Products	70	80	150 (15)	41	1
Industrial	70	60	130 (13)	38	0
Property & Construction	140	60	200 (20)	117	6
Natural Resources	20	20	40 (4)	16	3
Services	180	150	330 (33)	89	4
Technology	70	60	130 (13)	65	4
Total observations	630	570	1200 (120)	433	19

Panel B: Price model

Industry	Group 1	Group 2	No. of observations (firms)	Missing value of taxable income	Negative taxable income
Agro-Business	70	80	150 (15)	54	1
Consumer Products	70	60	130 (13)	35	1
Industrial	50	60	110 (11)	35	0
Property & Construction	110	50	160 (16)	85	6
Natural Resources	30	20	500 (50)	24	3
Services	140	130	270 (27)	69	4
Technology	50	50	100 (10)	43	3
Total observations	520	450	970 (97)	345	18

5.5 Results

Descriptive statistics

From Table 5.2, descriptive statistics report a high variation in stock returns, earnings per share, ROE and debt. Compared to prior research (Bartov et al. 2001a),[68] the high variation in stock returns can be found in many countries, i.e. the USA, the UK, Canada, Germany and Japan. High variation in earnings per

[68] See Table 2 in the article.

share and book value can be found in Germany, Belgium and Italy (Barniv and Myring 2006).[69] On average, the sample firms have 15 members on their boards. On average, one director serves as executive committee on 48 boards during the testing periods. In particular, one audit committee member serves as executive committee on 18 boards during the testing period. This high figure represents a high reputation of board of directors, however the quality of work is more likely to decline according to time constraints. Because standard deviations are smaller than means, on average it implies small variations of firm governance systems among sample firms.

Table 5.2 Descriptive statistics

	Mean	Median	SD	25th Percentile	75th Percentile	N
Earnings response coefficients (ERC) model						
R	0.178	-0.006	0.933	-0.384	0.433	1200
EPS	0.020	0.072	0.763	0.003	0.176	1200
ΔEPS	0.182	-0.001	1.847	-0.096	0.080	1200
Price model						
P	1.140	0.953	0.944	0.586	1.364	970
EPS	0.037	0.072	0.651	0.004	0.172	970
BVPS	1.391	1.012	1.524	0.505	1.790	970
Value relevance and firm governance						
VR_R^2	0.674	0.761	0.286	0.450	0.926	238
VR_ERC	2.666	1.305	4.992	0.024	3.860	238
NBO	15.437	15	4.700	12	18	238
NBB	48.521	45	27.774	27	64	238
NB	18.374	14	14.818	7	25	238
RCG	0.304	0.295	0.114	0.216	0.378	238
ROA	0.034	0.039	0.065	-0.004	0.074	238
MKT	69.3	129	207	43	424	238

R is 15-month dividend adjusted returns, 3-month after the financial year-end deflated by the beginning of share price; EPS is earnings per share scaled by the beginning of share price; ΔEPS is the change in earnings per share scaled by the beginning of share price; P is stock price 3-month after the financial year-end deflated by the beginning of share price; BVPS is book value per share scaled by the beginning of share price.
VR is value relevance – VR_ R^2 is r-squared and VR_ERC is earnings response coefficient. NBO is number of boards of director. NB is number of boards that audit committee members serve as board of directors or audit committee in other firms. RCG is a proportion audit committee members in board of directors. NBB is number of boards that members of board of directors serve as board of directors or audit committee in other firms. ROA is return on assets; MKT ('00,000,000) is market capitalization. SD is standard deviation and N is number of observations.

[69] See Table 1 in the article.

To obtain more insightful information about firms' characteristics, including size, firm performance, leverage and market activity, I use standard t-test and Wilcoxon rank-sum test to compare the sample firms. From Table 5.3, t-statistics report indifference in means of firms' size and leverage between both sample groups. Firm performance measured by ROA and ROE of group 1 is higher than firm performance of group 2 during post-adoption periods. According to the rank-sum test, firms' size measured by the market capitalization in group 2 is significantly larger than the size of firms in group 1 during post-adoption periods. And, firms in group 1 are likely to have a higher debt (measured by leverage), relative to firms in group 2. Both t-statistics and the rank-sum test reveal that ROA of group 2 is lower than that of group 1 during post-adoption periods. In addition, during post-adoption periods, the trading activity of firms' shares (measured by share turnover volume) for group 1 is more active than that for group 2.

Table 5.3 Mean comparisons based on 120 firms (1,200 observations)

	Pre-adoption (1995–1999)				**Post-adoption (2000–2004)**			
	Group 1	Group 2	t-test t (p-value)	Rank-sum test z (p-value)	Group 1	Group 2	t-test t (p-value)	Rank-sum test z (p-value)
Market Cap. ('00,000,000)	412	583	-1.35 (0.176)	0.60 (0.549)	880	883	-0.01 (0.990)	4.29 (0.000)
Leverage	2.82	2.49	0.23 (0.816)	3.32 (0.001)	1.77	1.75	0.04 (0.965)	2.88 (0.004)
ROA	-0.01	0.03	-4.43 (0.000)	-5.65 (0.000)	0.06	0.05	2.26 (0.024)	2.20 (0.0281)
ROE	-0.29	0.04	-2.26 (0.024)	-4.87 (0.000)	0.11	0.05	1.40 (0.161)	3.87 (0.000)
Share Turnover Volume	42.68	31.81	1.83 (0.068)	0.97 (0.335)	135.74	95.32	2.25 (0.025)	2.91 (0.004)

Leverage is the ratio of total liability divided by total equity. ROA is return on asset. ROE is return on equity. Revenue growth is the change in total revenue. Group 1 (2) is firms with larger (smaller) book-tax-differences in post-adoption periods.

Table 5.4 presents results from Pearson and Spearman correlations. Stock returns highly correlate with the level and change in earnings. Stock price highly correlates with net earnings and book value. The value relevance measured by R^2 and ERC is positively correlated with firm performance (ROA). ERC is positively correlated with the quality of audit committee measured by NB and firm size measured by market capitalization.

<u>*Main results*</u>

Table 5.5 presents the association between stock returns and earnings measured by the explanatory power – R^2 (Lang, Raedy and Wilson 2006; Van der Meulen et al. 2007).[70] In Panel A, the value relevance for firms in group 1 (17.1%) is higher than the value relevance for firms in group 2 (13.9%). However, ERC for firms in group 2 (.512) is greater than ERC for firms in group 1 (.247). As reported in Panel B, results for full samples reveal that on average the association between stock returns and earnings information increases from 22.8% in pre-adoption periods to 30% in post-adoption periods, implying that earnings in post-adoption periods explain the variation in market returns better than do earnings in pre-adoption periods, increasing by 31.58% [(.30 –.228)/.228] on average from pre-adoption periods. Earnings response coefficient (ERC) increases from .006 points in pre-adoption periods to .841 points in post-adoption periods.[71] ERC between those periods increases by 139.16 times [(.841 – .006)/.006] on average.

[70] Qualitatively similar results are obtained when using the adjusted R^2. The adjusted R^2 is also reported in the parenthesis. However, the magnitude of the adjusted R^2 (i.e. Table 5.5, 1.7%) is much smaller than R^2 (i.e. Table 5.5, 11.6%). This is consistent with prior studies that the adjusted R^2 in returns-earnings model is low. For example, Chen and Wang (2004) report the adjusted R^2 about 4% – 12% for returns-earnings model and 8% – 45% for price model in Chinese firms (see Table 4 in the article).

[71] ERC in the Thai firm is smaller than ERC in the UK (see Table 2, Donnelly 2002) and USA (see Table 3, Francis and Schipper 1999).

Table 5.4 Pearson (Spearman) correlation coefficient on the lower (upper) diagonal

Panel A: ERC model

	R	EPS	ΔEPS
R		**0.4548*****	**0.3102*****
EPS	0.2108***		**0.5298*****
ΔEPS	0.2499***	0.5037***	

Panel B: Price model

	P	EPS	BVPS
P		**0.4495*****	**0.4297*****
EPS	0.2763***		**0.2461*****
BVPS	0.3523***	0.0018	

Panel C: The value relevance and firm governance systems

	VR_R²	VR_ERC	NBO	NBB	NB	RCG	ROA	MKT
VR_R²		**0.3735*****	**-0.048**	**-0.0519**	**0.034**	**0.0231**	**0.2268*****	**-0.0457**
VR_ERC	0.2470***		**0.1159***	**0.0631**	**0.2504*****	**0.2438*****	**0.3932*****	**0.2069*****
NBO	-0.0346	0.1084		**0.6997*****	**0.4342*****	**-0.0234**	**0.0916**	**0.3502*****
NBB	-0.0165	0.0603	0.7219***		**0.6749*****	**0.0280**	**0.0312**	**0.3595*****
NB	0.0736	0.1765***	0.4075***	0.7032***		**0.5677*****	**0.2532*****	**0.3053*****
RCG	0.0134	0.1486	-0.0827	-0.0004	0.5164***		**0.3623*****	**0.1411**
ROA	0.1688***	0.2590***	0.0467	0.0342	0.2078***	0.3283***		**0.1960*****
MKT	0.0324	0.1749***	0.1288**	0.2568***	0.1580**	0.0826	0.1211*	

R is 15-month dividend adjusted returns, 3-month after the financial year-end deflated by the beginning of share price; EPS is earnings per share scaled by the beginning of share price; ΔEPS is the change in earnings per share scaled by the beginning of share price; P is stock price 3-month after the financial year-end deflated by the beginning of share price; BVPS is book value per share scaled by the beginning of share price.
VR is value relevance – VR_ R^2 is r-squared and VR_ERC is earnings response coefficient. NBO is number of boards of director. NB is number of boards that audit committee members serve as board of directors or audit committee in other firms. RCG is a proportion audit committee members in board of directors. NBB is number of boards that members of board of directors serve as board of directors or audit committee in other firms. ROA is return on assets; MKT (‘00,000,000) is market capitalization.
***,**,* Significant at 0.01, 0.05 and 0.10 level (two-tailed), respectively.

An average association between stock returns and earnings for firms with larger book-tax differences (group 1) decreases from 34.6% to 30.4%. The value relevance for firms with larger book-tax differences decreases by 12.14% [(.304 – .346)/.346] on average. For firms with smaller book-tax differences (group 2), earnings have a higher ability to explain market returns variation during post-adoption periods that the coefficient of determination increases from 15.3% to 30.6%. The value relevance for firms with smaller book-tax differences improves by 1 [(.306 – .153)/.153] time on average. z-statistics report the highly significant difference in R^2 between pre- and post-adoption periods for pooled-data and group 2, suggesting that the implemented new accounting standard in Thailand substantially improves the value relevance of accounting information for firms in group 2. Nevertheless, the value relevance of accounting numbers for firms in group 1 declines from pre- to post-adoption periods but it is not statistically significant as measured by z-stat (= -1.299). ERC for firms in group 1 increases from .037 points[72] in pre-adoption periods to 0.976 points in post-adoption periods. The improvement of ERC increases by on average 25.38 [(0.976 – .037)/.037] times for firms in group 1. ERC for firms in group 2 improves from .35 points from pre-adoption periods to .685 points in post-adoption periods. The enhancement of ERC increases by on average 0.96 [(.685 – .35)/.35] times for firms in group 2.

Overall results, the ability of earnings to explain market returns has increased during post-adoption periods. In addition, a higher slope of ERC indicates that earnings are of higher informativeness to investors, irrespective of the effect of other information sources (Francis and Schipper 1999). According to Lev and Zarowin (1999), ERC complements the inferences based on declining (increasing) the R^2. Other information, i.e. news about new accounting standards implemented, with no change in earnings informativeness may induce the decline (or increase) of the earnings ability to explain the variation in market returns. Based on Lev and Zarowin (1999), I interpret the results that the higher ERC is

[72] Very low ERC for group 1 during pre-adoption periods is due to the negative coefficient estimate of EPS and low value of coefficient estimate of ΔEPS.

driven by the investors' belief that earnings prepared by old accounting standards are highly transitory compared to earnings prepared by new accounting standards, resulting in the ERC adjustment being made by the market. The higher explanation power of earnings information on the variation in market returns is driven by the investors' belief that earnings prepared by new accounting standards reflect performance of the firm more accurately.[73]

Table 5.5 Earnings response coefficients (ERC): OLS estimation with firm-fixed effect and heteroskedasticity-robust standard errors

$$R_{it} = \alpha_0 + \alpha_1 EPS_{it} + \alpha_2 \Delta EPS_{it} + \varepsilon_{it}$$

Panel A

	Pooled	**Group 1**	**Group 2**
ERC	0.229	0.247	0.512
R^2	0.116	0.171	0.139
Adj. R^2	(0.017)	(0.077)	(0.042)
N	1200	630	570

Panel B

	Pooled		**Group 1**		**Group 2**	
	Pre	**Post**	**Pre**	**Post**	**Pre**	**Post**
ERC	0.006	0.841	0.037	0.976	0.350	0.685
R^2	0.228	0.300	0.346	0.304	0.153	0.306
Adj. R^2	(0.032)	(0.123)	(0.179)	(0.126)	(-0.065)	(0.128)
N	600	600	315	315	285	285
z stat*		3.462		-1.299		5.487

ERC is earnings response coefficients ($\alpha_1 + \alpha_2$); R is 15-month dividend adjusted returns, 3-month after financial year-end; EPS is earnings per share; ΔEPS is changes in earnings per share. All variables are deflated by the beginning of share price. N is a number of observations.
Pre = 1995 – 1999 and Post = 2000 – 2004.
Group 1 (2) is firms with larger (smaller) book-tax-differences in post-adoption periods.
* z-statistics are reported to compare the difference of R^2 between pre- and post-adoption periods.

[73] Table 5.5, Panel A reports that firms in group 1 have higher R^2 but lower ERC compared to firms in group 2. This shows that the increase of R^2 does not reflect the increase of ERC or vice versa. (see Lev and Zarowin (1999) Table 1 and Goncharov et al. (2006) Table 4 and 7 for qualitatively similar findings). In addition, qualitatively similar results are obtained when the returns are calculated over 12-months starting from 9-months before and 3-months after the financial year (see appendix 5).

Table 5.6 presents the result obtained from the price model. Panel A reports that the value relevance for firms in group 1 (31.9%) is greater than the value relevance for firms in group 2 (21.5%). This result is consistent with the explanatory power estimated by the ERC model. For pooled-data, results indicate that $1 of earnings (book value) corresponds to $0.41 ($0.29) of market value. In subsamples, $1 of earnings (book value) corresponds to $0.52 ($0.30) of market value for firms in group 1 and $1 of earnings (book value) corresponds to $0.20 ($0.29) of market value for firms in group 2.

When evaluating the improvement of value relevance of accounting summary measures, the result as presented in Panel B of Table 5.6 reports that value relevance (R^2) is enhanced from pre- to post-adoption periods, 29.5% to 47.6%, respectively. The value relevance increases by 61.36% on average [(.476 – .295)/.295]. The coefficient of earnings and book value per share is larger from pre- to post-adoption periods. z-statistics suggest that the improvement of value relevance between two periods is statistically significant. Panel C and Panel D report the value relevance for firms in group 1 and 2, respectively, during pre- and post-adoption periods. The value relevance of accounting numbers for firms in group 1 improves from 34.2% to 52.2% between the two periods, increasing by 52.63% [(.522 – .342)/.342] on average. The value relevance of earnings and book value for firms in group 2 also improves from 22.8% to 43.4% between the two periods, increasing by 90.35% [(.434 – .228/.228)] on average.

The higher coefficients of earnings and book value per share during IFRS post-adoption periods suggest that earnings and book value information correspond to market values higher than that during IFRS pre-adoptions. However, the coefficient estimate of book value information of group 1 declines during post-adoption periods. Additionally, z-statistics reveal that the improvement of value relevance of earnings and book values between the two periods for full samples and both subgroups is highly significant. It should be noted that qualitatively similar results as reported in Table 5.5 and 5.6 are also obtained when book-tax differences are calculated from consolidated financial statements.[74] In conclusion, the results indicate that value relevance has enhanced after IFRS adoptions, supporting the hypothesis (H.5.1). The improvement of value relevance for firms with larger book-tax differences (group 1) is lower than the improvement of value relevance for firms with smaller book-tax differences (group 2). These findings support the hypothesis (H.5.2).

The value relevance and firm governance

As reported in Table 5.7, I regress the value relevance on firm governance proxies to determine whether the alteration of value relevance for firms in both subgroups is related to firm governance systems. From Panel A, value relevance is estimated by the explanatory power obtained from the equation (1). For pooled-data, findings report that the association between the value relevance of accounting summary measures and firm governance systems is more pronounced during post-adoption periods, relative to pre-adoption periods. Value relevance is positively related to NB but negatively related to RCG.

From Panel B, findings report that for firms in group 1, the value relevance is significantly improved during post-adoption periods (measured by β_0) without other information sources but not varied with firm governance factors both pre- and post-adoption years. For firms in group 2 presented in Panel C, value relevance is significantly improved during post-adoption periods (measured by β_0) without other information sources. During post-adoption periods, value relevance for firms in group 2 relates to the quality of board (measured by NBB) and audit committee (measured by NB) and firm governance quality (measured by RCG). Findings report the negative relationship between the value relevance and board quality (NBB), suggesting that time constraint of board of director may deter the value relevance. Besides, the negative relationship between the value relevance and the proportion of audit committee in board of director (RCG) suggests that higher proportion induces lower value relevance.

[74] See Appendix 5.

Table 5.6 Price model: OLS estimation with firm fixed effect and heteroskedasticity-robust standard errors

$$P_{it} = \gamma_0 + \gamma_1 EPS_{it} + \gamma_2 BVPS_{it} + \varepsilon_{it}$$

Panel A

	Pooled			Group 1			Group 2		
	Estimate	t value	p value	Estimate	t value	p value	Estimate	t value	p value
Intercept	0.722	13.33	0.000	0.713	9.04	0.000	0.724	9.89	0.000
EPS	0.409	2.83	0.005	0.515	2.59	0.010	0.199	1.73	0.085
BVPS	0.289	7.91	0.000	0.303	6.04	0.000	0.287	5.08	0.000
R^2	0.273			0.319			0.215		
Adj. R^2	(0.191)			(0.242)			(0.126)		
N	970			520			450		

Panel B

	Pooled					
	Pre-adoption (1995–1999)			Post-adoption (2000–2004)		
	Estimate	t value	p value	Estimate	t value	p value
Intercept	0.711	10.37	0.000	0.577	6.96	0.000
EPS	0.264	1.38	0.167	0.466	2.91	0.004
BVPS	0.248	6.48	0.000	0.537	7.57	0.000
R^2	0.295			0.476		
Adj. R^2	(0.116)			(0.343)		
N	485			485	z-stat* =	6.875

Panel C

	Group 1					
	Pre-adoption (1995–1999)			Post-adoption (2000–2004)		
	Estimate	t value	p value	Estimate	t value	p value
Intercept	0.360	1.37	0.173	0.884	4.11	0.000
EPS	0.257	4.67	0.000	0.465	7.90	0.000
BVPS	0.680	6.59	0.000	0.532	7.21	0.000
R^2	0.342			0.522		
Adj. R^2	(0.172)			(0.399)		
N	260			260	z-stat =	4.845

Panel D

	Group 2					
	Pre-adoption (1995–1999)			Post-adoption (2000–2004)		
	Estimate	t value	p value	Estimate	t value	p value
Intercept	0.735	9.87	0.000	0.529	3.33	0.001
EPS	0.053	0.44	0.658	0.359	1.36	0.175
BVPS	0.265	5.38	0.000	0.445	3.42	0.001
R^2	0.228			0.434		
Adj. R^2	(0.028)			(0.288)		
N	225			225	z-stat =	4.581

P is stock price 3-month after the financial year-end; EPS is earnings per share; BVPS is book value per share. All variables are deflated by the beginning of share price. N is number of observations. Pre = 1995–1999 and Post = 2000–2004. Group 1 (2) is firms with larger (smaller) book-tax-differences in post-adoption periods.
*z-statistics are reported to compare the difference of R^2 between pre- and post-adoption periods.

Panel D–F present the results when the value relevance is measured by ERC. In terms of NB, it is measured from the number of boards on which audit committees and independent directors serve as executive directors in other firms. The higher number of boards on which they serve can deteriorate the quality of work due to time constraints. However, an alternative explanation is that a large number of boards on which they serve reflect the reputation of audit committees and independent directors. For this analysis, findings report a positive relationship between value relevance and NB. I argue that this is due to the reputation of audit committee and independent directors inducing more value relevance in the firm. On the other hand, the relationship between value relevance and NBB is negative and significant. It implies that the time constraint deters the value relevance of accounting numbers. It should be noted that the coefficient sign of NB and NBB should be in the same direction. However, the result reports different direction of NB and NBB. Thus, it is difficult to provide an inference for these two variables relative to the association between value relevance and board (audit committee) quality.

For RCG, value relevance is negatively related to the proportion of audit committee to board size (RCG). The larger RCG indicates higher quality of corporate governance on a board. The obtained negative relationship between value relevance and RCG suggests that value relevance of accounting information is less likely when the proportion is large.

From these findings, the relationship between value relevance and firm governance systems is different from the relationship between earnings persistence and firm governance systems previously presented in Chapter 4. However, the obtained result suggests that in Thai settings, firm governance systems for firms in group 1 are clearly not related to theirs value relevance but firm governance systems for firms in group 2 are related to theirs value relevance. These findings, therefore, suggest that the firm governance system is related to the variation in value relevance of firms in group 1 and group 2. It also implies that the firm governance system encourages the improvement of value relevance in the firm and plays an important role when IFRS has been adopted in Thailand.

Table 5.7 Value relevance and firm governance

$VR_i = \beta_0 + \beta_1 NBO_i + \beta_2 NBB_i + \beta_3 NB_i + \beta_4 RCG_i + \beta_5 ROA_i + \beta_6 MKT_i + \varepsilon_i$

$VR = R^2$

Panel A: Full samples

	Pooled			Pre-adoption (1995–1999)			Post-adoption (2000–2004)		
	Coef.	t value	p value	Coef.	t value	p value	Coef.	t value	p value
β_0	0.838	8.57	0.000	0.585	2.35	0.021	0.880	3.48	0.001
NBO	-0.001	-0.21	0.836	0.006	0.46	0.645	0.000	-0.04	0.969
NBB	**-0.003**	**-1.72**	**0.086**	-0.002	-1.03	0.304	-0.003	-1.37	0.173
NB	**0.006**	**2.29**	**0.023**	0.004	0.73	0.465	**0.007**	**2.02**	**0.045**
RCG	**-0.548**	**-2.12**	**0.035**	0.271	0.39	0.694	**-0.751**	**-1.82**	**0.071**
ROA	0.779	2.55	0.012	0.660	1.70	0.092	0.990	1.82	0.072
MKT	0.000	0.74	0.462	0.000	-1.34	0.183	0.000	1.78	0.078
Adj.R^2			0.033			0.012			0.038
N			238			119			119

Panel B: Group 1

	Pooled			Pre-adoption (1995–1999)			Post-adoption (2000–2004)		
	Coef.	t value	p value	Coef.	t value	p value	Coef.	t value	p value
β_0	0.664	4.86	0.000	0.409	1.42	0.161	0.945	3.42	0.001
NBO	-0.003	-0.42	0.675	0.005	0.32	0.747	-0.013	-0.96	0.339
NBB	0.002	0.86	0.393	0.001	0.38	0.702	0.003	0.89	0.379
NB	-0.004	-0.83	0.410	-0.004	-0.53	0.599	-0.005	-0.73	0.467
RCG	0.204	0.59	0.558	1.020	1.22	0.228	-0.218	-0.47	0.643
ROA	0.315	0.90	0.370	0.091	0.19	0.852	0.544	0.77	0.443
MKT	0.000	0.85	0.395	0.000	-0.25	0.801	0.000	0.36	0.719
Adj.R^2			-0.031			-0.076			-0.045
N			126			63			63

Panel C: Group 2

	Pooled			Pre-adoption (1995–1999)			Post-adoption (2000–2004)		
	Coef.	t value	p value	Coef.	t value	p value	Coef.	t value	p value
β_0	0.864	6.61	0.000	0.598	1.64	0.106	0.807	1.81	0.076
NBO	0.004	0.5	0.617	0.012	0.62	0.540	0.010	0.61	0.545
NBB	**-0.006**	**-2.92**	**0.004**	-0.005	-1.64	0.108	**-0.007**	**-2.57**	**0.013**
NB	**0.013**	**4.50**	**0.000**	0.011	1.38	0.174	**0.015**	**4.43**	**0.000**
RCG	**-1.135**	**-3.71**	**0.000**	-0.357	-0.41	0.684	**-1.161**	**-1.68**	**0.100**
ROA	1.899	4.84	0.000	2.156	4.41	0.000	1.357	1.85	0.070
MKT	0.000	0.51	0.610	0.000	-1.72	0.092	0.000	2.17	0.035
Adj.R^2			0.193			0.202			0.143
N			112			56			56

Table 5.7 (Cont.)

VR = ERC

Panel D: Full samples

	Pooled			Pre-adoption (1995–1999)			Post-adoption (2000–2004)		
	Coef.	t value	p value	Coef.	t value	p value	Coef.	t value	p value
β_0	0.835	0.52	0.601	1.853	0.51	0.609	9.706	2.02	0.046
NBO	**0.213**	**1.67**	**0.097**	0.083	0.47	0.638	0.030	0.13	0.896
NBB	**-0.065**	**-2.54**	**0.012**	**-0.050**	**-2.00**	**0.048**	-0.071	-1.62	0.108
NB	**0.109**	**2.84**	**0.005**	**0.106**	**1.67**	**0.097**	**0.112**	**1.99**	**0.049**
RCG	-3.631	-1.11	0.268	-3.076	-0.36	0.717	**-17.015**	**-2.45**	**0.016**
ROA	15.410	3.61	0.000	11.474	2.15	0.034	14.649	1.75	0.082
MKT	0.000	2.11	0.036	0.000	-0.43	0.670	0.000	3.94	0.000
Adj.R^2			0.105			0.031			0.079
N			238			119			119

Panel E: Group 1

	Pooled			Pre-adoption (1995–1999)			Post-adoption (2000–2004)		
	Coef.	t value	p value	Coef.	t value	p value	Coef.	t value	p value
β_0	0.902	0.39	0.694	8.202	1.65	0.105	4.954	0.77	0.442
NBO	0.137	0.76	0.449	-0.101	-0.53	0.600	-0.042	-0.11	0.913
NBB	-0.028	-0.74	0.458	**-0.061**	**-2.25**	**0.028**	0.048	0.60	0.549
NB	0.031	0.54	0.589	0.022	0.28	0.779	-0.072	-0.67	0.507
RCG	-1.568	-0.36	0.716	-16.805	-1.44	0.154	-3.503	-0.47	0.641
ROA	14.585	2.74	0.007	18.313	2.36	0.022	-4.263	-0.54	0.592
MKT	0.000	3.15	0.002	0.000	1.48	0.146	0.000	2.32	0.024
Adj.R^2			0.112			0.135			0.054
N			126			63			63

Panel F: Group 2

	Pooled			Pre-adoption (1995–1999)			Post-adoption (2000–2004)		
	Coef.	t value	p value	Coef.	t value	p value	Coef.	t value	p value
β_0	-0.578	-0.24	0.809	-0.146	-0.02	0.984	13.193	1.99	0.053
NBO	**0.344**	**1.75**	**0.083**	0.186	0.57	0.571	0.076	0.28	0.783
NBB	**-0.097**	**-2.54**	**0.012**	-0.057	-1.31	0.197	**-0.139**	**-2.37**	**0.022**
NB	**0.158**	**3.25**	**0.002**	0.218	1.56	0.126	**0.223**	**3.96**	**0.000**
RCG	-3.986	-0.83	0.407	-1.942	-0.12	0.902	**-28.516**	**-2.51**	**0.015**
ROA	21.495	2.67	0.009	3.718	0.42	0.677	43.325	2.86	0.006
MKT	0.000	0.57	0.571	0.000	-1.78	0.081	0.000	2.55	0.014
Adj.R^2			0.124			0.029			0.218
N			112			56			56

VR is value relevance obtained from the explanatory power (R^2) and ERC from the equation (1). One firm is dropped because of the incomplete data. The equation (1) is estimated by firm-specific OLS regression with heteroskedasticity-robust standard errors, rolling five-year window before and after the accounting change. NBO is number of boards of director. NB is number of boards that audit committee members serve as board of directors or audit committee in other firms. RCG is a proportion audit committee members in board of directors. NBB is number of boards that members of board of directors serve as board of directors or audit committee in other firms. Control variables are added, including return on assets (ROA), and market capitalization (MKT). The median of NBO, NB and NBB and the mean of RCG, ROA and MKT are applied for the regressions analysis. N are a number of observations. Group 1 (2) is firms with larger (smaller) book-tax-differences in post-adoption periods. OLS estimators with heteroskedasticity-robust standard errors are employed to run the regression.

Robustness checks

First, I exclude the sample firms that have negative annual income tax expenses. It results in dropping nine firms (90 observations)[75] for ERC model and eight firms (80 observations)[76] for price model. I re-estimate both models by using these sample firms. Results are qualitatively similar to the main findings reported in Table 5.5. However, the price model reveals that the improvement of value relevance for group 1 is greater than that for group 2.[77]

I estimate the value relevance of accounting information and compare it between pre- and post-adoption periods by each industry as presented in Table 5.8. ERC model suggests that the value relevance of accounting information (Adj. R^2) increases from pre- to post-adoption periods in 4 out of 7 industries, including agro-business, consumer products, industrial and services. But ERC increases for all industries except the firm in the natural resources group. The price model reveals that the value relevance of earnings and book values (Adj. R^2) increases during the testing period but it declines for firms in the natural resources and technology groups. Both models report that the value relevance declines for firms in natural resources and technology after IFRS adoptions. I argue that it is because these firms have high value of depreciable and intangible assets that are subject to firms' accounting discretions. And, IFRS provides more room for firms' discretions relative to the old accounting system in Thai settings. The market, therefore, may interpret accounting information in these two industries as transitory.

Next, I extend the sample period by using 70 constant firms for ERC model during the period 1993–2007 and 73 constant firms for price model during the period 1995–2007.[78] The dataset is divided into two groups according to book-tax differences. Non-deflated variables are employed for the analysis (Goncharov et

[75] BCP, BJC, CPF, CPH, CTW, LOXLEY, SCC, SCCC and UCOM
[76] BCP, BJC, CPF, CPH, CTW, LOXLEY, SCC and SCCC
[77] See details in Appendix 6.
[78] The book value per share is available in the database from 1995 onwards.

al. 2006; Van der Meulen et al. 2007). Consistent with the main analysis, group 1 (2) includes firms whose book-tax differences during post-adoption periods are larger (smaller) than book-tax differences during pre-adoption periods. Fama-MacBeth regressions are employed to obtain the average coefficient estimate and the explanatory power (R^2). Table 5.9 presents the result. Findings in panel A are obtained from ERC model, suggesting that on average, the value relevance of accounting summary measures increases from pre- (R^2 = 16.2%) to post-adoption periods (R^2 = 25.8%). On average, the value relevance for group 1 increases from 25% in pre-adoption years to 32% in post-adoption years, increasing by 26% [(.315 – .250)/.250]. The value relevance for group 2 increases from 20% in pre-adoption years to 31% in post-adoption years, increasing by 53.77% [(.306 – .199)/.199].

In Panel B, the price model reports consistent results that the value relevance of accounting information measured by the R^2 increases from 54.7% in pre-adoption years to 84.8% in post-adoption years. On average, from pre- to post-adoption periods, the value relevance for group 1 increases by 12.45% [(.831 – .739)/.739]. The value relevance for group 2 increases from 31% in pre-adoption years to 83% in post-adoption years, increasing by 1.71 times [(.833 – .307)/.307]. It should be noted that when excluding firms with negative annual income tax expenses, qualitatively similar results are obtained.[79] These findings suggest that the enhancement of value relevance from pre- to post-adoption years is higher for group 2 compared to group 1. The additional tests support the hypotheses (H.5.1 and H.5.2).

[79] See results in Appendix 8.

Table 5.8 Robustness checks: The value relevance of accounting summary measures when partitioning firms by industry[a]

ERC model: $R_{it} = \alpha_0 + \alpha_1 EPS_{it} + \alpha_2 \Delta EPS_{it} + \varepsilon_t$

Price model: $P_{it} = \gamma_0 + \gamma_1 EPS_{it} + \gamma_2 BVPS_{it} + \varepsilon_{it}$

		ERC model			Price model			
		ERC	**Adj.R²**	**N**	**EPS**	**BVPS**	**Adj.R²**	**N**
Agro-business	Pre	1.183	0.358	110	0.210	0.323	0.281	75
	Post	3.121	0.570	110	0.805	0.291	0.391	75
Consumer Products	Pre	0.327	0.114	75	0.116	0.206	0.201	65
	Post	0.830	0.324	75	0.698	0.315	0.413	65
Industrial	Pre	0.079	0.043	60	0.074	0.083	0.076	55
	Post	1.136	0.225	61	0.460	0.063	0.129	55
Property & Construction	Pre	0.091	0.402	105	0.301	0.194	0.228	80
	Post	1.061	0.291	104	1.267	0.265	0.308	80
Natural resources	Pre	-0.088	0.435	20	-0.090	0.189	0.314	25
	Post	-0.653	0.083	20	-0.452	-0.136	-0.041	25
Service	Pre	-0.295	0.064	165	-0.211	0.002	0.017	135
	Post	0.585	0.090	165	0.196	0.326	0.260	135
Technology	Pre	-1.034	0.121	65	-1.411	0.094	0.208	50
	Post	0.180	-0.012	65	-0.058	0.328	0.169	50

a: Full details of the regression results are presented in Appendix 7.
ERC is earnings response coefficients ($\alpha_1 + \alpha_2$); R is 15-month dividend adjusted returns, 3-month after financial year-end; EPS is earnings per share; ΔEPS is changes in earnings per share; and N is number of observations. P is stock price 3-month after the financial year-end; BVPS is book value per share and N is number of observations. All variables are deflated by the beginning of share price. Pre = 1995–1999 and Post = 2000–2004

In Table 5.10, I perform additional tests to evaluate the value relevance of accounting information for all firm-years. Extreme values of each variable are deleted. The dataset is partitioned according to firms' positive book-tax differences.[80] Firm-years with negative book-tax differences are excluded. The positive book-tax differences are classified into two groups every year. BT1 includes firm-years with small positive book-tax differences whilst BT2 includes firm-years with large positive book-tax differences.

[80] For the robust check, the annual income tax expense was not set to zero and the negative value of annual income tax expenses was excluded.

Table 5.9 Robustness checks: Panel data analysis by using Fama-MacBeth regressions

Panel A: $R_{it} = \alpha_0 + \alpha_1 EPS_{it} + \alpha_2 \Delta EPS_{it} + \varepsilon_t$

		Pre-adoption (1993–1999)					Post-adoption (2000–2007)				
		α_0	EPS	ΔEPS	Avg.R^2	N	α_0	EPS	ΔEPS	Avg.R^2	N
Pooled	Coef.	-0.081	1.548	0.390	0.162	490	0.069	1.225	0.369	0.258	560
	t value	-0.65	1.93	1.19			0.58	2.24	1.94		
	p value	0.538	0.101	0.278			0.578	0.06	0.093		
Group 1	Coef.	-0.038	0.891	0.220	0.250	266	0.031	1.488	0.483	0.315	304
	t value	-0.24	1.57	0.49			0.22	3.45	2.20		
	p value	0.816	0.168	0.639			0.832	0.011	0.064		
Group 2	Coef.	-0.147	2.438	1.082	0.199	224	0.080	1.382	0.396	0.306	256
	t value	-1.66	2.01	1.58			0.92	2.03	0.73		
	p value	0.147	0.091	0.165			0.388	0.082	0.49		

Panel B: $P_{it} = \gamma_0 + \gamma_1 EPS_{it} + \gamma_2 BVPS_{it} + \varepsilon_{it}$

		Pre-adoption (1995–1999)					Post-adoption (2000–2007)				
		γ_0	EPS	BVPS	Avg.R^2	N	γ_0	EPS	BVPS	Avg.R^2	N
Pooled	Coef.	13.425	5.720	0.321	0.547	365	-2.169	9.194	0.315	0.848	584
	t value	1.250	1.580	0.610			-1.170	5.180	2.300		
	p value	0.279	0.188	0.572			0.281	0.001	0.055		
Group 1	Coef.	10.821	7.334	-0.016	0.739	205	-4.436	8.943	0.262	0.831	328
	t value	0.90	1.69	-0.02			-2.65	5.63	1.68		
	p value	0.421	0.166	0.983			0.033	0.001	0.137		
Group 2	Coef.	16.433	2.901	0.958	0.307	160	6.598	9.460	0.196	0.833	256
	t value	3.88	2.14	6.56			2.99	4.14	1.30		
	p value	0.018	0.099	0.003			0.02	0.004	0.234		

R is 15-month dividend adjusted returns, 3-month after financial year-end; EPS is earnings per share scaled by the beginning of share price; ΔEPS is changes in earnings per share scaled by the beginning of share price. P is stock price 3-month after the financial year-end; BVPS is book value per share. N is a number of observations.
Fama-MacBeth regressions are applied to determine average coefficient estimates and R^2.
Group 1 (2) includes firms whose book-tax differences during pre-adoption periods are smaller (larger) than book-tax differences during post-adoption periods.

The expectation is that firms with smaller book-tax differences are of higher-quality accounting information than firms with large book-tax differences. Therefore, the higher value relevance of accounting summary measures is expected in BT1 relative to BT2.

From the ERC model, results show that the value relevance of accounting summary measures (Adj. R^2) improves from pre- (2.8%) to post-adoption periods (6.4%). When partitioning firms with their book-tax differences (BT1 vs. BT2), the value relevance for BT1 (Adj. R^2 = 47%) is greater than BT2 (Adj. R^2 = 35%). The value relevance increases from pre- to post-adoption periods for firms in both BT1 and BT2. The value relevance of accounting information for firms in BT1 (Pre = 45.8%, Post = 46.7%) is higher than that for firms in BT2 (Pre = 25.9%, Post = 40%) in both periods. Moreover, the magnitude of ERC supports the improvement of value relevance after the IFRS adoption in Thailand. The ERC increases after the IFRS adoption for pooled-data (ERC – Pre = .183, ERC – Post = .546) and BT1 (ERC – Pre = 3.22, ERC – Post = 4.26) but slightly declines for BT2 (ERC – Pre = 3.37, ERC – Post = 2.83). EERC for firms in BT1 is higher than ERC for firms in BT2 in both pre- and post-adoption periods, supporting the expectation that the value relevance for BT1 is higher than the value relevance for BT2.

Consistent with the ERC model, the price model reports that the value relevance of earnings and book value information increases during post-adoption periods for pooled-data (Adj. R^2 – Pre = 65.6%, Adj. R^2 – Post = 82.4%). The magnitude of earnings coefficients improves from pre- to post-adoption periods, suggesting that earnings information corresponds to share prices greater than in the past. When partitioning the dataset according to small (BT1) and large (BT2) positive book-tax differences, the value relevance of earnings and book value information is higher quality after IFRS adoptions for both subgroups. The value relevance for firms in BT1 (Adj. R^2 – Pre = 72.1%, Adj. R^2 – Post = 84.1%) is greater than the value relevance for firms in BT2 (Adj. R^2 – Pre = 55.6%, Adj. R^2 – Post = 81.7%)

in both periods. In addition, the higher coefficient estimate of earnings in BT1 and BT2 during post-adoption periods suggests that earnings information can better explain share price relative to pre-adoption periods. The results from subgroups are also consistent with the results obtained from the ERC model. In summary, the findings from both models suggest that the value relevance of accounting information increases after the IFRS adoption in Thailand, and the value relevance of accounting information for firms with small positive book-tax differences is higher relative to firms with large positive book-tax differences.

Table 5.10 Robustness checks: Pooled-cross section regression with firm fixed effect and heteroskedasticity-robust standard errors for all firm-years (1993–2007) and partitioning the dataset by using positive book-tax differences

$$R_{it} = \alpha_0 + \alpha_1 EPS_{it} + \alpha_2 \Delta EPS_{it} + \varepsilon_t$$

Panel A: Full samples

	All			Pre-adoption (1993–1999)			Post-adoption (2000–2007)		
	Coef.	t value	p value	Coef.	t value	p value	Coef.	t value	p value
INT.	0.020	1.91	0.056	-0.100	-6.52	0.000	0.098	6.49	0.000
EPS	0.286	4.94	0.000	0.093	1.46	0.143	0.508	4.59	0.000
ΔEPS	0.068	2.07	0.038	0.090	2.48	0.013	0.038	0.63	0.530
Adj. R^2			0.050			0.028			0.064
N			3628			1624			2004

Panel B: BT1

	All			Pre-adoption (1993–1999)			Post-adoption (2000–2007)		
	Coef.	t value	p value	Coef.	t value	p value	Coef.	t value	p value
INT.	-0.395	-16.05	0.000	-0.439	-14.61	0.000	-0.422	-6.83	0.000
EPS	3.872	16.21	0.000	3.661	10.65	0.000	4.681	9.51	0.000
ΔEPS	-0.470	-1.93	0.054	-0.582	-1.9	0.058	-0.672	-1.44	0.150
Adj. R^2			0.469			0.458			0.467
N			994			532			462

Panel C: BT2

	All			Pre-adoption (1993–1999)			Post-adoption (2000–2007)		
	Coef.	t value	p value	Coef.	t value	p value	Coef.	t value	p value
INT.	-0.287	-8.47	0.000	-0.370	-7.95	0.000	-0.255	-4.21	0.000
EPS	3.097	8.90	0.000	3.743	6.23	0.000	3.084	6.33	0.000
ΔEPS	-0.336	-1.53	0.125	-0.646	-1.88	0.061	0.166	0.51	0.612
Adj. R^2			0.350			0.259			0.400
N			989			530			459

Table 5.10 (Cont.)

$$P_{it} = \gamma_0 + \gamma_1 EPS_{it} + \gamma_2 BVPS_{it} + \varepsilon_{it}$$

Panel D: Full samples

	All			Pre-adoption (1995–1999)			Post-adoption (2000–2007)		
	Coef.	t value	p value	Coef.	t value	p value	Coef.	t value	p value
INT.	3.813	2.99	0.003	9.347	2.12	0.034	5.522	4.61	0.000
EPS	1.014	7.75	0.000	0.663	4.64	0.000	1.806	7.36	0.000
BVPS	0.916	17.58	0.000	0.778	6.24	0.000	0.737	11.28	0.000
Adj. R^2			0.675			0.656			0.824
N			3056			1167			1889

Panel E: BT1

	All			Pre-adoption (1995–1999)			Post-adoption (2000–2007)		
	Coef.	t value	p value	Coef.	t value	p value	Coef.	t value	p value
INT.	7.222	2.30	0.022	33.293	1.60	0.112	2.627	0.83	0.407
EPS	4.660	4.29	0.000	4.285	2.13	0.035	5.373	5.92	0.000
BVPS	0.295	1.95	0.052	-0.207	-0.33	0.739	0.281	2.20	0.029
Adj. R^2			0.768			0.721			0.841
N			748			320			428

Panel F: BT2

	All			Pre-adoption (1995–1999)			Post-adoption (2000–2007)		
	Coef.	t value	p value	Coef.	t value	p value	Coef.	t value	p value
INT.	6.196	1.24	0.214	27.599	1.62	0.108	14.763	5.41	0.000
EPS	2.986	4.09	0.000	1.965	1.75	0.083	3.876	3.36	0.001
BVPS	0.928	5.46	0.000	0.703	1.78	0.076	0.354	1.71	0.088
Adj. R^2			0.623			0.556			0.817
N			740			318			422

ERC is earnings response coefficients ($\alpha_1 + \alpha_2$); R is 15-month dividend adjusted returns, 3-month after financial year-end, t; EPS is earnings per share; ΔEPS is changes in earnings per share. P is stock price 3-month after the financial year-end, t; BVPS is book value per share and N is number of observations.

Observations of each variable in the top and bottom 1% of both models for full samples are deleted and the top and bottom 0.5% of both models for subgroups (BT1 and BT2) are excluded.

N is a number of observations. BT1 and BT2 include firm-years with small and large positive book-tax differences, respectively. Negative annual income tax expenses are excluded.

***,**,* Significant at 0.01, 0.05 and 0.10 level, respectively (two-tailed).

The last additional test presented in Table 5.11 is to estimate the relationship between the value relevance and firms' governance systems. The value relevance for the additional test is measured by the explanatory power (R^2) estimated from the price model. Control variables are included for the estimation. Findings report that board size (NBO) and board quality (NBB) are significantly related to the value relevance for full samples in both sub-periods. During pre-adoption periods, firms with a large board size tend to have high value relevance. However, this relationship becomes negative during post-adoption periods, indicating that firms with a small board size are more likely to have high value relevance of accounting numbers. During pre-adoption periods, the relationship between the value relevance and board quality is negative, but the relationship becomes positive after the IFRS adoption in Thailand.

Consistent with the main result, the value relevance is not associated with firm governance factors for firms whose book-tax differences become larger during post-adoption periods (Group 1). For firms whose book-tax differences become smaller during post-adoption periods (Group 2), findings report that the association between the proportion of audit committee on a board (RCG) and the value relevance is significantly negative whilst number of audit committee (NAC) is positively related to value relevance. These findings are quite contradicted. However, the result implies that the increase of a number of audit committee after July 1999 in Thailand is related to value relevance. In addition, quality of board (NBB) is positively related to value relevance. This implies that the reputation of board members is essential for the value relevance of accounting information.

From main and sensitivity analyses of the relationship between firm governance systems and value relevance, it clearly appears that value relevance for firms in group 1 is not related to the firm governance system. For firms in group 2, firms with low proportion of audit committee to board size (RCG) tend to have high value relevance. However, a high number of audit committee members (NAC) induce value relevance. Therefore, this thesis considers that it is rather difficult to make an inference from these opposed results whether or not higher a number of audit committee on a board encourage higher value relevance for firms in group 2. In addition, this thesis considers that the relationship between board quality (NBB) and value relevance cannot be concluded because of their mixed results. This thesis views that the small sample size employed in the analysis probably is a potential reason causing inconsistent findings. However, based on the overall finding, this thesis concludes that the value relevance is varied according to the firm governance and the corporate governance system becomes very important when IFRS has been adopted in Thailand.

5.6 Chapter Summary

This chapter presents the analysis of value relevance during IFRS pre- (1995–1999) and post-adoption periods (2000–2004) in Thailand. The study of value relevance has been widely used by existing research when examining the change in accounting system. The value relevance is interpreted by using the association between firm values and accounting summary measures. ERC is also used as a complement to interpret whether the value relevance has been improved in Thai firms. Overall findings suggest that the value relevance of earnings and book values has been enhanced after the IFRS adoption in the Thailand. At the firm level, the dataset is partitioned according to the book-tax difference. The finding supports that the enhancement of value relevance is varied according to the magnitude of book-tax differences. In addition, this thesis evidences that the variation in the improvement of value relevance among Thai firms is related to the corporate governance system. These findings support the notion that the IFRS adoption in Thailand brings better quality of accounting information in terms of the value relevance conditioning on incentives of a firm's insiders and the firm governance system is an essential monitoring mechanism to encourage value relevance.

Table 5.11 Robustness checks: The value relevance and firm governance

I regress value relevance (VR) on various firm governance proxies. I compare the analysis between firms in group 1 and 2 during pre- and post-adoption periods. Year indicator variables are employed for pre- and post-adoption periods. One firm is dropped due to incomplete data. I use median of NAC, NBO, NB and NBB and the mean of RCG and control variables for this analysis. OLS estimators with heteroskedasticity-robust standard errors are employed to run the regression.

$$VR_i = \beta_0 + \beta_1 NAC_i + \beta_2 NBO_i + \beta_3 NB_i + \beta_4 RCG_i + \beta_5 NBB_i + \beta_6 YR_i + \beta_7 YR{*}NAC_i + \beta_8 YR{*}NBO_i + \beta_9 YR{*}NB_i + \beta_{10} YR{*}RCG_i + \beta_{11} YR{*}NBB_i + X + \varepsilon_i$$

	Pooled			Group 1			Group 2		
	Coef.	t value	p value	Coef.	t value	p value	Coef.	t value	p value
β_0	0.336	1.13	0.260	0.568	1.36	0.176	-0.048	-0.11	0.913
NAC	-0.044	-0.82	0.411	-0.009	-0.13	0.897	-0.157	-1.56	0.122
NBO	**0.029**	**1.74**	**0.084**	0.010	0.41	0.683	**0.057**	**2.40**	**0.019**
NB	0.005	0.80	0.426	0.005	0.60	0.548	0.004	0.29	0.774
RCG	0.632	0.69	0.492	0.290	0.22	0.824	1.919	1.40	0.166
NBB	**-0.004**	**-2.32**	**0.022**	-0.004	-1.42	0.160	**-0.005**	**-1.72**	**0.090**
YR	0.939	1.90	0.059	0.062	0.08	0.935	1.624	2.86	0.006
YR*NAC	0.113	1.44	0.153	-0.012	-0.11	0.914	**0.274**	**2.27**	**0.026**
YR*NBO	**-0.068**	**-2.25**	**0.026**	-0.027	-0.59	0.553	**-0.109**	**-3.21**	**0.002**
YR*NB	-0.011	-1.35	0.177	-0.012	-0.87	0.385	-0.007	-0.55	0.586
YR*RCG	-1.620	-1.23	0.219	0.440	0.23	0.822	**-3.753**	**-2.15**	**0.035**
YR*NBB	**0.009**	**2.54**	**0.012**	0.011	1.58	0.119	**0.008**	**2.19**	**0.032**
Control variables									
ROA	0.472	1.15	0.251	0.398	0.70	0.483	1.006	1.56	0.124
GRW	-0.078	-1.19	0.234	-0.019	-0.32	0.751	-0.407	-1.67	0.100
LEV	-4.523	-0.85	0.398	-2.921	-0.41	0.686	-6.375	-0.77	0.444
MKT	0.000	-0.05	0.957	0.000	-0.84	0.405	0.000	0.80	0.428
Adj.R^2			0.066			-0.037			0.173
N			192			104			88

VR is value relevance estimated by the explanatory power (R^2). The explanatory variable is obtained from the price model: $P_i = a_0 + a_1 EPS_i + a_2 BVPS_i + \varepsilon_i$, where P is stock price 3-month after the financial year; EPS is earnings per share; BVPS is book value per share (total equity divided by a number of listed outstanding shares) and ε is the residual. The price model is estimated by firm-specific OLS regression with heteroskedasticity-robust standard errors, rolling five-year window before and after the accounting change. NAC is number of audit committee members. NBO is number of boards of director. NB is number of boards that audit committee members serve as board of directors or audit committee in other firms. RCG is a proportion audit committee members in board of directors. NBB is number of boards that members of board of directors serve as board of directors or audit committee in other firms. X is control variable, including return on assets (ROA), total revenues growth rate (GRW), the ratio of total liability divided by market capitalization (LEV), and market capitalization (MKT). YR is year dummy equal to 1 for post-adoption period, 0 otherwise and N is number of observations.

Group 1 (2) is firms with larger (smaller) book-tax-differences in post-adoption period.

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Chapter 6
Earnings Timeliness

Chapter 6
Earnings Timeliness

6.1 Introduction

The two previous chapters present the analysis of earnings persistence and value relevance. This chapter presents the other property of earnings information: the timeliness of earnings. Earnings timeliness is substantially of interest in the literature. There are at least two main streams of debates relating to earnings timeliness analysis. First, research studies have attempted to investigate whether earnings capture economic consequences (Basu 1997; Ball et al. 2000; Ball and Shivakumar 2008; Barth et al. 2008). Second, there are considerable debates about measures for conservatism (Givoly et al. 2007; Roychowdhury and Watts 2007; Givoly and Hayn 2000).

The majority of earnings timeliness studies are conducted in efficient market countries; the study of earnings timeliness in emerging market countries is scarce (i.e. Jindrichovska and Kuo 2003). By applying to Thai datasets, this thesis investigates earnings timeliness in twofold: earnings asymmetric timeliness and unconditional accounting conservatism. The analysis of earnings asymmetric timeliness in this study is based on Basu (1997) and unconditional accounting conservatism or firm-specific conservatism measures is based on Ahmed and Duellman (2007) and Roychowdhury and Watts (2007). Consistent with the two properties of accounting numbers – earnings persistence and value relevance as presented in previous chapters – this study incorporates the book-tax difference in the analysis of earnings asymmetric timeliness in Thailand. And, based on Ahmed and Duellman (2007), the relationship between firm-specific conservatism measures and book-tax differences in Thai settings will be estimated.

The remainder of this chapter is organised as follows. In section 6.2, I discuss the hypothesis development. The research methodology is presented in Section 6.3. Sections 6.4 and 6.5 present data and results, respectively. Chapter summary is presented in Section 6.6.

6.2 Hypothesis Development

Timeliness is one attribute of accounting measures (Watts 2003a). Timeliness of accounting income is defined as the ability of earnings to incorporate return occurred in the current period (Ball et al. 2000). In the literature (i.e. Basu 1997; Ball et al. 2000; Givoly and Hayn 2000), conservatism is employed to investigate the timeliness in earnings information. Accounting recognitions are viewed as 'conservative' when firms recognise losses in a more timely fashion than gains. Givoly et al. (2007) define accounting conservatism as "*the systematic undervaluation of the entity's net assets (equity) relative to their economic value.*" However, Basu (1997) defines conditional accounting conservatism as "*capturing accountants' tendency to require a higher degree of verification for recognising good news than bad news in financial statements.*" Measuring accounting conservatism is controversial (i.e. Givoly et al. 2007). A market-based measure of earnings asymmetric timeliness proposed by Basu (1997) is an influential procedure for reporting conservatism (Ahmed and Duellman 2007; Ball et al. 2003; Pope and Walker 1999; Roychowdhury and Watts 2007). In Basu's work, reported earnings are a function of good and bad news. Good and bad news is measured by positive and negative share returns, respectively. A primary expectation is that earnings recognise bad news (loss) in a more timely manner than good news (gain). Basu's results show that earnings sensitivity to bad news is two to six times larger than to good news. The author concludes that conservatism in US firms has increased over three decades.

Furthermore, earnings timeliness has been extensively explored in an international context. Ball et al. (2000) provide evidence about accounting income property in different international institutions. They evaluate accounting income property in terms of earnings timeliness in code law countries: France, Germany and Japan and common law countries, namely Australia, Canada, USA and the UK. They argue that short-term dividend policy influences accounting income in code law countries because the government, as one of the stakeholders, shares its income in the form of firms' tax payment from firms' accounting income. They also propose the investigation of association between cash flow from operation and accounting income timeliness, hypothesising that accruals reflect economic income in a more timely manner than cash flow when there is no new information. Based on Basu's model, they summarise that common law countries have better accounting income timeliness in terms of incorporating economic losses than code law countries. Payout policy influences accounting income property in code law countries compared to common law countries. Thus, they conclude that the demand for accounting income influences the way to capture economic income in each country. Pope and Walker (1999) compare the difference in earnings timeliness between US and UK financial reporting. They augment Basu's model by incorporating prior period shocks (3-year lags) in the model to estimate whether earnings are sensitive to them. Their findings suggest that bad news is recognised in a more timely manner in UK firms compared to US firms whilst earnings timeliness in UK firms responding to good news is lower compared to US firms; earnings recognise good news with a one-year lag. Barth et al. (2008) suggest that earnings timeliness has improved in the countries adopting international accounting standards. Bushman and Piotroski (2006) investigate accounting conservatism in 38 countries by incorporating various institution factors. They find many factors shaping accounting conservatism, i.e. legal systems and political costs.

Some studies investigate the earnings timeliness in single countries probably to avoid the impact of cross-country variations. For example, Ball and Shivakumar (2005) find that private company financial reporting is of low timely loss recognition relative to public company financial reporting in the UK. Ding and Stolowy (2006) examine earnings timeliness and accounting conservatism in French firms. As the French accounting system was substantially changed in

1996, they therefore investigate whether reported earnings become more timely and conservative over the test periods. They also compare earnings timeliness and conservatism in the French firm according to size and audit quality, as well as international finance versus domestic finance firms. Their findings estimated by Basu's model show that earnings recognise bad news in a more timely manner than good news and accounting conservatism is likely to increase over time. Except for firm size, there is no difference in earnings timeliness between firms with different audit quality or international versus domestic finance firms. Jindrichovska and Mcleay (2005) report that profits are more persistent than losses and earnings conservatism is not found in the Czech market.

Since accounting information is shaped by the information environment (Bushman and Piotroski 2006), prior studies have incorporated corporate governance information on the level of a company's reporting conservatism to estimate their effects on asymmetric timeliness in earnings. This is due to the fact that corporate governance is a monitoring mechanism to enhance the quality of financial reporting. For instance, Beekes et al. (2004) find that earnings asymmetric timeliness for firms with small proportions of outside board directors are less conservative in capturing news than firms with a higher number of outside board directors in UK firms. Ahmed and Duellman (2007) find a negative relationship between the percentage of inside directors and unconditional conservatism and the positive relationship between the percentage of outside directors' shareholdings and unconditional conservatism. Lafond and Roychowdhury (2008) find that the asymmetric timeliness in earnings declines with managerial ownership. Lara et al. (2007) document that strong boards positively correlate with asymmetric timeliness of earnings in Spanish firms. Bushman et al. (2004) investigate the relationship between earnings quality and governance variables. They find that high ownership concentrations, strong incentives to directors and executives and outside directors' reputation vary inversely with earnings timeliness while board size and inside director percentage do not.

The literature also debates about the validity of conservatism measures (see Givoly et al. 2007). Prior studies (Givoly and Hayn 2000; Givoly et al. 2007) document that firm-specific conservatism measures include the level and rate of accumulation over time of negative non-operating accruals, the skewness and variability of the earnings distributions relative to the cash flows distribution and changes in the market-to-book ratio. They argue that Basu's asymmetric timeliness is negatively correlated with other firm-specific conservatism measures, i.e. market-to-book. However, Roychowdhury and Watts (2007) find the positive relationship between the asymmetric timeliness and market-to-book ratio. They employ cumulative earnings and returns to estimate the asymmetric timeliness of earnings and incorporate market-to-book in the analysis. They suggest that the asymmetric timeliness measure is of more power to capture conservatism when it is estimated over several years (Ahmed and Duellman 2007).

This thesis is motivated by the previous work performed by Ball et al. (2003). Ball et al. (2003) employ a time-series model to determine the persistence of transitory loss components in earnings in Asian countries, including Thailand. According to their samples during the period 1984–1996, Ball et al. (2003) suggest that Thailand, as a tax-based accounting income system, exhibits low earnings timeliness in loss recognition due to the influential tax accounting rules in the country. Tax rules are stringent and do not reflect economic consequences. If firms' accounting income is calculated by using tax rules, that accounting income is of low quality whereas if firms' accounting income is calculated by following accounting principles, that accounting income is of high quality. Among four Asian countries, including Hong Kong, Malaysia, Singapore and Thailand, they find that Thailand exhibits the lowest earnings timeliness in loss recognitions. Ball et al. (2003) argue that earnings timeliness is less likely in Thailand due to the fact that tax accounting influences firms' financial reporting. Thus, it is of interest to investigate whether timeliness in earnings is observed when Thailand has adopted IFRS.

This thesis adds some evidence to the prior study by incorporating book-tax differences, the deviation between book income and taxable income,[81] to examine the asymmetric timeliness of earnings in Thailand. The interpretation about book-tax difference is twofold. Prior studies suggest that a large deviation between book income and taxable income reflects the variation in quality of earnings (i.e. Lev and Nessim 2004 and Hanlon 2005). Particularly, Hanlon (2005) concludes that firms with small (positive/negative) book-tax differences have more persistent earnings than firms with large (positive/negative) book-tax differences because tax rules are more restricted than GAAP. Thus, financial reporting for small book-tax differences firms is higher quality relative to that for large book-tax differences firms. On the other hand, a large book-tax difference indicates the use of tax shelter (Desai and Dharmapala 2007). This view implies that the large book-tax difference is caused by tax strategies rather than the management of financial reporting.

Even though it is rather problematic to employ the book-tax difference as proxy for determining financial reporting quality, this thesis views that the book-tax difference is useful information to determine whether Thai listed firms prepare their financial reporting according to GAAP or tax rules. It is possibility that under a tax-based accounting system environment, high costs incurred from tax filing preparations induce firms to use more the tax-based accounting but use less GAAP. Therefore, one explanation is that large book-tax differences probably indicate the firm whose financial reporting is being prepared in line with GAAP when all else is held constant. The large book-tax difference, then, reflects higher quality of financial reporting relative to the small book-tax difference.

Moreover, earnings timeliness views persistence of earnings in different ways. Basu (1997) explains that earnings timeliness in loss recognition is less pronounced when earnings are more persistent. In the literature, Hanlon (2005)

[81] As previously described about the absolute value of book-tax differences in Chapter 4, the actual book-tax difference has been employed for this empirical chapter.

finds higher earnings persistence in small book-tax differences firms. Based on the explanation and finding, this thesis considers that firms with large book-tax differences have higher earnings timeliness relative to firms with small book-tax differences. Based on Basu (1997) and Hanlon (2005), a priori prediction is that the ability of earnings to capture economic losses for firms with large book-tax differences is higher than that for firms with small book-tax differences. According to above discussions, I establish a hypothesis as follows, stated in alternative form:

H.6.1: Earnings asymmetric timeliness is more pronounced when Thai listed firms exhibit larger book-tax differences.

In addition to the earnings asymmetric timeliness analysis, I perform additional firm-specific conservatism analysis. Following Ahmed and Duellman (2007), I employ the market-based and accrual-based conservatism as measured by book-to-market and deflated accruals, respectively. I estimate the relationship between the unconditional conservatism measures and book-tax differences. I include related control variables consisting of firm size and corporate governance factors. The next hypothesis is as follows, stated in alternative form:

H.6.2: There is a positive association between firm-specific conservatism measures and book-tax differences in Thai settings.

6.3 Research Methodology

Asymmetric timeliness in earnings

Roychowdhury and Watts (2007) suggest that cumulative earnings should be used in analysing the asymmetric timeliness. Following Roychowdhury and Watts (2007) and Ahmed and Duellman (2007), other than annual earnings and returns, I use backward cumulative earnings and returns over the past two years (year -2 to 0). I analyse the effects of book-tax differences on asymmetric timeliness by using the following model (Basu 1997).

$$EPS_{t,\,t-j}/P_{t,\,t-j-1} = \alpha_0 + \alpha_1 D_{t,\,t-j} + \gamma_0 R_{t,\,t-j} + \gamma_1 D_{t,\,t-j} {*} R_{t,\,t-j} + \varepsilon_{it} \quad (6.1)$$

where $EPS_{t,\,t-j}$ is per share earnings accumulated from year t – j to year t; when t = 1, earnings are not accumulated and j is equal to 0. $P_{t,\,t-j-1}$ is the market value of equity at the end of year t – j – 1. $R_{t,\,t-j}$ is equal to buy-and-hold security returns, beginning the 3rd month of fiscal year t – j and ending 3 months after fiscal year t (Basu 1997). $D_{t,\,t-j}$ is an indicator variable set equal to 1 if $R_{t,\,t-j}$ is less than zero and zero otherwise. The coefficient of primary interests is γ_1 and expected to be positive. Its positive sign indicates the incremental information of asymmetric timeliness, indicating that earnings are able to capture economic losses in a timely basis. To observe the variation of asymmetric timeliness in earnings for sample firms, the dataset is partitioned according to small and large positive book-tax differences. The positive sign of γ_1 is expected in firm-years with large positive book-tax differences relative to firm-years with small positive book-tax differences. Following prior studies (Ahmed and Duellman 2007; Basu 1997; Roychowdhury and Watts 2007), pooled cross-section regressions with heteroskedasticity-robust standard errors are employed to estimate the regression model.[82]

Firm-specific conservatism

Following Ahmed and Duellman (2007), I use two measures of firm-specific conservatism, including book-to-market and 3-year accumulated accruals. I attempt to estimate the variation of firm-specific conservatism in firms with

[82] It should be noted that the equation 5.1 in chapter 5 shows that share returns (R) are a function of earnings (E). However, the equation 6.1 is a regression of earnings on share returns. Beaver, Lambert and Ryan (1987) originally explain these two bivariate linear relations between share returns and earnings. They suggest that "*Each characterization is a reverse regression with respect to one another and is equally valid because a random variable can always be linearly projected onto another variable with a resulting disturbance term that is uncorrelated with the explanatory variable and with an unconditional mean of zero. The only difference between the two equations is the direction in which the disturbance terms are measured.*" (Italics from originals) The disturbance term in equation 5.1 is measured perpendicular to the E-axis, while the disturbance term in equation 6.1 is measured perpendicular to the R-axis.

difference degrees of positive book-tax differences. A priori prediction is that the larger positive book-tax difference firm tends to have more accounting conservatism relative to the smaller positive book-tax difference firm. The first firm-specific conservatism is the ratio of book-to-market (BTM).[83] For BTM, the lower ratio indicates the higher conservatism. To ease the interpretation, the ratio is multiplied by negative one. For the second firm-specific conservatism measure, the accrual-based measure, I use the ratio of accruals divided by average total asset (ACC).[84] Based on Ahmed and Duellman (2007), I add up the ratio over a 3-year period centered on year t and divided by 3 to obtain the accumulated accruals-based conservatism measure. The 3-year accumulated accruals are used as a proxy because it is to mitigate the problem of accruals reversion between the current and previous years. Again, the ratio is multiplied by negative one. The positive ACC indicates higher conservatism. I include control variables to ensure that the analysis is well specified. Also, I introduce firm governance factors in the analysis to investigate whether firms' governance systems relate firms' unconditional conservatism.

For control variables, I include leverage, sales growth rate and firm size in the analysis. Following prior studies, the higher leverage induces the higher conservatism because of the contractual demand from lenders or creditors. Thus, the positive relationship between leverage and firm-specific conservatism measures is expected. Following Ahmed and Duellman (2007), a negative relationship between the sales growth and ACC is expected because ACC is likely to be a poor measure when sales are declining. The relationship between sales growth and BTM is predicted to be positive because firms' future cash flows are expected according to the increase of sales growth. The association between firms' size and firm-specific conservatism measures is predicted to be positive because the high political cost in larger firms induces more conservatism.

[83] As previously described, the book-to-market ratio employed in this thesis does not represent growth of the firm.

[84] Accruals are calculated as follows:

CFO = Earnings before interest and tax + Depreciation – [(Changes in current assets – Changes in current liabilities)]

ACC = Earnings before interest and tax – CFO

For firm governance factors, board quality, corporate governance quality, institutional ownership and board size are included. Consistent with the previous chapters, I do not have a priori prediction on the relationship between firm-specific measures and firm governance systems. I use the number of boards that board of directors serve as board of directors or audit committee in other firms as a proxy for board quality. Firms with complexity organization and relatively low earnings timeliness tend to use highly reputable board committees because of a demand for costly monitoring (Bushman et al. 2004). However, in this setting, the constraint of time allocated to their work as board of directors in many firms can deter the quality of work, finally resulting in a lower quality of accounting information.

The proportion of audit committee and independent directors in firms' board is used to measure the quality of corporate governance systems. The greater proportion induces higher quality of accounting numbers; therefore, the greater proportion indicates higher quality of corporate governance systems. As a result, firms with high proportion should be of higher conservatism compared to firms with low proportion. According to the monitoring cost approach, however, firms with low conservatism are likely to be demanded by their shareholders to have higher proportion of audit committee and independent directors in firms' board compared to firms with high conservatism. By this approach, I should find a negative relationship between firm-specific conservatism measures and the proportion of audit committee and independent directors on firms' board.

Institutional ownership induces firms to have more conservatism according to the monitoring approach. The greater institutional ownership the more power to vote and secure the firm from private benefits taken by the manager. On the other hand, the institutional ownership is able to influence firms' board and obtain private benefits at the expense of other investors. Thus, no a priori prediction is set for this issue. I operationalise the model in the following way:

$$C_{it} = \gamma_0 + \gamma_1 RNK\_BT_{it} + \sum_{j=1}^{3}\varphi_j CG_{j,it} + \sum_{j=1}^{3}\delta_j FF_{j,it} + \varepsilon_{it} \quad (6.2)$$

where C is firm-specific conservatism measures (BTM: book-to-market or ACC: 3-year accumulated accruals deflated by the average total asset). RANK_BT is the quintiles of positive book-tax differences every year (normalised to between 0 and 1). CG is firm-specific governance factors including: BOARD_SIZE is the natural log of total number of board of directors. BOARD_QUALITY is the natural log of a number of boards that board of directors serve as audit committee or board of directors in other firms. CG_QUALITY is the sum of audit committee and independent directors divided by total number of directors in a board. FF is firm-specific factors consisting of: LEV is the natural log of total liabilities. SIZE is the natural log of total assets. SALEGRW is the percentage of annual growth in total sales. The coefficient of primary interests is γ_1 and expected to be positive. OLS firm fixed effect estimator with heteroskedasticity-robust standard errors is employed for the estimation of coefficients.

Variable definitions

Book-tax differences

Book-tax differences are calculated by the difference between earnings before interest and tax and annual taxable income. Negative and missing values of annual income tax expenses are excluded. In addition, only positive book-tax differences are employed for this empirical chapter. This analysis is not generalise to firms with negative book-tax differences. However, based on the dataset employed in this chapter, a number of firms with negative book-tax differences are small. Following Lafond and Roychowdhury (2008), I rank positive book-tax differences each year in 10 (5) groups from zero to nine (four) and then deflate the ranking by nine (four). Then, the scaled deciles (quintiles) rank of positive book-tax differences (RANK_BT) are ranging from zero to one. It should be noted that all missing and negative values of annual income tax expenses are excluded for the calculation of book-tax differences.

6.4 Data

The initial sample population chosen is based on all non-financial firms with a 31st December financial year-end. They are all public firms listed on the Stock Exchange of Thailand (SET) from 1992 to 2007. Based on the asymmetric analysis, there are 3,671 observations in total across seven industries during the period 1992–2007. Industries, consisting of agro-business, consumer products, industrial, property and construction, natural resources, service and technology, are categorised according to SET. Table 6.1 presents the distribution of the observations across industries and years.

Table 6.1 Distribution of samples across years classified by industry

Year/Industry	1	2	3	4	5	6	7	Total
1992	32	29	26	33	6	45	10	181
1993	36	31	25	31	6	50	11	190
1994	45	34	28	52	8	53	18	238
1995	49	38	36	59	10	55	25	272
1996	43	32	40	59	11	58	26	269
1997	31	19	29	51	7	53	24	214
1998	30	21	26	28	6	47	23	181
1999	34	24	33	31	7	51	17	197
2000	33	17	22	39	7	42	22	182
2001	32	17	29	31	9	43	23	184
2002	34	19	33	36	9	52	25	208
2003	38	22	31	38	9	58	23	219
2004	31	24	32	51	12	61	30	241
2005	34	24	32	67	14	64	38	273
2006	33	25	56	74	19	73	32	312
2007	36	26	52	75	19	69	33	310
Total	571	402	530	755	159	874	380	3671

1 = Agro-business, 2 = Consumer products, 3 = Industrial, 4 = Property and construction, 5 = Natural resources, 6 = Service and 7 = Technology

6.5 Results

Descriptive statistics

Table 6.2 presents descriptive statistics for each variable. To reduce the potential effect from extreme values, observations in the top and bottom 1% of annual earnings and returns (at $j = 0$), 3-year cumulative earnings and returns (at $j = 2$), and two firm-specific conservatism measures (BTM and ACC) are excluded.

Earnings and returns are considerably varied among observations because of large standard deviations compared to the mean; these seem to be general cases for emerging markets i.e. Czech Republic (Jindrichovska and McLeay 2005)[85] and Finland (Kankaanpaa, no date).[86] SET requires listed firms to constitute at least three independent directors in a firm. CG_QUALITY indicates that on average three out of ten directors are independent directors or audit committee in a firm.

Table 6.3 presents the Pearson and Spearman correlations between conservatism measures and other variables. Pearson and Spearman correlations provide very similar results. The market-based measure of conservatism (BTM) and accrual–based measure of conservatism (ACC) are not correlated. At 5% level of confidence, the market–based measure of conservatism (BTM) is not correlated with board size but positively correlated with all other variables except firm's leverage. The accrual-based measure of conservatism (ACC) is negatively correlated with board quality at 10% level but not correlated with other variables. The rank of positive book-tax differences (BT) is correlated with all other variables except ACC and CG_QUALITY.

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[85] see Table 1, 2A and 2B in the article.
[86] see Table 3 in the article

Table 6.2 Summary of Variables

Variables	Mean	SD	P25	Median	P75	Min	Max	N
EPS/P (j = 0)	0.007	0.392	0.009	0.059	0.127	-3.252	1.340	3671
R (j = 0)	-0.017	0.569	-0.379	-0.114	0.199	-0.907	3.435	3671
EPS/P (j = 2)	0.098	0.747	-0.018	0.145	0.359	-5.24	3.099	2484
R (j = 2)	-0.072	0.937	-0.701	-0.334	0.202	-0.974	6.461	2484
BTM	-0.001	0.001	-0.002	-0.001	-0.001	-0.013	0.000	2386
ACC	0.657	9.484	-0.861	0.547	2.339	-64.179	68.667	1170
LEV	0.454	0.196	0.311	0.474	0.604	0.004	0.922	2291
SIZE	14.812	1.263	13.904	14.621	15.505	12.063	20.609	2291
SALEGRW	0.269	2.000	0.013	0.115	0.257	-2.443	78.306	2291
BOARD_SIZE	2.593	0.374	2.398	2.639	2.833	0.00	3.555	2046
BOARD_ QUALITY	3.489	0.686	3.045	3.555	3.989	0.693	5.176	2046
CG_QUALITY	0.306	0.136	0.188	0.30	0.40	0.05	1.00	2046

$EPS_{t,\,t-j}$ is per share earnings accumulated from year t – j to year t; when t = 1, earnings are not accumulated and j is equal to 0. $P_{t,\,t-j-1}$ is the market value of equity at the end of year t – j – 1. $R_{t,\,t-j}$ is equal to (12-month at j = 0 or 36-month at j = 2) buy-and-hold security returns, beginning the 3rd month of fiscal year t – j and ending 3 months after fiscal year t. BTM is book-to-market. ACC is 3-year accumulated accruals deflated by the average total asset. LEV is the natural log of total liabilities. SIZE is the natural log of total assets. SALEGRW is the percentage of annual growth in total sales. BOARD_SIZE is the natural log of total number of board of directors. BOARD_QUALITY is the natural log of a number of boards that board of directors serve in other firms. CG_QUALITY is the sum of audit committee and independent directors divided by board size. N is number of observations.

Table 6.3 Correlations: Pearson (Spearman) correlation coefficients on the lower (upper) diagonal

	BTM	ACC (N= 1152)	RNK_BT	LEV	SIZE	SALEGRW	BOARD_ SIZE	BOARD_ QUALITY	CG_ QUALITY
BTM		**-0.002**	**0.2552**	**0.0535**	**0.1904**	**0.2187**	**-0.0252**	**0.0347**	**0.1733**
(N= 2046)		**0.947**	**0.0000**	**0.0155**	**0.0000**	**0.0000**	**0.2547**	**0.1164**	**0.0000**
ACC	-0.033		**-0.0037**	**0.0071**	**-0.0293**	**0.0068**	**-0.006**	**-0.0536**	**-0.0171**
(N= 1152)	0.2628		**0.8999**	**0.8109**	**0.3209**	**0.8188**	**0.8386**	**0.0690**	**0.5623**
RNK_BT	0.1187	-0.008		**0.2918**	**0.7326**	**0.1909**	**0.0706**	**0.1658**	**-0.0038**
(N= 2046)	0.0000	0.798		**0.0000**	**0.0000**	**0.0000**	**0.0014**	**0.0000**	**0.8638**
LEV	-0.0718	0.025	0.2864		**0.3858**	**0.199**	**-0.1642**	**-0.1109**	**-0.235**
(N= 2046)	0.0012	0.400	0.0000		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**
SIZE	0.0589	-0.003	0.7155	0.3636		**0.1668**	**0.1762**	**0.3004**	**-0.0192**
(N= 2046)	0.0077	0.922	0.0000	0.0000		**0.0000**	**0.0000**	**0.0000**	**0.3861**
SALEGRW	0.045	-0.003	0.0704	-0.0095	0.0948		**-0.0924**	**-0.0551**	**-0.036**
(N= 2046)	0.0420	0.909	0.0014	0.6674	0.0000		**0.0000**	**0.0126**	**0.1032**
BOARD_ SIZE	0.0247	0.047	0.0643	-0.1469	0.1884	-0.0083		**0.7495**	**0.0672**
(N= 2046)	0.2643	0.110	0.0036	0.0000	0.0000	0.7092		**0.0000**	**0.0023**
BOARD_ QUALITY	0.0433	0.023	0.1489	-0.1082	0.3204	0.0044	0.7748		**0.1311**
(N= 2046)	0.0503	0.436	0.0000	0.0000	0.0000	0.8440	0.0000		**0.0000**
CG_QUALITY	0.2051	-0.004	0.0053	-0.2278	0.0073	-0.0492	-0.0245	0.093	
(N= 2046)	0.0000	0.895	0.8110	0.0000	0.7428	0.0259	0.2685	0.0000	

BTM is book-to-market. ACC is 3-year accumulated accruals deflated by the average total asset. RNK_BT is the quintiles of positive book-tax differences every year (normalised to between 0 and 1). LEV is the natural log of total liabilities. SIZE is the natural log of total assets. SALEGRW is the percentage of annual growth in total sales. BOARD_SIZE is the natural log of total number of board of directors. BOARD_QUALITY is the natural log of a number of boards that board of directors serve in other firms. CG_QUALITY is the sum of audit committee and independent directors divided by board size. N is number of observations. Negative annual income tax expenses are excluded.

Results from earnings asymmetric timeliness

Table 6.4 presents the asymmetric timeliness of earnings at j = 0 and 2. In Panel A, annual earnings-return regressions report that asymmetric timeliness in earnings is observed in Thai firms during the period 1993–2007. The coefficient estimate, γ_1, is positive and significant. The adjusted R^2 is 3.9%.[87] When using cumulative earnings and returns, the result is consistent with that using annual earnings and returns. Earnings in Thai firms are able to capture economic losses during the period 1994–2007. The adjusted R^2 is 6.9% and higher than the result reported from annual earnings and returns regressions.[88]

I further compare the asymmetric timeliness in earnings between pre- and post-adoption periods in Thailand. This is to investigate whether earnings are of higher quality in terms of timeliness after IFRS adoptions in Thailand. Results from annual and cumulative earnings and returns indicate that earnings timeliness is declined or unobserved after IFRS adoptions. It indicates that the ability to capture economic circumstances is less likely in Thailand after 1999. A potential explanation that earnings timeliness is less likely during post-adoption periods is because earnings are more persistent during post-adoption periods. The finding about earnings persistence is reported in Chapter 4. Thus, this thesis argues that it is possibility that the persistence of earnings deteriorates the ability to capture economic consequences in a timely fashion after IFRS adoptions in Thailand.

[87] Basu (1997 Table 1) reports the adjusted R^2 is 10.09% in US firms. The asymmetric timeliness in earnings is not observed in many countries, i.e. Czech Republic (Jindrichovska and McLeay 2005), Finland (Kankaanpaa, no date, see Tables 5 and 6 in the article) and other European countries (see Grudnitski and Aubert 2008).

[88] Based on Basu (1997), an alternative procedure to evaluate the asymmetric timeliness in earnings is by comparing the explanatory power when firms are partitioned according to gains (positive returns) and losses (negative returns). The explanatory power for firms with negative returns is expected to be higher than that for firms with positive returns, indicating that economic losses are captured by earnings in a more timely fashion. Appendix 9 reports more results of asymmetric timeliness in earnings by partitioning the dataset according to positive (economic gains) and negative (economic losses) returns. The adjusted R^2 is compared between two groups. Consistent with the result presented in Table 6.4, Panel A, findings suggest that the adjusted R^2 for the sample firm with negative returns is greater than that for the sample firm with positive returns.

Table 6.4 Asymmetric timeliness in earnings: Earnings-returns regressions (j = 0) and cumulative earnings-returns regressions (j = 2)

$$EPS_{t,\,t-j}/P_{t,\,t-j-1} = \alpha_0 + \alpha_1 D_{t,\,t-j} + \gamma_0 R_{t,\,t-j} + \gamma_1 D_{t,\,t-j} * R_{t,\,t-j} + \varepsilon_{i,t}$$

Panel A

	j = 0 (1992–2007)			j = 2 (1994–2007)		
	Estimate	*t*-value	*p*-value	Estimate	*t*-value	*p*-value
Intercept	0.070	5.75	0.000	0.211	5.07	0.000
D_{it}	-0.028	-1.55	0.121	-0.025	-0.46	0.642
R_{it}	0.033	1.33	0.184	0.131	2.96	0.003
$R_{it}*D_{it}$ (+)	**0.214**	**4.85**	**0.000**	**0.232**	**3.45**	**0.001**
Adj. R^2			0.039			0.069
N			3671			2484

Panel B: j = 0

	Pre-adoption (1992–1999)			Post-adoption (2000–2007)		
	Estimate	*t*-value	*p*-value	Estimate	*t*-value	*p*-value
Intercept	0.009	0.37	0.710	0.102	8.25	0.000
D_{it}	0.053	1.64	0.102	-0.079	-3.96	0.000
R_{it}	0.007	0.16	0.873	0.064	2.26	0.024
$R_{it}*D_{it}$ (+)	**0.335**	**4.59**	**0.000**	0.061	1.36	0.174
Adj. R^2			0.025			0.062
N			1742			1929

Panel C: j = 2

	Pre-adoption (1992–1999)			Post-adoption (2000–2007)		
	Estimate	*t*-value	*p*-value	Estimate	*t*-value	*p*-value
Intercept	-0.006	-0.08	0.933	0.265	5.52	0.000
D_{it}	0.230	2.86	0.004	-0.123	-1.76	0.079
R_{it}	0.248	3.82	0.000	0.106	2.11	0.035
$R_{it}*D_{it}$ (+)	**0.266**	**3.01**	**0.003**	0.064	0.72	0.473
Adj. R^2			0.100			0.042
N			1007			1477

$EPS_{t,\,t-j}$ is equal to cumulative earnings per share from year t – j to year t; $P_{t,\,t-j-1}$ is the market value of equity at the end of year t – j – 1; $R_{t,\,t-j}$ is equal to (12-month at j = 0 or 36-month at j = 2) buy-and-hold security returns, beginning the 3rd month of fiscal year t – j and ending 3 months after fiscal year t; $D_{t,\,t-j}$ is an indicator variable set equal to 1 if $R_{t,\,t-j}$ is less than zero and zero otherwise and N is the number of observations. Observations in the top and bottom 1% of price-deflated earnings and returns are truncated. Predicted signs are shown in the parentheses. t-values are two-tailed values computed by adjusting with heteroskedasticity-robust standard errors. Test variables and their statistics are presented in bold typeface.

Table 6.5 reports whether the institutional factor, book-tax differences, plays an important role to determine the asymmetric timeliness in earnings. The positive book-tax difference is ranked in ten groups every year from low to high book-tax differences. Then, the ranking is scaled to zero (least positive) and one (most positive). The scaled rank of book-tax differences is integrated with all other variables. A priori prediction is that earnings timeliness is more likely for firms with large book-tax differences. Therefore, the predicted sign of γ_3 is positive. Results in Panel A suggest that asymmetric timeliness in earnings are more likely for Thai listed firms with larger positive book-tax differences (γ_3 = .091 with positive sign).

In Panel B of Table 6.5, the data are partitioned according to the level of book-tax differences. Low (high) threshold includes firms with low (high) scale of book-tax differences. An indicator variable (YR) for pre- and post-adoption periods is integrated to bad news and good news variables to estimate whether earnings timeliness is improved after the IFRS adoption. The α_7 with positive sign is expected for firms in both low and high thresholds.

At j = 0 in Panel B, results show that α_7 (.139) is positive and significant for firms in high threshold, suggesting that conditional conservatism is more likely for firms with large book-tax differences. It infers that even though new accounting standards have been adopted in Thailand, earnings quality in terms of conditional conservatism is still less likely when firms are more likely to use more tax rules for financial statement preparations. At j = 2, untabulated findings are not significant. Thus, I perform additional tests to support these main findings in robustness checks.

Table 6.5 Asymmetric timeliness in earnings (1992–2007) – Positive book-tax differences. Predicted signs are shown in parentheses. t-values are two-tailed values computed by adjusting with heteroskedasticity-robust standard errors. Test variables and their statistics are presented in bold typeface. Positive book-tax differences are ranked in ten groups every year from small (group 1) to large (group 10) book-tax differences.

Panel A: j = 0

$$EPS_{t,\,t-j}/P_{t,\,t-j-1} = \alpha_0 + \alpha_1 D_{it} + \alpha_2 BT_{it} + \alpha_3 D_{it} * BT_{it} + \gamma_0 R_{it\text{-}j} + \gamma_1 D_{it} *R_{it} + \gamma_2 BT_{it} *R_{it\text{-}j} + \gamma_3 D_{it} * BT_{it} * R_{it\text{-}j} + \varepsilon_{it}$$

	Estimate	*t*-value	*p*-value
Intercept	0.068	6.02	0.000
D_{it}	-0.019	-1.71	0.087
BT_{it}	0.086	4.09	0.000
D_{it} *BT_{it}	0.000	0.00	0.998
R_{it}	0.137	6.31	0.000
D_{it}*R_{it} (+)	-0.067	-2.30	0.022
BT_{it}*R_{it}	-0.104	-2.97	0.003
BT_{it}*R_{it}*D_{it} (+)	**0.091**	**1.82**	**0.070**
Adj. R^2			0.332
N			2051

Panel B: j = 0

$$EPS_{t,\,t-j}/P_{t,\,t-j-1} = \alpha_0 + \alpha_1 D_{it} + \alpha_2 YR_{it} + \alpha_3 D_{it} *YR_{it} + \alpha_4 R_{it} + \alpha_5 D_{it}*R_{it} + \alpha_6 YR_{it}*R_{it} + \alpha_7 D_{it}*YR_{it}*R_{it} + \varepsilon_{it}$$

	Low threshold (1-8)			High threshold (9-10)		
	Estimate	*t*-value	*p*-value	Estimate	*t*-value	*p*-value
Intercept	0.094	10.29	0.000	0.077	4.46	0.000
D_{it}	-0.009	-0.87	0.384	-0.010	-0.37	0.713
YR_{it}	0.032	2.46	0.014	0.081	2.72	0.007
D_{it} *YR_{it}	-0.019	-1.24	0.215	-0.031	-0.93	0.351
R_{it}	0.082	3.40	0.001	0.041	1.17	0.243
D_{it}*R_{it} (+)	-0.024	-0.82	0.413	-0.049	-0.99	0.322
YR_{it}*R_{it}	0.030	1.02	0.306	-0.059	-1.23	0.218
D_{it}*YR_{it}*R_{it} (+)	0.010	0.26	0.793	**0.139**	**1.66**	**0.099**
Adj. R^2			0.367			0.282
N			1647			404

$EPS_{t,\,t-j}$ is equal to cumulative earnings per share from year t – j to year t; $P_{t,\,t-j-1}$ is the market value of equity at the end of year t – j – 1; $R_{t,\,t-j}$ is equal to (12-month at j = 0 and 36-month at j = 2) buy-and-hold security returns, beginning the 3rd month of fiscal year t – j and ending 3 months after fiscal year t and ending 3 months after fiscal year t; BT_{it} is the scaled deciles rank of positive book-tax difference, normalised between 0 and 1; D_{tt} is an indicator variable set equal to 1 if $R_{t,\,t-j}$ is less than zero and zero otherwise and N is number of observations. YR_{it} is an indicator variable set equal to 0 for pre-adoption periods (1992–999) and 0 otherwise (2000–2007). Observations in the top and bottom 1% of price-deflated earnings and returns are deleted. Negative annual income tax expenses are excluded. OLS regressions with firm fixed-effect and heteroskedasticity-robust standard errors are applied for the estimation.

Results from firm specific conservatism

Table 6.6 reports the result obtained from the market-based firm specific conservatism measure (BTM). I regress BTM on the quintiles of positive book-tax difference. Consistent with the scaled deciles rank of positive book-tax differences, positive book-tax differences are ranked in five groups each year and normalised between 0 and 1. Without control variables, results highlighted with bold typeface indicate that the conservatism varies according to the scale of book-tax differences. The significantly positive relationship between the ratio of book-to-market (BTM) and the rank of book-tax difference (RNK_BT) indicates that the larger book-tax difference induces more unconditional accounting conservatism. This result is consistent when including control variables. Inconsistent with a priori predictions, results suggest that the market-based conservatism is negatively associated with leverage and firm size.

When adding firm governance systems into the analysis, the relationship between BTM and book-tax differences remains positive. Accounting conservatism is more likely to improve according to larger board size. The higher ratio of independent directors and audit committee in firms' board induces more accounting conservatism, indicating that corporate governance systems in terms of independence induce accounting conservatism.

Results report negative relationship between BTM and board quality measured by the number of boards that board of directors serve as executive directors in other firms. A potential explanation for this negative relationship is that the quality of work is more likely to decline when one director works on too many boards.[89] For control variables, only the relationship between BTM and sales growth follows the predicted sign but is insignificant. In addition, the adjusted R^2 and F-statistics are improved when including control and corporate governance factors.

[89] It should be noted that the coefficient estimates are relatively small. This is rather consistent with the prior study. Ahmed and Duellman (2007) report the coefficient (quoted in absolute values) of BTM and board size (ranging from 0.028 to 0.129), BTM and sales growth (ranging from 0.003 to 0.007) and ACC and board size (ranging from 0.008 – 0.010), ACC and sales growth (ranging from 0.005 – 0.008).

Table 6.7 reports the relationship between accrual-based conservatism (ACC) and positive book-tax differences. Findings reports no relationship between ACC and the scaled quintiles rank of positive book-tax differences. The findings are consistent when including control variables and firm governance proxies. The adjusted R^2 is not considerably altered when including fundamental and corporate governance factors. F-statistics are not significant. These results when using ACC are contradicted with the results reported in Table 6.6. One potential explanation is that accrual-based conservatism may involve earnings management. Thus, these two regressions are re-estimated by controlling for earnings management as presented in the robust test.[90]

Robustness checks

In terms of earnings timeliness, I compare the explanatory power when partitioning the dataset according to good news and bad news (Basu 1997). As reported in Table 6.8, the explanatory power for bad news is higher than that for good news at j = 0 and j = 2, suggesting that bad news can explain earnings better than good news. This implies that earnings asymmetric timeliness is more likely in Thai firms.

[90] Appendix 10 presents results when calculating the book-tax difference from consolidated financial statements. It should be noted that the result is consistent when using the mean-reverting model to estimate the asymmetric timeliness of earnings, and estimating the relationship between firm-specific accounting conservatism and the scaled quintiles rank of book-tax differences.

Table 6.6 Firm-specific conservatism (BTM): OLS regressions with firm fixed-effect (1993–2007)

$$C_{it} = \gamma_0 + \gamma_1 RNK\_BT_{it} + \sum_{j=1}^{3}\varphi_j CG_{j,it} + \sum_{j=1}^{3}\delta_j FF_{j,it} + \varepsilon_{it}$$

C = BTM	Estimate	*t*-value	*p*-value	Estimate	*t*-value	*p*-value	Estimate	*t*-value	*p*-value	Estimate	*t*-value	*p*-value
Intercept (?)	-0.0015	-17.14	0.000	0.0075	6.82	0.000	0.0041	2.96	0.003	0.0032	2.39	0.017
RNK_BT (+)	**0.0004**	**2.28**	**0.023**	**0.0007**	**4.01**	**0.000**	**0.0005**	**2.84**	**0.005**			
Firm governance variables (CG)												
BOARD_SIZE (?)							0.0007	2.33	0.020	0.0007	2.32	0.020
BOARD_QUALITY (?)							-0.0007	-4.10	0.000	-0.0007	-4.14	0.000
CG_QUALITY (?)							0.0025	6.49	0.000	0.0025	6.57	0.000
Control variables(FF)												
LEV (+)				-0.0011	-3.92	0.000	-0.0011	-3.78	0.000	-0.0012	-3.97	0.000
SIZE (+)				-0.0006	-7.69	0.000	-0.0004	-3.35	0.001	-0.0003	-2.71	0.007
SALEGRW (+)				0.0000	0.91	0.365	0.0000	0.85	0.397	0.0000	0.90	0.367
Adj. R^2			0.176			0.208			0.308			0.305
N			2386			2291			2046			2046
F-stat			5.21			18.52			12.60			13.88

C is firm-specific conservatism measure (BTM: book-to-market or ACC: 3-year accumulated accruals deflated by the average total asset); RANK_BT is the quintiles of positive book-tax differences every year (normalised to between 0 and 1). LEV is the natural log of total liabilities. SIZE is the natural log of total assets. SALEGRW is the percentage of annual growth in total sales. BOARD_SIZE is the natural log of total number of board of directors. BOARD_QUALITY is the natural log of a number of boards that board of directors serve in other firms. C CG_QUALITY is the sum of audit committee and independent directors divided by board size. N is number of observations.

Observations in the top or bottom 1% of BTM and ACC are truncated. Negative annual income tax expenses are excluded. Predicted sign is shown in the parentheses. *t*-values are two-tailed values computed by using heteroskedasticity-robust standard errors.

Table 6.7 Firm-specific conservatism (ACC): OLS regressions with firm fixed-effect (1994–2006)

$$C_{it} = \gamma_0 + \gamma_1 RNK\_BT_{it} + \sum_{j=1}^{3}\varphi_j CG_{j,it} + \sum_{j=1}^{3}\delta_j FF_{j,it} + \varepsilon_{it}$$

C = ACC	Estimate	*t*-value	*p*-value	Estimate	*t*-value	*p*-value	Estimate	*t*-value	*p*-value	Estimate	*t*-value	*p*-value
Intercept (?)	0.306	0.37	0.712	13.656	0.89	0.373	11.343	0.63	0.527	8.500	0.48	0.628
RNK_BT (+)	0.711	0.44	0.661	1.432	0.84	0.404	1.549	0.92	0.360			
Firm governance variables (CG)												
BOARD_SIZE (?)							-1.955	-0.61	0.542	-1.891	-0.59	0.555
BOARD_QUALITY (?)							0.092	0.04	0.964	0.087	0.04	0.966
CG_QUALITY (?)							0.237	0.05	0.960	0.470	0.10	0.921
Control variables (FF)												
LEV (+)				4.449	1.10	0.274	3.657	0.84	0.400	3.412	0.79	0.427
SIZE (+)				-1.046	-1.00	0.316	-0.548	-0.41	0.685	-0.315	-0.24	0.810
SALEGRW (-)				-0.274	-0.34	0.733	-0.260	-0.33	0.741	-0.179	-0.23	0.820
Adj. R^2			0.2071			0.2074			0.206			0.206
N			1170			1170			1168			1168
F- stat			0.21			0.21			0.59			0.51

C is firm-specific conservatism measure (BTM: book-to-market or ACC: 3-year accumulated accruals deflated by the average total asset); RANK_BT is the quintiles of positive book-tax differences every year (normalised to between 0 and 1). LEV is the natural log of total liabilities. SIZE is the natural log of total assets. SALEGRW is the percentage of annual growth in total sales. BOARD_SIZE is the natural log of total number of board of directors. BOARD_QUALITY is the natural log of a number of boards that board of directors serve in other firms. C CG_QUALITY is the sum of audit committee and independent directors divided by board size. N is number of observations.
Observations in the top or bottom 1% of BTM and ACC are truncated. Negative annual income tax expenses are excluded. Predicted sign is shown in the parentheses. *t*-values are two-tailed values computed by using heteroskedasticity-robust standard errors.

Table 6.8 Robustness checks: Partitioning data by good news and bad news

$$EPS_{t,\,t-j}/P_{t,\,t-j-1} = \alpha_0 + + \gamma_0 R_{t,\,t-j} + \varepsilon_{i,t}$$

j = 0

	Intercept	γ_0	Adj. R^2	N
Good news	0.066 (4.92)***	0.040 (1.57)	**0.003**	1343
Bad news	0.031 (2.16)**	0.240 (6.22)***	**0.017**	2114

j = 2

	Intercept	γ_0	Adj. R^2	N
Good news	0.211 (5.07)***	0.131 (2.96)***	**0.021**	811
Bad news	0.186 (5.39)***	0.363 (7.17)***	**0.025**	1673

$EPS_{t,\,t-j}$ is equal to cumulative earnings per share from year t – j to year t; $P_{t,\,t-j-1}$ is the market value of equity at the end of year t – j – 1; $R_{t,\,t-j}$ is equal to (12-month at j = 0 or 36-month at j = 2) buy-and-hold security returns, beginning the 3rd month of fiscal year t – j and ending 3 months after fiscal year t and ending 3 months after fiscal year t and N is number of observations. Predicted signs are shown in the parentheses. t-values are two-tailed values computed by adjusting with heteroskedasticity-robust standard errors. ***,** Significant at 0.01 and 0.05 level, respectively (two-tailed).

I further investigate the conditional accounting conservatism by analysing the persistence of negative earnings changes. Basu (1997) suggests that negative earnings are transitory and they are mean reverting, suggesting that negative earnings tend to reverse in next periods of time. Following Ball and Shivakumar (2005), I regress changes in current year net earnings on changes in previous year net earnings (ΔNI). The negative relation between those two variables is expected. An indicator variable (D_{it}) is set to capture the difference between positive and negative earnings changes. Net earnings changes are scaled by the total asset at the end of year t – 1. The model is performed as follows:

$$\Delta NI_{it}/TA_{it-1} = \alpha_0 + \alpha_1 D_{it} + \gamma_0 \Delta NI_{it-1}/TA_{it-2} + \gamma_1 D_{it} * \Delta NI_{it-1}/TA_{it-2} + \varepsilon_{it} \quad (6.6)$$

As presented in Table 6.9, Panel A, the coefficient γ_1 is negative as expected, suggesting that earnings timeliness is more likely in Thai firms. The explanatory power for negative earnings changes is higher than that for positive earnings changes, as reported in Panel B. This supports the result reported in Panel A. When comparing between pre- and post-adoption periods reported in Panel C, findings suggest that earnings timeliness is not observed during post-adoption periods. These results are consistent with the result obtained from the market-based regressions[91] that earnings timeliness has not been improved during post-adoption periods. In Panel D, I estimate whether the persistence of negative earnings changes varies according to positive book-tax differences. The scaled deciles rank of book-tax differences is integrated with all variables. The predicted sign of γ_3 is negative. As predicted, γ_3 is negative and significant. The result is consistent with the finding obtained from the market-based model at j = 0 presented in Table. 6.5. According to the analysis of negative earnings persistence, earnings timeliness is more likely in Thai firms and is higher for firms with large book-tax differences relative to small book-tax differences.

In addition to the market-based earnings asymmetric timeliness, I employ the accrual-based earnings timeliness as suggested by Ball and Shivakumar (2005). Although accruals and cash flows have negative relationship according to their nature, the accrual-based earnings asymmetric timeliness suggests that the negative cash flows should reflect in negative accruals. Therefore, the positive relationship between accruals and cash flows should be observed when cash flows are negative. This positive relationship indicates that earnings are able to capture economic losses in a timely fashion. Thus, the accrual-based earnings asymmetric timeliness is derived as follows.

$$AC_{it} = \alpha_0 + \alpha_1 D_{it} + \gamma_0 CFO_{it} + \gamma_1 D_{it} * CFO_{it} + \varepsilon_{it} \quad (6.7)$$

[91] See Table 6.4 – Panel B and C.

Table 6.9 Robustness checks: The persistence of negative earnings changes (1993 –2007)

$\Delta NI_{it}/TA_{it-1} = \alpha_0 + \alpha_1 D_{it} + \gamma_0 \Delta NI_{it-1}/TA_{it-2} + \gamma_1 D_{it} * \Delta NI_{it-1}/TA_{it-2} + \varepsilon_{it}$

Panel A

	Estimate	*t*-value	*p*-value
Intercept	0.004	1.62	0.106
D_{it}	-0.034	-8.72	0.000
$\Delta NI_{it-1}/TA_{it-2}$	-0.201	-5.76	0.000
$D_{it} * \Delta NI_{it-1}/TA_{it-2}$ (-)	**-0.381**	**-6.10**	**0.000**
Adj. R^2			**0.106**
N			4195

Panel B

	Intercept	γ_0	Adj. R^2	N
Positive changes	0.004	-0.201	**0.035**	2285
	1.62	(-5.76)***		
Negative changes	-0.030	-0.582	**0.145**	1910
	(-9.54)***	(-11.24)***		

Panel C

	Pre-adoption (1993–1999)			Post-adoption (2000–2007)		
	Estimate	*t*-value	*p*-value	Estimate	*t*-value	*p*-value
Intercept	-0.006	-1.78	0.075	0.013	3.85	0.000
D_{it}	-0.055	-9.56	0.000	-0.009	-1.83	0.067
$\Delta NI_{it-1}/TA_{it-2}$	-0.176	-4.73	0.000	-0.229	-3.39	0.001
$D_{it} * \Delta NI_{it-1}/TA_{it-2}$ (-)	**-0.699**	**-9.48**	**0.000**	0.042	0.45	0.656
Adj. R^2			0.192			0.039
N			2064			2131

Panel D: $\Delta NI_{it}/TA_{it-1} = \alpha_0 + \alpha_1 D_{it} + \alpha_2 BT_{it} + \alpha_3 D_{it} * BT_{it} + \gamma_0 \Delta NI_{it-1}/TA_{it-2} + \gamma_1 D_{it} * \Delta NI_{it-1}/TA_{it-2} + \gamma_2 BT_{it} * \Delta NI_{it-1}/TA_{it-2} + \gamma_3 D_{it} * BT_{it} * \Delta NI_{it-1}/TA_{it-2} + \varepsilon_{it}$

	Estimate	*t*-value	*p*-value
Intercept	-0.015	-3.13	0.002
D_{it}	0.000	-0.03	0.979
BT_{it}	0.042	4.53	0.000
$D_{it} * BT_{it}$	-0.004	-0.43	0.670
$\Delta NI_{it-1}/TA_{it-2}$	-0.120	-1.47	0.142
$D_{it} * \Delta NI_{it-1}/TA_{it-2}$ (-)	-0.114	-0.77	0.441
$BT_{it} * \Delta NI_{it-1}/TA_{it-2}$	0.106	0.76	0.446
$D_{it} * BT_{it} * \Delta NI_{it-1}/TA_{it-2}$ (-)	**-0.734**	**-2.86**	**0.004**
Adj. R^2			0.150
N			2219

ΔNI_{it-j} is the difference in net earnings between year t and t-j; TA_{it-j} is the total asset at the end of year t-j; D is indicator variable set equal to 1 if ΔNI_{it-1} is less than zero and zero otherwise. Observations in the top and bottom 1% of ΔNI_{it} and ΔNI_{it-1} are truncated. Predicted sign is shown in the parentheses. N is the number of observations. BT_{it} is the scaled deciles rank of positive book-tax difference, normalised between 0 and 1. Negative annual income tax expenses are excluded. *t*-values are two-tailed values computed by adjusting heteroskedasticity-robust standard errors. Test variables and their statistics are presented in bold typeface. Firm-fixed effect estimation is applied for the analysis in panel D.

where AC is the accrual deflated by the total asset; D is an indicator variable equal to 1 when CFO is negative, or 0 otherwise; CFO is cash flows from operation scaled by the total asset; and ε is error term. γ_1 is a primary coefficient of interest and expected to be positive. Following the prior study, the pooled cross-section with heteroskedasticity-robust standard errors is applied to obtain coefficient estimates.

After excluding extreme values of both AC and CFO, results from the accrual-based earnings asymmetric timeliness are presented in Table 6.10. From Panel A, the predicted sign of γ_1 is positive, but the result reports the negative sign. This suggests that the earnings timeliness is less likely in terms of accrual-based analysis. When partitioning the dataset according to pre- and post-adoption periods as reported in Panel B, the coefficient γ_1 remains negative and significant. Consistent with the market-based earnings timeliness analysis (see Table 6.4), the ability of earnings in capturing economic consequences is less likely after IFRS adoptions. Panel C reports the analysis of earnings timeliness when incorporating the information of positive book-tax differences. I construct the scaled deciles rank of the positive book-tax difference each year. Then, the scaled rank is integrated with all variables. Results report that the coefficient γ_3 is positive but insignificant.[92]

[92] When partitioning sample firms with positive and negative cash flow, the adjusted R^2 for both groups are not different (equal to 42.14% vs. 42.12%, respectively). The result is not tabulated.

Table 6.10 Robustness checks: Accrual-based timeliness (1993–2007)

$$AC_{it} = \alpha_0 + \alpha_1 D_{it} + \gamma_0 CFO_{it} + \gamma_1 D_{it} * CFO_{it} + \varepsilon_{it}$$

Panel A

	Estimate	*t*-value	*p*-value
Intercept	0.037	12.92	0.000
D_{it}	0.020	2.28	0.022
CFO_{it} (-)	-0.638	-38.02	0.000
$D_{it}*CFO_{it}$ (+)	-0.196	-2.91	0.004
Adj. R^2			0.615
N			3180

Panel B

	Pre-adoption (1993–1999)			Post-adoption (2000–2007)		
	Estimate	*t*-value	*p*-value	Estimate	*t*-value	*p*-value
Intercept	0.060	11.46	0.000	0.024	7.24	0.000
D_{it}	0.009	0.71	0.479	0.026	2.26	0.024
CFO_{it} (-)	-0.782	-30.52	0.000	-0.545	-25.72	0.000
$D_{it}*CFO_{it}$ (+)	-0.214	-3.54	0.000	-0.202	-2.19	0.029
Adj. R^2			0.723			0.549
N			1059			2121

$$AC_{i,t} = \alpha_0 + \alpha_1 D_{it} + \alpha_2 BT_{it} + \alpha_3 D_{it} * BT_{it} + \gamma_0 CFO_{it} + \gamma_1 D_{it} * CFO_{it} + \gamma_2 BT_{it} * CFO_{it} + \gamma_3 D_{it} * BT_{it} * CFO_{it} + \varepsilon_{it}$$

Panel C

	Estimates	*t*-value	*p*-value
Intercept	0.039	5.18	0.000
D_{it}	0.036	1.35	0.178
BT_{it}	0.095	6.54	0.000
$D_{it} * BT_{it}$	0.004	0.10	0.917
CFO_{it} (-)	-0.706	-20.87	0.000
$D_{it}*CFO_{it}$ (+)	-0.505	-2.50	0.012
$BT_{it}*CFO_{it}$	-0.139	-2.15	0.031
$BT_{it}*CFO_{it}*D_{it}$ (+)	0.420	1.39	0.165
Adj. R^2			0.815
N			1632

AC is the accrual divided by the beginning of total asset; CFO is cash flows from operation divided by the beginning of total asset; D is an indicator variable set equal to 1 if CFO is less than zero and zero otherwise. Observations in the top and bottom 1% of AC and CFO are truncated. Predicted sign is shown in the parentheses.
CFO = Earnings before interest and tax + Depreciation – (Changes in current asset – Changes in current liabilities). AC = Earnings before interest and tax - CFO
BT is the scaled deciles of positive book-tax differences at every the end of year t and normalised from 0 to 1and N is the number of observations. Negative annual income tax expenses are excluded. *t*-values are two-tailed values computed by adjusting heteroskedasticity-robust standard errors. Test variables and their statistics are presented in bold typeface. Firm-fixed effect estimation is applied for the analysis in panel C.

Based on the market-based model and the persistence of negative earnings changes model, these findings suggest that the ability of earnings in capturing economic losses is varied according to positive book-tax differences in Thai settings. Relative to firms with small positive book-tax differences, the ability of earnings in firms with large positive book-tax differences is more likely to capture economic outcomes in a timely basis.

I further estimate earnings timeliness conditional to the scaled deciles rank of positive book-tax differences during post-adoption periods in Thailand. As presented in Table 6.11, I estimate by using all three models during post-adoption periods. Results shown in the bold typeface suggest that earnings timeliness varies according to the scale of book-tax differences, that firms with larger book-tax difference tend to have higher earnings timeliness. However, the market-based model in Panel A reports positive sign of the coefficient γ_3 but insignificant.

As the analysis of firm-specific accounting conservatism measured by accumulated accruals (ACC) provides insignificant results, this thesis argues that earnings management is an important candidate to be used as an alternative explanation. It is due to the fact that accruals are subject to the management's discretion. Thus, I partition sample firms according to the degree of discretionary accruals. By using the industry modified Jones' discretionary accruals[93] and excluding extreme values, I divide the sample firm each year into three thresholds from low to high discretionary accruals. The higher discretionary accruals reflect more activity for earnings management. Therefore, firm-specific conservatism is more likely to be observed in firms with low discretionary accruals relative to firms with high discretionary accruals.

[93] See footnote 54. However, the constant term is included to estimate the modified Jones model in equation (3) for this sensitivity analysis (see Ayer et al. 2009).

Table 6.11 Robustness checks: 2000–2007

Panel A: $EPS_{i,t} = \alpha_0 + \alpha_1 D_{it} + \alpha_2 BT_{it} + \alpha_3 D_{it} * BT_{it} + \gamma_0 R_{it} + \gamma_1 D_{it} *R_{it} + \gamma_2 BT_{it} *R_{it} + \gamma_3 D_{it} * BT_{it} * R_{it-j} + \varepsilon_{it}$

	Estimate	t-value	p-value
Intercept	0.080	3.95	0.000
D_{it}	-0.022	-1.21	0.228
BT_{it}	0.097	2.86	0.004
$D_{it} *BT_{it}$	0.024	0.69	0.493
R_{it}	0.174	4.67	0.000
$D_{it}*R_{it}$ (+)	-0.106	-1.97	0.049
$BT_{it}*R_{it}$	-0.122	-2.27	0.023
$BT_{it}*R_{it}*D_{it}$ (+)	0.165	1.55	0.121
Adj. R^2			0.392
N			891

Panel B: $\Delta NI_{it} /TA_{it-1} = \alpha_0 + \alpha_1 D_{it} + \alpha_2 BT_{it} + \alpha_3 D_{it}* BT_{it} + \gamma_0 \Delta NI_{it-1} /TA_{it-2} + \gamma_1 D_{it} * \Delta NI_{it-1} /TA_{it-2} + \gamma_2 BT_{it} * \Delta NI_{it-1} /TA_{it-2} + \gamma_3 D_{it} * BT_{it} * \Delta NI_{it-1} /TA_{it-2} + \varepsilon_{it}$

	Estimate	t-value	p-value
Intercept	-0.028	-3.58	0.000
D_{it}	0.008	1.06	0.290
BT_{it}	0.070	4.54	0.000
$D_{it}* BT_{it}$	0.001	0.05	0.960
$\Delta NI_{it-1} /TA_{it-2}$	-0.381	-3.18	0.002
$D_{it} * \Delta NI_{it-1} /TA_{it-2}$ (-)	0.319	1.31	0.189
$BT_{it} * \Delta NI_{it-1} /TA_{it-2}$	0.581	2.64	0.008
$D_{it} * BT_{it} * \Delta NI_{it-1} /TA_{it-2}$ (-)	**-0.975**	**-2.41**	**0.016**
Adj. R^2			0.208
N			936

Panel C: $AC_{i,t} = \alpha_0 + \alpha_1 D_{it} + \alpha_2 BT_{it} + \alpha_3 D_{it} * BT_{it} + \gamma_0 CFO_{it} + \gamma_1 D_{it} *CFO_{it} + \gamma_2 BT_{it} * CFO_{it} + \gamma_3 D_{it} * BT_{it} * CFO_{it} + \varepsilon_{it}$

	Estimates	t-value	p-value
Intercept	0.048	4.93	0.000
D_{it}	-0.018	-0.83	0.409
BT_{it}	0.079	4.44	0.000
$D_{it} *BT_{it}$	0.089	2.94	0.003
CFO_{it} (-)	-0.748	-16.18	0.000
$D_{it}*CFO_{it}$ (+)	-0.670	-3.21	0.001
$BT_{it}*CFO_{it}$	-0.031	-0.38	0.705
$BT_{it}*CFO_{it}*D_{it}$ (+)	**0.651**	**1.77**	**0.077**
Adj. R^2			0.806
N			959

BT is the scaled deciles of positive book-tax differences at every the end of year t and normalised from 0 to 1and N is number of observations. Negative annual income tax expenses are excluded. Observations in the top and bottom 0.5% of EPS, R, $\Delta NI_{it} /TA_{it}$, $\Delta NI_{it-1} /TA_{it-2}$, AC and CFO are excluded. OLS with firm-fixed effect estimator is applied for the analysis and t-values are two-tailed values computed by adjusting heteroskedasticity-robust standard errors. Test variables and their statistics are presented in bold typeface. All variables are as defined previously. OLS firm fixed-effect method with heteroskedasticity-robust standard errors is applied for the analysis.

Table 6.12 presents the relationship between accounting conservatism measures (BTM and ACC) and book-tax differences (RNK_BT). Findings report that the coefficient of RNK_BT is positive and significant in threshold 2 for BTM and threshold 1 for ACC. The significant results indicate that accounting conservatism measured by the ratio of book-to-market is more pronounced for firms with large positive book-tax differences and low discretionary accruals relative to firms with small positive book-tax differences and high discretionary accruals.

When investigating the relationship between accounting conservatism and firm governance, CG_QUALITY is positively significantly related to BTM for firms in threshold 2 (= 0.0019) but to ACC for firms in threshold 1 (= 28.354). This finding suggests that higher proportion of audit committee on firm's board induces more accounting conservatism. The result reports a negative relationship between BOARD_QUALITY and accounting conservatism (BTM in threshold 2 = -0.0008 and ACC in threshold 1 but insignificant = -8.312). Additionally, f-statistics become significant for ACC in threshold 1 (f-stat = 2.51). In summary, overall results are consistent with the main findings, suggesting that more accounting conservatism in the firm is induced by the larger book-tax difference and the higher proportion of audit committee and independent directors on the board.

6.6 Chapter Summary

According to all analyses in Thai settings, findings suggest that earnings asymmetric timeliness is more likely in Thailand for pooled-samples. However, when comparing between pre- and post-adoption periods, it appears that earnings asymmetric timeliness declines. It should be noted that the decrease of earnings asymmetric timeliness during post-adoption periods is consistent with the increase of earnings persistence during post-adoption periods as reported in Table 4.7. In addition, accounting conservatism positively varies with the magnitude of positive book-tax differences. With control variables including firm governance and firm size, firm-specific conservatism analysis reveals that the unconditional conservatism measures are more likely for firms with a large scale of positive book-tax differences. Also, the result suggests that the corporate governance system relates unconditional accounting conservatism (Ahmed and Duellman 2007). However, earnings management is an important issue when using accruals to measure firm-specific accounting conservatism. The finding suggests that accounting conservatism measured by accruals is more likely for firms with large scale of positive book tax differences when those firms have a low level of discretionary accruals.

Table 6.12 Firm-specific conservatism (BTM): OLS regressions with firm fixed-effect and heteroskedasticity-robust standard errors

$$C_{it} = \gamma_0 + \gamma_1 RNK\_BT_{it} + \sum_{j=1}^{3}\varphi_j CG_{j,it} + \sum_{j=1}^{3}\delta_j FF_{j,it} + \varepsilon_{it}$$

Panel A: C = BTM (1993 – 2007)

	Threshold 1 (Low DA)			Threshold 2			Threshold 3 (High DA)		
	Estimate	*t*-value	*p*-value	Estimate	*t*-value	*p*-value	Estimate	*t*-value	*p*-value
Intercept (?)	-0.0004	-0.22	0.830	-0.0001	-0.06	0.951	0.0018	0.51	0.609
RNK_BT (+)	0.0001	0.43	0.665	**0.0008**	**2.42**	**0.016**	0.0001	0.31	0.754
Firm governance variables (CG)									
BOARD_SIZE (?)	-0.0001	-0.16	0.869	0.0011	2.25	0.025	-0.0003	-0.42	0.673
BOARD_QUALITY (?)	-0.0004	-1.50	0.136	**-0.0008**	**-2.94**	**0.004**	0.0000	-0.02	0.987
CG_QUALITY (?)	0.0006	1.01	0.312	**0.0019**	**2.60**	**0.010**	0.0021	2.41	0.017
Control variables (FF)									
LEV (+)	-0.0007	-2.21	0.028	-0.0008	-1.44	0.150	-0.0011	-1.31	0.190
SIZE (+)	0.0001	0.48	0.629	-0.0001	-0.64	0.520	-0.0002	-0.71	0.481
SALEGRW (+)	0.0000	-0.64	0.523	0.0000	3.84	0.000	0.0000	0.21	0.837
Adj. R^2			0.600			0.4299			0.251
N			474			468			464
F-stat			1.86			6.30			1.79

Panel B: C = ACC (1994–2007)

	Threshold 1 (Low DA)			Threshold 2			Threshold 3 (High DA)		
	Estimate	*t*-value	*p*-value	Estimate	*t*-value	*p*-value	Estimate	*t*-value	*p*-value
Intercept (?)	34.741	0.73	0.466	61.702	1.75	0.082	-10.474	-0.17	0.864
RNK_BT (+)	**7.283**	**1.71**	**0.089**	1.117	0.33	0.739	0.515	0.13	0.895
Firm governance variables (CG)									
BOARD_SIZE (?)	-4.052	-0.53	0.599	-3.520	-0.49	0.627	5.724	0.67	0.506
BOARD_QUALITY (?)	**-8.312**	**-1.61**	**0.109**	1.624	0.35	0.730	14.786	1.05	0.974
CG_QUALITY (?)	**28.354**	**2.88**	**0.004**	1.015	0.10	0.921	-6.950	-0.65	0.519
Control variables (FF)									
LEV (+)	5.299	0.37	0.713	-2.115	-0.21	0.830	-0.644	-0.09	0.931
SIZE (+)	-0.656	-0.16	0.877	-3.816	-1.57	0.118	-0.043	-0.01	0.992
SALEGRW (-)	-2.387	-0.74	0.460	0.570	0.20	0.839	-0.263	-0.23	0.820
Adj. R^2			0.155			0.150			0.323
N			358			355			348
F-stat			2.51			0.55			0.17

C is firm-specific conservatism measure (BTM: book-to-market or ACC: 3-year accumulated accruals deflated by the average total asset); RANK_BT is the quintiles of positive book-tax differences every year (normalised to between 0 and 1). LEV is the natural log of total liabilities. SIZE is the natural log of total assets. SALEGRW is the percentage of annual growth in total sales. BOARD_SIZE is the natural log of total number of board of directors. BOARD_QUALITY is the natural log of a number of boards that board of directors serve in other firms. C CG_QUALITY is the sum of audit committee and independent directors divided by board size. N is number of observations. Negative annual income tax expenses are excluded. Observations in the top or bottom 1% of BTM and ACC are excluded. Predicted sign is shown in the parentheses. *t*-values are two-tailed values computed by using heteroskedasticity-robust standard errors. DA is the industry cross-section modified Jones discretionary accrual. DA is ranked in three groups every year from low to high discretionary accruals.

Chapter 7
Conclusions

Chapter 7
Conclusions and Discussions

7.1 Introduction

Thailand has officially constituted accounting and auditing organisations for more than forty years. The accounting and auditing setter was under government supervision from 1962. In 2005, a self-regulated accounting and auditing organisation – the Federation of Accounting Professions (FAP) – was established. The Thai accounting and auditing setter has been independent of government since then. It is irrefutable that the preparation of Thai financial statements has been influenced by tax rules because of the government's supervision on Thai accounting standards. It is also possible to believe that Thai accounting principles are more likely to serve the government's interests rather than public investment. The Thai accounting system, therefore, has been categorised as a tax-based accounting income system. However, since 2000, Thailand has adopted and converged domestic accounting standards to the International Financial Reporting Standards (IFRS). IFRS harmonisation is obviously aimed to stimulate the quality of accounting information in Thailand.

Even though IFRS harmonisation aims to bring a better quality of accounting information for the IFRS-adopted country, many potential factors can influence the improvement of accounting information quality during IFRS post-adoptions. The adoption of IFRS in domestic countries has fascinated accounting researchers, who have explored whether or not the quality of accounting information has actually been enhanced during IFRS post-adoptions. The existing research has attempted to compare the variation of accounting quality by either comparing between pre- and post-adoption in a single country or comparing these two periods among different countries. By comparing between pre- and post-adoption periods, researchers can explain the enhancement of accounting information quality after the change in accounting standards. By comparing between those two periods in different countries, researchers can explain the effect of institutional factors, i.e. legal systems, influencing the improvement of accounting information quality when IFRS has been adopted. This thesis argues that it also should be more useful to incorporate institutional factors when investigating the improvement of accounting information quality after IFRS adoptions in a single country, raising more understanding about accounting quality in such country.

Incentives of a firm's insiders are a major issue and can derive the variation in accounting quality. This thesis argues that the improvement of accounting information quality is varied according to a firm's incentives, especially when the principles-based accounting system (IFRS) is employed. This thesis employs book-tax differences (BT) to proxy insiders' incentives. The use of book-tax differences provides at least two advantages: i) it can be used to observe the pattern of the accounting system in Thailand between pre- and post-adoption periods and ii) it is employed to differentiate the firm's discretion. However, this proxy is not exhaustive and must be interpreted with caution because either large or small scale of book-tax differences is subject to firms' discretions. This thesis investigates whether there is an improvement of accounting information quality between IFRS pre- and post-adoption in Thailand by expanding conditioning to include the magnitude of book-tax differences.

If the variation in accounting quality among firms is found, this thesis considers that it is of interest to search for factors influencing such difference. After examining the variation in the improvement of accounting quality in Thailand, this thesis investigates whether the accounting quality is varied according to the firm governance system in Thailand. This thesis views that the firm governance system is an influential factor driving the difference in accounting information quality in each firm. To support this conjecture, this thesis further estimates the relationship between accounting quality and the firm governance system. As a result, this thesis performs two analyses: i) the investigation of the improvement of accounting information quality between IFRS pre- and post-adoption periods in Thailand and ii) the investigation of the relationship between accounting information quality and firm governance systems in Thailand. For both investigations, firms are divided into subgroups according to the scale of book-tax differences. This chapter summarises important aspects obtained from the analysis. The remainder of this chapter is divided into three sections. Summary of the thesis and implementation is presented in section 7.2 and sections 7.3 and 7.4 present research limitations and concluding remarks, contributions and future research, respectively.

7.2 Summary of the Thesis and Implementation

This study divides investigations into two parts. First, the improvement of accounting information quality between IFRS pre- and post-adoption periods in Thailand is analysed. Second, the relationship between accounting information quality and firm governance factors in Thai settings is examined.

This thesis defines accounting information quality according to three properties of earnings information. First, earnings quality is determined by the persistence of earnings. Second, accounting information quality is examined by the usefulness of earnings and book value (the value relevance analysis). And, third, earnings quality is determined by the ability of earnings to capture economic outcome on a timely basis (earnings timeliness).

For the analysis of earnings persistence and value relevance, this thesis employs 10-year longitudinal data for both analyses. This study views that these longitudinal data should provide more powerful inferences although they suffer from survivorship bias. The dataset for both analyses is also divided into two subgroups. The first subgroup includes firms whose 5-year accumulated book-tax differences during pre-adoption periods are smaller than the 5-year accumulated book-tax differences during post-adoption periods (Group 1: BT-Pre < BT-Post). The second subgroup includes firms whose 5-year accumulated book-tax differences during pre-adoption periods are larger than the 5-year accumulated book-tax differences during post-adoption periods (Group 2: BT-Pre > BT-Post).

After examining the earnings persistence and value relevance during pre- and post-adoption peirods, accounting quality is regressed on firm governance proxies. Accounting quality is measured by two proxies from earnings persistence–the coefficient estimate of each firm from earnings persistence and value relevance–the explanatory power and earnings response coefficients of each firm. The relationship between accounting quality and firm governance factors is examined by comparing between IFRS pre- and post-adoption periods in Thailand.

The last property of earnings to be examined is earnings timeliness. As suggested by prior studies, incorporating additional information into the model facilitates more powerful to explain the timeliness of earnings. Based on different models of asymmetric timeliness, the magnitude of book-tax difference is incorporated to the model. In addition to the asymmetric timeliness model, this thesis employs firm-specific accounting conservatism for the investigation. Prior studies suggest that the asymmetric timeliness is negatively related to firm-specific accounting conservatism. Therefore, it is more powerful if consistent results are observed when using different methodologies.

Earnings persistence

Consistent with prior research, a random walk model is employed to determine whether earnings are more persistent during IFRS post-adoptions in Thailand. Earnings information is also decomposed to cash flows from operation and accruals information. For analysing balanced-panel data, this thesis employs OLS estimation and standard errors corrected by bootstrap methodology. The future earnings are regressed on current earnings (cash flows and accruals component of earnings). The obtained result is consistent and suggests that earnings are more persistent during IFRS post-adoptions in Thailand. However, when estimating the persistence of earnings by industry, the finding reveals that the persistence of earnings information is sensitive to the industry. The result supports the a priori prediction that the persistence of earnings declines for firms in group 1 (BT–Pre < BT–Post) but increases for firms in group 2 (BT–Pre > BT–Post) during post-adoption periods. Consistent with prior research, the persistence of earnings is more persistent for firms with small-scale book-tax differences when using all firm-years in the analysis. In addition, when including additional explanatory variables, the robustness check supports the result obtained from the main analysis.

For the second part of the analysis, the persistence coefficient of each firm is estimated. Each firm is divided into two periods, pre- and post-adoption, 5-years each. Then, the persistence coefficient is regressed on firm governance factors. Overall results suggest that earnings persistence is related to firm governance. The finding in this setting implies that the decline of earnings persistence for firms in group 1 is likely to be induced by the governance system.

The value relevance

This study employs the earnings response coefficient model (ERC) and price model for the analysis of value relevance. This study mainly interprets the value relevance from the association between the market value (returns) and accounting summary measures (R^2). The earnings response coefficient is also interpreted to support the main interpretation. Based on balanced-panel data, the result suggests that value relevance improves during IFRS post-adoption periods in Thailand. The obtained result also supports the hypothesis that between pre- and post-adoption periods in Thailand, the improvement of value relevance of accounting summary measures for firms in group 2 (BT–Pre > BT–Post) is greater than the improvement of value relevance of accounting summary measures for firms in group 1 (BT–Pre < BT–Post). The additional test by using all-firm years suggests that the value relevance for firms with large scale of book-tax differences is lower than that for firms with small scale of book-tax differences.

For part two, the value relevance of each firm is estimated. Then value relevance (ERC and the explanatory power – R^2) is regressed on the firm governance factors. Again, the result suggests that value relevance is related to the governance factors. Overall results suggest that the variation in value relevance between firms in two groups is likely to be induced by firm governance factors.

Earnings timeliness

The third property of earnings being investigated in this thesis is earnings timeliness in Thailand. Three asymmetric piece-wise models are employed for the analysis of earning asymmetric timeliness, including the market-based asymmetric model, the accrual-based asymmetric model and the negative earnings change model. The result suggests that the Thai accounting information exhibits the timeliness in terms of the ability of earnings to capture negative events in the same period that they occur. Although it is not the main objective of this thesis, by using all firm-years, two out of three models suggest that earnings timeliness is less likely in Thailand during post-adoption periods. This finding does not deviate from expectations because a prior study (Basu 1997) explains that as earnings persistence increases, earnings asymmetric timeliness would decline. In this setting, this thesis finds that the persistence of earnings improves during IFRS post-adoption, thus it is possibility that the decline in earnings asymmetric timeliness should be observed.

Earnings persistence predicts that firms with a large scale of book-tax differences have lower persistence in earnings relative to firms with a small scale of book-tax differences. However, because the notion of earnings asymmetric timeliness and earnings persistence is different, earnings asymmetric timeliness should be more likely for firms with a large scale of book-tax differences relative to firms with a small scale of book-tax differences. Therefore, this thesis conjectures that earnings asymmetric timeliness varies positively according to the scale of book-tax differences: the larger scale the differences, the greater the earnings asymmetric timeliness. The obtained result supports this conjecture. It should be noted that this thesis includes only positive book-tax differences in the analysis.

In addition to the earnings asymmetric timeliness, unconditional accounting conservatism in Thailand is examined. This thesis employs two firm-specific earnings conservatism (unconditional conservatism) measures, book-to-market and 3-year accumulated accruals. Then this thesis investigates the relationship between unconditional conservatism measures and book-tax differences and firm governance factors. The finding suggests that book-to-market is positively related to the scaled rank of book-tax differences. This finding is consistent with the result obtained from the earnings asymmetric timeliness models. It is due to the fact that the earnings timeliness obtained from the market-based asymmetric model (i.e. Basu 1997) is negatively correlated with book-to-market (Givoly et al. 2007). However, the result in this setting reveals that the magnitude of book-tax differences is positively related to both the earnings asymmetric timeliness and unconditional conservatism measure (book-to-market). Thus, this consistent finding suggests that the scale of book-tax differences contains significant information about accounting conservatism.

Nevertheless, the 3-year accumulated accrual is not related to the scale of book-tax differences. This study argues that accruals information is potentially caused by earnings manipulation. Therefore, the sample firm is divided into three thresholds according to the level of discretionary accruals to control for earnings management. The finding supports the argument and reports a positive relationship between 3-year accumulated accruals and the scaled rank of book-tax differences. Overall results confirm that the scale of book-tax differences contains information about accounting conservatism.

The study of three properties of accounting information, in particular earnings and book value, provides accounting policy implication for the Thai standard setter and accounting standard setters in the country employing a tax-based accounting income system. This study suggests that IFRS adoption brings higher quality of accounting information. However, the enhancement of accounting quality is not only subject to accounting standards but also the environment of accounting, i.e. the firm governance system. From the overall finding, this thesis argues that accounting environment as indirect parameter is perhaps more important than accounting standards as direct parameter. IFRS tends to provide a good quality of accounting principles, i.e. reflecting the true value of the firm. However, it is more likely to depend on incentives of the firm whether or not a firm's insiders intend to use accounting standards as a proper means to reflect the true value of the firm. In addition, this study suggests that the book-tax difference contains information about earnings quality, especially for the country using a tax-based accounting income system.

7.3 Research Limitations

From all investigations in this thesis, some research limitations must be raised. The first limitation for this study is about the calculation of book-tax differences. Permanent and temporary differences should be identified to construct the book-tax difference. Annual tax expenses presented on financial statements are affected by temporary and permanent differences between accounting principles and tax rules. These may cause measurement errors in tax expenses unless the differences are adjusted to determine accurate tax expenses in each year (Lev and Nissim 2004). In this study, the timing difference in firms' portfolios is not identified because of limitations of tax data reported in financial statements. In addition, missing value of taxable income used to construct panel dataset is set to zero. Table 7.1 presets a number of missing values across years.

Table 7.1 Missing value of taxable income across years

Year	Earnings persistence	ERC model	Price model
1997	108	67	54
1998	111	63	48
1999	100	55	44
2000	97	56	45
2001	87	50	40
2002	86	50	41
2003	89	49	40
2004	73	43	33
Total observations	751	433	345

Second, annual income tax expenses are employed rather than actual income tax paid by cash because income tax payment by cash is not sufficient for the analysis. Cash flow statements have been compulsory reports by the Stock

Exchange of Thailand since 1999. However, prior studies find that actual income tax expenses do not change the results obtained from annual income tax expenses (Lev and Nissim 2004). In addition, it must be noted that for firms operating in Thailand, tax income must be calculated from individual financial statements rather than consolidated financial statements. The book-tax difference in this study, therefore, is mainly calculated from companies' financial statements to obtain more accurate figures. Nevertheless, this thesis compares the main investigation by using the book-tax difference calculated from consolidated financial statements. The results obtained from the comparison are presented in appendices and they are reasonably consistent with the result obtained from the main investigation. As a result, book-tax differences in this study are not exhaustive. Although the book-tax difference is employed to proxy a firm's incentive, the scale of book-tax differences can be influenced by other factors, i.e. earnings manipulation. Therefore, the interpretation about the use of book-tax differences must be performed with care.

Next, the industry cross-section modified-Jones' model is employed for the calculation of discretionary accruals. The data limitation does not allow this study to calculate the discretionary accrual by using a time series model. Accruals are calculated based on prior study rather than obtained from financial statements because accruals reported in financial statements are not available during pre-adoption periods.

In addition, accounting quality is unobservable. This study uses the measurement of accounting quality through earnings persistence and value relevance, and then regresses accounting quality on the firm governance. These proxies contain measurement errors.

Last, the proxy for quality of firm governance system, board and audit committee quality, in this study is measured by a number of sitting boards. This proxy is twofold: i) a high number of sitting boards indicate the reputation of board members, inducing a high quality of governance system and ii) a high number of sitting boards indicate a large workload, inducing a low quality of governance system because of time constraints. Therefore, non-linear relationship between accounting quality and this proxy should be addressed and further performed by future research.

7.4 Concluding Remarks, Contributions and Future Research

This thesis investigates accounting quality in Thailand when IFRS has been adopted since 2000. Accounting quality in this thesis refers to three properties of earnings, consisting of the persistence of earnings, the value relevance of earnings and book value and the timeliness of earnings. This thesis aims to investigate whether accounting quality in Thailand has been enhanced after the IFRS adoption. The overall finding suggests that the earnings persistence and value relevance have been improved after the IFRS adoption in Thailand. The timeliness of earnings is less likely after the IFRS adoption in Thailand.

This thesis views that a firm's incentives play important roles in accounting quality. This thesis employs book-tax differences a proxy for the firm's incentive in Thai settings. By incorporating the book-tax difference into the analysis, the finding suggests that accounting quality in Thai settings is varied according to the scale of book-tax differences. The result suggests that the earnings persistence and value relevance has been enhanced for firms with a small scale of book tax differences relative to firms with a large scale of book-tax differences. In addition to the firm's incentive, this thesis views that firm governance systems induce the variation in accounting quality in firms with different scale of book-tax differences. And, the finding suggests that the firm governance system is related to accounting quality, implying that the firm governance system is a significant factor for the improvement of accounting quality in Thai settings.

This research adds to the literature in many aspects. Firstly, it is an analysis of accounting quality in emerging market countries that use a tax-based accounting income system. Secondly, this thesis employs the book-tax difference to control for a firm's incentive in the Thai setting. The published research has been silent on using the book-tax difference for the investigation of accounting quality in emerging market countries. Thirdly, this thesis employs panel data for the analysis. This should provide a relatively strong inference. And, this thesis should facilitate Thai accounting regulators about accounting policy implications in Thailand, suggesting that accounting standards are not the only factor to improve accounting quality but such other factors as incentives and discretions do affect the improvement of accounting quality in Thailand.

This study suggests that future research should explore accounting quality in other dimensions. For example, i) future analysis can investigate earnings persistence, value relevance and earnings timeliness by focusing on a specific industry, i.e. high technology, or specific accounting standards, i.e. relevant accounting standards for tangible and intangible assets. This should provide more insightful information about the property of accounting quality; ii) future research should search for institutional or firm-specific factors containing richer information that can be used to identify variation in accounting quality among firms; iii) more comprehensive variables for firm governance systems should be used for the analysis, i.e. audit committee expertise – education and background, that accounting quality is positively varied with expertise or board compensation, that high compensation may induce high quality of accounting information; iv) the non-linear relationship and causation issue for firm governance analysis should be addressed and/or identified in future research; v) the model for value relevance analysis is open-ended. This thesis employs standard models existed in prior literature rather than construct models for the analysis. The future research may develop methodologies to fit the dataset and obtain more powerful results; and vi) the future research may investigate the association between costs of the firms and IFRS adoptions.

APPENDICES

Appendix 1

Thai Accounting Standards and International Accounting Standards Comparison

Index	TAS Title	TAS No.	IAS and AICPA	Effective Date
1	Accounting Basic Assumptions	1	-	1 Feb. 1979 Superseded by Framework
2	Accounting Policy	2	-	1 Sep. 1979 Superseded by TAS 35
3	Extraordinary Items	3	-	1 Sep. 1979 Superseded by TAS 39
4	Accounting Changes	4	-	1 Sep. 1979 Superseded by TAS 39
5	Earnings Per Share	5	-	1 Sep. 1979 Superseded by TAS 38
6	Revenue Recognitions	6	-	1 Sep. 1979 Superseded by TAS 39
7	Leases	7	IAS 17	28 Feb. 1987
8	Construction Contracts	8	-	31 Dec. 1988 Superseded by TAS 49
9	Property, Plant and Equipment	9	-	1 Jan. 1989 Superseded by TAS 32
10	Depreciation Accounting	10	-	1 Jan. 1988 Superseded by TAS 32
11	Doubtful Accounts and Bad Debt	11	-	1 Jul. 1989
12	Accounting for Marketable Securities	12	-	1 Jul. 1989 Superseded by TAS 40
13	Related Party Disclosures	13	-	1 Jul. 1989 Superseded by TAS 47
14	Accounting for Research and Development Activities	14	IAS 9	1 Jan. 1990
15	Borrowing Costs	15	-	1 Jan. 1990 Superseded by TAS 33
16	Current Assets and Current Liabilities	16	-	1 Jan. 1990 Superseded by TAS 35
17	Accounting for Investments	17	-	31 Dec. 1991 Superseded by TAS 40
18	Accounting for Investments in Associates	18	-	31 Dec. 1991 Superseded by TAS 46
19	Consolidated Financial Statements	19	-	31 Dec. 1991 Superseded by TAS 44

Thai Accounting Standards and International Accounting Standards Comparison (Cont.)

Index	TAS Title	TAS No.	IAS and AICPA	Effective Date
20	Business Combinations	20	-	31 Dec. 1991 Superseded by TAS 44
21	Events After the Balance Sheet Date	21	-	31 Dec. 1991 Superseded by TAS 52
22	Inventories	22	-	31 Dec. 1991 Superseded by TAS 31
23	Information to be Disclosed in Financial Statements	23	-	1 Jan. 1992 Superseded by TAS 35
24	Segment Reporting	24	IAS 14	1 Jan. 1994
25	Cash flow statements	25	IAS 7	1 Jan. 1994 (Revised in 2007)
26	Revenue Recognition for Real Estate	26	-	1 Jan. 1994
27	Disclosures in the Financial Statements of Banks and Similar Financial Institutions	27	IAS 30	1 Jan. 1995 (Revised in 2006)
28	Accounting for Convertible Debt and Debt Issued with Stock Purchase Warrants	28	-	29 Aug. 1994 Superseded by TAS 48
29	Accounting for Long Term Lease Agreements	29	-	1 Jan. 1996
30	The Effects of Changes in Foreign Exchange Rates	30	IAS 21	1 Jan. 1996
31	Inventories	31	IAS 2	1 Jan. 1997
Amended TAS after 1997				
32	Property, Plant and Equipment	32	IAS 16	1 Jan. 1999
33	Borrowing Costs	33	IAS 23	1 Jan. 1999 (Revised in 2007)
34	Accounting by Debtors and Creditors for Troubled Debt Restructurings	34	SFAS 15, 114	30 Sep.1998
35	Presentation of Financial Statements	35	IAS 1	1 Jan. 1999
36	Impairment of Assets	36	IAS 36	1 Jan. 1999
37	Revenue	37	IAS 18	1 Jan. 1999

Thai Accounting Standards and International Accounting Standards Comparison (Cont.)

Index	TAS Title	TAS No.	IAS and AICPA	Effective Date
38	Earnings Per Share	38	IAS 33	1 Jan. 1999
39	Net Profit or Loss for the Period, Fundamental Errors and Changes in Accounting Policies	39	IAS 8	1 Jan. 1999
40	Accounting for Investments in Debt and Equity Securities	40	IAS 25, IAS 39, SFAS115	1 Jan. 1999
41	Interim Financial Reporting	41	IAS 34	1 Jan. 2000
42	Accounting Guide for Investment Companies	42	AICPA	1 Jan. 2000
43	Business Combinations	43	IAS 22	1 Jan. 2000
44	Consolidated and Separate Financial Statements	44	IAS 27, IAS 39	1 Jan. 2000 (Revised in 2007)
45	Investments in Associates	45	IAS 28	1 Jan. 2000 (Revised in 2007)
46	Interests in Joint Ventures	46	IAS 31	1 Jan. 2000 (Revised in 2007)
47	Related Party Disclosures	47	IAS 24	1 Jan. 2000
48	Financial Instruments: Disclosure and Presentation	48	IAS 32, IAS 39	1 Jan. 2000
49	Construction Contracts	49	IAS 11	1 Jan. 2000 (Revised in 2007)
50	Events After the Balance Sheet Date	52	IAS 10	1 Jan. 2005
51	Provisions, Contingent Liabilities and Contingent Assets	53	IAS 37	1 Jan. 2005
52	Discontinuing Operations	54	IAS 35	1 Jan. 2005
53	Accounting Framework		IAS Framework	1997

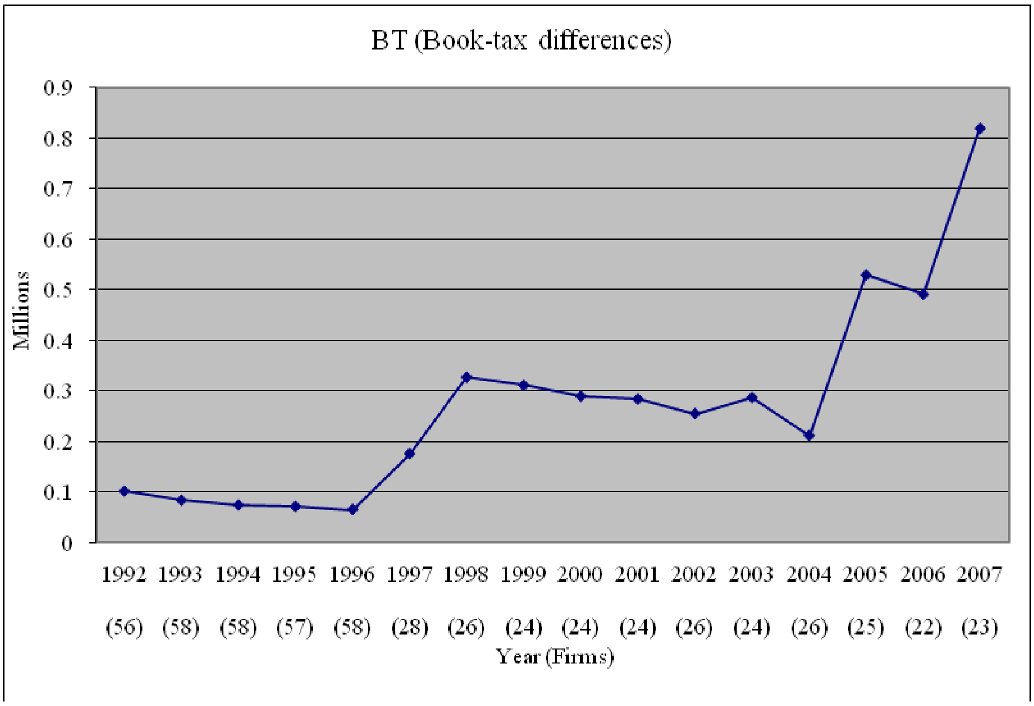
Source: The table is amended from the information given by BSAP.[94]

[94] Department of Business Development (2002), Thai Accounting Standards and International Accounting Standards by Institute of Certified Accountants and Auditors of Thailand. [online] Available from: http://www.dbd.go.th/thai/account/standard.phtml?head=061 [accessed 18th October 2007]

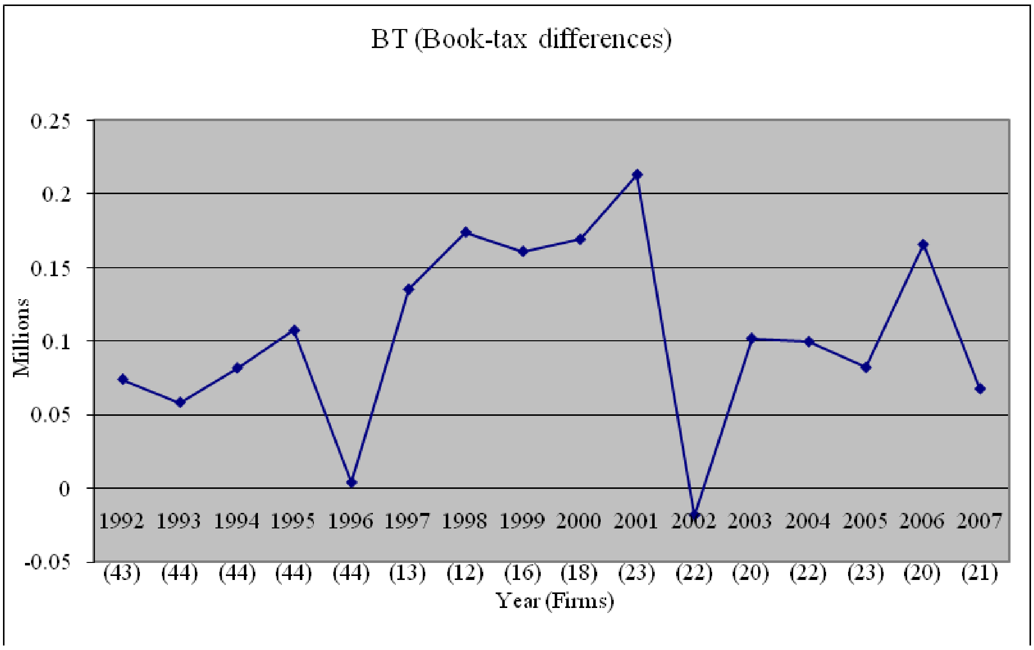
Appendix 2

The pattern of book-tax differences by industry

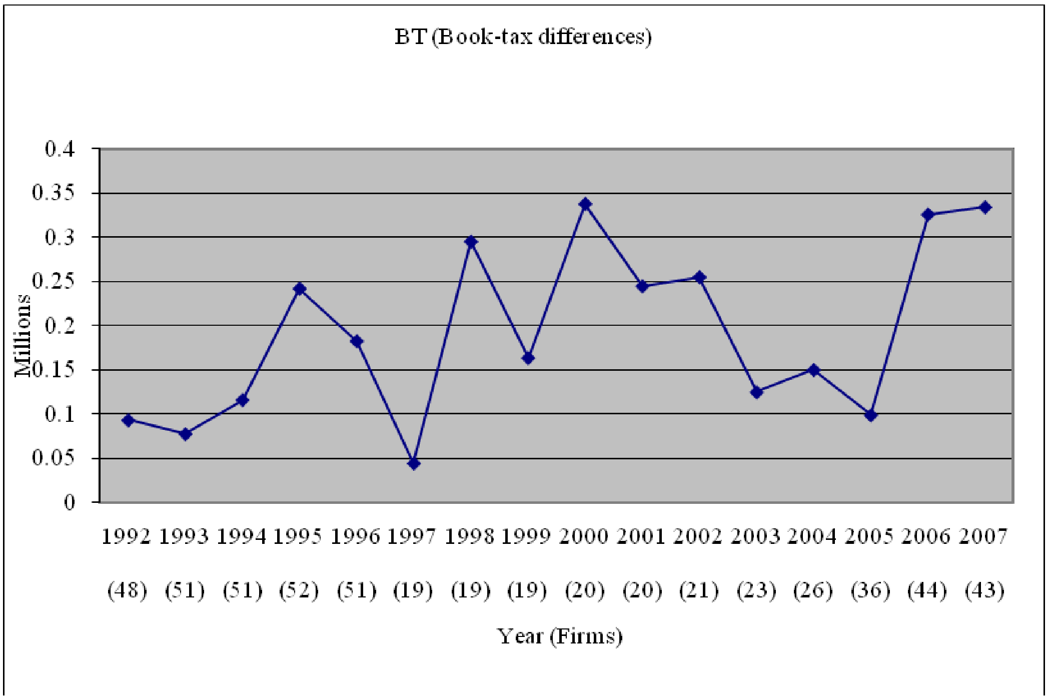
1. Agro-business



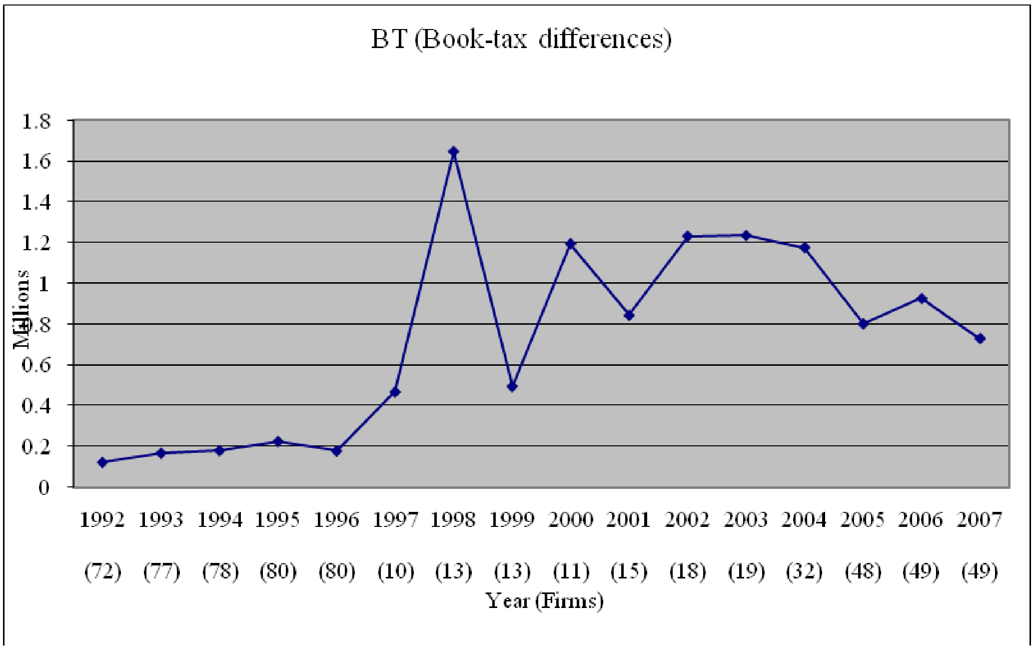
2. Consumer products



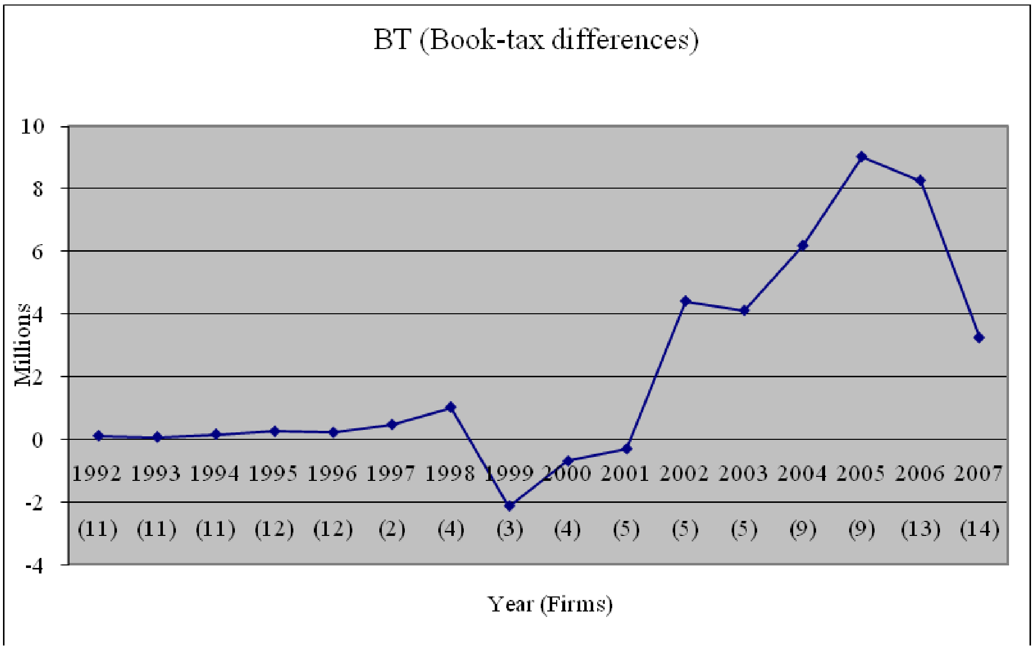
3. Industrial



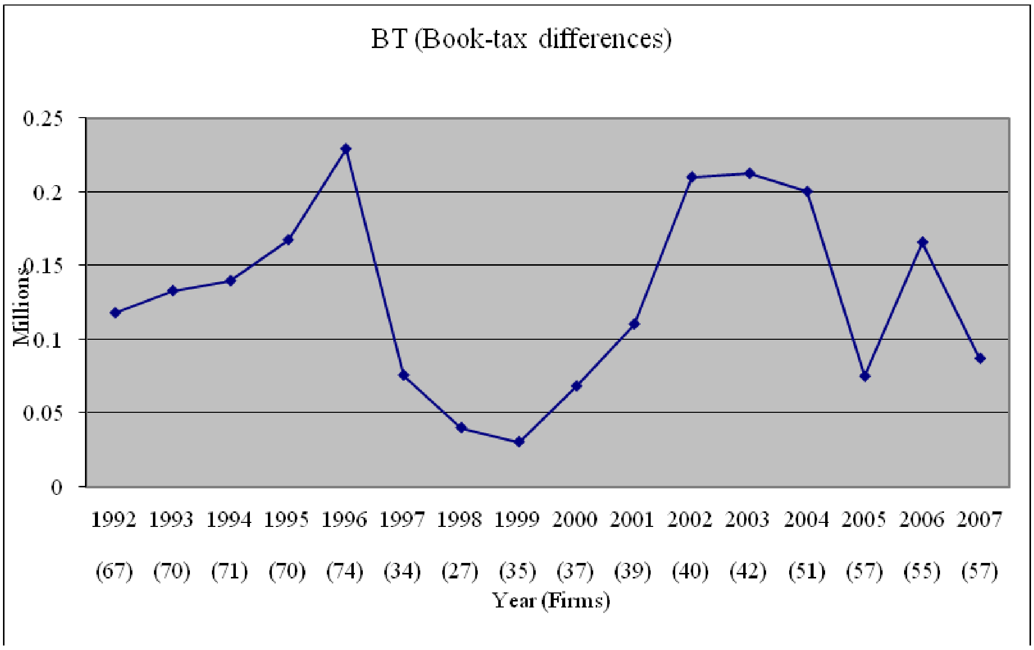
4. Property and construction



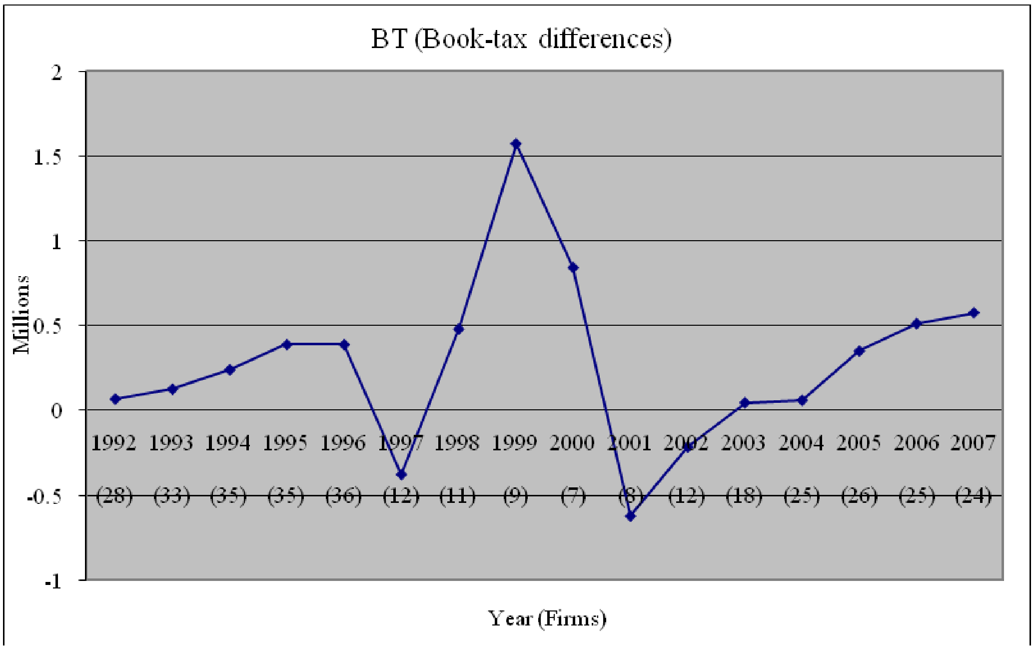
5. Natural resources



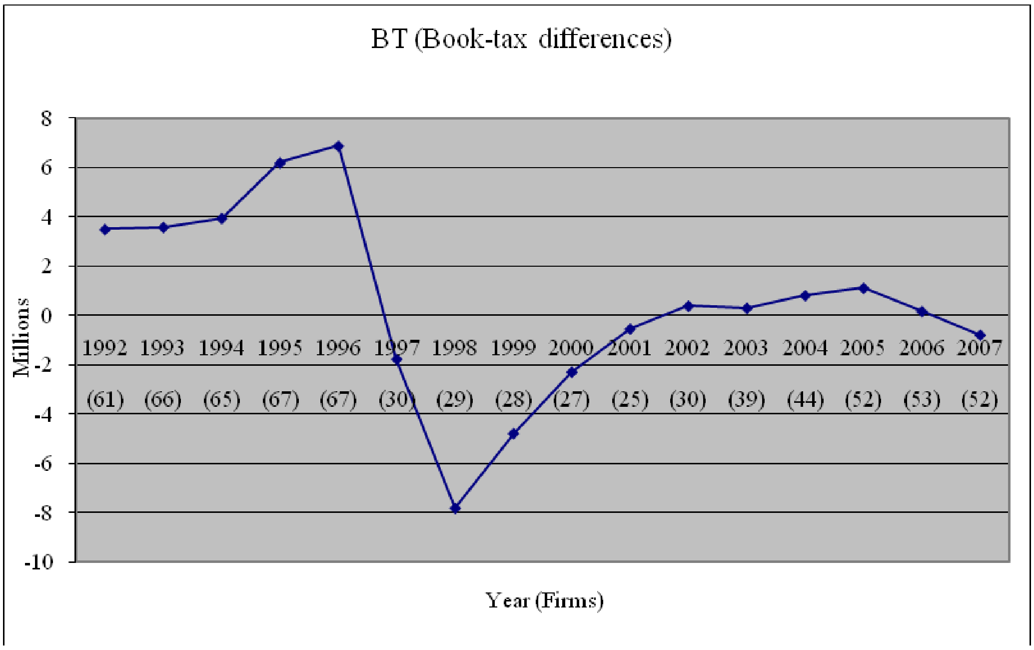
6. Services



7. Technology



8. Financial firms



Appendix 3

<u>Supplements for Table 4.7</u>

The book-tax differences are calculated by using consolidated financial statements.

Panel B

Group 1

```
. bootstrap, reps (1000): areg  lead_ebitast ebitast dy dyebitast if groupcon==1,
a(i_industry) r

Linear regression, absorbing indicators         Number of obs      =       850
                                                Replications       =      1000
                                                Wald chi2(3)       =    229.43
                                                Prob > chi2        =    0.0000
                                                R-squared          =    0.3939
                                                Adj R-squared      =    0.3874
                                                Root MSE           =    0.0852

------------------------------------------------------------------------------
             |   Observed   Bootstrap                         Normal-based
lead_ebitast |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     ebitast |   .5157199   .0693966     7.43   0.000      .379705    .6517348
          dy |   .0341788   .0092613     3.69   0.000      .016027    .0523305
   dyebitast |  -.0277275   .0779023    -0.36   0.722    -.1804132    .1249582
       _cons |   .0122919   .0081583     1.51   0.132     -.003698    .0282818
------------------------------------------------------------------------------
  i_industry |   absorbed                                      (7 categories)
```

Group 2

```
. bootstrap, reps (1000): areg  lead_ebitast ebitast dy dyebitast if groupcon==2,
a(i_industry) r

Linear regression, absorbing indicators         Number of obs      =      1150
                                                Replications       =      1000
                                                Wald chi2(3)       =    102.82
                                                Prob > chi2        =    0.0000
                                                R-squared          =    0.3239
                                                Adj R-squared      =    0.3186
                                                Root MSE           =    0.1010

------------------------------------------------------------------------------
             |   Observed   Bootstrap                         Normal-based
lead_ebitast |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     ebitast |   .5397459   .0668968     8.07   0.000     .4086307    .6708611
          dy |  -.0220532   .0146925    -1.50   0.133    -.0508501    .0067436
   dyebitast |   .2228033   .1332309     1.67   0.094    -.0383244    .4839311
       _cons |   .0275709   .0088927     3.10   0.002     .0101415    .0450003
------------------------------------------------------------------------------
  i_industry |   absorbed                                      (7 categories)
```

Panel D

Group 1

```
. bootstrap, reps (1000): reg  lead_ebitast cfoast accast dy dycfoast dyaccast if
groupcon==1, r
Linear regression                               Number of obs      =       450
                                                Replications       =      1000
                                                Wald chi2(5)       =     95.30
                                                Prob > chi2        =    0.0000
                                                R-squared          =    0.3355
                                                Adj R-squared      =    0.3280
                                                Root MSE           =    0.0774

------------------------------------------------------------------------------
             |   Observed   Bootstrap                         Normal-based
lead_ebitast |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      cfoast |   .5152017   .0768261     6.71   0.000     .3646254    .6657781
      accast |   .4969438   .0764998     6.50   0.000      .347007    .6468806
          dy |   .0195975   .0126682     1.55   0.122    -.0052316    .0444267
    dycfoast |   .0616591   .1323295     0.47   0.641    -.1977019    .3210201
    dyaccast |   .0072589   .1195613     0.06   0.952     -.227077    .2415948
       _cons |   .0302392   .0078782     3.84   0.000     .0147981    .0456802
------------------------------------------------------------------------------
. test cfoast=accast

 ( 1)  cfoast - accast = 0
           chi2(1) =    0.38
         Prob > chi2 =    0.5392

. test dycfoast=dyaccast

 ( 1)  dycfoast - dyaccast = 0
           chi2(1) =    0.99
         Prob > chi2 =    0.3207

.
```

Group 2

```
. bootstrap, reps (1000): reg  lead_ebitast cfoast accast dy dycfoast dyaccast if
groupcon==2, r
Linear regression                               Number of obs      =       600
                                                Replications       =      1000
                                                Wald chi2(5)       =    114.65
                                                Prob > chi2        =    0.0000
                                                R-squared          =    0.3435
                                                Adj R-squared      =    0.3380
                                                Root MSE           =    0.0781

------------------------------------------------------------------------------
             |   Observed   Bootstrap                         Normal-based
lead_ebitast |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      cfoast |   .5048576   .0665287     7.59   0.000     .3744638    .6352513
      accast |   .4133136   .0686272     6.02   0.000     .2788067    .5478206
          dy |  -.0100195   .0125043    -0.80   0.423    -.0345275    .0144884
    dycfoast |   .1703924   .1096522     1.55   0.120    -.0445219    .3853067
    dyaccast |   .2400617   .1105714     2.17   0.030     .0233457    .4567777
       _cons |   .0344505   .0084636     4.07   0.000     .0178621    .0510389
------------------------------------------------------------------------------

. test cfoast=accast

( 1)  cfoast - accast = 0
           chi2(1) =    6.00
         Prob > chi2 =    0.0143

. test dycfoast=dyaccast

 ( 1)  dycfoast - dyaccast = 0
           chi2(1) =    2.04
         Prob > chi2 =    0.1536
```

Appendix 4

<u>Supplements for Table 4.9</u>

The book-tax differences are calculated by using consolidated financial statements.

<u>Panel A</u>

Group 1

```
. bootstrap, reps(1000): reg lead_ebitast ebitast dy dyebitast grwrev rev lnast
dygrwrev dyrev dylnast if groupcon==1, r

Linear regression                               Number of obs      =       850
                                                Replications       =      1000
                                                Wald chi2(9)       =    352.27
                                                Prob > chi2        =    0.0000
                                                R-squared          =    0.4020
                                                Adj R-squared      =    0.3956
                                                Root MSE           =    0.0846
```

lead_ebitast	Observed Coef.	Bootstrap Std. Err.	z	P>|z|	Normal-based [95% Conf.	Interval]
ebitast	.4823838	.0768307	6.28	0.000	.3317984	.6329693
dy	.0936004	.06277	1.49	0.136	-.0294265	.2166274
dyebitast	.0291128	.0881111	0.33	0.741	-.1435817	.2018074
grwrev	-.02849	.0287178	-0.99	0.321	-.0847759	.0277958
rev	.0473405	.0105671	4.48	0.000	.0266294	.0680517
lnast	.0047871	.003364	1.42	0.155	-.0018062	.0113804
dygrwrev	.0114958	.0321682	0.36	0.721	-.0515528	.0745443
dyrev	-.0380683	.0116563	-3.27	0.001	-.0609143	-.0152223
dylnast	-.0026057	.0039572	-0.66	0.510	-.0103617	.0051503
_cons	-.0890413	.0540042	-1.65	0.099	-.1948877	.016805

Group 2

```
. bootstrap, reps(1000): reg lead_ebitast ebitast dy dyebitast grwrev rev lnast
dygrwrev dyrev dylnast if groupcon==2, r

Linear regression                               Number of obs      =      1150
                                                Replications       =      1000
                                                Wald chi2(9)       =    169.71
                                                Prob > chi2        =    0.0000
                                                R-squared          =    0.3228
                                                Adj R-squared      =    0.3175
                                                Root MSE           =    0.1010
```

lead_ebitast	Observed Coef.	Bootstrap Std. Err.	z	P>|z|	Normal-based [95% Conf.	Interval]
ebitast	.4990958	.0796158	6.27	0.000	.3430518	.6551399
dy	-.0782488	.0566686	-1.38	0.167	-.1893171	.0328196
dyebitast	.287046	.1429264	2.01	0.045	.0069154	.5671767
grwrev	-.0098636	.0211256	-0.47	0.641	-.051269	.0315417
rev	.0252042	.0058998	4.27	0.000	.0136407	.0367676
lnast	-.0040141	.0025846	-1.55	0.120	-.0090798	.0010515
dygrwrev	.0047864	.0383515	0.12	0.901	-.0703811	.079954
dyrev	-.0257681	.0099942	-2.58	0.010	-.0453564	-.0061798
dylnast	.0051041	.0036327	1.41	0.160	-.0020159	.0122242
_cons	.067133	.040842	1.64	0.100	-.0129158	.1471817

Panel C

Group 1

```
. bootstrap, reps(1000): reg lead_ebitast cfoast accast dy dycfoast dyaccast
grwrev rev lnast dygrwrev dyrev dylnast if groupcon==1, r

Linear regression                                Number of obs      =       450
                                                 Replications       =      1000
                                                 Wald chi2(11)      =    174.71
                                                 Prob > chi2        =    0.0000
                                                 R-squared          =    0.3755
                                                 Adj R-squared      =    0.3598
                                                 Root MSE           =    0.0755

------------------------------------------------------------------------------
             |   Observed   Bootstrap                         Normal-based
lead_ebitast |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      cfoast |   .3777486   .0785734     4.81   0.000     .2237475    .5317496
      accast |   .3723784   .0767963     4.85   0.000     .2218604    .5228963
          dy |   .0762557   .0709861     1.07   0.283    -.0628744    .2153859
    dycfoast |   .1964606   .1422659     1.38   0.167    -.0823755    .4752967
    dyaccast |   .1306296   .1277035     1.02   0.306    -.1196648    .3809239
      grwrev |   .0042014   .0346064     0.12   0.903     -.063626    .0720287
         rev |   .0548643   .0146027     3.76   0.000     .0262435    .0834852
       lnast |   .0056405   .0033045     1.71   0.088    -.0008362    .0121172
    dygrwrev |  -.0133556   .0394923    -0.34   0.735    -.0907591    .0640479
       dyrev |  -.0520115   .0165122    -3.15   0.002    -.0843748   -.0196482
     dylnast |  -.0019768   .0043926    -0.45   0.653    -.0105861    .0066326
       _cons |  -.0842907     .05464    -1.54   0.123    -.1913831    .0228018
------------------------------------------------------------------------------
```

Group 2

```
. bootstrap, reps(1000): reg lead_ebitast cfoast accast dy dycfoast dyaccast
grwrev rev lnast dygrwrev dyrev dylnast if groupcon==2, r

Linear regression                                Number of obs      =       600
                                                 Replications       =      1000
                                                 Wald chi2(11)      =    171.55
                                                 Prob > chi2        =    0.0000
                                                 R-squared          =    0.3606
                                                 Adj R-squared      =    0.3486
                                                 Root MSE           =    0.0775

------------------------------------------------------------------------------
             |   Observed   Bootstrap                         Normal-based
lead_ebitast |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      cfoast |   .4761535    .080063     5.95   0.000     .3192328    .6330742
      accast |   .3815817   .0796432     4.79   0.000     .2254839    .5376795
          dy |  -.0768992   .0694088    -1.11   0.268    -.2129379    .0591396
    dycfoast |   .1761865   .1232959     1.43   0.153     -.065469     .417842
    dyaccast |   .2468741   .1245887     1.98   0.048     .0026848    .4910633
      grwrev |   -.017446   .0241731    -0.72   0.470    -.0648243    .0299324
         rev |   .0238322   .0077122     3.09   0.002     .0087166    .0389479
       lnast |   .0001748   .0033475     0.05   0.958    -.0063861    .0067357
    dygrwrev |   .0382497   .0364803     1.05   0.294    -.0332503    .1097497
       dyrev |  -.0305034   .0103275    -2.95   0.003     -.050745   -.0102618
     dylnast |   .0062482    .004299     1.45   0.146    -.0021778    .0146741
       _cons |   .0126979   .0531064     0.24   0.811    -.0913888    .1167847
------------------------------------------------------------------------------
```

Appendix 5

<u>Supplements for Table 5.5</u>
The book-tax differences are calculated by using consolidated financial statements.

Grouip 1

```
. by groupcon,sort: areg  r15dpd epspd chgepspd , a (i_company) r

Linear regression, absorbing indicators              Number of obs =     530
                                                     F(  2,   475) =    5.66
                                                     Prob > F      =  0.0037
                                                     R-squared     =  0.1916
                                                     Adj R-squared =  0.0997
                                                     Root MSE      =  1.0093

------------------------------------------------------------------------------
             |               Robust
      r15dpd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |   .0841577    .136581     0.62   0.538    -.1842199    .3525352
    chgepspd |     .20232     .06785     2.98   0.003     .0689968    .3356433
       _cons |   .1541905   .0442321     3.49   0.001     .0672757    .2411053
-------------+----------------------------------------------------------------
   i_company |   absorbed                                     (53 categories)
```

Group 2

```
Linear regression, absorbing indicators              Number of obs =     670
                                                     F(  2,   601) =    2.86
                                                     Prob > F      =  0.0578
                                                     R-squared     =  0.0942
                                                     Adj R-squared = -0.0083
                                                     Root MSE      =  .81842

------------------------------------------------------------------------------
             |               Robust
      r15dpd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |   .3169734   .2519904     1.26   0.209    -.1779153    .8118621
    chgepspd |  -.0294021   .0568434    -0.52   0.605    -.1410381    .0822338
       _cons |    .148939   .0333934     4.46   0.000      .083357    .2145211
-------------+----------------------------------------------------------------
   i_company |   absorbed                                     (67 categories)
```

Group 1: Pre-adoption

```
Linear regression, absorbing indicators              Number of obs =     265
                                                     F(  2,   210) =    4.25
                                                     Prob > F      =  0.0156
                                                     R-squared     =  0.3614
                                                     Adj R-squared =  0.1972
                                                     Root MSE      =  .99087

------------------------------------------------------------------------------
             |               Robust
      r15dpd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |  -.1313616   .1121481    -1.17   0.243    -.3524419    .0897187
    chgepspd |   .2257781   .0776602     2.91   0.004     .0726846    .3788716
       _cons |   .0051619   .0635009     0.08   0.935     -.120019    .1303427
-------------+----------------------------------------------------------------
   i_company |   absorbed                                     (53 categories)
```

Group 1: Post-adoption

```
Linear regression, absorbing indicators              Number of obs =     265
                                                     F(  2,   210) =    8.37
                                                     Prob > F      =  0.0003
                                                     R-squared     =  0.2778
                                                     Adj R-squared =  0.0921
                                                     Root MSE      =  .96532

------------------------------------------------------------------------------
             |               Robust
      r15dpd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |   .7549263   .3042066     2.48   0.014     .1552362    1.354616
    chgepspd |   .1765003   .2321965     0.76   0.448    -.2812345    .6342351
       _cons |   .1711677   .0644888     2.65   0.009     .0440392    .2982961
-------------+----------------------------------------------------------------
   i_company |   absorbed                                      (53 categories)
```

Group 2: Pre-adoption

```
Linear regression, absorbing indicators              Number of obs =     335
                                                     F(  2,   266) =    1.52
                                                     Prob > F      =  0.2212
                                                     R-squared     =  0.1283
                                                     Adj R-squared = -0.0945
                                                     Root MSE      =  .81707

------------------------------------------------------------------------------
             |               Robust
      r15dpd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |  -.0882927   .2439734    -0.36   0.718    -.5686573    .3920719
    chgepspd |   .0529327   .0555659     0.95   0.342    -.0564723    .1623378
       _cons |   .1067897   .0457474     2.33   0.020     .0167166    .1968627
-------------+----------------------------------------------------------------
   i_company |   absorbed                                      (67 categories)
```

Group 2: Post-adoption

```
Linear regression, absorbing indicators              Number of obs =     335
                                                     F(  2,   266) =    4.98
                                                     Prob > F      =  0.0075
                                                     R-squared     =  0.3408
                                                     Adj R-squared =  0.1723
                                                     Root MSE      =  .76965

------------------------------------------------------------------------------
             |               Robust
      r15dpd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |    .959183   .3058705     3.14   0.002     .3569478    1.561418
    chgepspd |  -.1877339   .1306529    -1.44   0.152    -.4449792    .0695114
       _cons |   .1369523    .039734     3.45   0.001     .0587192    .2151854
-------------+----------------------------------------------------------------
   i_company |   absorbed                                      (67 categories)
```

Returns are calculated from 9 months before and 3 months after the financial year-end.

```
. by group dum_yr, sort: reg ret12m_9 epspd chgepspd, r
-> group = 1, dum_yr = 0

Linear regression                                      Number of obs =     300
                                                       F(  2,   297) =    2.55
                                                       Prob > F      =  0.0801
                                                       R-squared     =  0.0439
                                                        Adj R-squared =  0.0374
                                                       Root MSE      =  .86673
------------------------------------------------------------------------------
             |               Robust
    ret12m_9 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |   .0105885   .0683828     0.15   0.877    -.1239878    .1451647
    chgepspd |    .071734   .0352862     2.03   0.043     .0022915    .1411766
       _cons |   .0065023   .0489522     0.13   0.894    -.0898348    .1028394
------------------------------------------------------------------------------

-> group = 1, dum_yr = 1

Linear regression                                      Number of obs =     300
                                                       F(  2,   297) =   13.72
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.2178
                                                       Adj R-squared =  0.2125
                                                       Root MSE      =  .81346
------------------------------------------------------------------------------
             |               Robust
    ret12m_9 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |   .4656219   .2564972     1.82   0.070    -.0391605    .9704042
    chgepspd |    .454327   .1627769     2.79   0.006     .1339847    .7746693
       _cons |   .0915692   .0511056     1.79   0.074    -.0090058    .1921442
------------------------------------------------------------------------------

-> group = 2, dum_yr = 0

Linear regression                                      Number of obs =     300
                                                       F(  2,   297) =    3.62
                                                       Prob > F      =  0.0279
                                                       R-squared     =  0.0197
                                                       Adj R-squared =  0.0131
                                                       Root MSE      =  .74027
------------------------------------------------------------------------------
             |               Robust
    ret12m_9 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |   .2258545   .1451733     1.56   0.121    -.0598442    .5115532
    chgepspd |    -.06759   .0273018    -2.48   0.014    -.1213194   -.0138606
       _cons |   .0225524   .0450202     0.50   0.617    -.0660467    .1111514
------------------------------------------------------------------------------

-> group = 2, dum_yr = 1

Linear regression                                      Number of obs =     300
                                                       F(  2,   297) =    4.63
                                                       Prob > F      =  0.0105
                                                       R-squared     =  0.1021
                                                       Adj R-squared =  0.0961
                                                       Root MSE      =  .68264
------------------------------------------------------------------------------
             |               Robust
    ret12m_9 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |   .5493884   .1888145     2.91   0.004     .1778046    .9209722
    chgepspd |   .0338676   .0907185     0.37   0.709    -.1446648    .2124001
       _cons |   .0744171   .0359792     2.07   0.039     .0036107    .1452236
------------------------------------------------------------------------------
```

Supplements for Table 5.6
The book-tax differences are calculated by using consolidated financial statements.

```
. by groupcon,sort: areg  p_pdec eps_pdec bvps_pdec, a(i_company) r
```

Group 1

```
Linear regression, absorbing indicators               Number of obs =     420
                                                      F(  2,   376) =   26.95
                                                      Prob > F      =  0.0000
                                                      R-squared     =  0.3265
                                                      Adj R-squared =  0.2495
                                                      Root MSE      =  .92766

------------------------------------------------------------------------------
             |               Robust
      p_pdec |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    eps_pdec |   .5911132   .2218558     2.66   0.008     .1548797    1.027347
   bvps_pdec |   .3236232   .0446071     7.25   0.000     .2359127    .4113338
       _cons |    .706648   .0792402     8.92   0.000     .5508387    .8624574
-------------+----------------------------------------------------------------
   i_company |   absorbed                                      (42 categories)
```

Group 2

```
Linear regression, absorbing indicators               Number of obs =     550
                                                      F(  2,   493) =   15.58
                                                      Prob > F      =  0.0000
                                                      R-squared     =  0.2458
                                                      Adj R-squared =  0.1601
                                                      Root MSE      =   .7639

------------------------------------------------------------------------------
             |               Robust
      p_pdec |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    eps_pdec |   .1868264    .106592     1.75   0.080    -.0226043    .3962571
   bvps_pdec |    .273772   .0490632     5.58   0.000     .1773733    .3701707
       _cons |   .7286081    .066555    10.95   0.000     .5978417    .8593746
-------------+----------------------------------------------------------------
   i_company |   absorbed                                      (55 categories)
```

Group 1: Pre-adoption

```
Linear regression, absorbing indicators               Number of obs =     210
                                                      F(  2,   166) =   10.57
                                                      Prob > F      =  0.0000
                                                      R-squared     =  0.3407
                                                      Adj R-squared =  0.1699
                                                      Root MSE      =  1.0433

------------------------------------------------------------------------------
             |               Robust
      p_pdec |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    eps_pdec |   .4578554   .2942712     1.56   0.122    -.1231413    1.038852
   bvps_pdec |   .2696577    .062092     4.34   0.000     .1470658    .3922496
       _cons |   .6993424   .1185252     5.90   0.000     .4653312    .9333535
-------------+----------------------------------------------------------------
   i_company |   absorbed                                      (42 categories)
```

Group 1: Post-adoption

Linear regression, absorbing indicators

Number of obs	= 210
F(2, 166)	= 49.19
Prob > F	= 0.0000
R-squared	= 0.4994
Adj R-squared	= 0.3697
Root MSE	= .78062

p_pdec	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
eps_pdec	.8520888	.2273379	3.75	0.000	.4032424	1.300935
bvps_pdec	.5012801	.0675469	7.42	0.000	.3679185	.6346418
_cons	.5238389	.0837472	6.25	0.000	.3584919	.6891859
i_company	absorbed					(42 categories)

Group 2: Pre-adoption

Linear regression, absorbing indicators

Number of obs	= 275
F(2, 218)	= 20.17
Prob > F	= 0.0000
R-squared	= 0.2978
Adj R-squared	= 0.1174
Root MSE	= .74174

p_pdec	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
eps_pdec	.0072723	.1018214	0.07	0.943	-.1934081	.2079527
bvps_pdec	.2496526	.0395962	6.30	0.000	.1716122	.327693
_cons	.7130727	.0656566	10.86	0.000	.5836698	.8424756
i_company	absorbed					(55 categories)

Group 2: Post-adoption

Linear regression, absorbing indicators

Number of obs	= 275
F(2, 218)	= 10.25
Prob > F	= 0.0001
R-squared	= 0.4701
Adj R-squared	= 0.3339
Root MSE	= .71273

p_pdec	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
eps_pdec	.4154636	.2587589	1.61	0.110	-.0945257	.9254529
bvps_pdec	.4298099	.1037811	4.14	0.000	.2252671	.6343528
_cons	.5463008	.1301529	4.20	0.000	.2897818	.8028199
i_company	absorbed					(55 categories)

.

Appendix 6

Supplements of the robustness checks

```
. areg  r15dpd epspd chgepspd , a (i_company) r

Linear regression, absorbing indicators              Number of obs =    1110
                                                     F(  2,   997) =    3.78
                                                     Prob > F      =  0.0232
                                                     R-squared     =  0.1314
                                                     Adj R-squared =  0.0338
                                                     Root MSE      =  .92016

------------------------------------------------------------------------------
             |               Robust
      r15dpd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |   .1303244   .1141883     1.14   0.254    -.0937525    .3544013
    chgepspd |   .1134042   .0589003     1.93   0.054    -.0021787     .228987
       _cons |   .1603587   .0273029     5.87   0.000      .106781    .2139365
-------------+----------------------------------------------------------------
   i_company |   absorbed                                     (111 categories)

. by dum_yr, sort: areg  r15dpd epspd chgepspd , a (i_company) r
-> dum_yr = 0

Linear regression, absorbing indicators              Number of obs =     555
                                                     F(  2,   442) =    3.48
                                                     Prob > F      =  0.0318
                                                     R-squared     =  0.2523
                                                     Adj R-squared =  0.0628
                                                     Root MSE      =  .91105

------------------------------------------------------------------------------
             |               Robust
      r15dpd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |  -.1263577   .0882173    -1.43   0.153    -.2997351    .0470197
    chgepspd |   .1529628   .0595735     2.57   0.011     .0358802    .2700453
       _cons |   .0628875   .0382718     1.64   0.101    -.0123299    .1381048
-------------+----------------------------------------------------------------
   i_company |   absorbed                                     (111 categories)


-> dum_yr = 1

Linear regression, absorbing indicators              Number of obs =     555
                                                     F(  2,   442) =    9.31
                                                     Prob > F      =  0.0001
                                                     R-squared     =  0.3067
                                                     Adj R-squared =  0.1310
                                                     Root MSE      =  .86378

------------------------------------------------------------------------------
             |               Robust
      r15dpd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |   .8574388   .2325465     3.69   0.000     .4004045    1.314473
    chgepspd |   .0037913   .1496193     0.03   0.980    -.2902623    .2978449
       _cons |   .1599641   .0373414     4.28   0.000     .0865754    .2333528
-------------+----------------------------------------------------------------
   i_company |   absorbed                                     (111 categories)
```

```
. by btgrp_co, sort: areg  r15dpd epspd chgepspd , a (i_company) r

-> btgrp_co = 1

Linear regression, absorbing indicators              Number of obs =     570
                                                     F(  2,   511) =    5.18
                                                     Prob > F      =  0.0059
                                                     R-squared     =  0.1827
                                                     Adj R-squared =  0.0899
                                                     Root MSE      =  .99773

------------------------------------------------------------------------------
             |               Robust
      r15dpd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |   .0526968   .1274598     0.41   0.679    -.1977128    .3031065
    chgepspd |   .1914234   .0655154     2.92   0.004     .0627107    .3201361
       _cons |   .1609218   .0417872     3.85   0.000      .078826    .2430177
-------------+----------------------------------------------------------------
   i_company |   absorbed                                       (57 categories)

-> btgrp_co = 2

Linear regression, absorbing indicators              Number of obs =     540
                                                     F(  2,   484) =    6.40
                                                     Prob > F      =  0.0018
                                                     R-squared     =  0.1603
                                                     Adj R-squared =  0.0648
                                                     Root MSE      =  .77812

------------------------------------------------------------------------------
             |               Robust
      r15dpd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |   .6843574   .1959287     3.49   0.001     .2993814    1.069333
    chgepspd |  -.1163827   .0427358    -2.72   0.007    -.2003532   -.0324122
       _cons |    .120785   .0313271     3.86   0.000     .0592312    .1823388
-------------+----------------------------------------------------------------
   i_company |   absorbed                                       (54 categories)

. by btgrp_co dum_yr, sort: areg  r15dpd epspd chgepspd , a (i_company) r


-> btgrp_co = 1, dum_yr = 0

Linear regression, absorbing indicators              Number of obs =     285
                                                     F(  2,   226) =    4.79
                                                     Prob > F      =  0.0092
                                                     R-squared     =  0.3565
                                                     Adj R-squared =  0.1914
                                                     Root MSE      =  .98517

------------------------------------------------------------------------------
             |               Robust
      r15dpd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |  -.1812051   .1014655    -1.79   0.075    -.3811446    .0187344
    chgepspd |   .2163341   .0731871     2.96   0.003     .0721176    .3605506
       _cons |  -.0095255   .0599336    -0.16   0.874    -.1276257    .1085746
-------------+----------------------------------------------------------------
   i_company |   absorbed                                       (57 categories)
```

```
-> btgrp_co = 1, dum_yr = 1

Linear regression, absorbing indicators            Number of obs =     285
                                                   F(  2,   226) =    9.12
                                                   Prob > F      =  0.0002
                                                   R-squared     =  0.3260
                                                   Adj R-squared =  0.1530
                                                   Root MSE      =  .90669

------------------------------------------------------------------------------
             |               Robust
      r15dpd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |   .8166589   .3150776     2.59   0.010     .1957934    1.437524
    chgepspd |   .1881135   .2226176     0.85   0.399    -.2505581    .6267852
       _cons |    .163116   .0616391     2.65   0.009      .041655    .2845769
-------------+----------------------------------------------------------------
   i_company |   absorbed                                     (57 categories)

-> btgrp_co = 2, dum_yr = 0

Linear regression, absorbing indicators            Number of obs =     270
                                                   F(  2,   214) =    4.29
                                                   Prob > F      =  0.0149
                                                   R-squared     =  0.1872
                                                   Adj R-squared = -0.0217
                                                   Root MSE      =  .75401

------------------------------------------------------------------------------
             |               Robust
      r15dpd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |    .496118    .186186     2.66   0.008     .1291246    .8631114
    chgepspd |  -.0756753    .043066    -1.76   0.080    -.1605632    .0092125
       _cons |   .0954626    .046169     2.07   0.040     .0044584    .1864668
-------------+----------------------------------------------------------------
   i_company |   absorbed                                     (54 categories)

-> btgrp_co = 2, dum_yr = 1

Linear regression, absorbing indicators            Number of obs =     270
                                                   F(  2,   214) =    3.07
                                                   Prob > F      =  0.0486
                                                   R-squared     =  0.2984
                                                   Adj R-squared =  0.1181
                                                   Root MSE      =  .80672

------------------------------------------------------------------------------
             |               Robust
      r15dpd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |   .8697283   .3512104     2.48   0.014     .1774535    1.562003
    chgepspd |  -.1699108   .1623866    -1.05   0.297    -.4899929    .1501713
       _cons |   .1433293   .0441431     3.25   0.001     .0563184    .2303402
-------------+----------------------------------------------------------------
   i_company |   absorbed                                     (54 categories)
```

```
. areg  p_pdec eps_pdec bvps_pdec , a (i_company) r

Linear regression, absorbing indicators              Number of obs =     890
                                                     F(  2,   799) =   30.88
                                                     Prob > F      =  0.0000
                                                     R-squared     =  0.2960
                                                     Adj R-squared =  0.2167
                                                     Root MSE      =  .83991

------------------------------------------------------------------------------
             |               Robust
      p_pdec |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    eps_pdec |   .4394236   .1524832     2.88   0.004     .1401086    .7387387
   bvps_pdec |   .2964236   .0384171     7.72   0.000     .2210133    .3718339
       _cons |   .7069991   .0558957    12.65   0.000     .5972793    .8167188
-------------+----------------------------------------------------------------
   i_company |   absorbed                                     (89 categories)


. by dum_yr,sort: areg  p_pdec eps_pdec bvps_pdec , a (i_company) r

-> dum_yr = 0

Linear regression, absorbing indicators              Number of obs =     445
                                                     F(  2,   354) =   20.22
                                                     Prob > F      =  0.0000
                                                     R-squared     =  0.3196
                                                     Adj R-squared =  0.1466
                                                     Root MSE      =  .88798

------------------------------------------------------------------------------
             |               Robust
      p_pdec |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    eps_pdec |   .2901164   .2014651     1.44   0.151    -.1061025    .6863354
   bvps_pdec |   .2531834   .0398114     6.36   0.000     .1748867    .3314801
       _cons |   .6922645   .0722674     9.58   0.000     .5501372    .8343919
-------------+----------------------------------------------------------------
   i_company |   absorbed                                     (89 categories)

-> dum_yr = 1

Linear regression, absorbing indicators              Number of obs =     445
                                                     F(  2,   354) =   33.69
                                                     Prob > F      =  0.0000
                                                     R-squared     =  0.4882
                                                     Adj R-squared =  0.3581
                                                     Root MSE      =  .74568

------------------------------------------------------------------------------
             |               Robust
      p_pdec |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    eps_pdec |   .6144765   .2164605     2.84   0.005     .1887661    1.040187
   bvps_pdec |   .4720252    .064768     7.29   0.000     .3446468    .5994037
       _cons |   .5267287   .0804001     6.55   0.000     .3686068    .6848507
-------------+----------------------------------------------------------------
   i_company |   absorbed                                     (89 categories)
```

```
. by btgrp_co,sort: areg  p_pdec eps_pdec bvps_pdec , a (i_company) r

-> btgrp_co = 1

Linear regression, absorbing indicators               Number of obs =     470
                                                      F(  2,   421) =   16.63
                                                      Prob > F      =  0.0000
                                                      R-squared     =  0.3239
                                                      Adj R-squared =  0.2468
                                                      Root MSE      =  .90865

------------------------------------------------------------------------------
             |               Robust
      p_pdec |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    eps_pdec |   .5179383   .2053799     2.52   0.012      .1142405     .921636
   bvps_pdec |   .3025413   .0528006     5.73   0.000      .1987557     .406327
       _cons |   .7147797   .0834059     8.57   0.000      .5508359    .8787235
-------------+----------------------------------------------------------------
   i_company |   absorbed                                      (47 categories)


-> btgrp_co = 2

Linear regression, absorbing indicators               Number of obs =     420
                                                      F(  2,   376) =   15.57
                                                      Prob > F      =  0.0000
                                                      R-squared     =  0.2604
                                                      Adj R-squared =  0.1758
                                                      Root MSE      =  .74908

------------------------------------------------------------------------------
             |               Robust
      p_pdec |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    eps_pdec |   .2457477   .1122535     2.19   0.029      .0250244    .4664711
   bvps_pdec |   .3132999   .0561571     5.58   0.000      .2028786    .4237212
       _cons |   .6758467   .0687901     9.82   0.000      .5405852    .8111082
-------------+----------------------------------------------------------------
   i_company |   absorbed                                      (42 categories)


. by btgrp_co dum_yr,sort: areg  p_pdec eps_pdec bvps_pdec , a (i_company) r
-> btgrp_co = 1, dum_yr = 0

Linear regression, absorbing indicators               Number of obs =     235
                                                      F(  2,   186) =   10.46
                                                      Prob > F      =  0.0000
                                                      R-squared     =  0.3396
                                                      Adj R-squared =  0.1691
                                                      Root MSE      =  1.0276

------------------------------------------------------------------------------
             |               Robust
      p_pdec |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    eps_pdec |   .3509273   .2682813     1.31   0.192      -.178338    .8801927
   bvps_pdec |   .2561798   .0568905     4.50   0.000      .1439462    .3684134
       _cons |   .6780099   .1113045     6.09   0.000      .4584284    .8975913
-------------+----------------------------------------------------------------
   i_company |   absorbed                                      (47 categories)
```

```
-> btgrp_co = 1, dum_yr = 1

Linear regression, absorbing indicators               Number of obs =      235
                                                      F(  2,   186) =    56.73
                                                      Prob > F      =   0.0000
                                                      R-squared     =   0.5489
                                                      Adj R-squared =   0.4325
                                                      Root MSE      =   .71571

------------------------------------------------------------------------------
             |               Robust
      p_pdec |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    eps_pdec |   .9697943   .2355446     4.12   0.000     .5051119    1.434477
   bvps_pdec |   .4545966   .0595101     7.64   0.000      .337195    .5719982
       _cons |   .5351587   .0695148     7.70   0.000     .3980198    .6722976
-------------+----------------------------------------------------------------
   i_company |   absorbed                                     (47 categories)

-> btgrp_co = 2, dum_yr = 0

Linear regression, absorbing indicators               Number of obs =      210
                                                      F(  2,   166) =    19.36
                                                      Prob > F      =   0.0000
                                                      R-squared     =   0.2907
                                                      Adj R-squared =   0.1069
                                                      Root MSE      =   .69441

------------------------------------------------------------------------------
             |               Robust
      p_pdec |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    eps_pdec |   .1054519   .0827469     1.27   0.204    -.0579202    .2688239
   bvps_pdec |   .2834541   .0461619     6.14   0.000      .192314    .3745941
       _cons |   .6820849   .0668603    10.20   0.000     .5500787     .814091
-------------+----------------------------------------------------------------
   i_company |   absorbed                                     (42 categories)

-> btgrp_co = 2, dum_yr = 1

Linear regression, absorbing indicators               Number of obs =      210
                                                      F(  2,   166) =     6.47
                                                      Prob > F      =   0.0020
                                                      R-squared     =   0.4366
                                                      Adj R-squared =   0.2907
                                                      Root MSE      =   .76262

------------------------------------------------------------------------------
             |               Robust
      p_pdec |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    eps_pdec |    .364684   .2848491     1.28   0.202    -.1977099     .927078
   bvps_pdec |   .4725883   .1401412     3.37   0.001     .1958994    .7492772
       _cons |   .4928653   .1757772     2.80   0.006     .1458181    .8399124
-------------+----------------------------------------------------------------
   i_company |   absorbed                                     (42 categories)
```

Appendix 7

Supplement for Table 5.8

```
. by i_industry dum_yr, sort: reg r15dpd epspd chgepspd

i_industry = 1, dum_yr = 0

      Source |       SS       df       MS              Number of obs =     110
-------------+------------------------------           F(  2,   107) =   31.42
       Model |  41.7636029     2  20.8818015           Prob > F      =  0.0000
    Residual |  71.1027864   107  .664512023           R-squared     =  0.3700
-------------+------------------------------           Adj R-squared =  0.3583
       Total |  112.866389   109  1.03547146           Root MSE      =  .81518

------------------------------------------------------------------------------
      r15dpd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |   1.608953   .2146275     7.50   0.000     1.183479    2.034426
    chgepspd |  -.4260896   .1069463    -3.98   0.000    -.6380982   -.214081
       _cons |   .0237286    .085675     0.28   0.782     -.146112    .1935693
------------------------------------------------------------------------------

i_industry = 1, dum_yr = 1

      Source |       SS       df       MS              Number of obs =     110
-------------+------------------------------           F(  2,   107) =   73.35
       Model |  46.4654111     2  23.2327056           Prob > F      =  0.0000
    Residual |  33.8913413   107  .316741508           R-squared     =  0.5782
-------------+------------------------------           Adj R-squared =  0.5704
       Total |  80.3567524   109  .737217912           Root MSE      =   .5628

------------------------------------------------------------------------------
      r15dpd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |   1.434717   .2193743     6.54   0.000     .9998332    1.869601
    chgepspd |   1.686012   .2774001     6.08   0.000     1.136099    2.235926
       _cons |    -.02823    .061196    -0.46   0.646    -.1495439     .093084
------------------------------------------------------------------------------

i_industry = 2, dum_yr = 0

      Source |       SS       df       MS              Number of obs =      75
-------------+------------------------------           F(  2,    72) =    5.75
       Model |   3.5154771     2  1.75773855           Prob > F      =  0.0048
    Residual |   21.996013    72  .305500181           R-squared     =  0.1378
-------------+------------------------------           Adj R-squared =  0.1138
       Total |  25.5114901    74  .344749867           Root MSE      =  .55272

------------------------------------------------------------------------------
      r15dpd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |   .2701863   .1056412     2.56   0.013     .0595945    .4807781
    chgepspd |    .056317   .0636206     0.89   0.379    -.0705083    .1831423
       _cons |   .0326302   .0641861     0.51   0.613    -.0953225    .1605828
------------------------------------------------------------------------------
```

```
i_industry = 2, dum_yr = 1

      Source |       SS       df       MS              Number of obs =      75
-------------+------------------------------           F(  2,    72) =   18.73
       Model |  19.2852932     2  9.64264658           Prob > F      =  0.0000
    Residual |  37.0735799    72  .514910831           R-squared     =  0.3422
-------------+------------------------------           Adj R-squared =  0.3239
       Total |   56.358873    74  .761606392           Root MSE      =  .71757

------------------------------------------------------------------------------
      r15dpd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |   1.132919   .1980402     5.72   0.000     .7381326    1.527704
     chgepspd |  -.3033679   .2136445    -1.42   0.160    -.7292605    .1225246
       _cons |    .188567   .0886442     2.13   0.037     .0118581    .3652759
------------------------------------------------------------------------------
i_industry = 4, dum_yr = 0

      Source |       SS       df       MS              Number of obs =      60
-------------+------------------------------           F(  2,    57) =    2.33
       Model |  1.59673953     2  .798369767           Prob > F      =  0.1060
    Residual |  19.4924245    57   .34197236           R-squared     =  0.0757
-------------+------------------------------           Adj R-squared =  0.0433
       Total |   21.089164    59  .357443458           Root MSE      =  .58478

------------------------------------------------------------------------------
      r15dpd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |   .0351969   .1204689     0.29   0.771    -.2060379    .2764318
    chgepspd |    .043521   .0342219     1.27   0.209    -.0250072    .1120492
       _cons |  -.0632379   .0800449    -0.79   0.433     -.223525    .0970493
------------------------------------------------------------------------------
i_industry = 4, dum_yr = 1

      Source |       SS       df       MS              Number of obs =      61
-------------+------------------------------           F(  2,    58) =    9.68
       Model |  7.40589919     2  3.70294959           Prob > F      =  0.0002
    Residual |   22.176632    58  .382355724           R-squared     =  0.2503
-------------+------------------------------           Adj R-squared =  0.2245
       Total |  29.5825312    60  .493042186           Root MSE      =  .61835

------------------------------------------------------------------------------
      r15dpd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |   1.149749   .2774793     4.14   0.000     .5943137    1.705184
    chgepspd |  -.0142182   .1658304    -0.09   0.932    -.3461639    .3177275
       _cons |   .1101577   .0877017     1.26   0.214    -.0653963    .2857116
------------------------------------------------------------------------------

i_industry = 5, dum_yr = 0

      Source |       SS       df       MS              Number of obs =     105
-------------+------------------------------           F(  2,   102) =   35.90
       Model |   71.439066     2   35.719533           Prob > F      =  0.0000
    Residual |  101.492293   102  .995022482           R-squared     =  0.4131
-------------+------------------------------           Adj R-squared =  0.4016
       Total |  172.931359   104  1.66280153           Root MSE      =  .99751

------------------------------------------------------------------------------
      r15dpd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |  -.1049312   .0648534    -1.62   0.109    -.2335676    .0237053
    chgepspd |   .1959053   .0245061     7.99   0.000     .1472976    .2445131
       _cons |  -.1880015   .1057033    -1.78   0.078    -.3976635    .0216604
------------------------------------------------------------------------------
```

```
i_industry = 5, dum_yr = 1

      Source |       SS       df       MS              Number of obs =     104
-------------+------------------------------           F(  2,   101) =   22.16
       Model |  53.4344768     2  26.7172384           Prob > F      =  0.0000
    Residual |  121.785696   101  1.20579897           R-squared     =  0.3050
-------------+------------------------------           Adj R-squared =  0.2912
       Total |  175.220173   103  1.70116672           Root MSE      =  1.0981

------------------------------------------------------------------------------
      r15dpd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |   .3375156   .1757735     1.92   0.058    -.0111717     .686203
    chgepspd |   .7236795   .1572356     4.60   0.000     .4117664    1.035593
       _cons |   .1594432   .1140515     1.40   0.165    -.0668044    .3856907
------------------------------------------------------------------------------

i_industry = 6, dum_yr = 0

      Source |       SS       df       MS              Number of obs =      20
-------------+------------------------------           F(  2,    17) =    8.31
       Model |  1.75564823     2  .877824115           Prob > F      =  0.0030
    Residual |  1.79604145    17  .105649497           R-squared     =  0.4943
-------------+------------------------------           Adj R-squared =  0.4348
       Total |  3.55168968    19  .186931036           Root MSE      =  .32504

------------------------------------------------------------------------------
      r15dpd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |  -.2978414   .1193117    -2.50   0.023    -.5495672   -.0461157
    chgepspd |   .2093932   .1288777     1.62   0.123    -.0625149    .4813014
       _cons |   -.169255   .0769591    -2.20   0.042    -.3316245   -.0068856
------------------------------------------------------------------------------
i_industry = 6, dum_yr = 1

      Source |       SS       df       MS              Number of obs =      20
-------------+------------------------------           F(  2,    17) =    1.86
       Model |  2.21613146     2  1.10806573           Prob > F      =  0.1857
    Residual |  10.1166678    17  .595098104           R-squared     =  0.1797
-------------+------------------------------           Adj R-squared =  0.0832
       Total |  12.3327992    19  .649094696           Root MSE      =  .77143

------------------------------------------------------------------------------
      r15dpd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |   .2944594   .5825619     0.51   0.620    -.9346387    1.523557
    chgepspd |  -.9473653    .534489    -1.77   0.094    -2.075038     .180308
       _cons |   .2049269   .1759995     1.16   0.260    -.1663995    .5762533
------------------------------------------------------------------------------
i_industry = 7, dum_yr = 0

      Source |       SS       df       MS              Number of obs =     165
-------------+------------------------------           F(  2,   162) =    6.59
       Model |  6.09255228     2  3.04627614           Prob > F      =  0.0018
    Residual |  74.8395411   162  .461972476           R-squared     =  0.0753
-------------+------------------------------           Adj R-squared =  0.0639
       Total |  80.9320934   164  .493488374           Root MSE      =  .67969

------------------------------------------------------------------------------
      r15dpd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |  -.3859608   .1065976    -3.62   0.000    -.5964608   -.1754608
    chgepspd |   .0908716   .0385275     2.36   0.020     .0147907    .1669525
       _cons |   .0898388    .053127     1.69   0.093     -.015072    .1947495
------------------------------------------------------------------------------
```

```
i_industry = 7, dum_yr = 1

      Source |       SS       df       MS              Number of obs =     165
-------------+------------------------------           F(  2,   162) =    9.15
       Model |  11.6826695     2  5.84133473           Prob > F      =  0.0002
    Residual |  103.443833   162  .638542177           R-squared     =  0.1015
-------------+------------------------------           Adj R-squared =  0.0904
       Total |  115.126502   164  .701990867           Root MSE      =  .79909

------------------------------------------------------------------------------
      r15dpd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |   .9237158   .2166485     4.26   0.000     .4958966    1.351535
    chgepspd |  -.3386609   .1337815    -2.53   0.012    -.6028413   -.0744804
       _cons |   .1750899    .066232     2.64   0.009     .0443005    .3058793
------------------------------------------------------------------------------
i_industry = 8, dum_yr = 0

      Source |       SS       df       MS              Number of obs =      65
-------------+------------------------------           F(  2,    62) =    5.40
       Model |  14.8659766     2   7.4329883           Prob > F      =  0.0069
    Residual |  85.3588757    62  1.37675606           R-squared     =  0.1483
-------------+------------------------------           Adj R-squared =  0.1209
       Total |  100.224852    64  1.56601332           Root MSE      =  1.1734

------------------------------------------------------------------------------
      r15dpd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |  -1.165802   .3600456    -3.24   0.002    -1.885523   -.4460809
    chgepspd |   .1314879   .1101931     1.19   0.237     -.088785    .3517608
       _cons |   .1347125   .1525465     0.88   0.381    -.1702236    .4396486
------------------------------------------------------------------------------
i_industry = 8, dum_yr = 1
      Source |       SS       df       MS              Number of obs =      65
-------------+------------------------------           F(  2,    62) =    0.62
       Model |  .688436453     2  .344218227           Prob > F      =  0.5426
    Residual |  34.5649863    62  .557499779           R-squared     =  0.0195
-------------+------------------------------           Adj R-squared = -0.0121
       Total |  35.2534228    64  .550834731           Root MSE      =  .74666

------------------------------------------------------------------------------
      r15dpd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |   .3070482   .3056888     1.00   0.319     -.304015    .9181114
    chgepspd |  -.1272807   .1458305    -0.87   0.386    -.4187918    .1642303
       _cons |   .0187662   .0938773     0.20   0.842    -.1688919    .2064243
------------------------------------------------------------------------------.
```

Appendix 8

Supplements of Table 5.9

Negative income tax expenses are excluded.

```
. xtfmb  r15dp epspd chgepspd if btgrp_co==1&dy==0

Fama-MacBeth (1973) Two-Step procedure           Number of obs     =       245
                                                 Num. time periods =         7
                                                 F(  2,      6)     =      4.02
                                                 Prob > F          =    0.0782
                                                 avg. R-squared    =    0.2774
------------------------------------------------------------------------------
             |            Fama-MacBeth
       r15dp |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |   1.133283   .5418964     2.09   0.081      -.19269    2.459256
    chgepspd |  -.0912215   .5481347    -0.17   0.873    -1.432459    1.250016
       _cons |  -.0490987   .1622325    -0.30   0.772    -.4460674      .34787
------------------------------------------------------------------------------

. xtfmb  r15dp epspd chgepspd if btgrp_co==1&dy==1

Fama-MacBeth (1973) Two-Step procedure           Number of obs     =       280
                                                 Num. time periods =         8
                                                 F(  2,      7)     =      6.32
                                                 Prob > F          =    0.0270
                                                 avg. R-squared    =    0.3226
------------------------------------------------------------------------------
             |            Fama-MacBeth
       r15dp |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |   1.483342   .4391751     3.38   0.012     .4448577    2.521826
    chgepspd |   .4422784   .2552547     1.73   0.127    -.1613031     1.04586
       _cons |   .0514022   .1470424     0.35   0.737    -.2962977    .3991022
------------------------------------------------------------------------------

. xtfmb  r15dp epspd chgepspd if btgrp_co==2&dy==0

Fama-MacBeth (1973) Two-Step procedure           Number of obs     =       203
                                                 Num. time periods =         7
                                                 F(  2,      6)     =      9.83
                                                 Prob > F          =    0.0128
                                                 avg. R-squared    =    0.1746
------------------------------------------------------------------------------
             |            Fama-MacBeth
       r15dp |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |     1.8412   .7453743     2.47   0.048     .0173347    3.665065
    chgepspd |   .0799081   .9589447     0.08   0.936    -2.266545    2.426361
       _cons |  -.1372857   .0729171    -1.88   0.109    -.3157073     .041136
------------------------------------------------------------------------------

. xtfmb  r15dp epspd chgepspd if btgrp_co==2&dy==1

Fama-MacBeth (1973) Two-Step procedure           Number of obs     =       232
                                                 Num. time periods =         8
                                                 F(  2,      7)     =      1.96
                                                 Prob > F          =    0.2114
                                                 avg. R-squared    =    0.3016
------------------------------------------------------------------------------
             |            Fama-MacBeth
       r15dp |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       epspd |   1.364532   .6903953     1.98   0.089    -.2679936    2.997057
    chgepspd |   .4212242   .5512716     0.76   0.470     -.882326    1.724774
       _cons |   .0867522   .0915878     0.95   0.375    -.1298185    .3033228
------------------------------------------------------------------------------
```

```
. xtfmb  pavgmar r_acc_eps bvps if btgrp_co==1&dy==0

Fama-MacBeth (1973) Two-Step procedure          Number of obs     =       180
                                                Num. time periods =         5
                                                F(  2,      4)    =     28.67
                                                Prob > F          =    0.0043
                                                avg. R-squared    =    0.4480
------------------------------------------------------------------------------
             |             Fama-MacBeth
     pavgmar |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   r_acc_eps |   5.239455   2.343105     2.24   0.089    -1.266048    11.74496
        bvps |   .1006767    .331238     0.30   0.776    -.8189875    1.020341
       _cons |   19.13175   7.814802     2.45   0.071     -2.56562    40.82912
------------------------------------------------------------------------------


. xtfmb  pavgmar r_acc_eps bvps if btgrp_co==1&dy==1

Fama-MacBeth (1973) Two-Step procedure          Number of obs     =       288
                                                Num. time periods =         8
                                                F(  2,      7)    =    254.13
                                                Prob > F          =    0.0000
                                                avg. R-squared    =    0.7262
------------------------------------------------------------------------------
             |             Fama-MacBeth
     pavgmar |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   r_acc_eps |   10.50471   2.723294     3.86   0.006     4.065139    16.94427
        bvps |   .0098099    .221182     0.04   0.966    -.5132023    .5328222
       _cons |  -1.204026   1.413501    -0.85   0.423    -4.546424    2.138372
------------------------------------------------------------------------------


. xtfmb  pavgmar r_acc_eps bvps if btgrp_co==2&dy==0

Fama-MacBeth (1973) Two-Step procedure          Number of obs     =       145
                                                Num. time periods =         5
                                                F(  2,      4)    =     26.39
                                                Prob > F          =    0.0050
                                                avg. R-squared    =    0.3131
------------------------------------------------------------------------------
             |             Fama-MacBeth
     pavgmar |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   r_acc_eps |   4.585113   2.499786     1.83   0.141    -2.355405    11.52563
        bvps |   .3761158   .4938016     0.76   0.489    -.9948972    1.747129
       _cons |   29.46225   14.38937     2.05   0.110    -10.48903    69.41353
------------------------------------------------------------------------------


. xtfmb  pavgmar r_acc_eps bvps if btgrp_co==2&dy==1

Fama-MacBeth (1973) Two-Step procedure          Number of obs     =       232
                                                Num. time periods =         8
                                                F(  2,      7)    =     46.47
                                                Prob > F          =    0.0001
                                                avg. R-squared    =    0.8692
------------------------------------------------------------------------------
             |             Fama-MacBeth
     pavgmar |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   r_acc_eps |   9.231548   2.130903     4.33   0.003     4.192763    14.27033
        bvps |   .2066416   .1300785     1.59   0.156    -.1009451    .5142283
       _cons |   5.486903   1.951051     2.81   0.026        .8734    10.10041
------------------------------------------------------------------------------


.
```

Appendix 9

<u>Supplements for Table 6.4</u>

j = 0:

```
. reg epsp bhr12month_9, r

Linear regression                                      Number of obs =    3457
                                                       F(  1,  3455) =   61.89
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.0300
                                                       Root MSE      =  .40952

------------------------------------------------------------------------------
             |               Robust
        epsp |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
bhr12month_9 |   .1234522   .0156918     7.87   0.000      .092686    .1542184
       _cons |   .0030896   .0069887     0.44   0.658    -.0106127    .0167919
------------------------------------------------------------------------------

. reg epsp bhr12month_9,

      Source |       SS       df       MS              Number of obs =    3457
-------------+------------------------------           F(  1,  3455) =  106.80
       Model |  17.9119193     1  17.9119193           Prob > F      =  0.0000
    Residual |  579.434367  3455  .167708934           R-squared     =  0.0300
-------------+------------------------------           Adj R-squared =  0.0297
       Total |  597.346287  3456  .172843254           Root MSE      =  .40952

------------------------------------------------------------------------------
        epsp |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
bhr12month_9 |   .1234522   .0119455    10.33   0.000     .1000312    .1468732
       _cons |   .0030896   .0069682     0.44   0.658    -.0105727    .0167519
------------------------------------------------------------------------------
```

```
. reg epsp bhr12month_9 if z==0, r

Linear regression                                      Number of obs =    1343
                                                       F(  1,  1341) =    2.45
                                                       Prob > F      =  0.1175
                                                       R-squared     =  0.0035
                                                       Root MSE      =  .39065

------------------------------------------------------------------------------
             |               Robust
        epsp |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
bhr12month_9 |   .0399635   .0255161     1.57   0.118    -.0100924    .0900193
       _cons |   .0661171   .0134356     4.92   0.000       .03976    .0924742
------------------------------------------------------------------------------

. reg epsp bhr12month_9 if z==0,

      Source |       SS       df       MS              Number of obs =    1343
-------------+------------------------------           F(  1,  1341) =    4.67
       Model |  .713235111     1  .713235111           Prob > F      =  0.0308
    Residual |  204.643229  1341  .152604944           R-squared     =  0.0035
-------------+------------------------------           Adj R-squared =  0.0027
       Total |  205.356465  1342  .153022701           Root MSE      =  .39065

------------------------------------------------------------------------------
        epsp |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
bhr12month_9 |   .0399635   .0184855     2.16   0.031     .0036998    .0762271
       _cons |   .0661171    .014237     4.64   0.000     .0381878    .0940464
------------------------------------------------------------------------------

. reg epsp bhr12month_9 if z==1, r

Linear regression                                      Number of obs =    2114
                                                       F(  1,  2112) =   38.75
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.0179
                                                       Root MSE      =  .41809

------------------------------------------------------------------------------
             |               Robust
        epsp |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
bhr12month_9 |   .2403937   .0386184     6.22   0.000     .1646598    .3161277
       _cons |   .0313897   .0145305     2.16   0.031     .0028941    .0598852
------------------------------------------------------------------------------


. reg epsp bhr12month_9 if z==1,

      Source |       SS       df       MS              Number of obs =    2114
-------------+------------------------------           F(  1,  2112) =   38.52
       Model |  6.73355103     1  6.73355103           Prob > F      =  0.0000
    Residual |  369.170461  2112   .17479662           R-squared     =  0.0179
-------------+------------------------------           Adj R-squared =  0.0174
       Total |  375.904012  2113  .177900621           Root MSE      =  .41809

------------------------------------------------------------------------------
        epsp |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
bhr12month_9 |   .2403937   .0387318     6.21   0.000     .1644373    .3163502
       _cons |   .0313897   .0164152     1.91   0.056    -.0008019    .0635812
------------------------------------------------------------------------------
```

	Positive returns samples		Negative returns samples
Adjusted R^2	0.0027	**<**	**0.0174**

The higher R^2 indicates a better performance in capturing economic consequences when returns are negative (Basu 1997).

j = 2:

```
. reg eps3p z bhr3mar zr, r

Linear regression                                      Number of obs =    2484
                                                       F(  3,  2480) =   54.75
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.0702
                                                       Root MSE      =  .72097

------------------------------------------------------------------------------
             |               Robust
       eps3p |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           z |  -.0251027    .054022    -0.46   0.642    -.1310356    .0808303
     bhr3mar |    .130956   .0442957     2.96   0.003     .0440956    .2178163
          zr |   .2324754   .0673401     3.45   0.001     .1004268    .3645239
       _cons |   .2107883   .0415925     5.07   0.000     .1292288    .2923479
------------------------------------------------------------------------------

. reg eps3p bhr3mar, r

Linear regression                                      Number of obs =    2484
                                                       F(  1,  2482) =   63.07
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.0637
                                                       Root MSE      =  .72318

------------------------------------------------------------------------------
             |               Robust
       eps3p |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     bhr3mar |   .2013883    .025358     7.94   0.000     .1516634    .2511133
       _cons |      .1122   .0152814     7.34   0.000     .0822344    .1421655
------------------------------------------------------------------------------

. reg eps3p bhr3mar,

      Source |       SS       df       MS              Number of obs =    2484
-------------+------------------------------           F(  1,  2482) =  168.99
       Model |  88.3775351     1  88.3775351           Prob > F      =  0.0000
    Residual |  1298.04983  2482  .522985426           R-squared     =  0.0637
-------------+------------------------------           Adj R-squared =  0.0634
       Total |  1386.42736  2483  .558367846           Root MSE      =  .72318

------------------------------------------------------------------------------
       eps3p |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     bhr3mar |   .2013883    .015492    13.00   0.000     .1710097    .2317669
       _cons |      .1122    .014553     7.71   0.000     .0836628    .1407372
------------------------------------------------------------------------------
```

```
. reg eps3p bhr3mar if z==0, r

Linear regression                                      Number of obs =     811
                                                       F(  1,   809) =    8.73
                                                       Prob > F      =  0.0032
                                                       R-squared     =  0.0223
                                                       Root MSE      =  .89551

------------------------------------------------------------------------------
             |               Robust
       eps3p |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     bhr3mar |    .130956   .0443147     2.96   0.003     .0439707    .2179412
       _cons |   .2107883   .0416103     5.07   0.000     .1291114    .2924652
------------------------------------------------------------------------------

. reg eps3p bhr3mar if z==0

      Source |       SS       df       MS              Number of obs =     811
-------------+------------------------------           F(  1,   809) =   18.44
       Model |  14.7868987     1  14.7868987           Prob > F      =  0.0000
    Residual |  648.766608   809  .801936474           R-squared     =  0.0223
-------------+------------------------------           Adj R-squared =  0.0211
       Total |  663.553507   810   .81920186           Root MSE      =  .89551

------------------------------------------------------------------------------
       eps3p |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     bhr3mar |    .130956    .030497     4.29   0.000     .0710934    .1908185
       _cons |   .2107883    .042189     5.00   0.000     .1279755    .2936012
------------------------------------------------------------------------------

. reg eps3p bhr3mar if z==1, r

Linear regression                                      Number of obs =    1673
                                                       F(  1,  1671) =   51.36
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.0254
                                                       Root MSE      =  .61903

------------------------------------------------------------------------------
             |               Robust
       eps3p |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     bhr3mar |   .3634313   .0507101     7.17   0.000     .2639694    .4628932
       _cons |   .1856856   .0344667     5.39   0.000     .1180832    .2532881
------------------------------------------------------------------------------

. reg eps3p bhr3mar if z==1,

      Source |       SS       df       MS              Number of obs =    1673
-------------+------------------------------           F(  1,  1671) =   43.52
       Model |  16.6785721     1  16.6785721           Prob > F      =  0.0000
    Residual |  640.328276  1671  .383200644           R-squared     =  0.0254
-------------+------------------------------           Adj R-squared =  0.0248
       Total |  657.006848  1672  .392946679           Root MSE      =  .61903

------------------------------------------------------------------------------
       eps3p |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     bhr3mar |   .3634313   .0550879     6.60   0.000     .2553828    .4714798
       _cons |   .1856856   .0340703     5.45   0.000     .1188606    .2525106
------------------------------------------------------------------------------
```

	Positive returns samples		Negative returns samples
Adjusted R^2	0.0211	**<**	**0.0248**

The higher R^2 indicates a better performance in capturing economic consequences when returns are negative (Basu 1997).

Appendix 10

The book-tax difference is calculated from consolidated financial statements. It is ranked and scaled into five groups (scrnkbt) for all analyses.

```
. areg chgepsp z scrnkbt zbt l_chgepsp zlchg btlchg zbtlchg, a (i_company) r

Linear regression, absorbing indicators              Number of obs =    2108
                                                     F(  7,  1714) =   27.58
                                                     Prob > F      =  0.0000
                                                     R-squared     =  0.3852
                                                     Adj R-squared =  0.2442
                                                     Root MSE      =  .18541

------------------------------------------------------------------------------
             |               Robust
     chgepsp |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           z |   .0233564   .0156597     1.49   0.136    -.0073578    .0540706
     scrnkbt |   .1177496   .0274471     4.29   0.000     .0639162    .1715831
         zbt |  -.0563354   .0272459    -2.07   0.039    -.1097741   -.0028968
   l_chgepsp |   .0497309   .0918472     0.54   0.588    -.1304135    .2298753
       zlchg |  -.4259983   .2122827    -2.01   0.045    -.8423587   -.0096379
      btlchg |  -.1558419   .1334193    -1.17   0.243    -.4175236    .1058399
     zbtlchg |  -.5065355   .2972502    -1.70   0.089    -1.089547    .0764759
       _cons |  -.0701638    .014376    -4.88   0.000    -.0983601   -.0419675
-------------+----------------------------------------------------------------
   i_company |   absorbed                                     (387 categories)
```

```
. areg absbtm scrnkbt, a (i_company) r

Linear regression, absorbing indicators              Number of obs =    2422
                                                     F(  1,  1975) =    8.77
                                                     Prob > F      =  0.0031
                                                     R-squared     =  0.3369
                                                     Adj R-squared =  0.1871
                                                     Root MSE      =   .0013

------------------------------------------------------------------------------
             |               Robust
      absbtm |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     scrnkbt |   .0005148   .0001738     2.96   0.003     .0001739    .0008557
       _cons |  -.0015626   .0000908   -17.21   0.000    -.0017407   -.0013845
-------------+----------------------------------------------------------------
   i_company |   absorbed                                     (446 categories)
```

```
. areg absbtm scrnkbt lev lnast salegrw , a (i_company) r

Linear regression, absorbing indicators              Number of obs =    2328
                                                     F(  4,  1895) =   21.68
                                                     Prob > F      =  0.0000
                                                     R-squared     =  0.3689
                                                     Adj R-squared =  0.2251
                                                     Root MSE      =  .00128

------------------------------------------------------------------------------
             |               Robust
      absbtm |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     scrnkbt |   .0010166   .0001961     5.19   0.000      .0006321    .0014011
         lev |  -.0012993   .0002761    -4.71   0.000     -.0018408   -.0007577
       lnast |  -.0006123   .0000746    -8.21   0.000     -.0007586    -.000466
     salegrw |   .0000123   .0000151     0.81   0.416     -.0000174     .000042
       _cons |   .0078399   .0010742     7.30   0.000      .0057332    .0099466
-------------+----------------------------------------------------------------
   i_company |   absorbed                                     (429 categories)

. areg absbtm scrnkbt lnnbo lnnbb cgratio sh lev lnast salegrw , a (i_company) r

Linear regression, absorbing indicators              Number of obs =    1991
                                                     F(  8,  1568) =   12.55
                                                     Prob > F      =  0.0000
                                                     R-squared     =  0.4928
                                                     Adj R-squared =  0.3563
                                                     Root MSE      =  .00119

------------------------------------------------------------------------------
             |               Robust
      absbtm |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     scrnkbt |   .0005825   .0001902     3.06   0.002      .0002094    .0009556
       lnnbo |   .0005296   .0003176     1.67   0.096     -.0000933    .0011526
       lnnbb |  -.0006458   .0001836    -3.52   0.000     -.0010059   -.0002858
     cgratio |   .0027235   .0004339     6.28   0.000      .0018725    .0035745
          sh |   -.000431   .0002408    -1.79   0.074     -.0009034    .0000413
         lev |     -.0011   .0003077    -3.58   0.000     -.0017035   -.0004965
       lnast |  -.0003612    .000109    -3.31   0.001     -.0005751   -.0001474
     salegrw |   .0001817   .0000753     2.41   0.016      .0000341    .0003293
       _cons |   .0044444   .0014437     3.08   0.002      .0016126    .0072762
-------------+----------------------------------------------------------------
   i_company |   absorbed                                     (415 categories)
```

```
. areg absacc3 scrnkbt, a (i_company) r

Linear regression, absorbing indicators              Number of obs =    1206
                                                     F(  1,   942) =    0.10
                                                     Prob > F      =  0.7519
                                                     R-squared     =  0.3640
                                                     Adj R-squared =  0.1865
                                                     Root MSE      =  8.4162

------------------------------------------------------------------------------
             |               Robust
     absacc3 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     scrnkbt |  -.5103442   1.613564    -0.32   0.752     -3.67694    2.656251
       _cons |   .8367225   .8264547     1.01   0.312    -.7851828    2.458628
-------------+----------------------------------------------------------------
   i_company |   absorbed                                     (263 categories)

. areg absacc3 scrnkbt lev lnast salegrw , a (i_company) r

Linear regression, absorbing indicators              Number of obs =    1206
                                                     F(  4,   939) =    0.32
                                                     Prob > F      =  0.8619
                                                     R-squared     =  0.3654
                                                     Adj R-squared =  0.1856
                                                     Root MSE      =  8.4205

------------------------------------------------------------------------------
             |               Robust
     absacc3 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     scrnkbt |  -.1503079    1.75989    -0.09   0.932    -3.604081    3.303465
         lev |   3.533483   3.776081     0.94   0.350    -3.877052    10.94402
       lnast |   -.552705   .9909231    -0.56   0.577    -2.497385    1.391975
     salegrw |  -.2272331   .7864011    -0.29   0.773     -1.77054    1.316074
       _cons |   7.405721   14.55676     0.51   0.611    -21.16182    35.97326
-------------+----------------------------------------------------------------
   i_company |   absorbed                                     (263 categories)
```

```
. areg absacc3 scrnkbt lnnbo lnnbb cgratio sh lev lnast salegrw , a (i_company) r

Linear regression, absorbing indicators              Number of obs =    1165
                                                     F(  8,   899) =    0.80
                                                     Prob > F      =  0.6024
                                                     R-squared     =  0.3739
                                                     Adj R-squared =  0.1894
                                                     Root MSE      =  8.1143

------------------------------------------------------------------------------
             |               Robust
     absacc3 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     scrnkbt |  -.4377216    1.76492    -0.25   0.804    -3.901564     3.02612
       lnnbo |  -.5438646    3.01935    -0.18   0.857    -6.469659     5.38193
       lnnbb |  -.6919294   1.883157    -0.37   0.713    -4.387825    3.003966
     cgratio |  -1.868891    4.22338    -0.44   0.658    -10.15772    6.419942
          sh |  -2.245795   2.291469    -0.98   0.327    -6.743046    2.251456
         lev |  -.2413433   3.576336    -0.07   0.946    -7.260283    6.777597
       lnast |   .1803912    1.34459     0.13   0.893     -2.45851    2.819292
     salegrw |  -.1447199   .7823225    -0.18   0.853    -1.680111    1.390671
       _cons |   4.222232   17.75261     0.24   0.812    -30.61915    39.06362
-------------+----------------------------------------------------------------
     i_company |   absorbed                                     (258 categories)
```

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