DETERMINANTS AND CONSEQUENCES OF ACCOUNTING MISSTATEMENTS IN THAILAND: AN ANALYSIS OF FIRMS SUBJECT TO ENFORCEMENT ACTIONS AND RESTATED FINANCIAL REPORTS

BY

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ABSTRACT

While the determinants of low earnings quality (GAAP violation) have been examined in prior research, very few studies have been undertaken in firms with concentrated ownership. Financial reporting in concentrated ownership firms is important because the types of agency conflict shift from the shareholder-agent conflict to the principal-principal conflict (i.e. a conflict between controlling shareholders and outside investors). Against this background, this research aims to reveal the determinants of accounting misstatements in concentrated ownership firms and Thai firms form the basis of the sample. In addition, the research assesses the economic consequences of accounting misstatements – an issue that has received relatively little attention in prior research.

A study was conducted of a sample of 51 misstatement firm-years, compared with 2,452 non-misstatement firm-years for the financial reports of public companies listed on Thailand Stock Exchange during 2001-2009. The results indicate that Thai firms are more likely to misstate their financial reports when they are close to debt covenant violations and when they need external finance. Corporate governance mechanisms are also important factors influencing the likelihood of accounting misstatements. The likelihood of accounting misstatements increases when the ultimate owner holds more than 25% of the total shares. The determinants of accounting misstatements coincide with the institutional settings of the country.

The study of the consequences of accounting misstatements reveals that misstating firms are more financially constrained than non-misstating firms after misstatement announcements. The net amount of capital supplied by capital providers falls significantly, particularly in the net proceeds from share issuances. The examination of both the determinants and consequences of accounting misstatements extends our understanding on the cost-benefit trade-off in the financial reporting process. The insights from this research might also be applicable to other countries where the country's institutions are similar to those of Thailand and where ownership concentration is high.

DEDICATION

In memory of my beloved Brother, Sarawut LERTMALAIMAN

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TABLE OF CONTENTS

Contents **Page**

LIST OF TABLES

Page

LIST OF FIGURES

Page

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

According to agency theory (Jensen and Meckling 1976) the primary agency conflict in corporations (i.e. the principal-agent conflict) occurs between dispersed shareholders and professional managers (Berle and Means 1932). In contrast, in emerging markets (e.g. East Asian countries) where their institutional contexts differ from those of developed markets (e.g. the U.S. and the U.K.) the agency conflict becomes one between large shareholders (who can control the firm's operations through their majority of voting rights) and outside capital providers (i.e. minority shareholders and creditors). This has been referred to as a principal-principal conflict (Young *et al.* 2008). Controlling shareholders can exploit private benefits of control, which can be costly to outside investors. Companies with a controlling shareholder are the dominant form among public firms in many countries (e.g. Bebchuk and Hamdani 2009; Bebchuk and Weisbach 2010; La Porta *et al.* 1999), even in the U.S. where this form is more common than it is often assumed (Holderness 2009). Therefore, the principal-principal conflict is an important issue for consideration (Young *et al.* 2008). Unfortunately, the literature on this type of conflict is still limited (e.g. Morck *et al.* 2005); therefore, this research aims to shed light on this subject through an empirical study of accounting quality in Thailand.

As far as accounting is concerned, accounts manipulation can be exploited in a conflict of interest setting (Stolowy and Breton 2004). A certain set of accounting quality measures has been determined by previous empirical research (see, for example, the summary in Dechow *et al.* 2010) and one of these measures is GAAP violation (e.g. in Beneish 1997; Chen *et al.* 2006; Dechow *et al.* 1996). This measure has some advantages in showing a problem of agency conflicts (Dechow *et al.* 2010). The measure of GAAP violation is employed in this research in order to show financial

reporting when a principal-principal conflict occurs.[1] A GAAP violation consists of both unintentional (i.e. accounting errors) and intentional (i.e. fraud) misstatements (Dechow *et al.* 2010). The term 'accounting misstatements' has recently come into use and studies into cases of accounting misstatement have of perennial interest (e.g. Dechow *et al.* 2011; Efendi *et al.* 2007; Ettredge *et al.* 2010; Firth *et al.* 2011). Following these prior studies, this research uses the term 'accounting misstatement' to refer to those financial statements that are alleged of fraud or material misstated accounting items (which are detected by market regulators) and those financial statements that are later restated because of prior accounting errors. One common aim of the prior studies and this research into accounting misstatement cases is to discover what the exact causes of financial misreporting are and why some firms suffer from them while others do not. Managers' incentives and the weaknesses of corporate governance mechanisms are suggested as two primary factors driving an occurrence of accounting misstatements (Jiambalvo 1996) and these factors are supported by previous empirical evidence (e.g. Dechow *et al.* 1996; Efendi *et al.* 2007; Peasnell *et al.* 2001). However, most of the existing findings were derived from samples in diffused ownership systems (such as the U.S. and the U.K.) where the principal-agent conflict usually appears. An interesting question is whether the results of previous research will generalise to firms with a principal-principal conflict.

Recent studies (such as Coffee 2006; Morck *et al.* 2005; Young *et al.* 2008) have brought up the issue of the relationship between corporate ownership (i.e. diffused and concentrated) and a firm's financial reporting. Bebchuk and Hamdani (2009) suggest that one of the key elements of the governance arrangement is corporate ownership structure; consequently, assessing corporate governance matrices without consideration of companies' ownership structure is discouraged. Therefore, the attribute of ownership

[1]This research acknowledges that under the principles-based International Accounting Standards that are applied in European and Asian countries there are cases when a firm's financial reports depart from the letter of law and/or accounting standards in order to give a true and fair view of financial reports, such as the override cases in the U.K. (Livne and McNichols 2009) which is not considered to be fraudulent (Stolowy and Breton 2004, p. 12). However, according to *IAS 1* (IASB 2003 paragraph 19) the IASB considers this override an extremely rare circumstance and it does not want to initially include an override (Benston *et al.* 2006). Similar to the experience of European countries that is observed in Benston *et al.* (2006), this research is not aware of any override cases in Thailand and, therefore, the override case is exempted from the scope of 'GAAP violation' term in this research.

structure should be taken into account in an examination of the causes of accounting misstatements. Accordingly, three prospective determinants of accounting misstatements were examined in this research: the controlling shareholders' incentives, corporate governance mechanisms, and ownership structures.

In this thesis, Thai companies were sampled for firms in concentrated ownership systems. The principal-principal conflict can be found in Asian firms (Claessens and Fan 2002) and the financial reporting quality of firms in this region is generally deemed to be low (Ball *et al.* 2003). Thailand was the origin of the Asian Financial Crisis in 1997 that made the East Asian region become a popular focus of prior research. The ownership structure of Thai firms is found to be highly concentrated (Wiwattanakantang 2001) and there is evidence of an adverse effect of the high ownership concentration on the transparency of financial reports (Alba *et al.* 2003) and on the expropriation behaviour of controlling shareholders (Lemmon and Lins 2003; Mitton 2002). The principal-principal conflict, therefore, features quite often in Thai firms.

The financial reporting quality of Thai firms has previously been assessed in many aspects (such as earnings management and discretionary accruals (Pornupatham 2006), earnings smoothness (Charoenwong and Jiraporn 2009), and, accounting conservatism (Boonlert-U-Thai and Kuntisook 2009)); however, there is a lack of research into GAAP violation. Although there has been some pioneering research which has focused on the characteristics of those firms that are subject to enforcement actions by the Securities and Exchange Commission, Thailand (Tummanon 2005b), these studies were conducted on a small scale and no comparison was made with a control group. Therefore, this research project aims to extend the previous literature. A study into accounting misstatements in Thai firms can provide an insight into the causes of accounting misstatements in the context of the principal-principal conflict in concentrated ownership systems.

In addition to investigating the determinants of accounting misstatements, this research will also assess the economic consequences of accounting misstatements in the periods after the accounting misstatements are revealed. Reactions of equity investors through

share prices have been investigated by many prior studies, while the reactions of lenders have recently been revealed by studies, such as Chen *et al.* (2009) and Graham *et al* (2008). Using a Thai sample allows the research to particularly contribute to the latter issue. The financial system of Thai firms are debt-oriented, even though they are listed on stock exchanges (Alba *et al.* 2003). In addition, there is evidence showing personal connections between banks and firms (Charumilind *et al.* 2006). Therefore, Thai firms may be less concerned about the capital market participants' reactions when their accounts manipulation is revealed. Since accounts manipulation signals a conflict of interest among the parties in the contracting process (as presumed to be the principal-principal conflict in Thai firms) (Stolowy and Breton 2004), it is interesting to assess whether an announcement of accounting misstatements impacts the decision of outside capital providers. Corporate external financing activity is given specific attention. Moreover, a study of both the determinants and consequences of accounting misstatements will facilitate an understanding of the cost and benefit trade-offs in financial reporting processes: the research containing both aspects is still limited (Dechow *et al.* 2010).

The remainder of this chapter provides a summary of the contents of this thesis. Section 1.2 presents the purposes of the study and research questions. Section 1.3 describes the scope of the study while Section 1.4 outlines the structure of thesis.

1.2 Purpose of the Study

As previously discussed, the evidence on the antecedents of accounting misstatements in concentrated ownership systems (where conflicts between controlling shareholders and outside investors relatively appear) is limited and the evidence on whether the concentrated ownership firms are penalised after the revelation of accounting misstatements is even more scarce. This study will provide empirical evidence using a sample of Thai firms to fill the gap left by these limitations. Accordingly, the main research objectives and research questions are as follows.

The objectives of the research are:

1. To document the occurrence of accounting misstatements in Thailand;
2. To discover the causes of accounting misstatements in Thailand; and,
3. To assess the economic consequences imposed on misstating firms in Thailand after the revelation of accounting misstatements.

The detailed research questions that constitute the specific interests in the causes and consequences of accounting misstatements are:

1. What are the determinants of accounting misstatements in Thailand?[2]
    - 1.1 To what extent is the ownership structure associated with accounting misstatements?
    - 1.2 What are the incentives of the dominant shareholders?
    - 1.3 To what extent is corporate governance associated with accounting misstatements?
2. What are the economic consequences imposed on misstating firms after the announcement of accounting misstatements?
    - 2.1 Have these firms become more financially constrained?
    - 2.2 To what extent does the announcement of accounting misstatements affect subsequent external financing activity?

By addressing these questions, the research results will contribute to the literature on a variety of issues that have been suggested by prior studies as requiring research attention, including the incentives of financial statements preparers in East Asian countries (Ball *et al.* 2003), the relationship between corporate governance and earnings manipulation in Asia context (Brown *et al.* 2011), an effect of earnings quality on the decision of capital providers (Armstrong *et al.* 2010), and an explanation why some firms violate GAAP and some do not (Wahlen 2004).

[2]This research ultimately aims to contribute an insight into the causes of accounting misstatements. However, since the data analysis (including in previous studies) has been conducted through logistic regression models, the term 'determinants' is more appropriately used than the 'causes'. Accordingly, in this thesis the term 'causes' is used when the research refers to an understanding why some firms experience accounting misstatements but some do not and when it makes an argument on an implication of the research findings. The term 'determinants' is used when referring to empirical evidence of the causes of accounting misstatements.

1.3 Scope of the Study

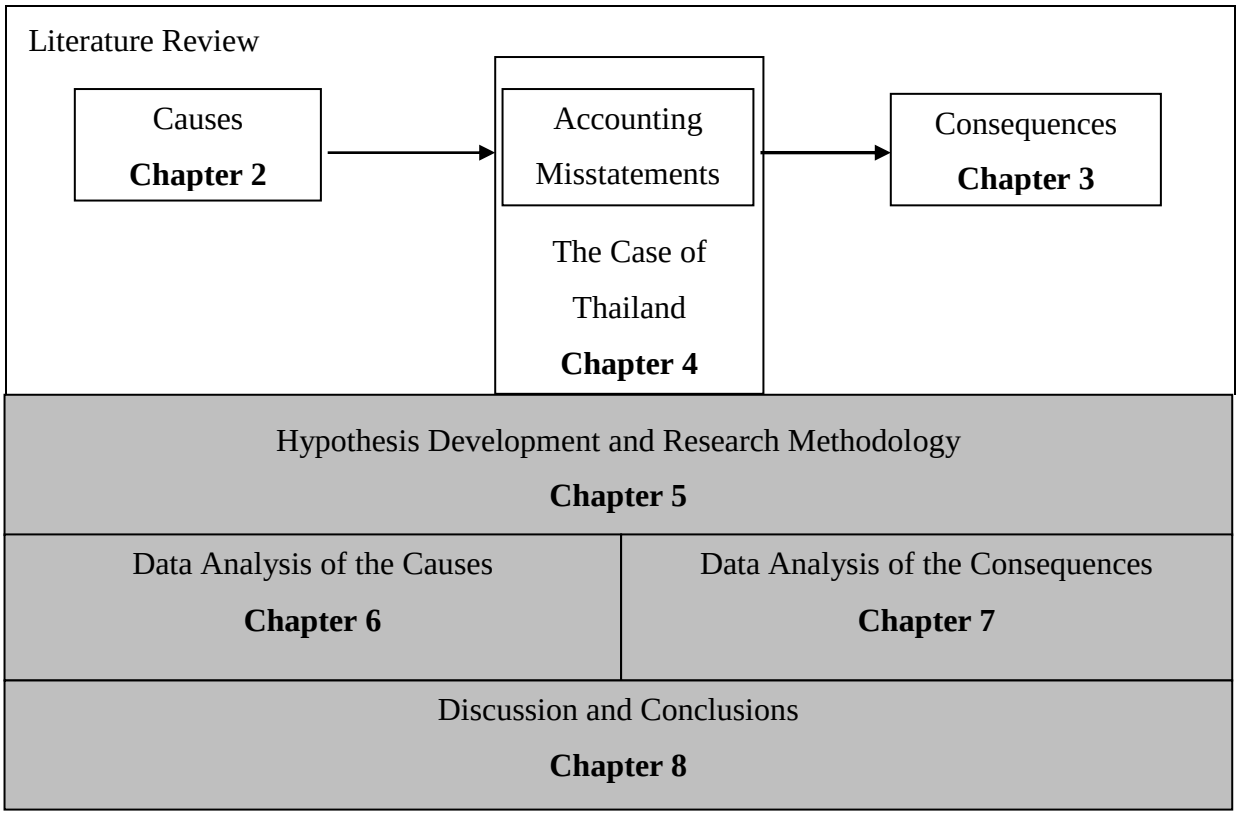
The scope of this study is accounting misstatements occurring in listed companies in Thailand. The focus on Thailand (where corporate ownership is mostly concentrated) is a proxy to mirror the opportunistic financial reporting of controlling shareholders that costs minority shareholders and lenders. A focus on listed companies can cover those who offer public funding (e.g. share investment and public debt) and private funding (e.g. bank loans and loans from directors and subsidiaries). In addition, the firms' willingness to invest in corporate governance mechanisms is naturally seen more in public firms than in private firms. The research period ranges from 2001 to 2009. The year 2001 is the earliest year when the data on corporate ownership is available. The sample and data are gathered from public sources and commercial databases. The sources of sample collection comprise announcements of the Securities and Exchange Commission, Thailand about fraud and material accounting misstatements of listed firms and corporate restated financial reports. The final sample comprises 51 misstatement firm-years, compared with 2,452 non-misstatement firm-years.[3] The number of observations, however, reduces in the data analysis because of the constraints of the model (more details are provided on this issue in Chapters 6 and 7). Regression models are the primary techniques used to uncover the causes and economic consequences of accounting misstatements in Thailand.

1.4 Structure of the Thesis

This thesis is organised into eight chapters. This current chapter introduces the study and provides a guide to the rest of the thesis. Figure 1.1 shows the schematic diagram of the thesis.

[3]Since the misstatement cases are only revealed if discovered and/or corrected by restatements, unidentified misstatements are likely extant. It is necessary to assume that financial reports of the control group do not contain misstated accounting items.

Figure 1.1: Structure of the Thesis



The upper part of Figure 1.1 contains the arrangement of three chapters of the literature review, while the lower part (i.e. the grey area) sets out the chapters for research methodology and research results.

Chapter 2 clarifies the terms involving accounting manipulation (e.g. earnings management, fraud, and accounting errors). The chapter then reviews the literature on the relevant theories and types of agency conflicts. After that, empirical evidence on the causes of accounting misstatements is presented. Chapter 2 ends with a summary of the main factors of accounting misstatements contributed by prior research.

Chapter 3 outlines consequences of accounting misstatements that occurred to misstating firms after the accounting misstatements are detected and revealed. The chapter also highlights the linkages between the causes and the consequences of

accounting misstatements. In addition, some methodological issues in prior research and the timeline of accounting misstatements are addressed in this chapter.

Chapter 4 describes the institutional background of Thailand and the financial reporting quality of Thai firms, which are the sample of firms in concentrated ownership systems. The financial reporting quality of Thai firms has been criticised since the Asian Financial Crisis of 1997. Although many governance mechanisms have since been introduced and form the basis of regulatory action towards Thai firms, because the ownership structure has not changed (ownership is concentrated and usually held by a single family), it is still questionable whether the financial reporting quality is improved. This research, consequently, focuses on the low quality of financial reports (i.e. GAAP violation) and will determine its determinants and economic consequences. As well as being of academic import, the findings on the antecedents of misstatements are beneficial to capital providers and to regulators in Thailand. The discoveries relating to the economic consequences might help us to understand how accounting quality affects the decision of capital providers in Thailand. These insights are discussed at the end of Chapter 4.

Chapter 5 specifies the empirical predictions and the research methodology. The research hypotheses are developed according to the literature and empirical prior results. The approaches for the hypothesis testing and the sample and data collection are presented in Chapter 5, while procedures for the ownership data collection and the companies included in the sample are detailed in Appendices A and B. Measures of interest for the hypotheses are later described in Chapters 6 and 7.

The structure of Chapters 6 and 7 are similar. Both chapters start with the measures of the variables for data analysis, they then describe the results of the data analysis. Chapter 6 presents the findings on the determinants of accounting misstatements, while Chapter 7 contains the results for the economic consequences. Regression models are employed in the analysis, and post-estimation tests for the regression assumptions are attached in Appendices C and D.

Chapter 8 provides a discussion and conclusion of this thesis. An acknowledgement of the research limitations and suggested areas for future research are also included in Chapter 8.

CHAPTER TWO

THEORY AND EVIDENCE ON THE CAUSES OF ACCOUNTING MISSTATEMENTS

2.1 Introduction

This research aims to shed light on the causes and economic consequences of accounting misstatements in concentrated ownership systems, using Thailand as the case country. In investigating the causes of accounting misstatements, the thesis aims to understand why they occur and what role the incentives of the controlling shareholders to mislead financial statements users are. A set of potential determinants of accounting misstatements will be examined. The research will then go on to assess the responses of capital providers after misstatements have occurred. In this chapter, the theoretical background and empirical evidence of the causes of accounting misstatements are discussed. The literature on the consequences of accounting misstatements will be reviewed in Chapter 3 and the financial and institutional background of Thailand is then described in Chapter 4.

This chapter is arranged as follows. Section Two provides a definition of accounting misstatements in order to provide an appropriate background to the thesis. Section Three discusses the theories aiming to explain the occurrence of accounting misstatements. Section Four summarises the evidence of causes of accounting misstatements found in prior studies. The final section concludes the chapter.

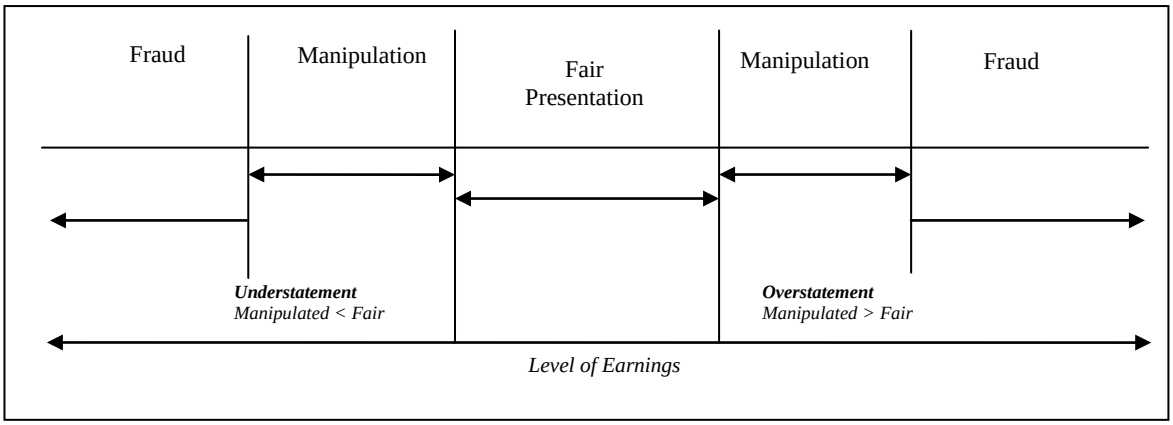
2.2 Definition of Accounting Misstatements

Existing research has examined many aspects of accounts manipulation, but few of these papers provide a comprehensive description of the phenomenon (Stolowy and Breton 2004). There are many attributes of financial reporting quality (Dechow *et al.* 2010). In the case of low accounting quality, earnings management (e.g. in Dechow and

Skinner 2000; Healy and Wahlen 1999), accounting misstatements (e.g. in Dechow *et al.* 2011), accounting errors (e.g. in DeFond and Jiambalvo 1991), and financial statement fraud (e.g. in Beasley 1996) have been explored in previous studies. However, not many studies carefully define the terms they use. Therefore, it is important to discuss them all at this stage and then to define precisely which attribute of financial reporting quality this thesis focuses on.

Stolowy and Breton (2004) provide a diagram (Figure 2.1) showing the differences between fair presentation and accounts manipulation.

Figure 2.1: Diagram of Accounts Manipulation and Fair Presentation



Adapted from: Stolowy and Breton (2004, p. 11) (The terms 'understatement' and 'overstatement' are added and the earnings line is changed to a two-way direction).

Compliance with Generally Accepted Accounting Principles (GAAP) is a criterion for differentiating types of accounts manipulation. Financial statements should be fairly presented and comply with GAAP. According to the recent IASB *Conceptual Framework for Financial Reporting* (IASB 2010b), a fair presentation shows a true and fair view of financial position, performance, and changes in the financial position of an entity. The financial position involves an expectation that future economic benefits will flow to or from an entity, while the performance is a net measure of the increases and decreases in economic benefits during an accounting period. In line with the objectives of financial statements, a fair presentation should provide useful information for users in economic decision-making and should also reveal the results of management stewardship.

In respect of earnings, which is one of the main outputs of the financial reporting system, manipulation occurs when managers alter financial reports to either mislead stakeholders about underlying economic performance or influence contractual outcomes that depend on the reported earnings number (Healy and Wahlen 1999). When the earnings number does not represent the capacity of a firm to generate earnings, then this number falls outside the fair presentation zone (Stolowy and Breton 2004). Earnings can be either overstated or understated, so the misrepresentation goes in both directions. Dechow and Skinner (2000) further suggest that financial reports engage many laws, acts, and accounting standards, some misrepresentation might be in violation of a regulation and that fraud occurs. Dechow and Skinner (2000), and Stolowy and Breton (2004) both suggest to use a criterion of GAAP to differentiate manipulation from fraud. Therefore, the misrepresentation occurring *within* GAAP is regarded as *earnings manipulation*, while the misrepresentation *in violation of* GAAP is regarded as *fraud*. They are presented in Figure 2.1.

Earnings manipulation (within GAAP) can be performed through real manipulation (e.g. by delaying an investment project or research and development expenditures) and accounting manipulation (e.g. change in accounting principles or adjust the estimate of bad debt expenses) (Jiambalvo 1996). In light of accounts manipulation, the use of accounting discretion is one area of interest in prior research, particularly in the measurement of discretionary accruals. Based on the usual accruals basis of preparing accounts, accruals are normal. In the case of earnings manipulation, managers may opportunistically use a certain set of accounting policies to conceal the real economic performance, including recording an unusual level of accruals (Fields *et al.* 2001). Researchers typically assess the unusual level of accruals by assuming that total accruals are composed of expected accruals, which are normally occurred in operations, and unexpected accruals or discretionary accruals, which occur from an intention to misstate earnings. Accordingly, the measurement of discretionary accruals is considered to be a measure of earnings management (within GAAP).[4]

[4]A statistical approach is normally used, where observations of total accruals from prior years are used to estimate what is believed to represent the normal accruals in operation. These estimates are used to estimate expected accruals for the current period, with the difference between total accruals and expected

A firm's objectives to use accounting practices to manage earnings (within GAAP) include income smoothing and big bath accounting. Income smoothing has a clear objective to produce a steadily growing stream of profits (Stolowy and Breton 2004). Since a consistent pattern of growing earnings commands a higher price-to-earnings ratio (Barth *et al.* 1999), there is a strong incentive for earnings management to be used in order to avoid reporting an earnings decrease (Burgstahler and Dichev 1997). Big bath accounting (Moore 1973) is an income-decreasing decision (typically associated with large losses) made after a change in management. New management gains at least two benefits from such accounting treatments: firstly, the reported low earnings are blamed on old management; and secondly, future income will be free of these charges and an improving earnings trend is more easily achieved, leaving the new management with increased potential for increasing future bonuses.

An income-decreasing approach is also employed and potentially useful for firms with a debt restructuring plan (Saleh and Ahmed 2005) and firms who have a dividend reduction policy (DeAngelo *et al.* 1994). On the other hand, an income-increasing approach is beneficial to firms who want to avoid defaults (Watts and Zimmerman 1986). Accordingly, what the managers have done to benefit or harm shareholders is still unclear (Guay 2008). Earnings management will certainly be harmful if managers use accounting discretion to inflate their bonuses or facilitate stock sales at an inflated price. In contrast, if the accounting discretion is used to avoid debt covenant violation, succeed a debt negotiation plan, or meet a certain forecasting benchmark then all of these samples can be beneficial to firms and shareholders (although they may sometimes cost creditors and other parties). Supporting this view, Bowen *et al.* (2008) found a positive relationship between accounting discretion (within GAAP) and firm performance, as measured by stock returns and ROA. Based on Bowen *et al.* (2008)'s findings the managers did not employ accounting discretion at the expense of the shareholders, but it can cost the creditors. Accordingly, earnings manipulation occurs

accruals being treated as discretionary accruals. The amount of discretionary accruals, thus, can be either negative (expected<actual) or positive (expected>actual) balance. There are many models used to assess discretionary accruals. The definitions of total accruals and the independent variables used in creating a prediction regression model also vary depending on the researchers' judgement, such as a pioneering model by Healy (1985), a popular Jones' (1991) model, the modified Jones' model by Dechow *et al.* (1995), Dechow and Dichev (2002), and McNichols (2002).

due to certain purpose(s), but to justify whether it is a good or bad practice depends on whom the managers "work for" and whose conflict of interests are in focus. This research is interested in the principal-principal conflict. An assumption is that there is information asymmetry between insiders (i.e. controlling shareholders) and outsiders (i.e. minority shareholders and creditors). Financial reports are one source of information that the outsiders can use to determine the economic status of a firm. However, it is not simply the earnings number that outsiders are interested in; they also take account of other accounting items such as asset and liability accounts. Therefore, the quality of the financial reports as a whole is the interest of this research, particularly when the financial reports are not in compliance with the GAAP.

The presentation of accounting items that is in violation of GAAP is called an accounting misstatement in this research. Except for the true and fair overrides (e.g. in Livne and McNichols 2009), GAAP violation can show an agency conflict problem (Dechow *et al.* 2010). The term 'accounting misstatement' has been used for a non-GAAP report in a number of recent studies. The samples in these studies are typically firms subject to enforcement actions by independent enforcement agencies, such as the U.S. Securities and Exchange Commission (e.g. Dechow *et al.* 2011) and firms that later restated their financial reports (e.g. Chen *et al.* 2006; Firth *et al.* 2011) . Some of the misstatements later become fraud cases when the misstatements are proved intentional, while some are errors because they are unintentional. Accordingly, this thesis assumes that the term 'accounting misstatements' comprises both errors and frauds. This view is consistent with paragraph 4 in *ISA 240* (IAASB 2006),[5] which accepts that misstatements in financial statements can arise from fraud or error.

Accounting errors are unintentional acts that violate GAAP. They might occur either due to the misapplication of GAAP, or an ineffectiveness of financial reporting control, and specific standards are in place to deal with them (e.g. *IAS 8* (IASB 2010a)) since their occurrence is inevitable. There are a number of studies which have examined

[5]Thailand adopts the International Standards of Auditing of IAASB, including the *ISA 240*. The accountability of auditors in Thailand for material misstatements is similar to that of the auditors in other countries using the *ISA*.

'accounting errors' (e.g. DeFond and Jiambalvo 1991), but the term 'accounting restatements' might be more familiar. 'Accounting restatements' is more often used in the literature because the sample is gathered from accounting restatement cases. Both terms are used interchangeably, except when accounting restatements later become fraud cases. Therefore, the readers of the accounting restatement literature need to be aware that the cases may comprise both fraud and accounting errors (e.g. Ettredge *et al.* 2010).

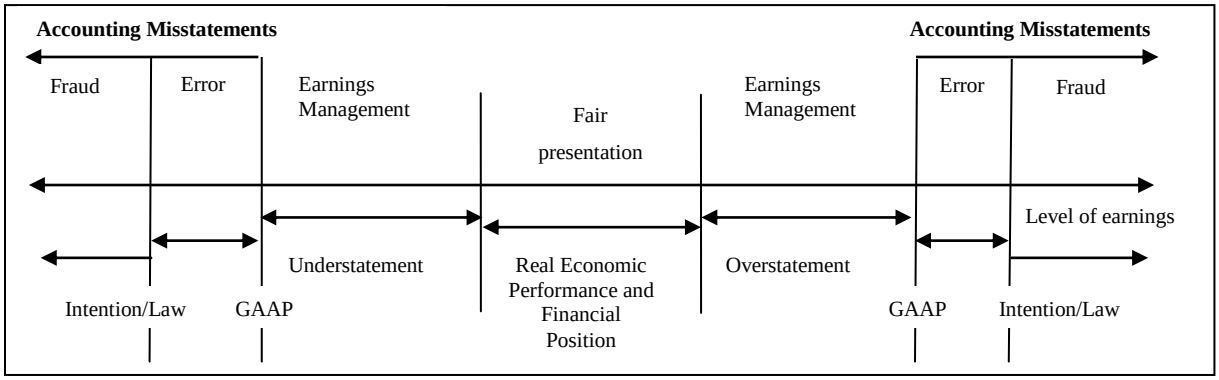
In professional context, Dechow and Skinner (2000) regard earnings manipulation that is illegal as fraud. In the *ISA 240* paragraph 6 (IAASB 2006) "[f]raud refers to an intentional act by one or more individuals among management, those charged with governance, employees, or third parties, involving the use of deception to obtain an unjust or illegal advantage". Because of the presence of intent, fraud is also classified as an intentional misstatement in *ISA 240*. Fraud was previously referred to as an accounting irregularity in *SAS No.82* (AICPA 1997). The terms accounting irregularity, intentional misstatement and fraud may be used interchangeably (Mulford and Comiskey 2002). Since intention is not in itself observable, in academic research the term fraud is often reserved for cases where a firm is subject to legal action (e.g. Beasley 1996; Lee *et al.* 1999).

From the distinctions among the terms above, the thesis makes an adjustment to the diagram of Stolowy and Breton (2004) (Figure 2.1) and create a new diagram in Figure 2.2.

The middle zone of Figure 2.2 represents fair presentation; i.e., financial reports present real economic performance. Because of their incentives, some managers manipulate earnings to mislead financial statement users. The earnings then do not fairly present the real economic performance of firms and can be either overstated or understated, depending on the managers' incentives. The earnings manipulation is still within GAAP. An accounting error is an unintentional financial reporting mistake that is in violation of the GAAP, while fraud refers to an allegation that the error is intentionally acted. However, the intention is difficult to prove. A violation of related law is

sometimes used to differentiate fraud from accounting errors. An empirical study into the U.S. firms by Hennes *et al*. (2008), for example, indicates that an average amount of restatements is significantly greater for fraud cases than for error cases: 11.9% versus 4% of total assets in the year prior to the restatement announcement.

Figure 2.2: Accounting Misstatements, Earnings Management and Fair Presentation



Adapted from: Stolowy and Breton (2004). (The specific terms under the earnings line are added).

This research focuses on accounting misstatements and disregards the distinction of fraud and error; this is similar to prior studies in the area (e.g. Beneish 1997; Dechow *et al.* 1996). In particular, the sample comprises firms whose financial reports are in violation of Thailand Securities and Exchange Act section 312 (SECT 1992), firms that have restated their financial reports due to prior period errors, and a control group. Like Dechow *et al.* (2011) this research does not take the directions of misstatements (i.e. overstatement and understatement) into account.[6] The study into the determinants of accounting misstatements will help us understand the causes of accounting misstatements and that it benefits regulators and financial statements users.

[6]This research realises the potential loss of power in the analysis that might exist when the sample combines both mandatory and voluntary restatements (the cases subject to the SECT's enforcement actions and the restated financial reports, respectively) and when the sample aggregates both fraud and error cases; however, because of the small sample size in both aspects of the sample, an additional analysis cannot be performed and this issue opens for analysis by future research. This constraint is acknowledged again in Chapter 8, Section 8.4.

2.3 Theoretical Perspective

This section describes theory justification and agency theory, which the researcher decided to use as the theoretical background for the phenomenon of accounting misstatements.

2.3.1 Theory Justification

Although a comprehensive theory of GAAP violation is absent (Beneish 1997; Wahlen 2004), agency theory (Jensen and Meckling 1976), which addresses opportunistic behaviour of the parties in the contracting process, has been frequently used to explain the opportunistic financial reporting. This research agrees to continue using agency theory and its details will be described in the next subsection. This subsection aims to describe a few of the other theories that have been used in prior studies of financial reporting. It will also give the reasons why they are not chosen for use in this current research.

In addition to agency theory, other theories that have been used in the study of financial reporting include institutional theory, operational legitimacy and signalling theory. Institutional theory (Scott 2004) offers a generic framework to analyse corporate practices. It posits that organisations adopt or adapt to institutional norms and rules to gain stability and enhance their survival aspects. Institutional theory is deemed to point out what makes organisations so similar in a country and different among countries, as seen in a cross-country study by Rahman *et al.* (2010), whose research is interested in explaining what makes firms in different countries behave differently in terms of financial reporting. Institutional theory does not seem to fit this research, where the samples are in one country and an objective of the research is to explore why firms release varied quality of financial reports (i.e. some financial reports contain accounting misstatements, while some do not).

The theory of operational legitimacy offers ‘an assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions’ (Suchman 1995, p. 574). Accordingly, a manager’s

decisions are constructed by the same belief systems. Arthaud-Day *et al.* (2006) find that accounting restatements pose a serious threat to organisational legitimacy and, therefore, restating firms dismiss their executives after restatement announcements in order to recover their reputation and maintain their survival. The concept of legitimacy can be used to explain a restating firm's action after the restatement announcement (e.g. executive replacement in Arthaud-Day *et al.* (2006)) so that the firm can reduce the negative effects imposed by a social audience. However, since this research project is interested in assessing reactions from outsiders (i.e. the social audience), particularly in terms of economic consequences rather than a change in restating firms themselves, the analysis is in a reverse direction. Legitimacy proposes that a firm changes itself to be consistent with social forces; consequently, it does not exactly match the aims of this project. On the other hand, an economic perspective of agency theory is a better fit because it addresses a conflict of interests and it can lead to an explanation for capital providers' reactions after the conflict of interests happen.

Signalling theory (Spence 1973, 2002), as emphasised by Connelly *et al.* (2011), is fundamentally concerned with reducing information asymmetry between two parties (i.e. controlling shareholders and outside investors), such as attributes of CEOs signal unobservable quality of their firms to potential investors via the observable quality of financial statements (Zhang and Wiersema 2009). The concept of signalling is that high-quality firms are motivated to signal and low quality firms are not. The signaller should benefit by some actions from the receiver that the receiver would not otherwise have done (Connelly *et al.* 2011). As far as financial reporting is concerned, firms prepare and publish financial reports in order to reduce information asymmetry between the firms and investors. For instance, some firms pay a higher audit fee and voluntarily disclose more information than others so that they can distinguish themselves from others (Ball *et al.* 2012). Signalling theory is deemed to fit financial reporting in a situation that a firm gets a benefit from high-level disclosures. In contrast, this thesis focuses on the financial reports that have low quality (either subject to the regulators' enforcement actions or later restated). The preparation of this low quality financial reports is an unpleasant situation for investors and they react negatively after the misstatements are revealed (e.g. Palmrose *et al.* 2004) while the high-level disclosures

are a pleasant policy for outside investors. Therefore, the release of misstated financial reports does not signal a good message to investors and as such signalling theory does not fit this research very well.

After considering the concept of these theories, this research project has decided to employ agency theory as a theoretical background to explain the phenomenon of accounting misstatements. The next subsection reviews agency problems and their relation to financial reporting.

2.3.2 Agency Problems

An agency conflict emerges when corporate ownership and control are separated (Fama 1980; Fama and Jensen 1983; Jensen and Meckling 1976). According to Berle and Means (1932) ownership of corporations is dispersed across a large number of public shareholders. The shareholders (the principals) delegate powers to a manager (the agent) to operate day-to-day activities. Since there is no dominant shareholder, the manager has control over the business operations. Such power of control may enable the manager to extract private benefits at the expense of the shareholders. This conflict is referred to as the shareholder-agent conflict, or the principal-agent conflict (e.g. Young *et al.* 2008). The shareholders thus initiate some monitoring activities (e.g. a board of directors and some independent directors on the board) to control the managers' operations so that their benefits are protected (Jensen and Meckling 1976). An earnings-based compensation plan is also initiated to align the interests of the shareholders and the manager.

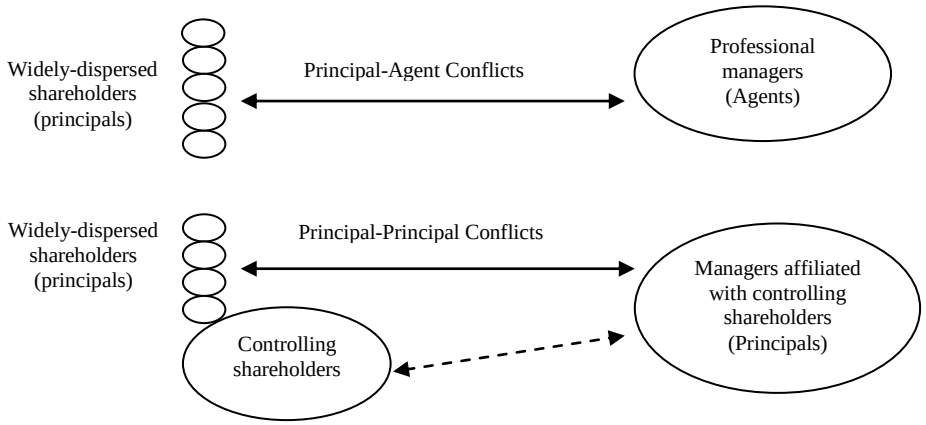
In contrast to the standard agency view of Berle and Means (1932), there are many firms where the large shareholders direct the business themselves, such as firms in Asia (Claessens *et al.* 2000; Claessens and Fan 2002), or some having a two-tier relationship of the ownership and control involving investors, investment managers and company managers (Bricker and Chandar 2000). When the shareholders are also the managers, then the shareholder-agent conflict is less likely to occur (Young *et al.* 2008). A shorter distance of ownership and control leads to a reduction in monitoring costs and

compensation plans are deemed to be less necessary (Coffee 2006; Jensen and Meckling 1976). An additional disbursement for extra monitoring costs will occur in the aspect of a cost-benefit trade-off (Doidge *et al.* 2007). For instance, firms are more likely to hire Big 4 auditors and pay a higher audit fee when they are raising funds from capital markets since these audit firms are often perceived as providing higher quality audit work (Fan and Wong 2005). Only large firms implement voluntary corporate governance practices (Ananchotikul *et al.* 2010; Kouwenberg 2010). As a result, corporate governance of the firms with large shareholders is potentially suspected: whether their corporate governance is effective enough to protect the interests of capital providers and to monitor corporate financial reporting is unclear. The weak corporate governance mechanisms in concentrated ownership firms can increase the incentive of controlling shareholders to exploit private benefits of control (Shleifer and Vishny 1997), particularly when there is a divergence between cash-flow and voting rights (Morck *et al.* 2005). Therefore, in firms with dominant shareholders, the agency problem shifts from the shareholder-agent conflict to a conflict between controlling shareholders and outside investors (e.g. minority shareholders and creditors) (Bebchuk and Hamdani 2009; Claessens *et al.* 2000; Young *et al.* 2008). This type of conflict is sometimes called the principal-principal conflict (e.g. in Young *et al.* 2008), or Type II agency problem (Claessens *et al.* 2000; Setia-Atmaja *et al.* 2011).

Collectively, there are two main types of agency conflicts, depending on the ownership structure. Young *et al*. (2008) provides a comparative view of the two primary types of agency conflicts in the following diagram (Figure 2.3).

In Figure 2.3, it can be seen that the principal-agent conflict is more likely to exist in dispersed ownership firms. The managers are professionals from labour markets and they do not bear the residual claims that result from their decisions. On the other hand, in concentrated ownership systems, managers are affiliated with controlling shareholders. They both may cooperate to extract private benefits, which are the expenses of outside investors.

Figure 2.3: Principal-Principal Conflict versus Principal-Agent Conflict



Source: Young *et al.* (2008, p. 200).

In addition to agency conflicts, there are some other attributes that occur differently in the two ownership systems, which are presented in Table 2.1.

Table 2.1: Comparative Views of the Ownership Systems

Dispersed Ownership System	Concentrated Ownership System
Institutional settings: - Wide public share ownership - Strong securities markets - Rigorous disclosure standards - High share turnover, and high market transparency	**Institutional settings:** - Controlling shareholders - Weaker securities markets - High private benefits of control - Lower disclosure and market transparency standards - A possibly role played by large banks and non-controlling shareholders
Financial system: - Equity-based system - Arm's-length system	**Financial system:** - Debt-based system - Relational-based transaction
Expropriation: - Aggressive accounting to maximise compensation benefits	**Expropriation:** - Private benefits of control, usually by financial transactions

Dispersed Ownership System	Concentrated Ownership System
- High interest in the day-to-day stock prices - High propensity to be scrutinised by professional services - High propensity of restatements - Harsh penalty from capital markets	- Less interest in the day-to-day stock prices - Low propensity to be scrutinised by professional services - Restatements are rarely occurred - Not severe penalty from capital markets due to weak capacity of the markets
Corporate governance: - Management dominated - Shareholder focused - Strong shareholder rights - Shareholder litigation culture	**Corporate governance:** - Controlling shareholder dominated - Stakeholder focused - Less strong shareholder rights - Less strong litigation culture

Sources: Coffee (2006), Rahman *et al*. (2010), Rajan and Zingales (1998), and Salacuse (2006).

By linking the two types of agency conflicts in Figure 2.3 to the two ownership systems in Table 2.1, the distinctions of two systems can be described as follows.

An aggregated view for the effect of country institutions on financial systems and corporate ownership is in the first two rows of Table 2.1. Pioneering cross-country research provides an explanation of why firms are owned and financed differently. Country institutional background characteristics, such as legal systems and legal protection for minority shareholders, lead to a variety of different types of capital market growth (La Porta *et al.* 1997), and eventually result in a number of different corporate capital structures and forms of ownership concentration (La Porta *et al.* 1998). On average, capital markets in common-law countries are larger than capital markets in civil-law countries. However, the capital markets in some common law countries, such as emerging markets in East Asia, are not as well advanced as the markets in the U.S. or the U.K. because they have a low quality of legal enforcement. The weaker legal protection for equity investors impedes the growth of capital markets, and firms in such an environment are inclined to use debt financing choice more frequently than an equity

alternative (La Porta *et al.* 1998). Consequently, the corporate ownership in Asian capital markets is relatively more concentrated (La Porta *et al.* 1999; La Porta *et al.* 1997, 1998). In addition, corporate founders still control a majority of the shares even though the company is listed on stock exchanges, and the founders remain dominant shareholders (Claessens *et al.* 2000).

Consequently, there are certain differences between the two main categories of the ownership. The dispersed ownership system comprises characteristics of strong security markets, rigorous disclosure standards, high share turnover and high market transparency. The enhancement of capital markets attracts firms to raise their funds from stock markets. External financing activities of the firms in this system are thus equity-oriented (Rajan and Zingales 1998) and corporate ownership appears to be widely-held. In contrast, the concentrated ownership system consists of controlling shareholders, weaker security markets, a higher possibility of private benefits of control, and lower disclosure and market transparency standards. The weaker institutional settings force the concentrated ownership firms to employ debt finance more frequently than equity (Rajan and Zingales 1998).

In addition to the difference in the financial systems between the two systems, the characteristics of expropriation risks are also dissimilar. As shown in the third row of Table 2.1, Coffee (2006) posits that in dispersed ownership firms, managers are key actors and they are the origin of the shareholder-agent conflict, while in concentrated ownership firms controlling shareholders are the originator of the conflict between themselves and outside investors. In comparison, Coffee (2006) argues that corporate managers are more engaged in earnings manipulation, while controlling shareholders are inclined to exploit the private benefits of control. The managers' opportunism encompasses an incentive to maximise their earnings-based compensation, or to maintain the corporate share prices. The controlling shareholders' expropriation usually occurs through financial transactions (e.g. transferring resources to their privately-owned companies) and, therefore, the ownership arrangement of pyramids and cross-holdings can be an important channel for the resource transfer in concentrated-

ownership firms (e.g. Bebchuk and Hamdani 2009; Brown *et al.* 2011; Morck *et al.* 2005). Transactions with related parties should be subject to the attention of monitors.

With regard to the role of monitors, Salacuse (2006) points out some differences in corporate governance between the two ownership systems (the fourth row of Table 2.1). Widely held firms are relatively more scrutinised by professional services: monitors in the contracting process (e.g. auditors and regulators) and capital market participants (e.g. securities analysts and credit rating agencies). In contrast, because of the lower number of the financial transactions with capital markets and the under-development of the capital markets, concentrated ownership firms are less disciplined by market participants. The low quality of legal enforcement actions in the concentrated ownership system weakens the litigation culture and shareholders' rights are less protected. The monitoring process in this system is often found to be dominated by controlling shareholders.

Since the corporate governance in the concentrated ownership system is relatively weaker than that of the dispersed ownership system, a question is raised: what is the quality of financial reporting in the concentrated ownership system? The next subsection will review the literature on the linkage between the country institutions, corporate governance, and financial reporting quality.

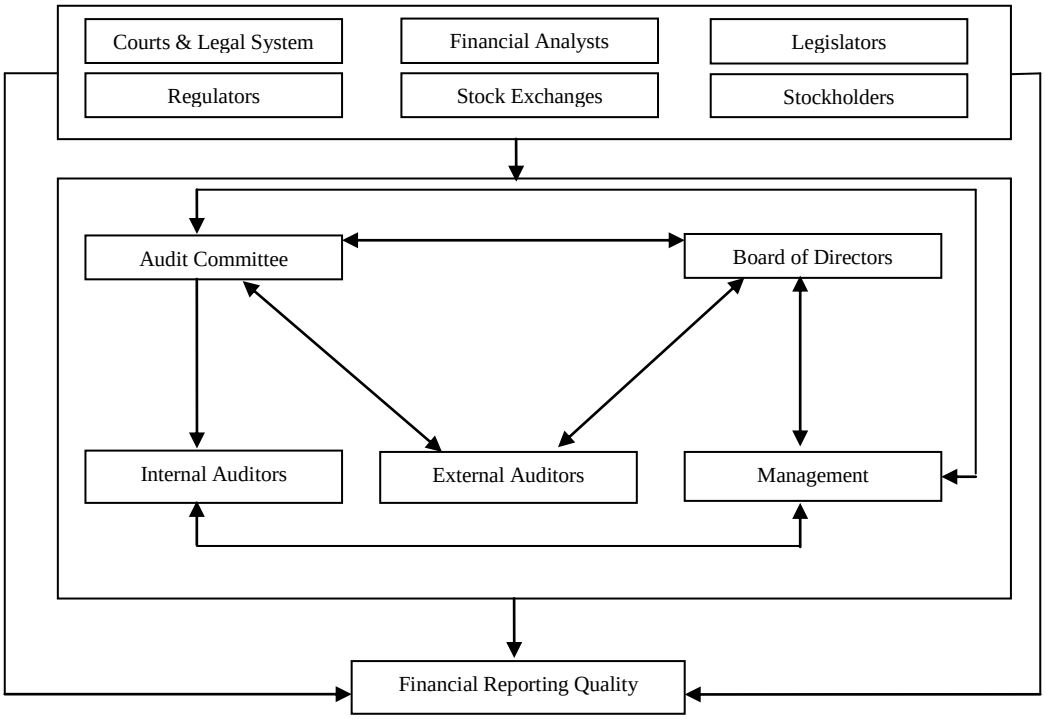
2.3.3 Ownership, Corporate Governance and Financial Reporting Quality

Cohen *et al.* (2004) provide a framework (Figure 2.4) for gathering relevant determinants of financial reporting quality.

The Figure 2.4 shows the interrelationships between the various factors and their effects on financial reporting quality. The upper level contains the country's institutions and corporate ownership structure. The second level encompasses corporate governance mechanisms. All these factors affect financial reporting quality. The study into the determinants of financial reporting quality can be divided into two types of research. The first category is cross-country research, such as relationships between country

institutions and earnings quality (e.g. Boonlert-U-Thai *et al.* 2006; Leuz *et al.* 2003). The second type is firm-level research. The influences of managers' incentives and corporate governance are emphasised in this second type (e.g. Anderson *et al.* 2004; Dechow *et al.* 1996; Wang 2006).

Figure 2.4: Corporate Governance Mosaic and Financial Reporting Quality



Source: Cohen *et al*. (2004, p. 89).

As far as accounting allegations are concerned, Coffee (2006) argues that widely held firms will restate their financial reports promptly after a misstatement is found because they are more scrutinised and the expected costs imposed by the capital markets are high. The incidence for accounting restatements thus tends to be more frequent in diffused ownership systems than in concentrated ownership systems. Possible reasons include that the possibility to detect accounting allegations can be lower for concentrated ownership systems because the governance mechanisms are less effective. In addition, the legal protection and enforcement is low in this environment, so a firm may not be enthusiastic to correct the accounting allegation themselves. Therefore, the proportion of accounting restatements is likely to be lower. However, Coffee's

argument on the restatements in the concentrated ownership systems has not yet been proved. The majority of the previous studies have based their samples on dispersed ownership systems, such as in the U.S. (e.g. Burns and Kedia 2006; Dechow *et al.* 2011; DeFond and Jiambalvo 1991) and the U.K. (e.g. Peasnell *et al.* 2001), and they have found an increase in the cases of accounting misstatements, particularly in the U.S. (Coffee 2006; Efendi *et al.* 2007). Meanwhile, the occurrence of accounting restatements in concentrated ownership systems has rarely been documented.

To summarise, Section 2.3 illustrates the importance of corporate ownership, which can vary, types of agency conflicts (i.e. principal-agent conflict and principal-principal conflict), financial systems (i.e. debt- or equity-oriented), and corporate governance policies (i.e. management dominated or controlling shareholder dominated). To address the limitations of the literature, the occurrence of accounting misstatements in the environment of principal-principal conflict is the focus of this research. As far as an accounting misstatement is concerned, incentives of owner-managers and the effectiveness of corporate governance are two potential factors in the occurrence of accounting misstatements. The next section will review the empirical findings of these two factors in prior studies.

2.4 Empirical Evidence on the Causes of Accounting Misstatements

As described in the previous section, theoretically the managers' opportunistic behaviour can occur when monitoring processes are weak (Jensen and Meckling 1976; Watts and Zimmerman 1986). Empirical predictions for the antecedents of accounting misstatements thus concern the managers' incentives and the weakness of corporate governance (Jiambalvo 1996). Consistent with the predictions, previous research has found the effect of managers' incentives and weak corporate governance to be present in misstating firms. Details of the findings in prior studies are categorised into three sectors: the managers' incentives, monitoring activities and the pressure from outside parties.

2.4.1 Incentives

The managers' incentives to manipulate financial reports include maximising their earnings-based compensations (e.g. Burns and Kedia 2006; Efendi *et al.* 2007), to secure their employment (Watts and Zimmerman 1986), to avoid debt covenant violations (Watts and Zimmerman 1986) and to minimise costs of external financing (e.g. Dechow *et al.* 1996). When ownership and control are separated, compensation plans are implemented into the contracting process because of shareholders' desire to align the interests of the managers with their own (Jensen and Meckling 1976; Watts and Zimmerman 1986). The compensation-relevant incentive is thus more likely to become significant when managers are professional (i.e. hired) managers and they do not have to bear the costs of what they have done. The incentive involving compensation plans has been found of significance in dispersed ownership firms where the shareholder-agent conflict is more likely to exist, such as the U.S. (e.g. Burns and Kedia 2006; Efendi *et al.* 2007). In contrast, in concentrated ownership firms, the managers are often affiliated with the controlling shareholders (Claessens *et al.* 2000), a compensation plan is often unnecessary (Bebchuk and Hamdani 2009; Peng and Jiang 2010; Pornupatham 2006). Likewise, because of the affiliation, the managers are unlikely to be concerned about losing their job if the firm performance is poor. This thesis does not regard the incentives involving compensation and employment security as significant proxies for the antecedents of accounting misstatements in concentrated ownership systems and the case of Thailand. Rather, the debt hypothesis and the minimisation of the cost of capital are two potential incentives for financial misreporting in Thailand. A review on both proxies is presented as follows.

a) Debt Covenant Hypothesis

The capital structure of Thai firms is based heavily on debt (e.g. Alba *et al.* 2003; Rahman *et al.* 2010; Wiwattanakantang 1999). In addition, accounting conservatism reduces when a firm's leverage ratio increases (Boonlert-U-Thai and Kuntisook 2009). Therefore, the debt-hypothesis is important when assessing the role of the incentives in GAAP violation in Thailand.

Debt covenants constrain a firm from not doing those things that jeopardise creditors' returns. When debt covenants are tied to accounting numbers, then an accounting misstatement is more likely to occur when a firm is close to debt covenant violations. Managers select accounting choices (Watts and Zimmerman 1986), or they manage their operations and financial reporting (Nikolaev 2010) to avoid the violation. For example, a manager does not write off inventory because it reduces the earnings number and increases the debt-to-equity ratio, *ceteris paribus*. This instance results in the firm's financial statements to not fairly present the real economic performance of the firm. Firms can also transfer earnings from future periods to the current period (Jiambalvo 1996; Watts and Zimmerman 1986), and an income-increasing procedure is often used for this purpose (DeFond and Jiambalvo 1994; Sweeney 1994). Managers can use accounting manipulation and the manipulation approaches include creating early recognition of revenues and/or delaying recognition of expenses (Dechow *et al.* 2011).

Previous studies have used two measures to examine the debt hypothesis: the leverage ratio (an *ex ante* measure) and technical defaults (*an ex post* measure).

Leverage Ratio

The first measurement attempts to capture the existence and closeness of accounting-based covenants. The more frequently used measure is the leverage ratio, in the form of either total debt to equity (Watts and Zimmerman 1986) or total debt to total assets (Dechow *et al.* 1996). The larger the ratio, the more likely a firm is to misstate its financial reports. The ratio of total debt to total assets is often used in the examination of accounting misstatements. This might be because subsequent studies follow the measure which was used in pioneering research (Dechow *et al.* 1996) or because it is generally a more stable ratio than debt/equity (as the denominator can be very small and/or negative). Some research (e.g. Lee *et al.* 1999) arrives at the same result as Dechow *et al.* (1996), while other studies do not (e.g. Beneish 1997; Beneish 1999a; Dechow *et al.* 2011).

Debt Defaults

The measure of technical default can exactly indicate that creditors' interests are expropriated by managers owing to accounting misstatements. Dechow *et al.* (1996) compared a proportion of technical default for their sample with a control group during the misstatement period, or up to two years after that. They found that the proportion of defaults is significantly higher for the misstatement sample than it is for the control firms. Dichev and Skinner (2002) argue that the leverage ratio does not represent the debt covenant violation and the *ex post* measure of technical default better indicates the expropriation on the creditors' interests[7]; however, the issue of data availability limits the employment of this measure. Prior studies (e.g. Dechow *et al.* 1996) manually collect the default data from companies' annual reports. Currently, in the U.S., there is a requirement for covenant violation disclosure (Roberts and Sufi 2009, p. 1661) and the data are also available in some commercial databases, such as DealScan (Dichev and Skinner 2002). Unfortunately, there is no such requirement in some countries, including Thailand. The likelihood that Thai firms voluntarily disclose the violation information in their annual reports is low because the disclosures of corporate governance in Thailand is low (Chuanrommanee and Swierczek 2007); the propensity for the data to be missing is therefore high. Hence, after considering costs and benefits of manual collection, this research leaves the examination of the effect of debt defaults on accounting misstatements to future research where the data are available. Nonetheless, the pioneering research by Dechow *et al.* (1996) did not find the significant relationship between the technical default and the likelihood of accounting misstatements. The default is only significant when there is an interaction with a low oversight of internal monitors in the multivariate model of the likelihood of accounting misstatements.

b) Minimisation of the Cost of Capital

While the debt hypothesis previously discussed involves pre-existing creditors, the financial motive of minimising the cost of capital is relevant to prospective capital providers.

[7]Dichev and Skinner (2002) found a negative correlation between the leverage ratio and technical defaults, while prior empirical research assumes that they are positively correlated and the leverage ratio is used to measure for the closeness to debt covenant violation.

The pioneering research by Dechow *et al.* (1996) found evidence of the financing-cost-minimisation incentive. They developed two proxies for firms' financing need: one is an *ex ante* measure, a dummy variable indicating negative free cash flow, and the other is an *ex post* measure, a dummy variable of new stock issuance. When a firm has negative free cash flow, it is more likely to need financing. Private debt, public debt, and equity issuances are preferred orderly alternatives (Myers and Majluf 1984). An accounts manipulation might occur at this moment to minimise the cost of capital. These two measures were found to be statistically higher in misstating firms than in non-misstating firms (Dechow *et al.* 1996). Subsequent studies have continued using these variables. The *ex post* measure of stock issuance is a significant result in many studies (e.g. Efendi *et al.* 2007; Lee *et al.* 1999; Peasnell *et al.* 2001), whereas the *ex ante* negative free cash flow is significant, but in a smaller number of studies (e.g. Dechow *et al.* 1996; Skousen *et al.* 2008).

The incentive to minimise the cost of capital by account manipulations costs both equity and debt holders. Since information asymmetry costs are inherent, capital providers charge for the risks. However, if financial reports are misstated, then equity holders may face incorrect asset pricing, while debt holders might be unable to be repaid. In comparison, lenders tend to have more opportunities to scrutinise firms' financial reports than equity investors do. However, the scrutiny is useless if the financial reports are incorrectly presented and firms do not have effective corporate governance in monitoring the financial reporting process. For instance, during the Asian Financial Crisis in 1997, fifty-six financial institutions in Thailand were closed down within a year and had a dramatic loss on their non-performing loans. One reason for such a collapse was the poor quality of financial reporting (Alba *et al.* 2003; Montreevat 2007). Accordingly, creditors are still at risk, particularly when the institutional environment is weak. Debt financing is the most frequently used source of funding for Thai firms and Thai firms are unlikely to be disciplined by the capital markets (Alba *et al.* 2003). Also, personal relationships informally play a role in obtaining funding from banks (Charumilind *et al.* 2006). These factors can lead to a low incentive to provide high quality financial reporting. This argument is in line with the results of a recent study by

Rahman *et al.* (2010) who found an adverse effect of the debt-based financial system on financial reporting quality (measured by abnormal accruals). The current thesis will further shed light on how capital structure (i.e. leverage ratio and external financing need) relates to the appearance of accounting misstatements.

This section has reviewed the financial motives (i.e. the closeness to debt covenant violation and the minimisation of cost of capital) which have a propensity to impact on the likelihood of accounting misstatements in Thai firms. The next section will present the monitoring mechanisms that can reduce the abilities of the managers to misstate the financial reports. It will also emphasise how these mechanisms behave in the presence of controlling shareholders.

2.4.2 Monitoring Activities

There are two groups of corporate governance mechanisms in the financial reporting process (Cohen *et al.* 2004): the financial reporting quality of a firm depends on country-level governance policies (e.g. legislators, enforcement actions by authorities) and firm-level governance policies (e.g. an audit committee, a boards of directors and an external auditor). As a firm-level research, this thesis particularly focuses on the firm-level policies. The roles of monitors are suspected why they are unable to detect accounting misstatements before financial statements are released.

a) Internal Monitors

In the presence of an accounting misstatement, boards of directors and audit committees of misstating firms are suspected in two points: firstly, whether boards of directors and audit committees exist; and secondly, whether they are qualified and independent of the managers. The misreporting firms have significantly weaker governance mechanisms than the control firms, such as: boards of directors which are dominated by management, a chief executive officer who also serves as chairman of the board, a lack of an audit committee, and a lack of financial expertise (Agrawal and Chadha 2005; Dechow *et al.* 1996; Efendi *et al.* 2007; Skousen and Wright 2006). In contrast, there is no evidence of weak board structure in U.K. firms subject to adverse rulings in Peasnell

et al. (2001) (e.g. on average a proportion of outside audit committee members and a fraction of separating the roles of chief executive officers and chairmen of the board are higher for the misstating firms than the non-misstating firms). Beasley (1996) does not find a significant effect of an audit committee on the likelihood of fraud. Beasley's investigation also shows that there were on average 1.8 meetings held by the audit committee of the firms he analysed, this same number was found in fraudulent and non-fraudulent firms alike. These results indicate that the existence of a board of directors and an audit committee is not an important monitoring activity to control a firm's financial reporting practice, but their competence and independence.

A number of outside directors are included on the boards because the boards of directors and audit committees may perform ineffectively (Beasley 1996; Fama 1980; Fama and Jensen 1983). However, the presence of outside directors does not determine the quality, whereas the outside directors' qualifications and working experiences may do. Neither the number of board meetings nor the inclusion of outside directors is associated with the likelihood of an accounting restatement or the lawsuit case of fraud (Larcker *et al.* 2007). Only the boards or audit committees that have an independent director with financial expertise can reduce the likelihood of accounting restatements (Agrawal and Chadha 2005). In China, the inclusion of outside directors increases the opportunity to detect fraud, but it does not impact the point when a firm decides whether it will commit fraud (Firth *et al.* 2011). These last two studies can suggest that the role of outside directors and independent members of audit committees is to detect ongoing fraud rather than to protect a company from fraud. If correct, then these findings help to clarify why the monitors' competence is more important than their presence.

Peasnell *et al.* (2001) suggest that the inconsistent results in the prior research might imply that there may be some complex issues behind the quality of governance mechanisms. Ownership structure can be argued to be one of these complex issues. As Bebchuk and Hamdani (2009) suggest, companies' ownership structure considerably affects the corporate governance arrangements. In dispersed ownership systems shareholders elect a board of director and the effectiveness of the board depends on

whether the directors are competent and independent from the managers (Armstrong *et al.* 2010). The shareholders' selection tends to be important; specifically, shareholders elect directors whose interest is aligned with that of the shareholders and thereby the directors will be motivated to protect the shareholders' interests. Meanwhile, in concentrated ownership systems, corporate governance is dominated by controlling shareholders (Salacuse 2006) and the controlling shareholders usually have boards follow their preferences (Bebchuk and Hamdani 2009; Cohen *et al.* 2002). Consequently, the independence of internal monitors (i.e. boards and audit committees) can be absent. The effectiveness and establishment of corporate governance policies in the latter system are thus likely to depend on the owner-managers' incentives (i.e. whether they want to govern or be governed by the monitors). As a result, such matters as a majority of voting rights held by controlling shareholders become of importance. This research, therefore, proposes to include proxies of corporate ownership structure (i.e. ownership concentration, owner identity and an appearance of pyramids and cross-holdings) into the analysis of the determinants of accounting misstatements. On the other hand, following the Bebchuk and Hamdani (2009) and Larcker *et al.* (2007) guidance, the researcher considers independent directors and audit committees as potentially unimportant determinants of accounting misstatements in firms with a controlling shareholder and, therefore, they are excluded in the analysis (more details for weaknesses of independent director and audit committee arrangements in Thai firms are illustrated in Chapter 4).

b) External Auditors

The empirical evidence for the role of external auditors on the existence of accounting misstatements is inconclusive. Stakeholders expect the monitoring role of external auditors because they are not employees of firms. External auditors are contracted with shareholders to audit the accuracy of financial reports. Currently, external auditors are likely to have more responsibilities: they are required to identify not only material errors on financial reports but also risks of material misstatements due to fraud [*SAS No.99* (AICPA 2002) and *ISA 240* (IAASB 2006)]. Even so, the question of why accounting misstatements remain where financial reports are audited by external auditors is important. Possible answers include: firstly, the misstatements are immaterial; or,

secondly, the auditors are not able to detect them; or, thirdly, the auditors find them, and provide qualified, disclaimer of, or adverse audit opinions.[8]

The auditors' materiality level is unobservable and it varies among firms. Therefore, it is difficult to test the point that the misstatements appeared because they were immaterial and the auditors did not correct them. As for the second potential answer, one exploratory study from Feroz *et al.* (1991) found that 45% of audits of the misreporting firms have audit deficiencies (such as improper professional conduct and the lack of quality control) and, therefore, low audit quality is an important factor of the likelihood of accounting misstatement. As for the third presumption, Skousen and Wright (2006) find that although some misstated financial statements are reported in the qualified audit report, qualified audit opinions are not significantly associated with the incidence of fraud.

Another principal focus in the prior literature is the impact of being audited by one of the Big 4, or non-Big 4, audit firms on the likelihood of misstatements. Feroz *et al.* (1991) explored the GAAP violators and found that 46% of those were audited by Big 4 audit firms while 31% were audited by local firms. Meanwhile, the proportion of Big 4 audit firms is smaller in the population of misreporting companies in the U.K. (Peasnell *et al.* 2001). Thus, the use of a Big 4 auditor was found to have been a significant variable to reduce the likelihood of accounting misstatements in Peasnell *et al.* (2001). In contrast, some studies have shown that Big 4 auditors do not reduce the probability

[8]The researcher is aware that there can be cases when auditors compromise their independence and agree not to disclose accounting misstatements. However, this scenario is hardly likely to be observed and, therefore, an assumption must be made that auditors maintain their practices according to the standards of auditing but a variation in audit quality happens because of, for example, in-house expertise and audit teams (see Francis 2011). The researcher is interested in types of audit firms. In Thailand, the respondents in Pornupatham (2006) address that non-Big 4 auditors are less resistant to management's discretion, particularly when firms are highly concentrated. If this is the case, then the audit quality of Big 4 and non-Big 4 should be far more different in highly-concentrated firms. The researcher made an additional analysis into the roles of auditors in firms with high and low ownership concentration (25% is a cut-off point) and the main model which is described in Chapter 6, Section 6.3 was used. The regression results show that there is no significant relation between a use of Big 4 auditors and accounting misstatements in firms with low ownership concentration (the coefficient of -0.3648, *p*-value of 0.665), but a negative relationship between them significantly appears in the sample with high ownership concentration (the coefficient of -1.0367, *p*-value of 0.046). Accordingly, the results support the prior finding of Pornupatham (2006) on the lower resistance of non-Big 4 auditors in firms with high ownership concentration. On the other hand, the resistance of auditors in firms with low ownership concentration, does not differ for Big 4 and non-Big 4 firms.

of accounting misstatements (e.g. Dechow *et al.* 1996; Lee *et al.* 1999). One reason to explain why the use of a Big 4 auditor is not an important explanatory variable in the accounting misstatement model possibly involves the sample's character. Almost all of the studies use listed firms as a sample. Due to the Big 4's reputations, most listed companies are more likely to hire Big 4 auditors; for example, more than 99% of S&P 500 companies (Wang 2006) and more than a half of listed companies in the U.K. (Abidin *et al.* 2010; Beattie *et al.* 2003) and in European and Asian countries (Choi and Zéghal 1999; Fan and Wong 2005; Narasimhan and Chung 1998) use Big 4 auditors. Therefore, there is a high possibility that the proportion of companies hiring Big 4 auditors in the sample group does not statistically differ from that of the control group (such as in Dechow *et al.* 1996).

It is widely accepted that Big 4 firms provide better audit quality than non-Big 4 firms (Becker *et al.* 1998; Teoh and Wong 1993). In particular, Big 4 auditors in the East Asian region play important roles in monitoring activities, especially when firms issue new stocks (Fan and Wong 2005). In Thailand Big 4 clients have been shown to have a lower amount of discretionary accruals (Pornupatham 2006) and 75% of the misstating firms in Thailand during 2003-2005 were audited by local firms (Tummanon 2005b). Overall, therefore, Big 4 auditors appear to be a significant monitor in reducing the likelihood of accounting misstatements in Thailand. An influence of the usage of Big 4 auditors on the likelihood of accounting misstatements in Thailand will therefore be examined.

2.4.3 External Drivers

There are two external drivers that prior studies have found to be significant in the financial reporting process: capital market participants and regulations. They are classified as external drivers because they are not originally initiated by the managers but because of these forces from outside parties, the managers are activated to manipulate accounting items.

a) Capital Markets

Capital market participants are significant external drivers that can compel some managers to misstate financial reports. Firms' reported earnings numbers are constrained by two forces: analysts' forecasts and market reactions to the reported earnings numbers. Previous research has shown that managers care about capital markets (Fama 1980). Because accounting numbers have an influence on share valuation (Watts and Zimmerman 1986, pp. 15-70), managers are certainly aware of an announcement on those numbers (Graham *et al.* 2005). An earnings announcement can influence a market's valuation of the firm, and stock prices react to the deviation of the actual announced earnings and the market's prior expectation. The growth of stock values in capital markets has been found to have a large negative price response to negative earnings surprise (Skinner and Sloan 2002). Therefore, managers are forced to maintain satisfactory earnings numbers, even by earnings management (Dechow and Skinner 2000). The executives accept that earnings numbers and analysts' forecasts are their critical benchmarks (Graham *et al.* 2005), and fraudulent firms admit that they avoid reporting losses and exaggerate financial performance because they are concerned of markets' expectation and reactions (Rezaee 2005). Although the pressure of the market on financial reporting quality is supported by previous studies, its measurement in empirical research is limited.

Researchers acknowledge the limitations of quantifying capital market pressure. The measures that are found in the literature are based on the amounts of market value and equity; however, the designation for numerators and denominators varies among studies (either book-to-market or market-to-book ratio is used and, although the coefficients are in an opposite direction, their interpretation is the same). For example, the book-to-market ratio is determined as a capital market pressure (e.g. Dechow *et al.* 2011; Ettredge *et al.* 2010). A lower ratio shows the greater multiple of the market value to the book value, and it implies the higher pressure a firm must maintain. Dechow *et al.* (2011) find that the book-to-market ratio is negatively associated with the likelihood of accounting misstatements, both in the misstatement year and one year earlier. However, the book-to-market ratio is significant only in the case of accounting errors, but not in fraud cases (Ettredge *et al.* 2010). This might imply that a firm can anticipate an

extreme negative response from the market if fraud is detected, so the market pressure does not relate to the likelihood of fraud. Some studies do not find a significant effect of market pressure. For example, Burns *et al.* (2010) and Burns and Kedia (2006) use a market-to-book ratio to determine the market driver, but they do not find a significant association between the market-to-book ratio and financial misreporting. A test of this determinant on the likelihood of accounting misstatements in other countries is rarely witnessed. Although equity financing is not a predominant source of funds in Thai firms, Pornupatham (2006) finds that capital market pressure is a significant factor in the earnings management for Thai firms. It is thus possible that the capital market pressure is one of the determinants of the causes of accounting misstatements in Thailand and the measure of market-to-book ratio will be used in this study.

b) Regulations

Another external driver involves regulations (Healy and Wahlen 1999). Fraud firms accept that they mask the reports to prevent being delisted (Rezaee 2005). An empirical study into Chinese firms by Chen *et al.* (2001) find that the companies under the profitability regulation of Chinese Securities Regulatory Commission (CSRC) are more aggressive in earnings management. The regulation is a command to either suspend shares from trading, or delist a company when the company reports losses for three consecutive years.

In Thailand, there is one regulation that is akin to the profitability regulation of the CSRC. In the Stock Exchange of Thailand, when shareholders' equity in a listed company, as shown in its audited financial statements, is less than zero, or the amount of shareholders' equity, when adjusted according to the qualified opinion of external auditors, is less than zero, then, the company is subject to preparing a rehabilitation plan. The company's shares will be suspended from trading for the negotiation period. The firm then has 30 days to make a decision on whether it will submit for rehabilitation or delisting. If it continues, then the firm's stock will be transferred to the REHABCO sector. Then, the company is required to generate positive shareholders' equity within two years, or ask for a one-time extension, not exceeding one year, to resume a normal status; otherwise, the company will be delisted. This rehabilitation

status tends to put considerable pressure on the firm and its managers. After the financial crisis of 1997, many Thai firms experienced dramatic losses and were subject to a rehabilitation plan. Tummanon (2005b) finds that during 2003-2005 the accounting enforcement actions of the Securities and Exchange Commission, Thailand appeared the most frequently in REHABCO sector, 30.8%.

Besides the recovery requirement that the firms under profitability regulation have to maintain, the financial status of these firms is also in a critical condition. The negative amount of the equity indicates the large value of debt and potential liquidity problems. There is evidence in previous literature showing a relationship between financial difficulties and financial reporting quality. Empirical studies in the earnings management area have found that firms with financial distress, defined by two to three consecutive years of negative earnings, employ income-decreasing approaches when they are going to negotiate debt restructuring (Saleh and Ahmed 2005) and reduce dividend payout (DeAngelo *et al.* 1994). With regard to the area of GAAP violation, the financial distress is usually examined in respect of the closeness to bankruptcy or Altman's *Z*-score. For instance, Malaysian firms are more likely to commit fraud when they are close to filing a bankruptcy (i.e. higher Z-score) (Hasnan *et al.* 2008) and Australian firms are more likely to commit fraud when they report at least three annual net losses in the six year period preceding the first year of fraud (Sharma 2004). There is a higher tendency for highly-levered firms to commit fraud (Maksimovic and Titman 1991, p. 189)[9] because their reputation costs after committing fraud are likely to be low (Agrawal *et al.* 1999, p. 313).

The regulation involving a rehabilitation status for the firms in the Stock Exchange of Thailand can indicate both the pressure from the profitability requirement and a financial deficiency. It is, therefore, interesting to assess whether the rehabilitation

[9]A hypothesis by Maksimovic and Titman (1991) suggests that highly-levered firms have a tendency to cut costs and reduce the quality of their products in order to avoid immediate bankruptcy and maintain cash balances. Rational investors can anticipate the lower incoming cash flow due to such unimproved product quality. Therefore, they will offer lower amount of funds with a higher cost of capital. The distressed firms know at this current period that they will be suffering a high cost of capital in the next period, so their incentives to maintain reputation reduce. As a result, there is a tendency to commit fraud for by highly-levered firms, even if there is no possibility of financial distress in the next period.

status relates to a decision of financial misreporting. Investors can easily notice this status because firms under the rehabilitation period are disaggregated into the REHABCO sector. This study uses rehabilitation status as a measure for profitability and financial distress. Although this measure is dissimilar to the prior studies that have employed either the appearance of negative equity or Altman's *Z*-score, a research result on the rehabilitation status can be beneficial to the investors investing in Thai listed companies and securities regulators.

Based on the review of the extant empirical evidence, the determinants of accounting misstatements can be summarised in Table 2.2.

Table 2.2: Summary of Determinants of Accounting Misstatements

Incentives	Monitoring Activities	External Drivers
a) Self-interest incentives - Maximisation personal benefits - Bonus and compensation - Insider trading - Employment security	a) Internal monitors (e.g. board of directors, audit committee, board composition)	a) Capital market pressures - Analysts' forecasts - Growth in firm value
b) Financial motives - Avoid debt covenant violations - Minimise cost of capital	b) External auditors	b) Regulations

The determinants include: incentives to violate GAAP, the ineffectiveness of monitoring activities, and pressures from external drivers. The incentives comprise the managers' personal motivations, an incentive to avoid debt covenant violations, and an incentive to minimise costs of coming capital. The monitoring activities depend on the effectiveness of internal and external monitors. Capital market expectations and the profitability regulations are both examples of the external drivers that pressure a firm to misstate financial reports.

In the contexts of principal-principal conflict and concentrated ownership systems, the researcher argues that self-seeking incentives of managers are unlikely to occur due to the affiliation of managers and controlling shareholders. The likely determinants of accounting misstatements in Thailand examined in this research are financial motives, monitoring activities and external drivers. The hypotheses for testing whether these proxies are significant determinants of accounting misstatements in Thailand are presented in Chapter 5.

Evidence on the determinants of accounting misstatements can imply a reason why firms release misstated financial reports. The cause of, or a decision to release, misstatements may illustrate the benefits that a firm can get from the financial misreporting (e.g. minimised cost of capital and maximised firm value). Positivist researchers thus believe that there is a cost and benefit trade-off when managers decide whether they will manipulate earnings (Beneish 1997; Dechow *et al.* 1996; Rezaee 2005). The determinants of accounting misstatements, or an implication for the causes of an accounting misstatement, have already been discussed in this chapter. The next chapter will illustrate the empirical evidence on the costs imposed to the misstating firms after the accounting misstatement is detected and revealed.

2.5 Summary

Managerial opportunism can occur when there is a separation between ownership and control. A principal-agent conflict relatively occurs in diffused ownership firms, while a principal-principal conflict is more likely to appear in concentrated ownership firms. Accounts manipulation can be involved in the expropriation scheme of the agent (i.e. the managers) and the majority shareholders. Revelation of the determinants of accounts manipulation will consequently be able to provide an insight for investors and regulators. However, mainstream research has so far been more concentrated on samples in diffused ownership systems. Our understanding of concentrated ownership systems is, therefore, limited. This study aims to bring the causes of accounts

manipulation in the concentrated ownership systems into light. To do this Thailand is selected to serve as a case study. This thesis will examine the determinants of accounting misstatements in Thailand, particularly focusing on managers' incentives, governance mechanisms, and corporate ownership structure.

The next chapter discusses the consequences imposed to misstating firms after their accounting misstatements are revealed.

CHAPTER THREE

PRIOR EVIDENCE ON THE CONSEQUENCES OF ACCOUNTING MISSTATEMENTS

3.1 Introduction

The causes of accounting misstatements were reviewed in the previous chapter. This chapter will review the previous literature on the consequences for misstatement firms after accounting misstatements have been detected. To date, the research that investigates both the causes and consequences of accounting misstatements is scarce (Dechow *et al.* 2010). The disparity between the cause and consequence examinations limits our ability to understand why a firm decides to commit accounts manipulation and what the constraints are in cases where such behaviour is intentional. To overcome this limitation, this thesis aims to examine both the determinants and the consequences of accounting misstatements. With regard to the study of consequences, many prior studies have assessed the effect of accounting misstatements on share prices shortly after the misstatements have been announced. Only a few studies focus on the reactions of creditors and all of them were conducted on widely held firms. The capital structure of the concentrated ownership system (including Thai firms) is primarily based on debt, making the reaction from the creditors more appropriate to be examined.

This chapter will start with a review of the relevant literature on the consequences of accounting misstatements. It then outlines the link between causes and consequences. Finally, the limitations of the prior literature and the objectives of the present research will be discussed.

3.2 Consequences of Accounting Misstatements

A number of previous studies (e.g. Beneish 1997; Dechow *et al.* 1996; Rezaee 2005) have agreed that accounting misstatements are deemed to be part of a cost-benefit trade-

off in the process of financial reporting; however, quantifying them is difficult. Revsine *et al.* (2002, pp. 295-319) provide a number of examples of financial reporting costs, which include: preparation and publication costs, competitive advantage costs, litigation costs, and political costs. Moreover, additional costs seem to appear when financial reporting includes accounts manipulation, such as: costs for lawsuits, costs of future financing and reputational costs (Jiambalvo 1996). Although many scholars believe that there are cost-benefit trade-offs in the decision-making process (e.g. Jiambalvo 1996; Kellogg 1984; Rezaee 2005), this hypothesis has not received conclusive support. The previous research on the subject is restricted by possible issues. Firstly, there is no theory that dictates costs and benefits of GAAP and non-GAAP reporting (Wahlen 2004) and, therefore, a number of methodological issues can occur. For example, Palmrose and Scholz (2004) predicted and found empirical evidence that firms with restatements of core accounts are more likely to be sued after being controlled for other relevant factors; however, why firms with core accounts ended up in court while other firms with restatements of non-core accounts did not was not explained, particularly in a theoretical view (Wahlen 2004, p. 186). Secondly, quantifying all of the costs involved in financial reporting decision-making is difficult (Francis 2001, p. 313). Additionally, to date much research has been constrained by data availability. However, despite these limitations, empirical researchers have attempted to identify many of the costs and benefits of accounting misstatements. Some benefits of accounting misstatements were discussed in respect of the determinants of accounting misstatements (presented in the previous chapter). In this chapter, the costs imposed on misstating firms will be discussed.

Many aspects of the costs, or consequences, for misstating firms have been explored. Capital market reaction and management turnover are two common measures that a number of previous studies have utilised, probably because most mainstream research has focused on the shareholder-agent conflict. Therefore, the shareholders' responses and penalties for the agent are two possible outcomes relevant to such conflict. Other consequences comprise class actions lawsuits, litigation costs, and corporate governance reforms. Unlike the shareholder-agent conflict, the principal-principal conflict occurs between controlling shareholders and outside investors. Therefore, the researcher is

interested in the reactions of those outside investors and economic consequences (i.e. subsequent financing activities). Nevertheless, there are certain methodological issues in the other types of consequences (i.e. corporate governance reforms and legal costs) that the researcher found during the review into literature and they are worth considering. There are also linkages between the causes that were previously reviewed in Chapter 2 and the consequences imposed on misstating firms and monitors when misstatements are revealed. Therefore, some space in this section is dedicated to discuss the other types of consequences, even though the main focus of this research is on economic consequences.

The following subsections will review the empirical evidence of consequences imposed on misstating firms, which can be divided into three groups according to the entities in the contracting process (Stolowy and Breton 2004). The first category is the response of capital providers (i.e. shareholders and creditors) through costs of capital and contracts. The second group engages subsequent improvements in monitoring mechanisms, which involve penalties for managers and incompetent monitors. The third group is a response from society, particularly from legislators and authorities.

3.2.1 The Effect of Information Uncertainty

Because financial reports play an important role in providing economic information for funds providers, concern about information uncertainty must occur after an accounting misstatement is revealed.

a) Cost of Equity

Share Prices

Since a listed firm's funding comes from equity investors, there is a likelihood that investors will penalise the firm if it commits an accounting misstatement. A measure of market reaction is ascertained by change in share prices. Pioneering researchers observed changes in share prices around the misstatement announcement and they found an average negative cumulative abnormal return after an announcement of accounting misstatements of about 9-13% (e.g. Dechow *et al.* 1996; Feroz *et al.* 1991;

Kellogg 1984; Palmrose *et al.* 2004). The literature then shifted from exploring abnormal returns in misstating firms to exploring the effect of misrepresentation on abnormal returns through a multivariate regression model. Despite an absence of theory explaining the linkage between a misstatement announcement and a negative abnormal return (Wahlen 2004), empirical research has tested a casual relationship between the two. Kinney and McDaniel (1989) discovered two characteristics of the misstatements influencing abnormal returns: the sign (overstatement) and magnitude of misstatements. Abnormal returns are greater when there is a larger misstatement in relation to overstatements. Because the findings in Kinney and McDaniel (1989) are limited to the sample of accounting errors in quarterly financial reports, Palmrose *et al*. (2004) later tested the same issue in a sample of annual financial misreporting. Apart from testing a relationship between a restatement announcement and abnormal returns, Palmrose *et al.* (2004) also examined relationships between abnormal returns and the characteristics of restatements (such as the magnitude of restatements and reasons for restatements). Similar to Wahlen (2004), Kasznik (2004) argues that the lack of theory makes it difficult to explain why these characteristics generate greater adverse responses on the abnormal returns.

Besides the adverse effect on the misstating firms, Gleason *et al*. (2008) found that non-restating firms in the same industry also experienced share price declines at the same time. Many previous studies find negative abnormal returns for both misstating firms and non-misstating firms in the same industry around the restatement period. Ball and Brown (1968), and Ball (1972) detected the earlier movement of abnormal returns and its appearance in the industry. The pre-existing abnormal returns had appeared for a year before the detection of accounting misstatements in Kellogg's (1984) sample. Wilson (2008) acknowledges the contagion effect and, therefore, used a sample containing both misstatement firms and matched non-misstatement firms. The results reveal an interaction effect of the restatement announcement on abnormal returns: abnormal returns are greater when unexpected earnings appear due to the restatement announcement. Meanwhile the abnormal returns of non-restating firms did not significantly vary across time; even when unexpected earnings appeared in these firms. Therefore, Wilson argues that abnormal returns are a result of restatement

announcement and they are not caused by time-period trends. Some studies (e.g. Kinney and McDaniel 1989; Palmrose *et al.* 2004) argue that there is news leakage. Ball and Brown (1968), emphasised by Watts and Zimmerman (1986, p. 45), point out that the earlier movement can occur because investors usually get information from quarterly financial reporting and from non-accounting sources. Therefore, the investors regularly revise the asset pricing, and the revision can also make the expected earnings of the firms in the same industry fluctuate (Watts and Zimmerman 1986, pp. 71-110). A recent study by Bardos *et al.* (2011) supports this point of view. They found that investors can anticipate subsequent restatements and start marking the share prices down several months (i.e. four months in their study) before a restatement announcement. This price reduction costs a misstating firm three times as much as does the effect of a restatement announcement.

Watts and Zimmerman (1986, p. 88) urged caution in the research design for an examination of abnormal returns. Because the research sample is usually selected on the basis of one variable (i.e. accounting restatement), if the research cannot control for other factors, it might later be found that the sample differs from the population due to some other variables. If this happens then it should not be concluded that the abnormal returns in the misstating firms around the misstatement period are a result of the restatement announcement (Ball 1972). In addition, Watts and Zimmerman (1986, pp. 92-93) argue that if investors' expectations are correct, then why the firm waits for years to announce the restatement. Alternatively, whether the firm waits until when there appears to be no correlation between price change and restatement announcements. This point of view is consistent with the no-effect hypothesis.[10] Consequently, the appearance of prior movement of abnormal returns is an issue that researchers must be aware of if they are interested in observing a change in share price after the announcement.

[10]The no-effect hypothesis underlines the efficient market hypothesis, which implies that the share price is a function of the firm's expected future cash-flows and the expected rate of return and earnings are unimportant (unless they capture the primary drivers). The mechanistic hypothesis implies that there is a relation between stock prices and accounting earnings changes, supported by Ball and Brown (1968). However, it was later clarified that the stock prices will react to the accounting earnings changes that reflect real economic changes, but they do not react to the earnings changes that have no cash flow effect (Ball 1972; Watts and Zimmerman 1986, p. 97).

Other responses of capital market participants

Besides the decline in stock prices, prior research has measured the reactions of capital market participants to misstatements through bid-ask spreads, estimated rates of returns and analysts' reactions. Dechow *et al.* (1996) found an adverse effect of misstatement announcements on bid-ask spreads. Meanwhile, Hribar and Jenkins (2004) argue that the bid-ask spread is an indirect measure for costs of capital, so they applied three asset-pricing models to estimate the effect of a restatement announcement on cost of capital. Their premise is that a restatement announcement generally leads to downward revisions in future expected earnings. They therefore used analyst forecast revisions to proxy for an effect of the announcement on expected future cash flows. Data for the assessment include book value of equity, analyst forecasts and long-term growth rates. The rates of returns were calculated and analysed to determine whether they changed between the periods. They found that the rates of return rose by 10.8%-19.5% during the five days after the revelation of misstatements.

Investors tend to find corporate information from other sources when they are concerned about the information uncertainty in misstating firms, including analysts' forecasts (Barniv and Cao 2009). Dechow *et al*. (1996) showed a significant increase in the dispersion of analysts' forecasts after the misstatement announcement (year -3 to year +3), while they do not find a change in dispersion of forecasts for control firms. Similarly, Palmrose *et al.* (2004) discovered a wider dispersion in restating firms along the 45 days after the announcement. The number of analysts following has also been studied in prior studies. Dechow *et al*. (1996) observed changes in the median number of analysts following during a six year window (year -3 to year +3) when compared with those of the control firms. They found a significant decline in the numbers from year -1 to year +1. More interestingly, for the three years before the misstatement announcement the median number of analysts following in the misstating firms is found to be higher than that of the control firms. Dechow *et al.* (1996) posit that the higher rate supports the proposition that the managers of growing firms are under more intense pressures from the markets and that they are consequently more likely to misstate financial reports.

In brief, studies into the reactions of market participants are available, and their findings are all alike: affirming that a misstating firm suffers negative consequences from investors and analysts. However, the lack of theoretical foundation limits empirical researchers' explanations in some circumstances; for example, why misstatements of core accounts results in a higher level of abnormal returns, or why share prices start marking down several months before a restatement announcement (Kasznik 2004; Wahlen 2004). Therefore, it might be improper to conclude a casual relationship between misstatement announcements and a higher cost of capital, but it is useful to confirm their correlation.

To assess the reactions of equity investors is deemed to be an effective measure for dispersed ownership systems, where capital market participants (e.g. shareholders and analysts) importantly discipline the firms. In contrast, capital markets in the concentrated ownership system are not enhanced and firms are more likely to choose debt alternatives than equity (La Porta *et al.* 1997; Rajan and Zingales 1995). Therefore, concentrated ownership firms might be less concerned about the market reaction. Rather they can be more concerned about creditors' responses. The next section reviews the reactions of creditors studied in prior literature.

b) Cost of Debt

A revelation of accounting misstatements signals the low quality of the financial reporting process, so it would seem rational for creditors to call for efficient monitoring and higher charges to secure their investment returns. A higher interest rate, tighter debt covenants and stricter requirements for collateral are instances of debt features that the creditors might prefer from misstating firms.

Graham *et al.* (2008) examined the impact of restatement announcements on loan features. An average cost of debt, measured by the amount of the interest rate above LIBOR rate (named loan spreads) is higher after a restatement announcement. An investigation into the characteristics of the misstatements was conducted, similar to the approach used in abnormal-returns studies. An average loan spread was found to be

larger when the restatement involved fraud, but was irrelevant to the restatement initiated by auditors, company, and capital market regulators. With reference to loan obligations, the restatement announcement resulted in a decline in loan maturity, a requirement for collateral, and an increase in the number of covenants. General covenants (such as prepayment, dividends, and voting rights) were added into the new debt covenants - more so than financial covenants (e.g. ratios). This possibly happened because financial covenants can be manipulated. In addition, misstating firms had to pay more for upfront and annual fee charges. The results from Graham *et al*. (2008) confirm the negative impact of the restatement announcements on loan features. Chen *et al.* (2009) argue that since the sample in Graham *et al.*(2008) comprises only of firms getting subsequent loans, there may be some restating firms that also need funds but the firms are unable to get them because they are high in financial constraints. Therefore, Chen *et al.* (2009) explored the financial constraint status and external financing capability of the restating firms and compared these with matched non-restating firms.

Chen *et al.* (2009) found that about half of restating firms do not raise any external financing within two years after the restatements. They assessed whether misstating firms need financing in the post-announcement period by using two indices. The first measured the level of financial constraint, following the approach used by Kaplan and Zingales (1997). The data were collected from misstating firms' annual reports. The second measure is a calculation of a financial constraint index, as developed by Whited and Wu (2006). Both measures provided consistent results in that an average of the constraint level of the restating firms did not differ from that of the non-restating firms before the restatement announcement, but the average is greater for the restating firms after the announcement. After assuring that the restating firms need financing but are less likely to find it because their ability to get new funding is lower, Chen *et al.* (2009) then examined the dynamic changes of financing choices around the misstatement period. Based on the financing choices from pecking order theory (Myers and Majluf 1984), Chen *et al.*'s (2009) study found that the proportion of private debt increases while the proportion of public debt and equity decrease after the misstatement announcement. This result agrees with the financial constraint indices, affirming that misstating firms suffer from financial constraints in the post-restatement period. The

increase in private debt funding is consistent with the description by Bharath *et al.* (2008) of how firms with low quality financial reports prefer private-debt alternatives. This is consistent with pecking order theory in that the cost of equity is the highest because it is associated with the highest information asymmetry costs. Since the restatement announcement raises information asymmetry between the firm and the users of financial statements, it is a persuasive argument that these firms should prefer private debt to equity. In addition, firms tend to lose their credibility of financial reporting and, therefore, the costs of capital from public debt and stock issuance are deemed higher.

Even equity-based firms, such as the U.S. firms in Chen *et al.* (2009), are more likely to prefer private debt after the restatement period. This finding raises a question of how the external financing choices change for misstating firms in debt-based firms. Due to the primary preference on debt financing, debt-based firms have already had a relatively high leverage ratio and debt covenants to maintain. After an announcement of accounting misstatements, a number of questions arise, including: whether they can raise more debt, or change to issue stocks, and whether minority shareholders and creditors charge the firms more. Unfortunately, the answers for these questions are unavailable. Having a sample of debt-based firms (i.e. Thai firms) allows the present research to respond to these questions.

This thesis will therefore assess the economic consequences of accounting misstatements in Thailand, with a particular focus placed on the firms' external financing activities. With regard to the reactions from capital markets, previous studies in Thailand have found results that are consistent with prior studies into other countries. For example, Tummanon (2005a) finds an average of cumulative abnormal return of -9.78% in Thai firms after they are subject to accounting enforcement actions by the Securities and Exchange Commission, Thailand. The concentration on the debt financing activities of Thai firms will enable the present research to contribute new evidence to the literature in order to understand the reactions of creditors and minority shareholders.

Financial difficulties after the misstatement announcement lead firms to face a restriction on their investment (Kedia and Philippon 2009). Since misstating firms risk a higher cost of capital, (some cannot even get new finances) corporate liquidity and debt covenants are deemed to restrict the firms from investing activities. During the two years after the restatement period, misstating firms' operations are more economically constrained than are those of non-restating firms in the same industry, measured by the growth rates of capital expenditures, employees, sales, and market values (Kedia and Philippon 2009). If these restrictions last for long then the cost of a restatement announcement is inclined to be dramatic and might cost more than the firm can quantify (Graham *et al.* 2008).

One possible solution to reduce the severity of the costs of information uncertainty is to improve corporate governance structures so that the reforms can lessen the potential costs of capital and can restore the firms' credibility to investors and creditors. The next section illustrates changes in corporate governance for the misstating firms in the post-restatement period.

3.2.2 Improvement in Corporate Governance Structures

Improvements in corporate governance mechanisms are a potential mechanism to help restore misstating firms' reputation. The revelation of accounting misstatements indicate the weakness of corporate governance (Dechow *et al.* 1996) and it decreases value of the firm's reputational capital (Agrawal *et al.* 1999). The misstating firms may thus desire to show their investors the improvement on corporate governance systems in order to restore their credibility; for example, firing the managers (Feroz *et al.* 1991) or increasing the number and proportion of outside directors (Farber 2005).

a) Change in Top Management Position

The benefit of a managerial change is still a controversial point of debate. Since a firm's market value decreases after a misstatement announcement (e.g. Dechow *et al.* 1996; Palmrose *et al.* 2004), the firm is anticipated that a managerial change may increase its firm's value (Weisbach 1988). Previous studies have found that management turnover is

significantly higher in misstating firms after the revelation of accounting misstatements (e.g. Desai *et al.* 2006; Feroz *et al.* 1991; Hennes *et al.* 2008), yet many studies have not (e.g. Agrawal *et al.* 1999; Beneish 1999b; Peasnell *et al.* 2001).

Hennes *et al.* (2008) advise that the inconsistency of evidence in prior studies into the management turnover may be a methodological issue. When accounting misstatement cases (i.e. both error and fraud samples) are aggregated, the sample is not as powerful as the disaggregation between them in predicting a managerial change. In their study, there is a significant positive relationship between the accounting irregularity (intentional misstatements) and the CEO/CFO turnover, but there is none in the group of accounting errors. Agrawal *et al.* (1999) emphasise that there is a complex process behind the decision for a managerial change. A firm tends to have a trade-off between the benefits of a managerial change (e.g. restoring reputational capital, reduced legal liability costs) and the costs (e.g. loss of human capital and expertise). In addition, Weisbach (1988) raises that some CEOs might voluntarily resign from the poorly performing companies because of their difficulties in recovery and the threat of stakeholder suits; so an observation on the appearance of turnover only cannot deal with this argument. Unfortunately, this suggestion can be achieved only if the data are available and even Weisbash (1988) recognises this limitation.

Besides management turnover, subsequent employment of the restating firms' managers has been also investigated in prior studies. When an accounting misstatement is detected, it will at least be reported in the restated financial statements in following years, while they go public for listed firms. Therefore, the managers tend to lose their reputation and it might be difficult for them to find employment afterwards. Desai *et al*. (2006) discovered that the appearance of restatements reduces the managers' ability to find comparable employment at another firm. This finding is consistent with an exploratory study by Beneish (1999b). In addition, Persons (2006) found that the compensation (bonus and salary) of executives decreased after the revelation of fraud or a lawsuit. These insights confirm the important role of the managerial labour market in disciplining the managers' behaviour.

In concentrated ownership systems, although studies into management turnover are scarce, this type of penalty is unlikely to occur because of the affiliation between the managers and controlling shareholders. Gibson (2003) finds a weak negative correlation between corporate poor accounting-based performance (i.e. profitability and sales growth) and CEO turnovers in emerging markets, including Thailand, particularly when firms have a large shareholder (holding > 20% of the total shares). In addition, there is no significant correlation between stock performance (i.e. stock market returns) and CEO turnover in Gibson's sample. These results may indicate that the monitoring system to control managers' performance in emerging markets is weak because it is often in emerging markets that CEO are affiliated with the controlling shareholder, and sometimes the CEO is one of the controlling shareholders (Morck *et al.* 2005; Young *et al.* 2008) and, therefore, the probability that the CEO is fired is reduced. In addition, there is a smaller opportunity for investors in emerging markets to be able to discipline managers and request effective corporate governance (La Porta *et al.* 1997, 1998; Shleifer and Vishny 1997). Accordingly, concentrated ownership firms may not need to fire managers in order to minimise the cost imposed by the markets. The weak relationship between the CEO turnover and accounting performance which was found in the Thai sample of Gibson (2003) indicates an absence of support for an examination into the managerial change in Thai firms. Therefore, managerial change tends not to be a significant consequence suffered by misstating firms in Thailand and that the consequence imposed on managers is not an interest in this research.

b) Change in Monitoring Systems

When a misstatement is found, not only are the executives sometimes fired, but the monitors themselves are also occasionally dismissed. Srinivasan (2005) points to a higher rate of outside director turnover, particularly when the outside directors are also audit committee members. He also finds that the labour market penalises outside directors of misstating firms. Outside directors are shown by Srinivasan (2005) to lose their position in other companies after the companies they service had announced income-decreasing restatements. However, the multivariate tests of Srinivasan's (2005) findings were run on misstating firms only and, therefore, these results are not entirely surprising (Richardson 2005). In contrast, Agrawal *et al*. (1999) do not find a higher

turnover of outside directors by the three year post-period window, when compared with control firms; however, they do notice a significant change in the turnover of inside directors. In terms of the board size, the number of directors on a board is larger for fraud firms than for control firms in year *t*-1, but it is slightly smaller and close to that of the control firms in the post-restatement period. This result supports the previous studies into corporate governance structures which found that the size of the board is not significant in monitoring roles (Beasley 1996), but qualifications are important (Agrawal and Chadha 2005).

Auditors can also receive a penalty. Detecting and disclosing fraud is an auditors' responsibility (*ISA 240* (IAASB 2006)), and a suspension and litigation costs can be imposed on those auditors who fail to fulfil their obligations. Feroz *et al.* (1991) find that 85 auditors of the 188 misstating firms were censured by the SEC and 89% of them were penalised. Bonner *et al.* (1998) developed a model to predict the possibility that the auditors will be sued based on characteristics of the misstatements. They discover that auditors are more likely to be sued when litigation relates to the frequently misstated accounts (e.g. revenues and assets) or to fictitious transactions. Unsurprisingly, the severity level also increases the likelihood of auditor litigation. Since fictitious transactions are illegal, the more severe the offence, the more stakeholders lose and the more likely auditors are to be sued. With regard to the reaction of the market participants when the auditors are dismissed, restating firms with auditor changes have a quarter shorter penalty for the decline in share prices when compared with restating firms who have no audit change (Wilson 2008).

Significant changes in the monitoring level have been found in misstating firms, but the benefits of these changes is inconclusive. By three years after the revelation of fraud, the fraud firms studied by Farber (2005) were shown to have improved their corporate governance mechanisms to the same level as those of the control firms. Farber (2005) finds that the governance reformation informs the capital markets and leads to a higher stock price performance, as measured by buy-and-hold abnormal returns. Yet, when an evaluation is performed of a stock following by financial analysts, these reforms have been shown to have no effect on subsequent institutional ownership and short sales.

Although there is evidence supporting a positive relationship between governance reforms and an average share return, like in Farber's (2005) study, it is still somewhat difficult to argue that corporate governance reforms benefit the firm in terms of an increase in stock performance because a firm's value is principally derived from future expected cash flows (Watts and Zimmerman 1986, pp. 15-36), or might be linked to the earnings number, as Ball and Brown (1968) argue. Consequently, a confirmation of the correlation between the governance reforms and stock performance is persuasive, but it is too early to confirm a casual relationship. This conclusion is similar to the situation of the relationship between share price and the announcement of accounting misstatements in Section 3.2.1 in that both occurred but explanations for the results are constrained.

3.2.3 Legal and Regulatory Penalties

The previous subsections reviewed the reactions of capital providers to misstating firms and the corporate governance reformation in misstating firms after accounting misstatements are announced. This subsection will review legal and regulatory costs imposed on misstating firms, when accounting misstatements are in violation of laws (such as fraud) or when the misstatement costs stakeholders who then file a lawsuit against the firm. The prior literature asserts that legal liabilities limit, but do not eliminate, GAAP violation (Jiambalvo 1996). Moreover, some research is against the view that the legal liabilities are an inadequate deterrence in the protecting mechanism (e.g. Coffee 2001). Exploratory results from previous studies, based on litigation cases, show that the likelihood of litigation increases when a misstatement is fraudulent financial reporting and involves core accounts (Palmrose and Scholz 2004). In the same vein, the probability of litigation for auditors increases when they cannot detect fictitious items and the core accounts (Bonner *et al.* 1998). These studies show the correlations between accounting attributes and litigation probability, and the adverse consequence for supplying low quality financial reports.

Although there is a significant relationship between financial reporting and litigation probability, based on the statistics in previous research, the managers might still take a risk (Wahlen 2004). According to the results in Palmrose and Scholz (2004), only 38%

of misstating firms were sued and the chance of being sued occurs only when the misstatements are in core accounts. These findings tend not to be economically significant enough to deter self-seeking managers from the temptation to misstate elements of earnings. Karpoff *et al.* (2008) develop certain measures for the costs imposed to a misstating firm: for every pound of inflated value after the detection, the firm's value decreases by that pound, plus £0.36 for fines and class-action settlements and £2.71 for reputational loss. Even though there are some limitations in their study (Karpoff *et al.* 2008, p. 606), it is a rare attempt to disentangle the measurement of reputational cost.

To summarise, this section has reviewed the consequences imposed to misstating firms, management team, and monitors. There is empirical evidence showing that misstating firms and managers receive penalties from stakeholders, in terms of economic consequences (i.e. costs of capital, financing abilities, litigation and regulatory costs), managerial changes, costs of the corporate governance restructuring, and reputational costs.

The next section discusses the linkages from the causes of accounting misstatements to the consequences after the misstatements have been detected (a link from Chapter 2 to Chapter 3).

3.3 Linkages between the Causes and Consequences

Chapter 2 reviewed the determinants of the causes of accounting misstatements. The previous section (Section 3.2) discussed the evidence on the consequences imposed on misstating firms and relevant parties. From this, it can be seen that the causes and consequences are related, as shown in Table 3.1.

In Table 3.1, the left-hand column presents the causes of accounting misstatement, which were taken from the determinants of the causes in Table 2.2. The causes can be divided into three groups: incentives, weakness of monitoring activities and external

drivers (see Chapter 2). The right-hand column contains the consequences of accounting misstatements. As discussed earlier, they consist of managerial changes, economic consequences, corporate governance reforms, and litigation costs.

Table 3.1: Relevance between Causes and Consequences of Accounting Misstatements

Causes	Consequences
Incentives Managers' own benefits • Higher compensation • Profit from selling shares at inflated price • Reputation gain Financial motives • Circumvent debt covenant violation • Minimisation of costs of capital	**Management turnover** Managers • Decreased compensation • The loss of employment and poorer subsequent employment **Economic consequences** • Ability to obtain external financing • Higher costs of capital
Weak monitoring activities • Audit deficiency • Ineffective and/or incompetence internal monitors (board of directors, audit committee, internal auditors)	**Corporate governance reforms** • Auditors (suspended, dismissed) • Internal monitors (decreased remuneration, dismissed) • Improve governance structures
External drivers • Maintain or raise share price by meeting earnings benchmarks and analysts' forecast • Comply with requirements and regulations	**Economic consequences** • Capital market participant's reactions (decreased share price, increased bid-ask spread, downward analysts' revisions) **Legal and regulatory penalty** • Firm • Management • Auditors and internal monitors

The linkages between the causes and consequences can be explained as follows. Firstly, if the accounting misstatement is created to maximise personal gains then the self-seeking or incompetent managers are fired or face a reduction in compensation. They are also penalised by the labour market in subsequent employment. Secondly, if the misstatement is performed so that the firm can avoid debt covenants and minimise cost of debt then the creditors will penalise the firm by tightening debt covenants and increasing interest rates. Thirdly, the managers may offer an excuse that they had to create a misstatement to meet the capital market's expectations; however, the capital market participants disagree. They are likely to sell the firm's shares and the firm's value will then decrease. As for prospective investors, they will require a higher rate of returns due to concerns over information uncertainty. Financial analysts are also concerned about the market performance of the firm. Fourthly, the misstatement signals the weaknesses of corporate governance structures and, therefore, the firm is more likely to improve the governance systems in order to assure the investors and minimise the likelihood of accounting misstatements in future. Finally, if the misstatement is in violation of the law then the firm will face a lawsuit case and litigation costs will be incurred. Due to the limitation of research in concentrated ownership systems, it is acknowledged that the attributes of the causes and consequences in the Table are mainly driven by the samples from dispersed ownership systems.

The linkage of the causes and consequences of an accounting misstatement can also be integrated into a timeline (see Figure 3.1) devised by Wahlen (2004, p. 184).

At the outset of Figure 3.1, there is a certain set of circumstances that can lead to an occurrence of non-GAAP reporting. Similar to the review conducted in this research, the antecedents are composed of: managers' incentives, internal control systems, external pressures from capital markets and a firm's characteristics that are usually control variables in research analyses (e.g. size, growth, and industry). Three columns at the middle present the process of non-GAAP reporting after an incentive occurs. The internal control systems are common protection tools to weaken the incentives but if the control systems are weak then non-GAAP financial reports will be released. The GAAP violation might take the form of an error on a core account, inadequate disclosures, or

fraudulent financial reporting. The non-GAAP reporting expropriates some stakeholders' interests, depending on the incentives of the misreporting. For instance, inflated earnings numbers misleads the capital-market participants, or lenders are misled by manipulated accounts when the firm is close to default. The board of directors and compensation committee are deceived, if the manager wants to mask his poor operating performance or maximise his compensation, respectively.

Figure 3.1: Factors Associated With Non-GAAP Financial Reporting

Timeline →

	Non-GAAP report is:			
	Released	Used	Restated	
Antecedent circumstances	Actions taken to misstate earnings	Resource allocation decisions	Detection triggers restatement	Restatement triggers consequences and *ex post* settling up
• Managers' incentives • Internal Controls • Prior earnings and returns • Earnings expectations • Size • Growth • Industry • Others	• Core and non-core elements of earnings • Pervasiveness • Transactions versus accounts • Estimates versus allocations • Annual or interim financial statements • Number of periods restated • Disclosures • Auditor negligence or compliance • Fraud • Others	Are users fooled? •Capital-market participants •Lenders •Boards of directors •Compensation committees •Regulators •Others	Who detects misstatement? Who triggers restatements? •Capital-market participants •Directors and officers •The SEC and other regulators •Auditors •Other managers within the firms •Others	•Share price reactions in the capital markets •Cost of capital implications •Litigation and resolution •Managers sued and/or fired •SEC actions (*AAERs*) or other regulatory actions •Auditors sued and/or fired •Delisting •Bankruptcy •Survivorship •Others

Source: Wahlen *et al.* (2004, p. 184).

Since non-GAAP reporting can be very costly to relevant users, a certain set of monitoring systems is instituted to detect misstatements (the fourth column). The monitors include authorities (e.g. stock exchange authority), external auditors, and internal monitors (e.g. directors, an audit committee, and officers). A requirement for an accounting restatement arises after these monitors have detected the misreporting. Once the restatement, or the detection of the misstatement, is revealed, the relevant

stakeholders take action (the fifth column). These actions are in accordance with the review in the previous section. Equity holders are then expected to sell the firm's stocks (or buyers are prepared to pay less for them) and the share price declines. Possible capital providers increase their charges for the capital provided because of the firm's poor quality of financial reporting. The self-seeking and incompetent manager can be dismissed, as might incompetent auditors and monitors. The related authority will file a lawsuit against the perpetrator(s) and/or issue a specific command to the firm (such as an enforcement action or delisting). Existing studies have been conducted in line with this Wahlen (2004) timeline; however, it is useful to divide it into two phases: causes and consequences.

The extant literature frequently separates the occurrence of accounting misstatements into two parts. The samples in previous research are usually the *ex post* cases, i.e., studying non-GAAP reporting after it is detected. For instance, mainstream U.S. research has collected samples from the U.S. Securities and Exchange Commission *Accounting and Auditing Enforcement Releases, AAERs*, or accounting restatement filings in the U.S. Government Accountability Office database. Detection, either by the independent authorities or by the internal monitors, is at the midpoint of the timeline. Therefore, the detection is deemed to have become a cut-off point for the specification of independent and dependent variables in the research. By the *AAERs* (or restatements), these *ex post* case studies go backwards to find the causes of accounting misstatements. When the causes are being examined, the substance of the consequences is assumed to be less than the economic benefits that the misstating firms get from the manipulation (e.g. in Efendi *et al.* 2007), and it is assumed that the managers decide to misstate financial reports. With regard to the consequences, from the revelation of an accounting misstatement point, the studies go forward to investigate the costs imposed to the misstating firm after the discovery, such as capital market reactions, legal penalty, and corporate governance reforms.

To be consistent with the methodology of previous studies, and the timeline suggested by Wahlen (2004), this thesis is interested in gathering samples from the Securities and Exchange Commission, Thailand. The research will then examine the determinants of

accounting misstatements, where the occurrence of accounting misstatements is the dependent variable of the determination. After that, it will assess the economic consequences after the accounting misstatements have been disclosed. The incidence of accounting misstatements, therefore, is an independent variable in the consequence assessment. Both the determinants and consequences of accounting misstatements will be determined in one study, consistent with the recommendation of Dechow *et al.* (2010).

3.4 Summary

The consequences of accounting misstatements can be categorised into three groups: capital market participants' reactions, improvements in monitoring mechanisms, and liability and litigation commitments. An absence of theory explaining the relationship between GAAP violation and the consequences imposed on misstating firms means that some research results contain limitations (Wahlen 2004). For instance, a casual relationship between the announcement of an accounting misstatement and abnormal returns cannot be confirmed because the abnormal returns have already appeared before the announcement, and have also happened with other firms in the same industry. There is also a lack of theoretical grounds to explain the incremental effects of some variables (i.e. initiators, characteristics of errors). Nevertheless, the available empirical findings can provide us with many important insights of the costs and benefits of financial reporting decision-making.

The evidence on the causes and consequences in the setting of the principal-principal conflict is found to be smaller than that of the principal-agent conflict. Since most of the mainstream research to date has been conducted on samples in the U.S., where the shareholder-agent conflict appears, analysis of the causes has mostly focused on the agent's personal incentives and capital market drivers. As a result, the consequences are predominantly focused on capital market reactions and management turnovers. In the presence of a principal-principal conflict, a majority of shares are usually held by controlling shareholders and the managers are affiliated with them. Consequently, the

potential agency conflicts in this setting are a conflict between the controlling shareholders and the outside investors. The related causes and consequences of those misstatements that involve outside investors are less well explored when compared with those of the principal-agent conflict. An examination of these issues in Thailand can help to bring them into light.

The next chapter provides a brief background for the country of Thailand and will describe the financial reporting regime for Thai firms.

CHAPTER FOUR

THE CASE OF THAILAND

4.1 Introduction

As previously discussed in Chapters 2 and 3, the aim of this research is to study the determinants and consequences of accounting misstatements in concentrated ownership systems. Thai firms are selected to serve as a sample of firms from a concentrated ownership system. In this chapter, the country's institutions and financial reporting regulations are described. Hypothesis development and the research methodology will be set out in Chapter 5, while secondary data analysis for the determinants and economic consequences of accounting misstatements in Thailand are contained in Chapters 6 and 7 respectively.

Thailand's institutions and firms are highly representative of a concentrated ownership system (Rahman *et al.* 2010). Thai firms mostly use debt financing and the power of capital markets to discipline a firm is low (Alba *et al.* 2003). Approximately 83% of non-financial firms listed in the Stock Exchange of Thailand are firms with controlling shareholder(s) (Wiwattanakantang 2001) and the high ownership concentration risks weakening corporate governance mechanisms (Alba *et al.* 2003; SECT 2005a). These attributes call into question the quality of financial reporting in Thailand. Since the 1997 crisis, the authorities in Thailand have enacted many regulations to improve corporate governance structures and the quality of financial reporting. For example, listed firms are now required to have an audit committee with at least one member who has financial expertise (SET 2000a). However, so far, it is reported that such changes have had little impact on the management and behaviour of Thai firms (White 2004). These reforms are still in an early stage and have not yet worked effectively in financial reporting control (Tengamnuay and Stapleton 2009). Therefore, it is likely that financial reporting in Thailand is not of a particularly high quality.

In light of this, this research examines financial reporting quality in Thailand, particularly focusing on the occurrences of accounting misstatements. It has been suggested in the literature that Thailand's financial statement preparers' incentives are more important than the body of accounting standards (Ball *et al.* 2003). Consequently, it is necessary to ask what the incentives of the financial statements preparers are, and how the existing corporate governance structures function in order to limit the preparers' incentives in the financial reporting process. Apart from the determinants of accounting misstatements, this study also aims to assess the economic consequences after the misstatements have been discovered. As discussed in the previous chapter, the analysis of both the determinants and consequences should help contribute a comprehensive understanding of a cost-benefit trade-off in financial reporting process.

4.2 The Case of Thailand

Thailand's capital market is considered to be an emerging market (Boubakri and Ghouma 2010; La Porta *et al.* 1998) and the ownership structure of Thai firms is based on business groups and family-based firms (Claessens and Fan 2002). A pyramid structure and cross-holdings are common and these characteristics generate a divergence between cash flow rights and voting rights (Claessens and Fan 2002; Wiwattanakantang 2001). In addition, they increase the possibility that controlling shareholders can expropriate the interests of outside investors (Claessens *et al.* 2002). Thailand's concentrated ownership system has meant that it has been the subject of several prior cross-country studies (e.g. Boonlert-U-Thai *et al.* 2006; Fan and Wong 2002; Leuz *et al.* 2003; Rahman *et al.* 2010).

Another reason that has made Thailand a popular focus of research is the 1997 Asian Financial Crisis. The Asian Financial Crisis began with the flotation of the Thai currency (Thai baht-THB) in July 1997. The crisis quickly spread to Indonesia, Korea and other countries in South-East Asia and East Asia. This crisis represented an exogenous shock that significantly lowered the available return on investment opportunities of firms in these countries (Johnson *et al.* 2000). The sudden shock

provides an opportunity to assess the legal systems and corporate governance that existed at that time. Empirical research finds that legal protections and the national governance policy in East Asian countries were poor (Johnson *et al.* 2000). Firms with weak corporate governance (i.e. low disclosure quality and large shareholders involve in management) have been shown to suffer more severe decreases in stock prices during the crisis (Mitton 2002). Ownership concentration has generally had a positive effect on share price, but the share price declined when there was a great divergence between cash-flow and voting rights (Lemmon and Lins 2003). All of the South-Asian economies that experienced a crisis in 1997 have subsequently improved their corporate governance structures (e.g. in Talha *et al.* 2009). Many improvements have been made in Thailand's monitoring bodies, such as full adoption of International Accounting Standards, stricter regulations for listed companies, and corporate governance reforms. However, the efficiency and effectiveness of such reforms has not yet been confirmed. The following sections will address this issue in detail, and will further continue reviewing the effect of the corporate governance reforms on financial reporting quality.

4.2.1 Thailand's Accounting and Financial Institutions

This section provides the background of Thai regulatory systems. Thailand's law and legal systems are emphasised in this section, as are its accounting and auditing professions.

a) Legal Systems

It has been found that Thailand's legal systems to protect investors are weak. In particular, its protection of minority shareholders is lacking. Thailand's laws are based on common law, but they have been significantly influenced by French civil laws (La Porta *et al.* 1998, p. 1119). La Porta *et al.* (1998) also showed that Thailand has a below-average score on liability standards (which minority shareholders can use to sue directors and majority shareholders for damages), and a below-average score of creditor rights. The efficiency of the Thai judicial system was ranked 48th out of 49 countries (La Porta *et al.* 1998). The presence of civil lawsuits by minority shareholders is absent in Thailand and large penalties for offenders in cases where listed companies have

violated the law are also rare (Ananchotikul *et al.* 2010). As for the criminal cases, Viverito (1998) argues that these often do not end in convictions.

All listed companies and market regulators are governed under the Securities and Exchange Act B.E. 2535 (A.D. 1992). It is noteworthy that although the Thai stock exchange was created in 1975, the Act was only released in 1992. Although the Thai government intended to develop the regulatory framework since 1987, the project took five years until it was completed because of the frequent changes in government and the lack of competent human resources and expertise. At present, there are two projects to amend the Securities and Exchange Act and the Public Company Act, and to enact a Class Action Act, in order to increase the protection of minority shareholders. However, once again they are progressing slowly and it is uncertain if these legislative amendments will be ultimately adopted (SECT 2005a).

b) Accounting and Auditing Profession

The body of the accounting and auditing profession in Thailand is deemed to be improved. In particular, since the crisis of 1997 their independence has been strengthened. Accounting and auditing professionals in Thailand are under the control of the Institute of Certified Accountants and Auditors of Thailand (ICAAT), which is now named the Federation of Accounting Professions (FAP). The ICAAT started to adopt International Accounting Standards (IASs) for guidance in its accounting standard setting in 1987. However, because the ICAAT was under the supervision of Ministry of Commerce at that time, all accounting standards had to be approved by the Ministry of Commerce. The independence of the standard setting and financial reporting practices in Thailand is consequently criticised because it is highly related to political factors (Ball *et al.* 2003). After the 1997 Financial Crisis, the World Bank encouraged the establishment of the Thailand Financial Accounting Standards Board, which would have the sole authority to issue accounting standards and regulations. The project was achieved in 2004 when the FAP was formally established. It now has full power to regulate accounting and auditing standards.

The FAP fully adopted International Financial Reporting Standards (IFRS) as Thai GAAP for the SET50 in 2011 and plans to expand it to all of the listed companies in 2015. Nonetheless, the effective date for each standard usually provides the benefit of a transition period. Therefore, it is currently unknown when the full IFRS/IAS will become mandatory in Thailand. In addition, during this evolution period it is impossible to be sure that the financial reports in Thailand have met the global standard level. In addition, since IAS/IFRS emphasises a principles-based approach, the implementation depends on the manager's and the auditor's judgement (Ball 2006). Since markets, political forces, and economic influences are still local (White 2004), it is still impossible to conclude that the financial reporting quality in Thailand has met the standard.

Auditors in Thailand are authorised by the FAP under the Accounting Professions Act B.E. 2547 (A.D. 2004).[11] The auditors who certify the financial reports of listed companies are also under the Securities and Exchange Act B.E. 2535 (A.D.1992). Auditors' practices are regulated by Thai Standards on Auditing, which are adopted from the International Standards on Auditing. Audit firms in Thailand fall into two categories: Big 4 and non-Big 4 firms. The Big 4 are PricewaterhouseCoopers, Ernst & Young, KPMG and Deloitte. Non-Big 4 firms encompass international firms (e.g. Grant Thornton and BDO Richfield) and local Thai audit firms. Foreign audit firms are not allowed to practise in Thailand without local audit partners. Therefore, the establishment of a global audit firm in Thailand is in reality a form of incorporation with a local audit firm.

Thailand has a shortage of well-qualified accountants and auditors. Alba *et al*. (2003) comment that the country has unnecessary statutory requirements; for example, partnerships and inactive limited enterprises (about 300,000 firms in the survey) have to be audited every year. By statutory requirement, each CPA can provide a service to up to 300 corporations a year. This regulation thus limits the availability of audit partners.

[11]Before the Accounting Professions Act B.E. 2547 (A.D. 2004), auditors were under the Auditor Act B.E. 2505 (A.D. 1962). The new Act draws more attention on the qualification of auditors, such as auditors are required to attend a training course at least 12 hours a year.

As of 2002 there were 4,700 CPAs, but only 2,700 were active and qualified for 700,000 registered companies in total (White 2004). Therefore, there was an average of 260 clients per auditor, which almost reaches the maximum level. In the capital markets, auditors who want to provide a service for listed companies must register and get approval from the Securities and Exchange Commission, Thailand. At the end of 2009, there were 140 certified auditors for 560 companies, 77 of whom work for Big 4 auditors (SECT 2011). The next subsection will separately review the regulatory body of the capital markets in Thailand, including their regulations for financial reporting of listed companies.

4.2.2 Thailand's Capital Market

The Stock Exchange of Thailand (SET) was first started as a limited partnership in 1962, but it ceased operations in the early 1970s due to poor performance and a lack of official government support. The capital market was resurrected in 1975, and it has remained in business ever since. In 1999, the SET constructed a new Market for Alternative Investment (MAI) to provide an opportunity for small and medium-sized companies. Large companies with more than THB 300 million (£5.77 million) in paid-up capital after IPO can trade in SET, while small and medium-sized enterprises having over THB 200 million (£3.8 million) can trade in MAI. However, the MAI market does not operate separately; it is considered to be a sector of the SET market. Therefore, firms listed in either market are similarly required for reporting, disclosure requirements, and corporate governance rules and they all are under the supervision of the Securities and Exchange Commission, Thailand (SECT). The size of Thailand's capital market is relatively small when compared with neighbours (BOT 2011).[12] The number of listed companies has grown slightly, from 518 companies in 2006 to 525 companies in 2008.

According to the SET (2009) report, more than 50% of investors are local individual investors while about 7% are local institutions. The number of foreign investors has

[12]Based on the market capitalisation of THB 449.96 million (£8 million) at the end of 2008. It was 1/25 of Hang Seng (Hong Kong), 1/33 of Nikkei (Japan), 1/3 of Straits Times (Singapore) and 3/4 of Kuala Lumpur Stock Exchange (Malaysia).

decreased from 33.7% in 2006 to 19.4% in 2009 (SET 2009). A report to World Bank by the SECT (2005a) documents that foreign institutional investors are quite active in Thailand and often drive the market. Firms that are controlled by a group of foreign investors have higher performance of return on assets than firms with no controlling shareholders; however, no significant relationship has been found between foreign ownership and a firm's value (i.e. Tobin's Q) (Wiwattanakantang 2001). The influence of foreign investors in disciplining listed firms might be limited and exist in only some groups of firms because the Foreign Business Act, B.E. 2542 (A.D.1999) restricts foreign share ownership in companies (including listed companies) and the investment from foreigners is usually directed into the largest firms.

The ownership of listed companies is not dispersed even when listed. The average of ownership concentration is about 44% of all outstanding shares (Alba *et al.* 2003). Families are major shareholders. A survey of 270 Thai listed companies in 1996 shows that 70% of the sample is owned by a single family, and 83% of all have controlling shareholders involving in management as officers or directors (Wiwattanakantang 2001). The structure of business groups is also found to be linked through stock pyramids and cross-ownership; however, at 13.5% the number of firms having a structure of stock pyramids and cross-shareholdings is relatively smaller in the region (Claessens *et al.* 2000).[13] Even so, some Western firms (e.g. in the U.S., Ireland and Finland), or even Japanese firms, do not have ultimate owners who control the company through either a pyramid or through cross-holdings (La Porta *et al.* 1999, p. 499). Wealthy families play a major part in the national economy of Thailand: just twenty-six wealthy families controlled approximately 66 percent of the market capitalisation in 2004, and 75 percent for the same number of families in 2001 (SECT 2005a). This high ownership concentration and the prevalence of controlling shareholders tend to be a major obstacle that weakens corporate governance in Thai firms (Alba *et al.* 2003; Kouwenberg 2010; SECT 2005a).

[13]The region includes nine countries in the study by Claessens *et al.* (2000): Hong Kong, Indonesia, Japan, Korea, Malaysia, The Philippines, Singapore, Taiwan and Thailand.

a) Corporate Governance Policies

Corporate governance has been of major concern to the government and regulators of Thailand since the 1997 Asian Financial Crisis. Since 1998, all listed companies are required to have an audit committee, and the audit committee members must be composed of at least three independent directors (SET 2000b). Companies also need to have a code of best practice for board members. The year 2002 was officially designated as the Year of Corporate Governance, and the SET introduced a corporate governance code for listed companies in this year. The code consists of fifteen principles of good governance, similar to existing codes in developed markets (e.g. the U.K.). The current fifteen principles of corporate governance are in compliance with the 2004 Principles of Corporate Governance by the Organisation for Economic Co-operation and Development. Most of them are voluntary principles on a "comply or explain" basis. If a listed firm does not adopt a particular policy recommended by the code, it is expected to provide an explanation in an annual report. A study by Ananchotikul *et al.*(2010) suggests that an adoption of the fifteen principles is likely to be given attention by large firms. To date there have only been a few compulsory policies, such as facilitating voting through proxy, having an audit committee, and having at least three independent directors.

As for banks and financial institutions, they are also under the supervision of the Bank of Thailand (BOT). After the collapse of fifty six financial institutions during the crisis, the BOT has more strictly enforced good corporate governance; including the guidelines of good practices for directors and notifications to spell out the requirements of an external auditor's qualifications (Montreevat 2007). The financial sector is consequently excluded in this research project because of the specific regulatory systems and accounting for finance companies.

With regard to boards of directors, a listed company is required to have a board of directors, which must be composed of at least five directors and the board must meet once every three months (Public Company Act of B.E. 2535 (A.D.1992) section 67, 79 and 80). Since 2006, one-third of the directors (at least three members) must be independent directors. The average number of independent directors in Thai listed firms

has seldom changed: three in 2002 and four in 2008 (Kouwenberg 2010) and it does not differ from the requirement. A possible reason for this may be that the controlling shareholders do not desire to see their influence reduced by outside directors. In addition, prior research has argued that the governance systems in Thai firms are established due to obligations/compliance with regulation, and are not due to an appreciation of their benefits (Dhnadirek and Tang 2003; White 2004).

The involvement of controlling shareholders on management and corporate governance usually appears and weakens the independence of monitoring systems. Since most Thai firms are family-run business, it is frequently found that the board is dominated by family members (Nikomborirak 2001). In addition, eighty-eight percent of listed companies have a chairman of the board who is also the chief executive officer (CEO) (Kouwenberg 2010). Generally, CEOs are monitored by boards of directors. The monitoring system is, thus, weakened if the chairman and CEO is the same individual. The prevalence of audit committees has been done in a 'passive' way (they are often established only because they are compulsory) and it is hard to be assured that the audit committees are not affiliated with controlling shareholders and management (Tengamnuay and Stapleton 2009). Since an audit committee is appointed by boards of directors, and because the boards of Thai firms are often composed of family members, the boards may appoint affiliated members to serve on the audit committees. Accordingly, the appearance of controlling shareholders is likely to reduce the independence and effectiveness of the corporate governance systems.

In addition, a cost-benefit trade-off is an inevitable factor in the decision-making for a corporate governance policy. Less developed countries, including Thailand, seem to have less incentive to improve firm-level governance and one reason involves the financing activity choice (Doidge *et al.* 2007). The incidence of good corporate governance is more likely to appear when Thai companies issue equity (Nikomborirak 2001; White 2004). Kouwenberg (2010) finds that an increase in the implementation of voluntary corporate governance practices in Thai firms appears only in some aspects (e.g. a disclosure of individual directors' fees and written ethics code and corporate governance policy) and exists only in large firms.

Another interesting point of the trade-off in the decision-making for corporate governance policy is given by Ananchotikul *et al*. (2010); that is, firms may prefer implementing only costless policies (e.g. a code of ethics and a statement for business conduct) to more costly polities (e.g. reforming boards of directors and increasing independence in the controlling systems). Ananchotikul *et al*. (2010) call this group of firms a 'talk-only' group. They measure the talk-only group by using a dummy variable for the firms having a high score (top 33%) for written statement policies but a low score (bottom 33%) for either shareholder rights or board structure. Twelve percent of the sample in Thailand is found to be in this 'talk-only' segment. The results indicate that, overall, the voluntary implementation of corporate governance practice reduces the likelihood of a firm to violate listing rules, laws and accounting standards; however, the talk-only policy increases the likelihood of violations. Accordingly, the findings remind us of that the significance of the quality is more essential than its appearance. In a similar vein, Chuanrommanee and Swierczek (2007) examined the relationship between corporate governance reforms and firms' operating performance (as measured by ROA) after the crisis, basing their study in three countries: Malaysia, Singapore and Thailand. Chuanrommanee and Swierczek (2007) did not find a significant relationship between corporate governance reforms and operating performance. They argue that the prevalence of corporate governance policies in these countries in the post-crisis era is more illusion than fact.

In brief, corporate governance in Thailand has been the subject of considerable reform after the 1997 crisis. However, because the management and behaviour of Thai firms have not changed (White 2004), and because legal enforcement is weak (Chuanrommanee and Swierczek 2007), the reforms do not seem to function effectively. The SECT (2005a) comments that a majority of the listed companies are family firms and they have near absolute control in the corporations. They can effectively control the company's annual general meetings through voting rights. The SECT (2005a) also addresses a drawback of the structure of pyramids and cross-holdings.[14] Therefore, the

[14]A pyramidal ownership structure is defined as an entity whose ownership structure displays a top-down chain of control (La Porta *et al.* 1999). The ultimate owner is located at the apex and below are successive layers of firms, which all are affiliated. For example, outstanding shares of a public company

ownership structure of Thai firms tends to threaten the effectiveness of internal corporate governance mechanisms (e.g. boards of directors and audit committees). So much so, that it can eventually lower the financial reporting quality of the firms.

Since the prevalence of audit committees in Thailand is in an early stage (Tengamnuay and Stapleton 2009) and there is no variation in the number of independent directors for listed firms between 2002-2008 (Kouwenberg 2010), these mechanisms are unlikely to vary an incidence of accounting misstatements in Thailand. On the other hand, the ownership structure is likely to influence the financial reporting and corporate governance policies. Due to the constraint of time and data availability, this research excludes an examination into the boards of directors and audit committees. Instead, following the suggestions by Bebchuk and Hamdani (2009) this research will determine relationships between ownership structure and accounting misstatements.

There is a group of external monitors who might be able to moderate the agency conflicts in the contracting process and to protect the interests of minority shareholders and creditors. This group includes external auditors and market regulators.

As is the case in most countries, auditors play an important role in East Asia (Fan and Wong 2005). Big 4 auditors can increase detection of earnings management in Thai firms, while neither board size nor the proportion of independent directors on boards is associated with restraint (Pornupatham 2006). The Securities and Exchange Commission, Thailand, who regulate the Thai markets, also play a role in monitoring financial reporting of listed firms. Their regulations and monitoring process are discussed in the following section.

A are held by family X, 10%, and by private companies Y and Z, 10% each. It seems that there is no ultimate owner in company A. However, in detail family X is the owner of companies Y and Z and holds half of shares in both private companies. Ultimately family X has control rights over public company A for 30%. Regarding cross-holding structure, if public company A also holds shares of company Y, company A has cross-holdings. More examples can be seen in La Porta *et al.* (1999) and Wiwattanakantang (2001).

b) Regulations for Financial Reporting

The Securities and Exchange Commission, Thailand (SECT) is the securities regulator in Thailand and it regulates every activity of securities business (e.g. listed companies, broker/dealer companies, investment advisory companies, registrars and credit rating agencies). In terms of corporate financial reporting, CEOs and CFOs of listed companies are fully responsible for financial reporting. Annual financial statements must be approved by shareholders in the annual general meeting. They should then be submitted to the Stock Exchange of Thailand within one month of the annual general meeting, and then made available for public access. The annual general meeting must be prepared within four months after the end date of fiscal year.

According to Securities and Exchange Act B.E. 2535 (A.D. 1992), section 56, listed companies must submit:

i. Quarterly financial reports;
ii. Annual financial reports;
iii. Annual reports; and,
iv. Any other reports specifically required by the SECT.

Quarterly and annual financial reports must be reviewed and audited by an auditor who has been approved by the SECT, respectively. Auditors have to state their findings and disclosure the facts material to the financial statements incorrectly prepared by the company (section 62). The SECT can suspend or withdraw its authorisation from auditors who fail to report such circumstance, and they can be withdrawn or suspended of certification. The financial reports of government-owned enterprises are required to be audited by auditors of Office of the General Auditor of Thailand.

Regarding penal provisions, any company who fails to submit financial reports shall be liable to a daily fine not exceeding THB 100,000 (£2,058), and a further daily fine not exceeding THB 3,000 (£62) (section 274). Any director and manager who acts or omits to act in order to obtain unlawful gains for himself and causes damage to others (e.g. asset misappropriation) shall be liable to imprisonment for a term of five to ten years and a fine of THB 500,000 to THB 1,000,000 (£10,290-£20,580) (section 311). The

penalty for any director or manager who commits fraudulent financial reporting and keeps incomplete inaccurate accounts (section 312) does not differ from the penalty for the asset misappropriation case.

The monetary penalty tends not to be costly for the firms and perpetrators. Roughly calculated, if a director commits a fraud then he or she is liable to a fine of THB 2 million (£41,160) (sections 311 and 312). An average value of the accounting misstatements that have been found by the SECT is THB 417.6 million (£8.84 million).[15] With this amount of misstatement, a fraudulent director may be able to gain a certain amount of private benefits, which are considerably higher than the fine of THB 2 million. Even in the U.S., where legal enforcement is stronger, on average the proportion of litigation cost is less than 10% of the total cost imposed on the misstating firms (Karpoff *et al.* 2008).

The process of investigations on accounting allegations by the SECT does not substantially differ from that of the U.S. Securities and Exchange Commission (U.S. SEC). The SECT was itself modelled on the U.S. SEC. Investigations by the SECT include company and securities fraud, and management malpractice. Examples include embezzlement by company officials and securities firms, expropriation of assets that hurt minority shareholders, false and inadequate financial disclosures, and stock market manipulation. The SECT has a practice of regular reviews, as well as random inspections, of companies and securities firms. The financial statement review has a division that observes companies' operation and financial reporting. The SECT has two main sources where it looks for unusual items and behaviour. The first source includes the Stock Exchange of Thailand (SET) and newspapers, which it uses to gather abnormal trading volumes and insider trading information. Another source is company financial reports. Analytical reviews are normally done to uncover accounting irregularities. The SECT publishes information on its investigations if wrongdoing is found. However, if the infraction is deemed minor, or if the company accepts that it must correct the misstatement shortly after the SECT detects and informs them

[15]There has never been a document published showing the value of accounting misstatements in Thailand. This amount is based on the sample of this research, which is detailed in Chapter 6 and Appendix B.

informally, this detection will not be made public. However, the restated financial reports must be sent to the SET and released to investors.[16]

Part of the sample in this research is accounting misstatements that were filed in the SECT's enforcement actions. They comprise requirements for accounting corrections and announcements of fraud allegations (a violation of the Securities and Exchange Act section 312). The remainder comprises accounting misstatements that were detected by the companies themselves, or there might be a case where a firm agrees to correct the misstatement since an informal contact from the SECT is made. These cases are also considered accounting misstatement cases. The researcher collected these cases from the restated financial reports, available in Thomson One Banker database. (More details of the sample are presented in Chapters 5 and 6.)

The next section discusses previous studies into financial reporting quality in Thai firms. The effects of ownership structure, corporate governance, debt orientation are a subject of particular focus.

4.3 Evidence on Financial Reporting in Thailand

As discussed earlier in the thesis, financial reporting quality is a multi-dimensional construct (Cohen *et al.* 2004). Many attributes of accounting quality in Thailand have been examined by previous studies and they range from the informativeness of earnings, earnings management, to accounting allegations.

4.3.1 Informativeness of Reported Earnings

Informativeness of reported earnings is one attribute of financial reporting quality that has been tested since before the Asian Financial Crisis of 1997.[17] Based on the data

[16]Details into the review process of the SECT in this paragraph were gathered from the conversation with an authority of the SECT, Mr.Thawatchai Kiatkwankul, Head of the Audit Department, on 28 August 2010. The questions had been approved by the Research Ethics Committee Cardiff Business School. In addition, the contents of the process were agreed by Mr. Kiatkwankul.

before the crisis, Ball *et al.* (2003) contend that informativeness of reported earnings in East Asian firms, including Thai firms, differs from that of other common-law countries; it is even lower than that of code-law countries. Their regression analysis shows that accounting income does not significantly respond to negative returns and the timeliness of loss recognition is lower than that of other firms in other common law countries and code law countries. Vichitsarawong *et al.* (2010) retested the informativeness of earnings in the four East Asian firms across the crisis period. Their findings are consistent with Ball *et al*. (2003) in that the informativeness of reported earnings was low both before and during the crisis (i.e. 1995-1998) and the informativeness improved after the crisis (i.e. 1999-2004). However, when considered by country, the improvement is clearly seen in Malaysia and Singapore, but only partially confirmed in Hong Kong and Thailand. The relationship between the reported earnings and returns in Hong Kong and Thailand is significant only in the period of 2003-2004, while it has been significant in Malaysian and Singaporean groups since 2001. In addition, when scrutinising the corporate governance disclosure scores for each country provided by Standard & Poor's in 2004, they find that the disclosure scores are widely distributed, from the best to lowest score they are: Singapore (median score = 92), Malaysia (64), Hong Kong (38) and Thailand (35). The score of Singapore and Malaysia are thus of the order of two-three times that of Hong Kong and Thailand. Consequently, a premise that the improvement in earnings informativeness after the crisis is an effect of corporate governance reforms is weak in the Hong Kong and Thailand samples. The average corporate governance disclosure in Thailand is behind that of all of its neighbours.

[17]The informativeness of earnings in this content comprises accounting conservatism and timeliness of loss recognition (Fan and Wong 2002; Vichitsarawong *et al.* 2010). To measure accounting conservatism, many prior studies (i.e. Ball *et al.* 2003; Boonlert-U-Thai and Kuntisook 2009; Herrmann *et al.* 2008; Vichitsarawong *et al.* 2010) have used Basu's (1997) reverse regression model. The model observes the relationship between returns (an independent variable) and accounting income (the dependent variable). A positive relationship is expected (it indicates the sensitivity of accounting income to returns). Under accounting conservatism the relationship is expected to be greater when a firm's return has negative balance (a proxy of bad news). A dummy variable of 1 is thus added into the model and interacted with the return when firms have negative returns (the coefficient of this interaction is anticipated to be positive in order to indicate the sensitivity of accounting income to bad news). The timeliness of loss recognition is measured by the adjust R^2 of this regression model. If the association between accounting income and bad news (i.e. negative returns) is strong, the adjust R^2 will be higher and as such accounting income contains timely information of loss.

The research into the effects of ownership structures on accounting conservatism in Thai samples is available. Boonlert-U-Thai and Kuntisook (2009) found that a higher ownership concentration and family ownership have a positive effect on accounting conservatism. They also find a significant relationship between corporate governance mechanisms (i.e. board size, the number of audit committee and number of independent directors) and accounting conservatism, but Thai firms are less conservative in reporting earnings when firms have a high leverage ratio and a high share value. The latter finding is similar to the two incentives of accounts manipulation; i.e., firms with high leverage ratio and high share value are more likely to misstate financial reports (Dechow *et al.* 2011; Dechow *et al.* 1996). Therefore, the negative effects of the debt level and the share value may lead to a decision to misstate financial reports later.

The evidence of the role of auditors in accounting conservatism is varied, particularly when the samples were considered in the period around the Asian Financial Crisis of 1997. Before the crisis (i.e. 1990-1996), Khurana and Raman (2004) did not find a variation in accounting conservatism between Big 4 and non-Big 4 clients; yet, during the crisis (i.e.1997-1998) Big 4 clients reported more conservative earnings (Herrmann *et al.* 2008). After the crisis (i.e. 1999-2003), Herrmann *et al.*(2008) argue that both Big 4 and non-Big 4 clients reported conservative earnings (i.e. firms responded to timely loss recognition), but non-Big 4 auditors advanced their work until the quality of their clients' reports did not differ from that of Big 4 clients. However, Boonlert-U-Thai and Kuntisook (2009) found an increase in the level of accounting conservatism in Big 4 clients in a longer period of study (i.e. 2000-2006). A bias in the research results due to the crisis should not be an issue for this research because the observations collected range from 2001 to 2009. Meanwhile, this research provides evidence on the role of Big 4 auditors in financial reporting process when measured by an incidence of GAAP violation.

In summary, for the attribute of earnings informativeness, it is likely that Thai firms generally have an incentive to provide high quality of financial reports and provide good corporate governance (such as a use of Big 4 auditors) because by so doing they

can maintain their reputation and minimise their costs of capital. Yet, such an intention can often be reduced by certain financial pressures (i.e. high debt and high share value).

4.3.2 Earnings Management

Prior evidence reveals some evidence of earnings manipulation (within GAAP) in Thai firms, consistent with incentives revealed in extant research. Charoenwong and Jiraporn (2009) examine whether or not Thai firms have an incentive to avoid reporting losses and negative earnings growth, both before and after the 1997 crisis. Their work was conducted with reference to Degeorge *et al.*'s (1999) threshold; however, their results showed that earnings management reduces in non-financial firms after the crisis. This result is somehow surprising because the financial sector is generally more regulated by authorities (both by the Bank of Thailand and by the stock exchange) and the monitoring is found elsewhere to be more intense after the crisis (Montreevat 2007). Nonetheless, since the measure indicates more of a kind of income smoothness than aggressive accounting, it can be possible that the financial firms, which have a higher proportion of outside investors than non-financial firms, want to maintain their performance and not surprise their investors and, therefore, the change of earnings number falls within the threshold.

Pornupatham (2006) reveals more on the incentives of earnings management in Thai firms by surveying auditors' perceptions. The first three incentives of earnings management in the auditors' opinion are to increase share prices, to avoid loss, and to avoid a decline in earnings growth. The last two of the top three incentives are consistent with the findings of Charoenwong and Jiraporn (2009). The pressures concerning debt covenants and analysts' forecasts are not important in the auditors' opinion. Regarding monitors' roles, the responses agree that Big 4 auditors are more capable of detecting earnings management than non-Big 4 auditors. Respondents explain that non-Big 4 auditors are less resistant to the management's discretion, particularly when firms are highly concentrated. One limitation of this study is that the incentives of earnings management are analysed in the survey, but they were excluded

in secondary data analysis. This research project will develop this previous research by examining whether these incentives exist if observed in accounting items.

Both this research and that by Pornupatham (2006) have a similar objective to reveal incentives of Thai firms in manipulating earnings; however, there are important differences between the two studies. The first difference is the dependent variable. Pornupatham (2006) focuses on the manipulation within GAAP and measures it by discretionary accruals, but this thesis is interested in the cases of GAAP violations. Because the question of whether or not earnings manipulation benefits or harms shareholders (Bowen *et al.* 2008; Guay 2008) is still inconclusive, the difficulty here is that the earnings management measure may not be strong enough to show a conflict of interests among the parties in contracting processes. Additionally, to examine the opportunistic accrual management hypothesis by assessing discretionary accruals (e.g. from Jones' (1991) model) is controversial. A number of previous studies have found a number of flaws in the models that are used for the assessment of discretionary accruals, particularly for the opportunistic accrual management hypothesis (e.g. Guay *et al.* 1996; Young 1999).[18]

Since this research aims to shed light on the principal-principal conflict, the researcher needs a reliable measure that can indicate the occurrence of the conflict of interests. Since an accounts manipulation signals a wealth transfer (Stolowy and Breton 2004), the researcher proposes that GAAP violation can indicate that certain financial statements users are being misled by the misstated financial reports (e.g. minority shareholders are deceived by fake firm value or debt covenant violations are hidden from creditors). Using the GAAP violation as a measure should, therefore, enable the researcher to examine how the interests of minority shareholders and creditors are

[18]There are two main types of error that can occur due to the use of regression residuals in the measurement of discretionary accruals (Guay 2006). First, the residuals can contain non-discretionary accruals. Suppose a firm suddenly experiences a negative operating cash flow. This shock affects the amount of working capital deviating from the usual and, therefore, the prediction of discretionary accruals in that year contaminates this performance-driven shock. Ball and Shivakumar (2006), for example, has evidence to support this view. The second type of error occurs due to the estimates of non-discretionary accruals. For example, Young (1999) finds that the parameters that are employed to estimate non-discretionary accruals (e.g. operating cash flow, sales growth and fixed asset structure) are significantly associated with the discretionary accruals generated from the frequently-used models (e.g. Jones' 1991 model).

expropriated by the firms and controlling shareholders. It also allows the research to show what the reactions of capital providers are after they find that they have been fooled by the counterfeit financial reports. A GAAP violation is thus likely to be a superior measure. The other difference is on the variable of ownership concentration. Pornupatham (2006) computed the percentage of the ownership concentration from the top ten shareholders. Meanwhile, this research considers all the shareholders who own more than 0.5%, it also investigates the shareholders who are private companies with the aim of knowing who the ultimate owners are and the levels of their aggregated control rights. This further investigation is important because more than a half of Thai firms are family-based and their shareholding structure is often in the form of pyramids and cross-holdings. Consequently, the aggregated control rights of ultimate owners are greater than those that the investors see in the shareholder list.

When ownership structure is taken into account, the incidence of earnings management increases in firms with high ownership concentration; however, this result is valid only in non-Big 4 clients (Pornupatham 2006). A question is then raised: whether such appearance occurs because of the poor quality of non-Big 4 firms. It may be that the non-Big 4 auditors are competent but they cannot resist the dominant shareholders' intention (as the interviewees in Pornupatham (2006) suggest), or the controlling shareholders may create certain settings which obstruct the auditors from detecting the manipulation (Cohen *et al.* 2002). An occurrence of audit firm change is one of these settings. It is possible that the controlling shareholders want to hide their expropriation, so they change an audit firm to reduce the possibility of detection. A higher proportion of audit firm change for fraud firms than non-fraud firms has been found elsewhere (Summers and Sweeney 1998). However, it is also possible that the newly appointed auditors are extra vigilant about accounting irregularities. For example, Loebbecke *et al.* (1989) found that more than one third of the frauds were detected in the first two years of an auditor's tenure. If this is the case, then fraud cases can be more easily identified and there will be a positive relationship between audit firm change and the occurrence of fraud cases in the *ex post* fraud sample. The relationship between auditor changes and the likelihood of accounting misstatements, including the relationship by type of audit

switch (suggested by Lennox and Pittman 2010), will be examined further in this research.

4.3.3 Accounting Allegations in Thailand

The two previous subsections yielded two important points for financial reporting in Thai firms. Firstly, although high ownership concentration has a positive effect on the informativeness of earnings, the quality of earnings reduces when firms have higher debt and higher share value (Boonlert-U-Thai and Kuntisook 2009). Secondly, earnings management (within GAAP) is also found in Thailand and the Thai managers' incentives are in line with those in other countries (i.e. to avoid reporting loss and negative earnings growth and to increase share prices) (Charoenwong and Jiraporn 2009; Pornupatham 2006). However, it is still inconclusive if earnings management costs shareholders (Bowen *et al.* 2008; Guay 2008), particularly when the manipulation is measured by discretionary accruals (Guay 2006). Since this research aims to shed light on financial reporting that can be opportunistically used by controlling shareholders to extract private benefits, the attribute of financial reports that are in violation of GAAP will be focused upon. This section will review the prior studies involving accounting misstatements and a particular focus is given to the misstatements found by capital market regulators.

Tummanon (2005b) explores the characteristics of Thai firms that were required by the Securities and Exchange Commission Thailand (SECT) to correct accounting errors, and/or provide a special audit, during 2003-2005. A special audit required by the SECT generally occurs due to two situations. Firstly, when the SECT suspects a firm's transactions, a further investigation by an independent auditor is required. Secondly, when an auditor has a qualified opinion on the submitted financial reports due to the limitation of evidence, the firm is required to provide the auditor with adequate evidence. In many cases, the investigation starts from a requirement for special audits, after which a requirement for accounting correction or an announcement of management fraud is initiated. The firms subject to such enforcement appear the most frequently in rehabilitation sector (30.8%). Seventy-seven percent of them are audited

by non-Big 4 auditors (compared with an average proportion of 43% across the market[19]). The primary reasons for the requirements involve understated allowance for bad debt (18.7%), revenue recognition (15.25%) and managers' misconduct (15.25%). The share price of the alleged firm reduces after the news of the SECT's enforcement actions is released. An average cumulative abnormal return is -9.78% (Tummanon 2005a). Since the objective of Tummanon's (2005b) study is to explore the characteristics of the firms and the transactions only, it does not contain any hypothesis testing and control group. Hypothesis testing can help to analyse whether there is significant evidence to support the predicted determinants of accounting misstatements in Thailand, while the prior research could show only the number of the occurrence. In addition, an inclusion of a control group in the test can explain why, under the same condition, some firms misstate financial reports but some do not. This thesis will develop this previous work significantly and contain a control group in order to investigate the causes of the accounting allegations in Thai firms.

Ananchotikul *et al*. (2010) examined whether the corporate governance adoptions assist the firm to avoid violating capital market rules and accounting standards. Their study gathered a sample of the announcements of the SECT under the news section during 2003-2006. The violations include management's expropriation, falsification of financial statements, insider trading and market manipulation. These violations are rated from 1 to 3, depending on the severity (subject to researchers' opinions). For instance, a failure to submit financial statements on time is scored as 3, financial statements with disclaimer of opinion and qualified opinions are scored as 2, while financial statements with an adverse opinion are rated as 1. The corporate governance adoptions cover nine principles introduced in the SET best practices (SET 2003). A Tobit regression is used in the data analysis. After certain variables of the agency conflicts are controlled for, the model shows that corporate governance adoption can reduce the likelihood of violations. Ownership concentration has no significant impact on the violations in this study. Phunnarungsi (2010) further investigates the cost imposed on the sample which was used by Ananchotikul *et al.* (2010). Phunnarungsi (2010) finds that the firms were

[19]This proportion is based on the data in this research. It is a ratio of non-Big 4 clients to the total number of listed firms during 2003-2005.

facing an average abnormal return of -3.55% for day +1, and -4.57% for day 0 to +1. There is no difference in this study between the abnormal return of high-governed firms and the abnormal return of low-governed firms. The negative abnormal return in Phunnarungsi (2010) and Tummanon (2005a) confirms that the participants in the Thailand capital market negatively respond to the firm after they know that the firms have violated the regulations.

Although there are some overlaps on the data and sample between this thesis and the study of Ananchotikul *et al.* (2010), the research objectives and research designs are different. Firstly, Ananchotikul *et al.* (2010) assessed the effect of voluntary adoption of corporate governance in 2002 on the likelihood of subsequent violations in the years 2003-2006. Their corporate governance variables are nine out of the fifteen governance principles suggested by the Stock Exchange of Thailand. On the other hand, this thesis desires to discover the causes of accounting misstatements in Thailand. In the extent of corporate governance practices, this research specifically focuses on the effectiveness of external auditing and the weaknesses in the monitoring system when the chairman of the board and the executive officer is the same individual. The potential determinants are firm-level characteristics occurring to a firm in an individual year and driving the firm to release misstated financial reports at the end of year. Secondly, the dependent variable in Ananchotikul *et al.* (2010) covers a wide range of violations, while this thesis focuses only on accounting violation. Ananchotikul *et al.* (2010) used a two-stage Tobit estimation with instrumental variables to serve two research objectives, orderly: to predict governance policy adoption by using firm-level characteristics, and to examine an impact of the adoption on a likelihood of violations. Ananchotikul *et al.* (2010) contribute to the literature on the determinants of corporate governance adoption (Doidge *et al.* 2007) and show an effect of the adoption on a probability of subsequent violations. This thesis uses logistic regression models to discover the determinants of accounting misstatements in Thai firms. The thesis expects to contribute the significant causes of GAAP violation in order to answer why accounting misstatements appear in some firms and do not in other firms.

To summarise, there is evidence of an improvement of the quality of financial reporting in Thailand after the Asian Financial Crisis of 1997. However, whether the improvement is caused by corporate governance reforms is an ambiguous point of debate. Controlling shareholders tend to be a key factor of both financial reporting and corporate governance implementation. Under certain circumstances (e.g. high ownership concentration, financial constraints and high expectation from capital markets), the quality of financial reports tends to reduce. Even so, these circumstances have rarely been tested, particularly when the quality of financial reports is measured by an incidence of GAAP violation. This research will examine the determinants of accounting misstatements in Thai listed firms. The consequences imposed on the misstating firms are also of interest, yet these have not been investigated in prior studies. The next subsection contains the contributions that the research expects to make to the literature.

4.4 Expected Contributions from the Case of Thailand

The determinants of accounting misstatements have been previously been explored in the literature, but most of the studies have been conducted in cases where the managers are originators of the agency conflict. This thesis will shed light on the principal-principal conflict. Thailand is selected to serve as a sample for two important reasons. Firstly, Thailand is one of the East Asian countries where previous research has found an expropriation of controlling shareholders (such as through poor firm performance). Secondly, there have been some previous studies that have drawn attention to the cases of accounting irregularities found by the SECT (Tummanon 2005a, b) and the effect of corporate governance on the likelihood of violations (Ananchotikul *et al.* 2010). This research project can further the prior work and contribute some insights to the literature. The following areas are expected to benefit from the study into public companies in Thailand:

1. Based on agency theory (Jensen and Meckling 1976; Watts and Zimmerman 1986) and a proper conceptual framework (Coffee 2006; Jiambalvo 1996;

Wahlen 2004), this thesis creates a systematic research design for the determinants of accounting misstatements, which contain both incentives and corporate governance mechanisms into one model. Prior research involving Thailand has missed this (e.g. Pornupatham 2006). Although some studies (e.g. Ananchotikul *et al.* 2010) have included both groups of factors, since the incentives are not their research focus this means that the incentives of financial statements preparers in Thailand (raised by Ball *et al.* 2003) have not been thoroughly revealed.

2. A study into both the determinants and consequences of accounting misstatements should provide a comprehensive understanding on the cost-benefit trade-off for financial misreporting decision. The research into both dimensions is limited in the literature (Dechow *et al.* 2010).
3. The evidence on how the ownership relates to the likelihood of accounting misstatements is lacking in the literature. High ownership concentration presents a high potential for agency conflict between controlling shareholders and outside investors. The study into the *ex post* accounting misstatements will reveal the incentives of the controlling shareholders in accounts manipulation. Moreover, the study into the ownership of Thai firms will enlarge the firm-level database for ownership in emerging market economies. The ownership information in Thailand is normally restricted because they are available only in the Thai language and often required supplemental documents in respect of shareholders of private companies (Wiwattanakantang 2001). This thesis will gather the data of the ownership and further track down to the shareholders of the private companies in the pyramids structure. Extensive manual work will increase the data for the interested researchers.
4. The financial structure that is primarily based on debt for Thai firms is a well-qualified setting to verify the debt hypothesis and contribute to the literature on how accounting quality plays a role in debt contracting, suggested by Armstrong *et al*. (2010).
5. Previous studies have found that Big 4 auditors serve a corporate governance role in safeguarding accounting information in East Asia (Fan and Wong 2005) and Thailand (Boonlert-U-Thai and Kuntisook 2009; Pornupatham 2006). This

research will shed further light on the roles of Big 4 auditors in detecting accounting misstatements. This thesis will also examine whether an audit firm change signals a likelihood of an accounting misstatement in Thai firms.

6. In the Stock Exchange of Thailand, firms under rehabilitation are separately categorised into the REHABCO sector. It is interesting to examine whether or not the profitability requirement and the financial distress of these firms has an impact on the financial reporting quality of these firms. The result will be of potential interest to both investors and regulators.

4.5 Summary

The principal-principal conflict replaces the shareholder-agent conflict in the environment of high ownership concentration. The principal-principal relationship is argued to be firmly embedded in ultimate ownership structures of South-East Asian firms, including Thailand (Claessens *et al.* 2000; Fan and Wong 2002; Young *et al.* 2008). The event of the Asian Financial Crisis in 1997 led to the revelation of weak corporate governance and the opacity of financial reporting in the region, and the ownership structure has been considered to be a primary cause of these problems. Although corporate governance has been very much improved after the crisis, previous research has not yet confirmed its outcome on a firm's performance and financial reporting quality. The reason for this engages two possible factors that remain unchanged: the country's legal enforcement and Thailand's corporate ownership structures that are still dominated by controlling shareholders.

In general, there is evidence showing that the family ownership in Thai firms has a positive effect on a firm's performance and informativeness of reported earnings (Boonlert-U-Thai and Kuntisook 2009; Wiwattanakantang 2001). However, when there is a divergence between cash flow and voting rights, then the possibility of taking private benefits of control by controlling shareholders increases. The incentives of the financial statement preparers (i.e. controlling shareholders) are more significant than accounting standards in Thailand. Therefore, the incentives of controlling shareholders

in the financial reporting process are interesting to be explored. With regard to the corporate governance, the involvement of the controlling shareholders in the management and monitoring systems weakens the effectiveness and independency of the corporate governance mechanisms. The roles of external monitors, such as auditors, become more outstanding in the monitoring systems, but since the controlling shareholders have a high proportion of voting rights, they might enable to govern the monitoring role of the auditing, such as change an audit firm. Therefore, in the prevalence of controlling shareholders it likely appears that the controlling shareholders have an impact on both corporate governance mechanisms and financing reporting process. It is thus interesting to examine how ownership, controlling managers' incentives and corporate governance are associated with the occurrence of accounting misstatements.

This thesis contains studies of the determinants and consequences of accounting misstatements in Thailand. The first objective of this research is to continue exploring the determinants of accounting misstatements in the context of the principal-principal conflict. These insights will benefit outside investors so that they can be aware of, and have more confidence in using, financial reports of Thai firms. In addition, regulators will be able to apprehend the underlying causes of financial misreporting in Thai firms, and with this knowledge, they will enable to solve the problems effectively. The second objective of this research is to assess the economic consequences imposed to the misstating firms after accounting misstatements are revealed, with particular focus on subsequent external financing capability. The capital structure of debt orientation in Thai firms provides fruitful institutional setting for determining the creditors' and minority shareholders' responses to the low quality of financial reports. The results can contribute significantly to the literature on how accounting quality plays a role in debt contracting and outside investors' decision-making in an emerging market.

Taking together with the literature on the causes and consequences of accounting misstatements and on the characteristics of Thai firms, this research has established a set of empirical predictions for the determinants and economic consequences of accounting misstatements in Thailand. These are presented in the next chapter.

CHAPTER FIVE

HYPOTHESIS DEVELOPMENT AND RESEARCH METHODOLOGY

5.1 Introduction

In previous chapters, this thesis reviewed the theoretical background and the empirical evidence on the causes and consequences of accounting misstatements (Chapters 2 and 3) as well as the institutional settings and evidence on financial reporting quality in Thailand (Chapter 4). Based on this evidence, it can be seen that there is a limitation in the literature on the causes and consequences of accounting misstatements in concentrated ownership systems. This research project aims to address this issue. In so doing, Thai firms are sampled because their characteristics are in accordance with firms in a concentrated ownership system and there is evidence showing a conflict of interests between controlling shareholders and outside investors in the country. Based on theoretical justifications drawn from previous studies and the rationale of this study, a conceptual framework showing relationships of the relevant factors and empirical predictions for the case of Thailand are developed and presented in this chapter. A rigorous research design is then constructed and discussed in this chapter. The data and analysis will be presented in the following two chapters.

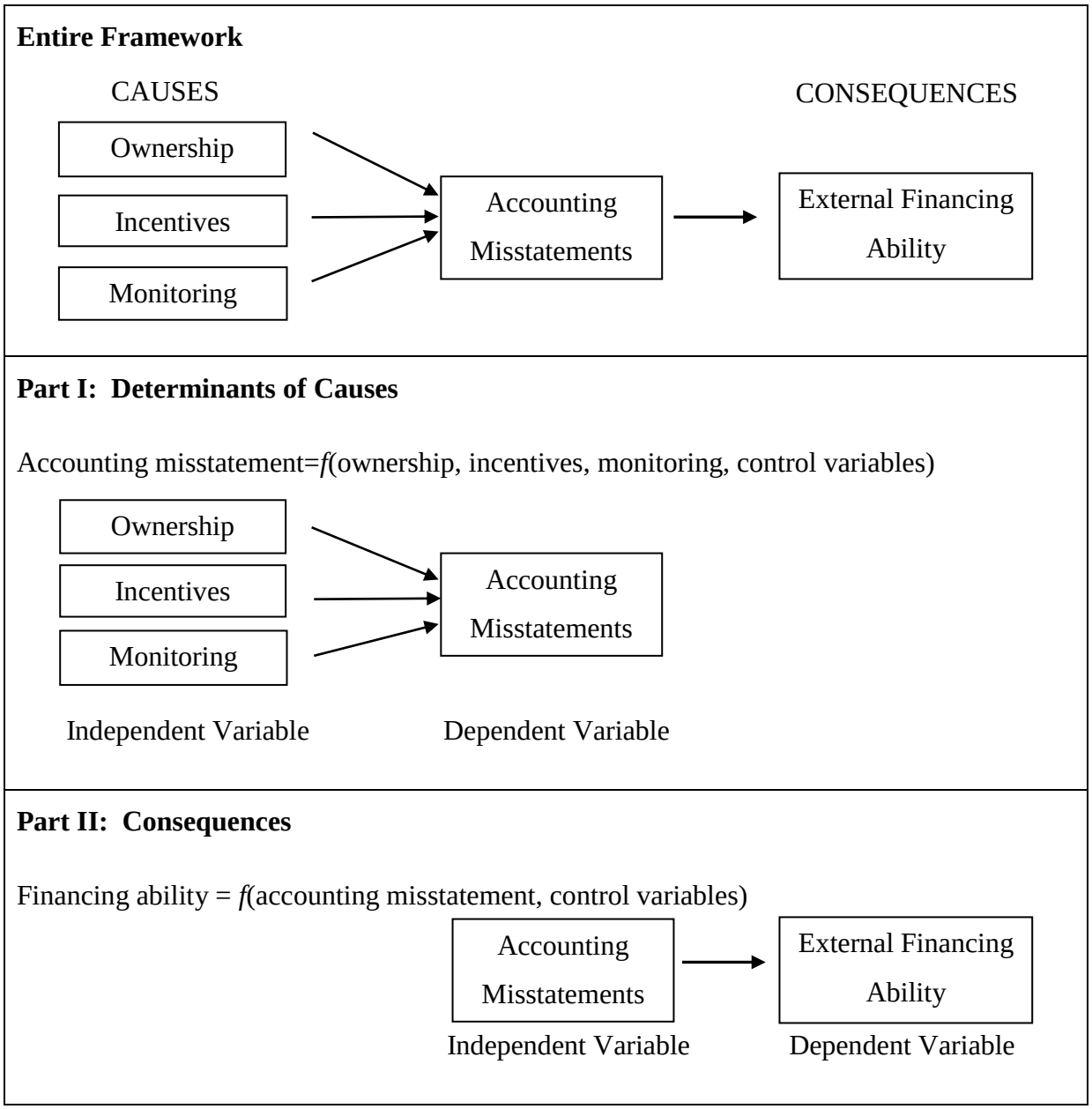
The next section presents the study's conceptual framework. Then, Section Three details empirical predictions. Section Four discusses how the research methodology was prepared. Section Five demonstrates the sample and data collection and Section Six considers the statistical tools for data analysis.

5.2 Conceptual Framework

The timeline of an occurrence of accounting misstatements and the relevant factors of the occurrence (Bowen *et al.* 2008; Jiambalvo 1996; Wahlen 2004) that were previously

reviewed in the preceding chapters are integrated into a conceptual framework employed by this research (see Figure 5.1).

Figure 5.1: Conceptual Framework of Accounting Misstatements



Overall, the timeline shows a set of antecedent circumstances that, in combination, create a fertile ground for accounting misstatements (Wahlen 2004, p. 183). Then after the accounting misstatements are revealed the company may be penalised by lenders and minority shareholders. The subsequent financing activities of misstating firms are

therefore focused on in this thesis. The research project thus has two main parts of the analysis.

The first part is an examination in the determinants of accounting misstatements in Thailand. The body of literature suggests the important influences of firms/managers' incentives and corporate governance mechanisms on the likelihood of accounting misstatements (e.g. Bowen *et al.* 2008; Jiambalvo 1996). In addition, the influence of ownership structure is also of interest because the ownership structure is an origin of the agency conflicts (Jensen and Meckling 1976; Young *et al.* 2008) and it is correlated with the corporate governance policies (Bebchuk and Hamdani 2009). Leuz *et al.* (2003) also raised the question that there might be a relationship between ownership and accounts manipulation at firm-level. As a result, the ownership structure, controlling shareholders' incentives, and corporate governance mechanisms are proposed to be significant determinants of accounting misstatements in Thailand. The incidence of accounting misstatements is the dependent variable in this stage.

The second part of the study will assess the economic consequences that have occurred to the misstating firms after the misstatements are revealed. In this stage, the occurrence of accounting misstatements is one independent variable affecting the subsequent financing activities of the misstating firms. This study considers the consequence of this after the end of the year of the announcement date.

Linked from the relationships of the variables that have been described in this section, a set of hypotheses is developed and discussed in the next section.

5.3 Empirical Predictions

Based on the research questions (Chapter 1, Section 1.2) and the body of literature that has been reviewed in Chapters 2 to 4, the researcher has developed a set of hypotheses for the determinants and economic consequences of an accounting misstatement for the Thai sample. They are presented as part of the group of determinants as follows.

5.3.1 Ownership

There are three attributes of ownership that prior studies have tested to determine whether or not they have an impact on the quality of financial reporting, they are ownership concentration, owner identity, and the divergence between voting rights and cash-flow rights (i.e. the existence of pyramids and cross-holdings).

Gaining effective control of a corporation enables controlling shareholders to control the corporate operations, including the financial reporting policies. There are two perspectives of the influences of controlling shareholders on the quality of financial reports, which are: entrenchment effects and alignment effects (Fan and Wong 2002; Morck *et al.* 2005). On one hand, the controlling shareholders are less inclined to provide high quality of financial reports and there are three possibilities for this scenario that the prior studies discussed. Firstly, controlling shareholders distort accounting numbers to bury the wealth effects of their expropriation activities. Secondly, their expropriation can be anticipated by outside investors who already discount the stock prices or charge high interest rates, so the benefit that the firms can earn if the firms invest more is deemed to be only slight. Thirdly, the number of transactions with outside parties is likely to be smaller than that of dispersed ownership firms, so that a cost-benefit trade-off limits the information disclosures. Empirical evidence by Fan and Wong (2002) supports this scenario: there is a negative relationship between the pyramidal structure and the informativeness of earnings in East Asian firms including Thai firms. On the other hand, since the expropriation is predictable, controlling shareholders want to assure outside investors that they have an incentive to align their interests with that of outsiders and, therefore, an alignment effect occurs. Controlling shareholders commit to provide high quality financial reports. Boonlert-U-Thai and Kuntisook (2009) support this alignment viewpoint. They find a positive relationship between the ownership concentration and informativeness of earnings. Whether the controlling shareholders use financial reporting as a commitment mechanism or if they use it to facilitate greater extraction of private benefits is still an open question (Armstrong *et al.* 2010) and the evidence on the association between ownership

structure and the quality of financial reports in Thailand is also inconclusive. When assessed by discretionary accruals, no significant relationship has been found between the ownership concentration and earnings management (Pornupatham 2006). There has never been a study into the relationship between the ownership and accounting misstatements in Thailand case. In China, the likelihood of fraud increases when the ownership is concentrated in the government's hands (Firth *et al.* 2011). Since accounts manipulation may signal a wealth transfer (Stolowy and Breton 2004), the group that earns the benefit of an accounts manipulation in concentrated ownership systems is more likely to be controlling shareholders. The interviewees in Pornupatham (2006) stated that local audit firms are less resistant to the management's discretion, particularly when firms are highly concentrated. Therefore, this research predicts that when a firm misleads financial statement users, high ownership concentration is more likely to be more accommodating of the opportunism of controlling shareholders. Therefore, the first empirical prediction of this research is that:

> ***Hypothesis 1.1: There is a positive relationship between ownership concentration and accounting misstatements.***[20]

In addition, the ownership arrangement of pyramids and cross-holdings in East Asian and Thai firms creates divergence in the voting rights and cash-flow rights, and it increases the possibility of expropriation by controlling shareholders (Morck *et al.* 2005). Family ownership also lowers the quality of financial reporting, which can be measured by a higher cost of debt (Boubakri and Ghouma 2010). In Thailand 70% of listed companies are owned by a single family (Wiwattanakantang 2001) and approximately 13.5%-17.4% of listed companies have pyramidal and cross-holdings ownership structures (Claessens *et al.* 2000; Wiwattanakantang 2001). Although the proportion of firms having a complex structure in Thailand is smaller than that of other firms in the same region (Claessens *et al.* 2000), this structure rarely exists in Western firms (La Porta *et al.* 1999). Therefore, it is interesting to examine whether the complex ownership structure as well as the family ownership are associated with accounting misstatements. As accounting misstatements signal a wealth transfer (Stolowy and

[20]Accounting misstatements here mean the occurrence and not the magnitude.

Breton 2004), so the existences of group affiliation and family ownership are likely to be positively associated with the likelihood of accounting misstatements. Consequently, two hypotheses are:

Hypothesis 1.2: There is a positive relationship between family ownership and accounting misstatements.

Hypothesis 1.3: There is a positive relationship between the existence of a pyramid structure and accounting misstatements.

5.3.2 Incentives

In the context of the principal-principal conflict, financial motives are expected to be an important factor for a decision to misstate financial reports (the arguments were developed in Chapter 2). Prior studies in other countries (i.e. the U.S., the U.K., Malaysia and China) have found that firms are more likely to misstate financial reports because they wish to minimise their cost of capital (e.g. Dechow *et al.* 2011; Dechow *et al.* 1996; Efendi *et al.* 2007; Skousen *et al.* 2008), they are highly constrained by debt covenants (Firth *et al.* 2011), and they are distressed and face the possibility of bankruptcy (e.g. Hasnan *et al.* 2008). In Thailand firms are financed by debt more than equity (Alba *et al.* 2003); consequently, Thai firms are likely to be constrained by debt covenants. A debt covenant violation is costly (Roberts and Sufi 2009), and so the likelihood that a firm will misstate financial reports increases when they are close to a debt covenant violation.[21] Therefore, an alternative hypothesis for the debt hypothesis is that:

Hypothesis 2.1: There is a positive relationship between the leverage ratio and accounting misstatements.

[21]As discussed in Chapter 2, this research acknowledges a limitation of the leverage ratio to proxy a violation of debt covenants (Dichev and Skinner 2002). The assessment of debt hypothesis refers to the closeness to debt covenant violation rather than technical defaults because the data on debt defaults are unavailable for the Thai sample.

In terms of the incentive to minimise the cost of capital, the likelihood of accounting misstatements increases in the year when firms issue shares, this is an *ex post* measure of financing need (e.g. Dechow *et al.* 2011; Efendi *et al.* 2007). It also increases when firms have negative free cash flow, which is an *ex ante* measure of financing need (e.g. Dechow *et al.* 1996; Skousen *et al.* 2008). There is no record of either situation being influential over earnings manipulation in Thailand. Nonetheless, since the sample of this research is listed firms, it is possible for both incentives to occur in the Thai sample and the direction of the relationship is expected to be similar to that found in the previous studies. Therefore, the two empirical predictions for the Thai sample are:

Hypothesis 2.2: There is a positive relationship between share issuances and accounting misstatements.

Hypothesis 2.3: There is a positive relationship between negative free cash flow and accounting misstatements.

A survey by Pornupatham (2006) suggests that Thai firms are more likely to manipulate earnings in order to maintain market expectations. Empirical results from prior studies (e.g. Dechow *et al.* 2011; Ettredge *et al.* 2010) also show that firms are more likely to misstate financial reports when their shares have a high market-to-book ratio. This may be because the high value of a firm indicates that the capital market participants have high expectations for the firm's growth and incoming cash flow. When the firm's real financial status is less than their investor's expectations, then it is more likely that the firms will misstate financial reports because the cost of not reaching the benchmark seems too high (Graham *et al.* 2005). Consequently, there is also likely to be a positive relationship between capital market pressures and the likelihood of accounting misstatements in Thailand.[22]

[22]This research recognises that the capital market pressure can be assessed by such measures as analyst forecasts (e.g. Perols 2011; Perols and Lougee 2011). However, the data on analyst forecasts are missing more than a half of the sampled firms (i.e. the researcher found 142 firm-years are available on the I/B/E/S), while prior studies (e.g. Ciccone and Etebari 2004) found in the same source for 192 firms out of 520 firms listed on the Stock Exchange of Thailand. Therefore, the research uses the market-to-book ratio for this hypothesis.

Hypothesis 2.4: There is a positive relationship between capital market pressure and accounting misstatements.

The significance of the regulation driver, such as the profitability regulation in Chen *et al*. (2001), is also important in the Thai sample. Thailand has the regulation of rehabilitation (as detailed in Chapters 2 and 4), and the firms that were subject to the accounting enforcement actions by the Securities and Exchange Commission, Thailand (SECT) were most often found to be in the REHABCO sector (Tummanon 2005b). Therefore, there may be a positive relationship between the rehabilitation status and the likelihood of accounting misstatements. However, firms in rehabilitation can be specially scrutinised by creditors because of their incapability of making repayments. In addition, these firms' financial reports face more scrutiny by the SECT, particularly in the year when the firms are permitted to resume a normal status. On the other hand, extra monitoring might discipline firms in rehabilitation, meaning the likelihood of the decision to misstate financial reports can be mitigated. Therefore, the prediction is formed as a two-way hypothesis:

Hypothesis 2.5: There is a relationship between rehabilitation status and accounting misstatements.

5.3.3 Corporate Governance Mechanisms

As set out in Chapter 2 above, monitoring activities are an important factor (besides the relationship between incentives and accounting misstatements) constraining the likelihood of accounting misstatements. External auditors are fully responsible for monitoring the quality of financial reports and audit quality should influence the occurrence of accounting misstatements. Empirical research has tested many dimensions of audit quality (i.e. audit firm, audit firm change, auditor change, and audit opinion), though empirically, many are not statistically associated with the occurrence of accounting misstatements, particularly in the U.S. samples (e.g. Skousen *et al.* 2008; Skousen and Wright 2006). Nonetheless, Big 4 auditors have been shown to reduce the likelihood defective accounting items in the U.K. (Peasnell *et al.* 2001)

and Canadian (Smaili and Labelle 2009) samples. In Asia, auditors play an important role in the monitoring process (Fan and Wong 2005). In Thailand, the quality of financial reports is higher for Big 4 clients than non-Big 4 clients when measured by discretionary accruals (Pornupatham 2006) and accounting conservatism (Boonlert-U-Thai and Kuntisook 2009). Three-fourths of accounting allegations found by the SECT were audited by local audit firms (Tummanon 2005b). Therefore, the Big 4 auditors may be able to protect against and detect accounting misstatements before financial reports are released. Accordingly, a negative relationship between the use of a Big 4 auditor and the occurrence of accounting misstatements in Thai firms is expected.

Hypothesis 3.1: There is a negative relationship between the use of a Big 4 auditor and accounting misstatements.

Additionally, in concentrated ownership systems it is likely that the controlling shareholders dominate the monitoring mechanisms (Salacuse 2006). They can also set the environment of the monitoring process, either to govern the monitors or to be governed by the monitors (Cohen *et al.* 2002). The influence of management in making an auditor change appears to increase when the CEO is dominant on the board (Cohen *et al.* 2010). In Thailand, 88% of 546 listed companies have CEOs serving as chairmen of the board (Kouwenberg 2010) and it is possible that controlling shareholders change their audit firm in misstatement years because they want to avoid being detected. It is consequently interesting to investigate whether there is a relation between an audit firm change and the likelihood of an accounting misstatement. Elsewhere, a higher proportion of audit firm change has been found in fraudulent firms than in non-fraudulent firms (Summers and Sweeney 1998). In addition, the newly appointed auditor is new to the firm. He or she has a higher risk of failing to detect the accounting misstatements and, therefore, a positive relationship between the likelihood of accounting misstatement and short audit tenure has been found (e.g. Carcello and Nagy 2004; Stanley and Todd DeZoort 2007). In contrast, a newly appointed auditor may not be aligned with the controlling shareholders; he or she may perceive this as a risk and be more aware of the accounting misstatements. In this case, the auditor is more likely

to detect accounting irregularities during the audit process and the appearance of accounting misstatements (i.e. when financial reports go public) consequently decreases. For instance, more than one third of frauds have been found to be detected in the first two years of an auditor's tenure (Loebbecke *et al.* 1989). This second perspective will result in a negative relationship between an auditor change and the likelihood of accounting misstatements and will be in line with, for example, a negative association between audit tenure and earnings management in Taiwanese firms (Chen *et al.* 2008; Chi and Huang 2005). On the other hand, in the U.S. sample of Myers *et al*. (2005), there is no significant relationship found between the length of audit tenure and restatement cases. Because the effect of an auditor change on the likelihood of accounting misstatements has been found in both directions, the prediction is set as a two-way hypothesis.

Hypothesis 3.2: There is a relationship between an audit firm change and accounting misstatements.

Additionally, because the point of an audit firm change is still an open issue in the literature (as explained above), this thesis will further examine how the relationship occurs (i.e. whether the controlling shareholders govern, or are governed by, the auditor). This research will test the relationship between the likelihood of accounting misstatements and the sorts of audit firm change (i.e. lateral switch (e.g. from Big 4 to Big 4), downgrade (from Big 4 to non-Big 4), and upgrade (from non-Big 4 to Big 4)). The types of the audit switch used here follow the categorisation of Lennox and Pittman (2010). The empirical predictions for the types of audit switch are detailed later in Chapter 6.

In addition to the effect of the external monitors, prior studies have found an effect of internal monitoring activities on the likelihood of accounting misstatements. One measure of internal monitoring activities which has been found to be significant in monitoring financial reporting quality is the duality position (Larcker *et al.* 2007); i.e., where a CEO is also chairman of the board. Even in dispersed ownership firms, this

duality position exists and it increases the likelihood of accounting misstatements (e.g. Dechow *et al.* 1996; Efendi *et al.* 2007; Peasnell *et al.* 2001; Skousen *et al.* 2008; Skousen and Wright 2006). In Thailand, this duality position appears in almost 90% of listed companies (Kouwenberg 2010) and, therefore, it is also expected that the duality position will be a significant determinant of the likelihood of accounting misstatements in Thailand.

Hypothesis 3.3: There is a positive relationship between duality position and accounting misstatements.

5.3.4 Economic Consequences of Accounting Misstatements

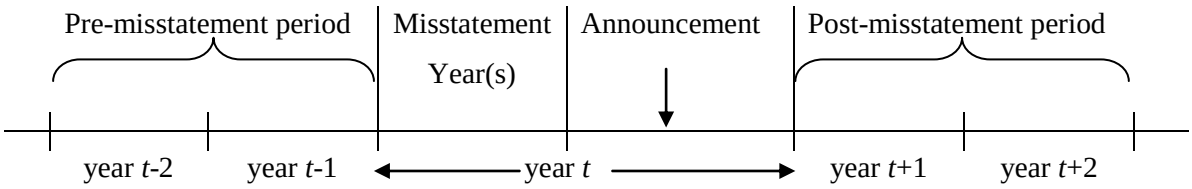
Since an occurrence of accounting misstatements may signal a wealth transfer and the low quality of the firm's financial reporting process (Stolowy and Breton 2004), an announcement of an accounting misstatement is hypothesised to negatively affect financing activities of misstating firms. Like the empirical function of the post-stage in the study of Bowen *et al.* (2008), if an accounting misstatement is a manifestation of the opportunism that is stronger than the capability of monitoring then there should be a consequent loss in stakeholder wealth which can be used as evidence of the abuse. As far as external financing activities are concerned, previous studies have found that the announcement of accounting misstatements has an adverse effect on bank loan contracting (Graham *et al.* 2008) and financing capability (Chen *et al.* 2009) for misstating firms. Accordingly, an ability of misstating firms to get new loans tends to be restricted in the post-announcement period. Similarly, the announcement of accounting misstatements reduces the credibility of the firms and the equity holders react negatively, share prices fall (e.g. Dechow *et al.* 1996; Palmrose *et al.* 2004) and equity investors require a higher rate of return (Hribar and Jenkins 2004). In Thailand the share prices of misstating firms also fall significantly after the revelation of accounting errors (Tummanon 2005a). Therefore, if misstating firms in Thailand issue new shares after the announcement of accounting misstatements then the proceeds from the stock issuance are inclined to be lower. Collectively, an announcement of accounting misstatements is likely to affect both the share and debt choices. Therefore, when

measured by the flow of capital, the external financing ability of misstating firms is likely to be affected by the announcement of accounting misstatements in the post-announcement period. The hypothesis is that:

Hypothesis 4: There is a negative relationship between an announcement of accounting misstatements and subsequent external financing activities.

This research project follows the methodology of the study by Roberts and Sufi (2009), who examined the amount of funds that the firms earn after firms violated debt covenants (which is one example of the incentive conflict between firms and creditors). This thesis determines the dynamics of the amount of funds shown in the cash flow statements during the first two fiscal years (i.e. year *t*+1 and *t*+2) after the revelation of misreporting. The focused period for the event of accounting misstatements is shown in Figure 5.2 below.

Figure 5.2: Timeline for the Period of Misstatements



The misstatement year (year *t*) ranges from the misstatement fiscal years to the year when accounting misstatements are revealed. The research interest of an economic consequence is drawn upon the post-announcement period (year *t*+1 and *t*+2). Prior studies have also investigated the consequence of misstatements in the first two-year period after they are revealed (e.g. Chen *et al.* 2009). One possible reason for this involves the disclosure of the restated items in comparative financial statements. The restated items in year *t* will last appear as the beginning balance of fiscal year *t*+1, when compared with the financial statements of year *t*+2.

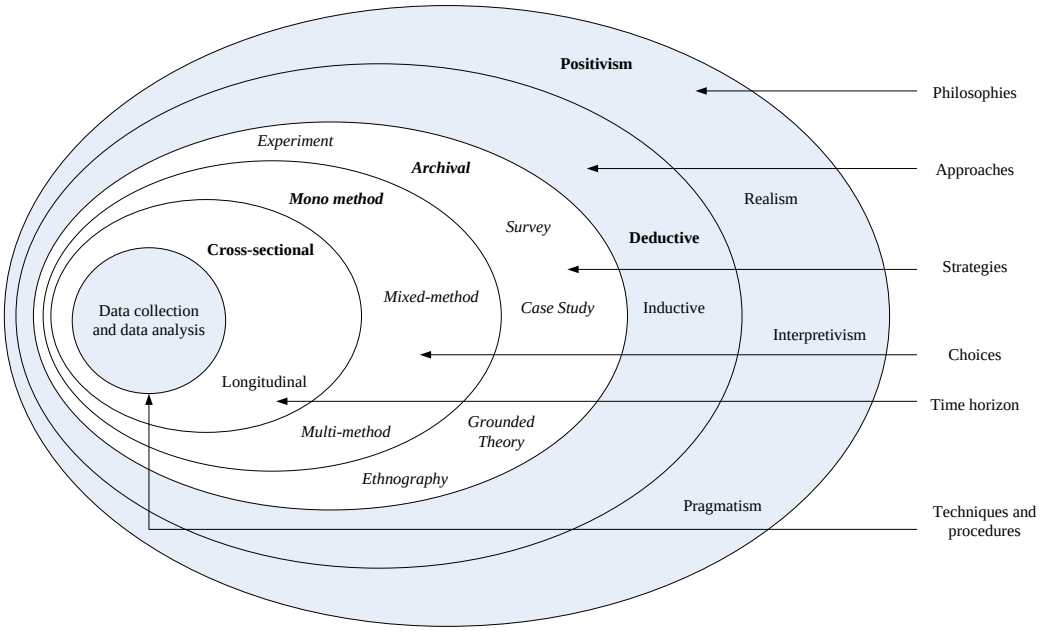
This section has illustrated the empirical predictions for the determinants and economic consequences of accounting misstatements in Thai firms. The next section will discuss the research methodology that will be used to test the empirical predictions.

5.4 The Research Methodology

To achieve the research objectives and address the hypotheses above, a detailed research process was planned. The research process can be viewed as a series of linked stages in a linear manner (Saunders *et al.* 2007). After identifying the research questions (as presented in Chapter 1) and critically reviewing the literature (Chapters 2 to 4), the research hypotheses were developed (as shown in the previous section). The following step is to construct a rigorous and appropriate research design for the testing of the hypotheses, which will be described in this section.

A comprehensive understanding of the 'research onion' (Saunders *et al.* 2007) (see Figure 5.3) helped clarify the researcher's position in the development of knowledge for this research project.

Figure 5.3: The Research Onion



Source: Saunders *et al.* (2007, p. 132).

The principles of positivism and deductive approach were applied in this research. The research technique which is used is an archival research strategy, which uses administrative records (i.e. enforcement actions by the SECT) and documents (i.e. financial reports) as the principal source of data. This research used a single data collection technique from secondary data sources (which is called mono method) and the data were observed for a particular phenomenon (i.e. accounting misstatements) at a particular time (i.e. 2001 to 2009), which is considered to be a cross-sectional study (Wooldridge 2006). The justification for these attributes is detailed as follows.

5.4.1 Research Philosophy

"Mainstream accounting research is dominated by a belief in physical realism-the claim that there is a world of objective reality that exists independently of human beings and that has a determinate nature or essence that is knowable" (Chua 1986, p. 606). Jensen (1993) asserts that economists and management scholars in the 1990s were developing positive theories of the world to understand how the firm, capital providers, and control systems work and how they interact with the other control forces (e.g. product markets, legal and regulatory systems, and the capital markets). The positive theories of cause and effect relationships allow an understanding of the subject's existence. The principal-agent theory by Jensen and Meckling (1976) is one of the positive theories attempting to discover a knowable, objective reality of a firm (Chua 1986). Accounting research that is based on agency theory has stimulated an understanding into the role of financial accounting in contractual relationships between managers and shareholders (Ryan *et al.* 2002, p. 107).

The principles of positivism, mainly guided by Chua (1986) and Guba and Lincoln (1994), can be summarised as follows.

1. *The ontological assumption*, which involves the belief of reality. The objects already exist and they are independent of the researchers' perception. There are general laws or theories that govern the world, and these need to be tested so that we can understand the world (Creswell, 2009).

2. *The epistemological assumption,* which concerns the relationship between the researchers and what is being researched. Positivists observe the event independently and gather data, evidence, and rational considerations to shape knowledge.
3. *The methodological assumption,* which entails how researchers discover and validate reality. Researchers use observations to verify the theory as representative of general laws. A deductive approach can be used here which derives the hypotheses from theories and then formally tests these via the collected observations.

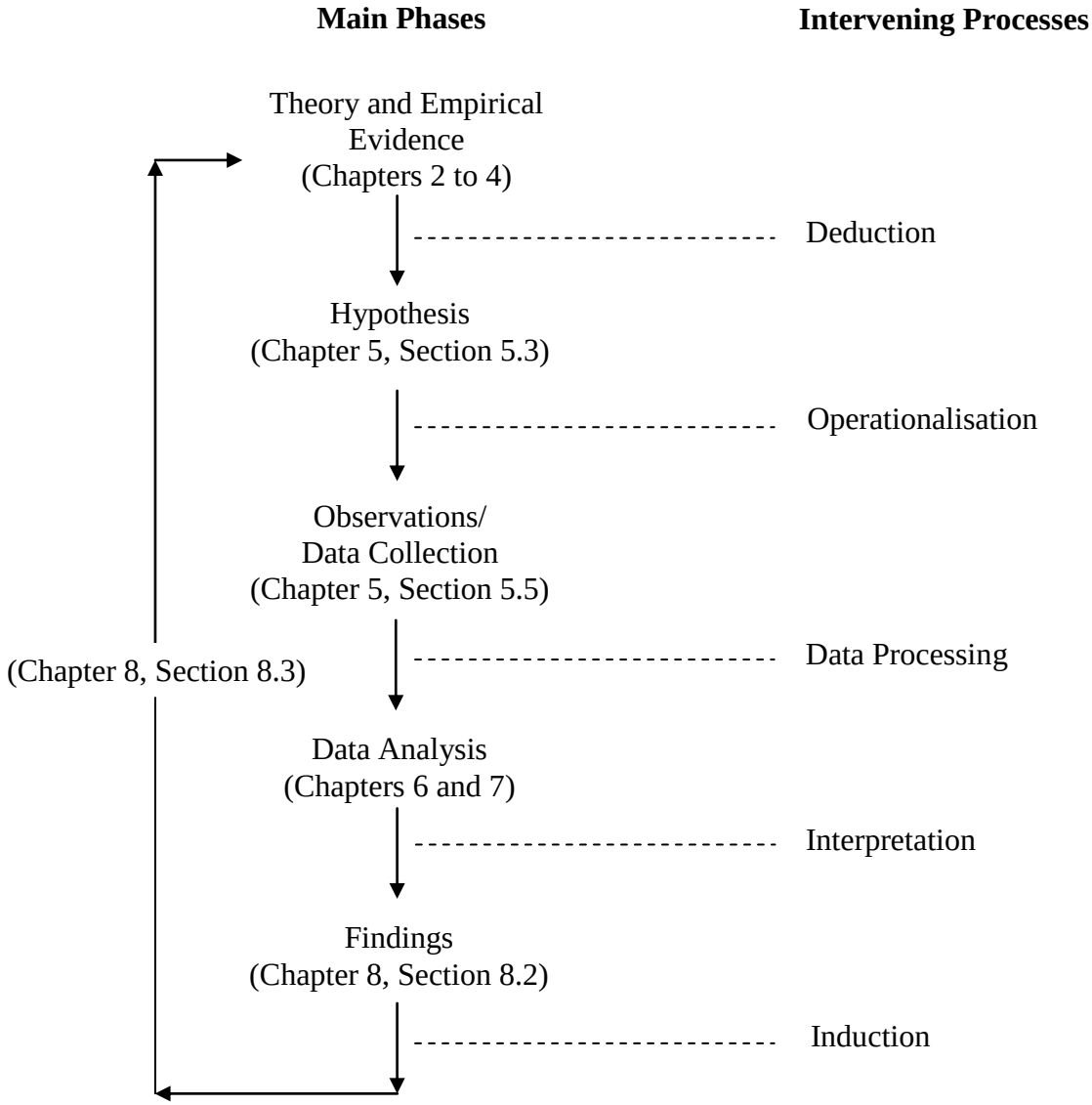
Researchers in the area of the principal-agent literature believe that the reality of accounting misstatements exists (as theoretically claimed by the agency theory and empirically supported by prior empirical evidence) and waits for researchers to discover 'the truth' about them. The discoveries of the determinants and economic consequences of accounting misstatements in concentrated ownership systems (the research objectives of this thesis) will enable the researcher to generalise the truth of the agency theory in concentrated ownership systems. Based on the literature review, previous principal-agent studies were primarily conducted under the positivist paradigm and used a deductive approach, which is in accordance with the approach of the positivist paradigm (as stated in the methodology assumption above). This study maintains the deductive approach and its details are presented in the next subsection.

5.4.2 Research Approach

This research project implements a deductive approach. The process of deduction (as explained in Bryman and Bell 2007, pp. 7-14) is that a researcher deduces hypotheses on the basis of what is known about a particular domain (i.e. the agency theory and opportunistic financial reporting in the context of this research) and then translate them into operational terms. This translation process can be referred to as operationalisation (Bryman and Bell 2007); in other words, to devise measures of the concept that the researcher is interested in. Data are then collected and analysed in order to test the hypotheses. The researcher's findings are finally fed back into the stock of the knowledge (or theory in the domain). All of these procedures are similar to what

Bryman (1988) explained for the quantitative research process and the structure of these manners (see Figure 5.4).

Figure 5.4: The Logical Structure of the Quantitative Research Process



Source: Bryman (1988, p. 20).

The research process of this thesis is in accordance with the structure suggested by Bryman (1988) and the relevant chapter(s) and section(s) for each step are presented in the blankets in Figure 5.4. Out of the five phrases, the first two stages have already performed and described in the preceding chapters. The literature was reviewed in

Chapters 2 to 4 that pioneering research has applied the agency theory (Jensen and Meckling 1976) in explaining an occurrence of accounting misstatements.[23] Many rational insights of the determinants of financial misreporting have been introduced from these positive theories (e.g. Dechow *et al.* 1996; Efendi *et al.* 2007). The research is consistent with prior studies in considering that the agency theory can be used to explain an occurrence of accounting misstatements in concentrated ownership systems. A taxonomy of theory of the firm and agency theory (Jensen and Meckling 1976) is thus maintained and it led the research in developing the hypotheses (as previously shown in Section 5.3). Similar to the previous quantitative studies, the research knowledge will be derived in a form of hypothetico-deductive account (Chua 1986).

The next three phrases of the research process (shown in Figure 5.4) will be performed as follows. Firstly, the research will translate the research's interests into operational terms; it is the operationalisation process in Figure 5.4. This process will be explained in the next paragraph and it also includes the research method for data collection (Section 5.4.3) and the specification of the data (Section 5.5). Then, the analyses into the data are performed. They are reported in Chapters 6 and 7. After that, the research findings are concluded in Section 8.2, Chapter 8. Lastly the research findings will be related back to the theories (Section 8.3) in order to validate and/or extend the agency theory in the setting of concentrated ownership systems, referred as the term 'induction' in Figure 5.4. The next paragraph discusses the process of operationalisation.

According to the theory of a firm and agency theory (Jensen and Meckling 1976) a set of operational terms (interests of the research) was devised as follows. It is assumed in agency theory that all units are profit maximisers (the utility-maximisation assumption of neoclassical economic theory). In concentrated ownership firms, controlling shareholders hold a majority of control rights, and so they are rational profit maximisers by maximising their property rights (such as by reducing monitoring costs or expropriating others' interests). Reduced monitoring costs (e.g. having only compulsory corporate governance, hiring affiliations rather than professional managers) can lead to

[23]The discussion of the determinants of the causes are emphasised in Chapter 2, while the discussion on the consequences are in Chapter 3. Chapter 4 engages the institutional settings for the Thai sample.

ineffective governance mechanisms, and this eventually lowers the quality of financial reports. As a result, the likelihood of an accounting misstatement increases. On the other hand, controlling shareholders may extract private benefits, which cost minority shareholders and creditors; for example, controlling shareholders manipulate accounts to maintain share performance, minimise the cost of incoming capital, and avoid debt covenant violations. Observations on the *ex post* accounting misstatements could help us to understand the causes of accounting misstatements in these concentrated ownership firms. Therefore, the *ex post* accounting misstatement cases form the research sample and the controlling shareholders' incentives and corporate governance mechanisms are two of the three groups of the prospective determinants of accounting misstatements in concentrated ownership firms. These entities are included in the analysis of the determinants of accounting misstatements (see the conceptual framework, Figure 5.1, Part I).

In addition, the utility-maximisation assumption for capital providers is also tested. Firms are contracted with capital providers (i.e. minority shareholders and lenders), and the capital providers are also assumed to be profit maximisers. In the contracting process, the investors assess the integrity of the firms' financial reporting process (e.g. corporate inherent risks and corporate governance policies) and then they require a certain rate of return that maximises their investment returns. Financial reports are one traditional monitoring mechanism used by the capital providers to observe firms' performance and economic status. When they perceive that the financial reports are misstated, the capital providers rationally revise the existing contracts and circumspect their future investments. Consequently, the amount of funds provided by the capital providers after the announcement of accounting misstatements may be reduced. An investigation into the dynamics of the capital of misstating firms, particularly in the post-announcement period, is thus another aspect of interest to the present research (see Figure 5.1, Part II).

Nevertheless, it could be argued that since all units are profit maximisers then there is no reason why the other group of firms that do not misstate financial reports (including their controlling shareholders) pursues the interests of stakeholders instead of

maximising their own returns. This group is, therefore, taken into account as a control group in the analysis so that an insight on the firms with accounting misstatements will reliably appear.

A conclusion for this subsection is that this research project is conducted as quantitative research under a deductive approach. The hypotheses and operational terms have already been specified. The next subsection will discuss the research method for data collection.

5.4.3 Research Method

Because financial misreporting is a form of ethical issue, some of which is illegal, to observe its occurrence through disclosures in secondary data sources (i.e. financial reports and the documents filed to stock exchanges and governmental agencies) is inclined to be feasible and less biased than to collect primary data (such as from interview and questionnaire methods). In sensitive topics, the informant may either transmit the information in a biased manner or withhold it entirely and that an interview barely provides real answers (Christensen 1992). Some previous studies in the Thai context (e.g. Pornupatham 2006) used an interview approach; however, their interviewees were auditors and securities regulators, not the perpetrators. Access to fieldwork is also an unlikely method for observing the financial misreporting process. Questionnaires may be a possible choice, but the respondents in developing countries (including Thailand) pay less attention to research and do not consider it a worthwhile endeavour (Sjorberg 1967). In addition, since the interest is in Thailand while this research is written in English, many rounds of translating between Thai and English languages may distort the data. To trade-off between the costs and benefits (including the reliability of data), use of data from secondary sources is preferred.

In terms of the data analysis, quantitative methods (i.e. statistical techniques) are deemed most suitable for use in this research project. As shown by the conceptual framework (Section 5.2), this research will examine the cause-effect relationships of the variables. Creswell (2009) suggests that quantitative approaches suits problems which

call for identification factors that influence an outcome. In addition, the discovered cause-effect linkage can lead to a prediction of corporate financial reporting in subsequent periods. Quantitative methods allow generalisability (Chua 1986), and so the research findings from the Thai sample can be of benefit to our understanding of the phenomenon of accounting misstatements in other countries that have similar institutional settings.

Finally, as Firth *et al*. (2011) point out, several studies use data which is drawn from U.S. firms and, consequently, this means that it can be difficult to generalise the findings from the previous research because there are different historical, legal, and institutional backgrounds between countries. According to Beneish (1997), a possibility of GAAP violation is a function of three factors: an incentive to do (i.e. managers' incentives), an ability to do (i.e. exploitation of principal-based accounting standards), and a probability of detecting GAAP violation (i.e. the effectiveness of monitoring systems). Presently, many countries, particularly developing economies, adopt or modify the governance practices from the developed economies (Young *et al.* 2008). In addition, European and Asian countries are now using the International Financing Reporting Standards (Ball 2006). Accordingly, the principles of accounting standards and corporate governance practices are currently more similar. Therefore, the likelihood of GAAP violation now is more likely to depend on the financial statements preparers' incentives and the environment they set for the misrepresentation, which is in line with Jiambalvo's (1996) framework. These two features are firm-level characteristics and as such the methodology of the firm-level research in the U.S. and the U.K. can be used as a point of reference for a study in the developing economy sample, but the agency theory is applied and focused in the type of principal-principal conflict (Firth *et al.* 2011). The research findings are considered to be the discovery (or an application) of the truth of the positive agency theory in the developing economies.

In summary, this research is based on the positivist paradigm and it applies a deductive approach and quantitative strategy. Data will be independently collected from secondary sources. The next section presents the procedures for the sample and data collection, and the last section discusses the statistical tools for data analysis.

5.5 Sample and Data Collection

After the research approach and research method were specified (as detailed in the previous section), this section sets out the data collection procedures.

5.5.1 Sample Selection

The initial sample used in this research project is misstated financial reports of firms listed on the Stock Exchange of Thailand. The sample was gathered from two sources. The first source is the announcements of the Securities and Exchange Commission, Thailand (SECT) on its website. These announcements are close to the *Accounting and Auditing Enforcement Releases* that have been used in previous U.S. studies (e.g. Dechow *et al.* 1996; Feroz *et al.* 1991). However, in addition to accounting issues the SECT announcements cover all ranges of topics. The SECT announcements are presented on its website for the last ten years. This research project initially selected 2000 as the start year for the sample construction; however, the data for ownership, which were provided in an electronics database of Ministry of Commerce, Thailand, are only available since 2001; therefore the start date is 2001 and the end date is 2009.

The second source for companies with accounting misstatements used in this research project is the financial restatements published in the Thomson One Banker database. All restated financial reports of non-financial firms during the year of 2001 to 2009 were searched in the database and only the restatements due to prior period errors are of interest (e.g. an error due to mathematical problem, or misapplication of GAAP).[24] Some of the restatements shown in the database were initiated by the SECT, so they are overlapped with those in the first source.

[24]It is possible that the misstatements may be detected during the following year, such as during the auditor's review on quarterly financial reports, but the study takes it as occurring at the end of such year.

This research then compares the sampled financial reports with a control group. The control group comprises the financial reports of the non-financial companies listed on the Stock Exchange of Thailand. They are subject neither to the SECT enforcement actions, nor restated due to a prior period accounting error. The firms that restate their financial reports due to other reasons (such as retroactive restatements because of an accounting policy change or in a compliance with a new Thai Accounting Standard) are included in the control group. The finance sector is excluded from this study because financial institutions are subject to a more stringent regulatory framework required by Bank of Thailand (Chuanrommanee and Swierczek 2007; Montreevat 2007) and have different accounting items which limit comparability. Additionally, as the accounting items engage economical substances, which may vary across time, the research limits the control firms only to the firms having fiscal years ending on 31 December in order to improve the comparability between the sample and control group.[25]

For a number of reasons, the control group in this thesis covers all non-financial listed firms rather than a matched control group (which has been used in many previous studies). Firstly, a matched sample causes a choice-based matched-sample bias, which results in a bias of coefficient (Cram *et al.* 2009; Zmijewski 1984). Secondly, the Stock Exchange of Thailand lists only 520 companies in seven industries. To find a qualified matched sample can be difficult and this might affect the research results. On the other hand, the small size of the capital market made the alternative of non-matched sample design more possible. Thirdly, because the data of Thai firms are still limited, the data collection on all listed firms can increase the data availability (which is of benefit to further research). After trading-off the costs and benefits, a choice-based non-matched sample is preferable: the treatment group is selected on the basis of outcome (i.e. having an accounting misstatement) and the control group is selected from firms not having the same outcome (i.e. not having an accounting misstatement).[26] This alternative is also

[25]No misstatement observations were lost due to this.

[26]The term 'choice-based' refers to a sample selection process in which the outcomes to be explained in the analysis affect whether observations are selected. The outcome (i.e. choice) is the dependent variable (i.e. the incidence of accounting misstatements). The term 'non-matched' refers to a selection for comparison sample, or control group. This research used a non-matched sample, which comprises all non-financial listed companies, of which data are not missing. Some prior studies use the matched sample approach, such as Firth *et al.* (2011) matched a misstating firm with a non-misstating firm that is

used in a number of previous studies (e.g. Beneish 1997; Burns and Kedia 2006; Dechow *et al.* 2011). Logistic regression, which will be used for the data analysis, can be applied for a choice-based non-matched sample (Cram *et al.* 2009).

The research excludes those observations with incomplete data and, therefore, a sample selection bias exists (Cram *et al.* 2009; Zmijewski 1984). The coefficients of a probit model (Zmijewski 1984) and logit model (Dietrich 1984) can also be biased. However, based on the examples in Zmijewski (1984, pp. 76-79) the significance level of the coefficients is similar when compared to that of the sample with complete data. Since the research main objective is to examine the relationship between the variables in order to understand what the causes of accounting misstatements are (i.e. hypothesis testing), rather than to create a model to predict the likelihood of accounting misstatements, the limitation of the incomplete data availability can be accepted in this project.

This research assumes that the firms that are not in the group of misstating firms did not experience accounting misstatements. It is acknowledged that the possibility of undetected or unreported misstatements may exist, and that these can work against the finding a distinction between misstating and non-misstating firms.

5.5.2 Data Collection

Data were collected according to the research objectives and proposed hypotheses. There are two primary types of data used in this thesis: financial and non-financial.

The financial data were collected from the Thomson One Banker database, ranging from 1996 to 2009. The non-financial data were gathered from a variety of sources. The data involving external auditors and their opinions were collected manually from audit reports, available on the website of the SECT. The names of audit partner and audit firms were collected back as far as 2001. The data governing rehabilitation periods, firms' chief executive officers and chairmen of the boards were mainly collected from

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traded in the same stock exchange, has the nearest firm size, and has the same age of trading in the stock exchange.

the annual registration statements (Form 56-1)[27] and supplemented where necessary by annual reports. The Form 56-1 and annual reports were gathered through a commercial web-based database of the Stock Exchange of Thailand, named SETSMART. Some annual reports were also available on the Thomson One Banker database and companies' websites. Collecting data from many sources minimised the numbers of missing observations.

Data on the major shareholders were manually collected from several sources. The first source is the SETSMART database, which shows the names of major shareholders holding shares above 0.5%. In the SETSMART, there are many types of shareholder lists, such as a list for dividend payout and a list for annual meetings. In this study, the list for annual meetings was selected because firms must report their financial statements and appoint an auditor in the annual general meeting. The atmosphere of the monitoring should at least occur at this point. After gathering the major shareholders' names, the researcher then identified the firms' ultimate owner; the definition of the ultimate owner which was used in this study is consistent with La Porta *et al.* (1999) and Wiwattanakantang (2001).[28] In cases where the major shareholders are private companies, the researcher tracked down the shareholders of those private companies in order to identify exactly who was the ultimate owner. Those shareholders who share the same family name were grouped together as one group, like prior research studying into the ownership of Thai firms[29] (e.g. Boonlert-U-Thai and Kuntisook 2009; Wiwattanakantang 2001). The number of shares held by the ultimate owner was recorded and then used for the ownership concentration. These shares indicate the voting rights, or control rights, of the ultimate owner. A further investigation through the shareholders of the private companies allowed this study to account for the effect of

[27]Form 56-1, or the annual registration statement, is a type of report required by the Stock Exchange (the regulation no. Bor.Jor./Por.01-00). The report covers events occurring in the last period, such as: significant changes in the company, or its business operations, board of directors, shareholder structure, summary financial status and operational results, industrial conditions or business risks. Since December 2002, companies have had to disclose how they comply with the fifteen principles of corporate governance practices under the comply-or-explain basis, and the directors' and management profiles (e.g. name, education, percentage of share holding and remuneration).

[28]The method which was used to collect the ownership data is presented in Appendix A.

[29]In Thailand it is very uncommon that two families have the same surname. The family name is unique. When a family wants to change its surname, the new one must differ from existing surnames.

pyramids and cross-holdings structure. The ownership arrangement is measured in using a dummy variable rather than a continuous measure of cash-flow rights. This approach is used in numerous prior studies (e.g. Filatotchev *et al.* 2011; Wiwattanakantang 2001). The information on shareholders of private companies was gathered from the updated shareholder lists (Form Bor.Or.Jor 5).[30] These copies are made available by request from the Department of Business Development, Ministry of Commerce Thailand.

5.6 Data Analysis Tools

This section discusses statistics issues and the treatments for the data and analyses.

5.6.1 Treatment of Outliers

An important issue in using financial data is that of outliers, which might distort the research results and interpretation of research findings. Therefore, a winsorisation method is applied to values of extreme outliers at the 1st and 99th percentiles, which is similar to prior studies (e.g. Chen *et al.* 2009; Roberts and Sufi 2009).[31]

5.6.2 Inferential Statistics

The data analysis, which will be presented in Chapters 6 and 7, started with the exploration of the distribution of the data and comparisons in means/medians between two groups of the sample. Then a correlation matrix was created to investigate the relationships among variables. Multiple regression models were then employed to test the hypotheses described in Section 5.3. Logistic regression models were employed for

[30]Form Bor.Or.Jor 5 is an updated list of the company's shareholders, which needs to be prepared for the annual general meeting and submitted together with the annual financial reports and income tax filing form to the Revenue Department and the Department of Business Development, Ministry of Commerce within 14 days of the annual general meeting. The contents in this form comprise shareholders' names, the amount of shares held, numbers of the shares, and the beginning and ending dates of holding.

[31]The main research results for the causes and consequences of accounting misstatements are not sensitive to the winsorisation at the cut-off points of 5th and 95th percentiles, but are sensitive to the case where the winsorisation procedure is not used. Results of the latter case are reported after the data analysis has been performed in Chapters 6 and 7.

analysing the determinants of accounting misstatements. Although model creation is not a purpose of this study, McFadden's pseudo R^2 was also considered for a measure of fit in modelling. An ordinary least squares linear regression was used in the examination of economic consequences. The adjusted coefficient of determination (adjusted R^2) was analysed for the power of explanation by models. Heteroscedasticity and multicollinearity were tested for and rectified if such statistical problems existed. The hypotheses were generally tested at the conventional significance level of 5%; however, a 10% significance level was also considered and presented in the analysis.

5.6.3 Rare Events Logit Models

Since the research uses a non-matched approach for the sample groups, the research may confront the issue of a small proportion of the sample (i.e. the misstatement firm-years) to the control group (i.e. the non-misstatement firm years) of these studies, such as: 2.4% in Beneish (1997), 3.32% in Burns and Kedia (2006) and 0.31% in Dechow *et al.* (2011). The researcher adopts a rare events logit model of King and Zeng (2001c)[32] to test the robustness of the results. King and Zeng (2001a, c) show that the application of traditional logit models in samples where the binary dependent variable has much fewer ones than zeros might lead to biased results due to the underestimation of the parameter estimates. The constant term of a traditional logit model for rare events is underestimated while the coefficient of explanatory variables is overestimated (King and Zeng 2001c, pp. 153-154). The rare events logit models can correct the parameters in the presence of rare events or small samples. This method was first used in political science (e.g. King and Zeng 2001b). Although this has recently been applied in the management literature (e.g. Lafuente *et al.* 2010), it has not yet been applied by accounting scholars. Consequently, introducing the rare events logit models to accounting literature is one of the contributions of this research.

[32]A rare events logistic regression model can be run in Stata by a command of 'relogit' (Tomz *et al.* 2003). The zip file of the command is available in Tomz *et al.* (2003) (http://www.jstatsoft.org/v08/i02) and the instalment procedure is available at http://userwww.service.emory.edu/~jhamner/readme.txt.

5.6.4 Estimating Standard Errors

The data set contains multiple firms in multiple years, and so the residuals from regression analyses for a given firm may be correlated across years for a given firm (an unobserved firm effect) or the residuals for a given year may be correlated across different firms (a time effect). These correlations result in biased standard errors and inaccurate estimates (Petersen 2009). To produce unbiased estimates, Petersen (2009) suggests that research can address one dimension by including, for example, time dummies and then estimating standard errors clustered on the other dimension. This study uses year dummies (YEAR) to control for time effects and it uses firm-level clustering to make standard errors unbiased.[33]

5.7 Summary

Due to the limitations of prior literature into the causes and consequences of accounting misstatements in the concentrated ownership systems, this thesis was designed to provide evidence to address this gap and uses Thailand as an example of the concentrated ownership systems. There are two main parts in this research. The first part is an examination into the determinants of accounting misstatements in Thailand. The second part is a study of the external financing activity of misstating firms after the accounting misstatements have been revealed. With a belief on the objectivity of the agency theory, this research project has oriented the research methodology towards a positivist paradigm. The structures of quantitative research and deductive approach were implemented. The samples and data were independently collected to test the hypotheses.

The next two chapters will present the data analysis. Chapter 6 details the empirical findings on the determinants of accounting misstatements in Thailand. Chapter 7 reports

[33]A fixed effect regression model can also cope with the unobserved firm effect; however, in this study it cannot be applied because, when using a command of fixed effect in Stata, an analysis of logistic regression model cannot be prepared due to an absence of the variation in dependent variable for the control group. Nonetheless, there is a suggestion that there is no great difference on the parameters from the fixed effect model and the clustered robust standard error when the number of firms is large and time period is fixed (Kezdi 2003)and at the sample size of time period equals to ten and number of clusters is less than 500 (Stock and Watson 2008), which is the size of the research's observations.

the effect of the accounting misstatement announcements on subsequent external financing activities.

CHAPTER SIX

DATA ANALYSIS ON THE DETERMINANTS OF ACCOUNTING MISSTATEMENTS IN THAILAND

6.1 Introduction

The research sample and data were collected according to the research methodology described in Chapter 5. This present chapter illustrates the empirical results of the analysis into the determinants of accounting misstatements in Thailand, while the results for economic consequences are presented in the next chapter. This chapter is organised as follows. Section Two illustrates the research sample. Section Three details the description of each variable, its measure(s) and the logistic regression model for the data analysis. Section Four furnishes the empirical results of the data analysis. Robustness tests and some additional issues are reported in Section Five. The final section summarises the results on the antecedents of accounting misstatements in Thailand.

6.2 Research Sample

Table 6.1 below presents how the final sample was obtained. Observations of accounting misstatements were gathered from two sources, which are presented separately. Panel A, which is the first source, encompasses the misstated financial reports detected by the Securities and Exchange Commission, Thailand (SECT). Meanwhile Panel B, which is the second source, consists of the misstated financial reports that are later restated. Panel C summarises the sample observations.

Table 6.1: Samples of Accounting Misstatements during 2001-2009

Panel A: Identification of Firms Subject to Enforcement Actions

Panel A-1: SECT News Releases By Year

Year	Number of All Releases	Number of Accounting Based Releases
1999	27	1
2000	40	6
2001	38	5
2002	35	2
2003	36	3
2004	103	11
2005	126	25
2006	100	14
2007	104	7
2008	85	9
2009	111	18
Jan - Nov 2010[34]	82	12
Total	887	113

Panel A-2: Classification of the Accounting Based Releases

	Releases	Number of Firms	Number of Firms
1. Fraud	50		
1.1 Misappropriation of assets		9	
1.2 Fraudulent financial reporting		**9**	18
2. Accounting errors	30		
2.1 Errors in quarterly financial reports		5	
2.2 Errors in annual financial reports		**10**	15
3.Unfair trading by executives	11		10
4.Requirements for disclosures	5		4
5.Requirements for special audits	5		2
6.Others (i.e. clarification of rehabilitation plan and operations, cooperation with auditor)	5		3
7. Suspended auditors	7		9 auditors
Total	113		
Number of firms relating to accounting misstatements from the SECT source (1.2 and 2.2, subtracted one firm appearing in both categories)			(AM1)18

[34]The period of the SECT news releases covers until November 2010 because the announcements relating to the misstatement fiscal year of 2009 were released in the following year after the SECT reviewed the submitted financial reports.

Table 6.1 (continued)

Panel B: Identification of Firms Using a Search on the Thomson One Banker Database

	Number of Firms	Number of Firms
Step I: Searching financial reports of listed companies in Thailand		
Search "BAN" market code		554
Less security funds (i.e. industrial funds, property funds)		(12)
Trading companies		542
Less financial industry		(63)
Industrial company		479
Less firms with non-December fiscal year		(27)
Less firms with only one year of data on financial reports		(4)
		448
Step II: Investigating the financial reports of the 448 companies		
1.Firms with at least one fiscal year of restated financial reports		*121*
2.Firms with no restated financial reports		327
Total investigated financial reports		448
Step III: Examining the reasons of the 121 restated financial reports (Step II, item no.1)		
1.Accounting misstatements		31
The cases required by the SECT and already included in the 18 observations in Panel A-2	15	
The cases initiated by the companies	[AM2]16	
2.Other reasons		
Changes in accounting policy	44	
Changes to comply with Thai Accounting Standard changes	24	
Subsequent events required backward adjustments	14	
Subsidiaries' subsequent accounting adjustments	7	
The database is incorrectly presented	1	90
Total cases of financial restatements		121
Number of firms relating to accounting misstatements from the Thomson One Banker source		31

Table 6.1 (continued)
Panel C: Final Sample

	Number of Firms	Number of Firm-Years
1) Misstatement observations		
Misstating firms subject to the SECT enforcement actions	(AM1)18	
Add the misstating firms voluntarily corrected their accounting misstatements, searched from Thomson One Banker database	(AM2)16	
Less one firm missing the data of ownership (Manager Media Plc)	(1)	
Final misstatement observations	**33**	**51**
2) Non-misstatement observations		
Preliminary non-misstating firms (327+90 from Panel B)	417	
Less incomplete data firms	(62)	
Final non-misstatement observations	355	2,257
Add the number of non-misstated financial reports of the 33 misstating firms	33	195
Final non-misstatement observations	**388**	**2,452**
Total number of financial reports	**388**	**2,503**

Table 6.1 presents the sample collection. Panel A shows the number of misstatement firms gathered from the SECT's enforcement actions. Panel B reports the number of misstatement firms gathered from restated financial reports. Panel C summarises the numbers of the misstatement and non-misstatement observations.

Panel A in Table 6.1 shows the identification of the firms charged by the SECT for allegedly violating GAAP and committing corporate fraud. In Panel A-1 there were a total of 887 announcements, of which 113 were relevant to accounting aspects. Panel A-2 details the issues on the 113 announcements (e.g. fraud, accounting errors, insider trading, disclosure requirements, and audit suspension). The announcements involving fraudulent financial reporting (item 1.2) and accounting errors in annual financial reports (item 2.2) are of particular interest. The final number of the misstating firms charged by the SECT is 18 companies (AM1).

Apart from the accounting misstatement cases that were found by the SECT, this research also collected accounting misstatement samples from restated financial reports. The restated financial reports were gathered from the Thomson One Banker database. There are three steps of sample collection for this group. Panel B in Table 6.1 presents

the number of observations involving these three steps. The first step was to find firms listing on the Stock Exchange of Thailand by searching through BAN code. This search yielded 554 securities; however, the following securities were excluded: industrial funds and property funds (12 units), banks and financial institutions (63 companies), firms whose fiscal year did not end on 31 December (27 companies), and firms who only have one year of financial reports (4 companies).[35] Consequently, the primary number of firms listing on the Stock Exchange of Thailand and their financial reports are available in the Thomson One Banker database is 448. The second step was to survey whether or not these 448 firms restated their financial reports between 2001 and 2009. One hundred and twenty one firms were found to have restated financial reports in at least one year. The third step was to determine the reasons for the restatements. The focus of this study is on prior period accounting errors and fraud, and, therefore, only the restatements due to this basis are included. Of the 121 firms, 31 firms have had the misstatements falling into the focus. However, 15 out of the 31 firms they were already included in the 18 firms of the first source (named AM1 in Panel A-2) because their restated their financial reports initiated by the SECT. Consequently, only 16 firms (named AM2 in Panel B) were additionally counted. Collectively, there were 34 (AM1+AM2) preliminary firms generating at least one fiscal year of misstated financial reports in Thailand during 2001-2009, summarised in Panel C.

Panel C in Table 6.1 reports the final sample of accounting misstatements. Originally, there were 34 firms releasing misstated financial reports. However, after the data collection, the ownership data of one firm (i.e. Manager Media Plc) was missing (the firm has been suspended from trading since May 1998 and so its disclosures have never been prepared for public from this date). Therefore, the sample ended up with 33 misstating firms with 51 firm-years of misstated financial reports.[36] There are eleven firms releasing more than one fiscal year of misstated financial reports. Regarding the

[35]As described in Chapter 5, Section 5.5.1, this research excludes those firms in the finance sector and the firms having fiscal years not ended on 31 December in order to control the impacts of economic factors at a different point of time. Those firms with only one year of financial reports have been excluded because the study has some lagged independent variables (i.e. negative free cash flow, beginning cash, beginning receivables and inventory) which need accounting numbers from previous years.

[36]Details of the 33 firms are provided in Appendix B.

control group, since this research considers financial reports each fiscal year individually, the financial reports of the misstating firms in those years that do not involve any accounting misstatement are included in the control group. Accordingly, the control group comprises 2,257 non-misstatement firm-years from 355 firms that have never released accounting misstatements and 195 non-misstatement firm-years from the 33 misstating firms. There are 2,452 firm-years for the control group.[37] Collectively, the observations of this research are 2,503 firm-years in total.[38] They covered 388 individual firms out of 520 listed companies in the Stock Exchange of Thailand.

Table 6.2 breaks down the sample by time period (Panel A), by industry and sector (Panel B) and by type of the accounting misstatements (Panel C).

The data in Panel A indicates that accounting misstatements occurred more frequently in 2004 (34%), 2005 (22%) and 2006 (18%). One reason for the high frequency in 2004 possibly could be the new appointment of Secretary-General of the Securities and Exchange Commission, Thailand (Mr. Thirachai Phuvanatnaranubala), who was appointed in December of that year. Mr.Thirachai was the first Secretary-General to have experience in auditing and he established an independent committee that is responsible for uncovering accounting irregularities and management malpractice. In the first two years of his duties, Mr.Thirachai and his team revealed 23 cases of accounting misstatements and management fraud (17 of these cases are included in the research sample while the rest are quarterly financial reports which are excluded in the study). SECT enforcement actions had rarely happened before this appointment (Matichon 2005).[39] This research controls a potential effect of the SECT team on the detection of accounting misstatement cases that can be varied across time by including year dummies in the regression analysis (see Section 6.3.1).

[37]If the 195 non-misstatement firm-years of the misstating firms are excluded, the coefficients for the multivariate logistic regression analysis (Section 6.4) are slightly changed but their significance levels are unaffected.

[38]However, later in Chapters 6 and 7 the number of observations reduces due to an aspect of statistics and requirements for the data (see Sections 6.3.3 and 7.2).

[39]Mr. Thirachai Phuvanatnaranubala was sent a letter reportedly containing death threats in September 2005. The death threat was suspected to involve these accounting enforcement actions (Matichon 2005).

Table 6.2: Classification of Accounting Misstatements during 2001-2009

Panel A: By Year and Initiator

Year	Misstated Financial Reports			
	SECT	Company	Total (firm-years)	Percentage (%)
2001	-	-	-	-
2002	4	-	4	8
2003	4	-	4	8
2004	11	7	18	34
2005	6	5	11	22
2006	4	5	9	18
2007	1	-	1	2
2008	3	-	3	6
2009	1	-	1	2
	34	17	51	100

Panel B: By Industry and Sector

Industry/sector	AM Firm-Years	Percentage (% of 51)	Non-AM Firm-Years	Percentage (% of Sector)
Agro & food/ food producer	7	13.7	189	3.7
Consumer products/fashion	1	2.0	180	0.6
Industrials/automotive	9	17.6	108	8.3
Industrials/industrial materials & machinery	2	3.9	137	1.5
Industrials/packaging	6	11.8	105	5.7
Industrials/petrochemicals & chemicals	2	3.9	89	2.2
Property & construction/ construction materials	3	5.9	175	1.7
Property & construction/ property development	5	9.8	236	2.1
Resource/energy	2	3.9	117	1.7
Resource/mining	1	2.0	21	4.8
Service/commerce	2	3.9	74	2.7
Service/health care services	1	2.0	110	0.9
Service/ travel & leisure	2	3.9	105	1.9
Technology/electronic components	6	11.8	80	7.5
Technology/information & communication technology	2	3.9	157	1.3
Seven sectors not having accounting misstatements	0	0.0	569	0.0
	51		2,452	

Table 6.2 (continued)
Panel C: By Type of Accounting Misstatements

	Firm-Years	Firm-Years	Percentage (%)
1. Big bath accounting		1	1.67
2. Overstating revenues:			
2.1 Inappropriate revenue recognition	9		
2.2 Transfer pricing	2		
2.3 Fraudulent scheme with related parties	1		
2.4 Over record gain on assets sold	1	13	21.67
3. Failing to record revenues from assets sold to related parties		2	3.33
4. Improperly booking allowance for bad debt		7	11.67
5. Incorrectly recording cost of goods sold		5	8.33
6. Understated operating expenses		5	8.33
7. Capitalisation of repair and maintenance costs		1	1.67
8. Overstating assets:			
8.1 Goodwill	3		
8.2 Failure to test impairment of assets	5		
8.3 Counterfeiting documents	3	11	18.33
9. Incorrectly classifying types of leasing		2	3.33
10. Failing to prepare consolidated financial statements		9	15.00
11. Managements' embezzlement affecting financial reports		4	6.67
		60	100.00

Table 6.2 reports the distribution of the 51 misstatement firm-years. Since some fiscal years contain more than one type of misstatements, there are 60 cases of the misstatements in Panel C.

The data in Panel B of Table 6.2 (industry/sector) indicates that, of the 51 cases, accounting misstatements most frequently occur in the automotive sector (17.6%). They are also common among firms in the food production sector (13.7%), packaging (11.8%), and electronic components (11.8%). When compared with other firms in the same sector, accounting misstatements most frequently appear in the automotive sector (8.3%) and electronic components sector (7.5%). There are seven sectors in Thailand that have not released financial reports. In an aggregate point of view for the industries, accounting misstatements have appeared in all industries during 2001-2009, but only one case occurred in the consumer products industry.

Panel C in Table 6.2 indicates the types of accounting misstatements. The total number of 60 is larger than the number of 51 misstatement observations because some fiscal years contained more than one accounting misstatement. The most common accounting misstatements involve overstated revenues (21.67%), overstated assets (18.33%), and a failure to prepare consolidated financial statements (15%). Revenue overstatement is amongst the most common reason for misstatements in other counties, such as the U.S. (e.g. Dechow *et al.* 2011). One distinction in the Thai sample is an accounting mistake that happens in preparing consolidated financial reports. This can happen because Thai firms (and also other Asian firms) have a characteristic of business group where ownership is arranged in forms of pyramids and cross-holdings (Claessens *et al.* 2000). These complex ownership structures can cause the firms to incorrectly prepare financial reports because parent companies often misinterpret the term 'control'. The Securities and Exchange Commission, Thailand (SECT 2004, 2008) points out that the parent companies usually interpret the 'control' term (Thai Accounting Standard 44, an adoption of *IAS 27* (IASB 2008) by considering the proportion of shareholdings (i.e. above 50%) in a subsidiary only; they disregard the control in other circumstances (e.g. the parent company has a power to govern the financial and operating policies of the subsidiary, or the parent disposes of an investment in a subsidiary but still retains control).

Considering the magnitude of accounting misstatements in Thailand, the average amount of the impact of restatements on earnings numbers in Thai firms is approximately 49.62 million THB (£1.05 million) per year.[40] This is approximately 11% of the average firm's market capitalisation a year.[41] Specifically, the average absolute value of the impact of accounting restatements on earnings number is 417.6 million THB (£8.84 million) for the restatement required by the SECT, and 29 million THB (£0.6 million) for the voluntarily restated financial reports (details are in Appendix

[40]This is computed by dividing an average magnitude of restatements of 446.6 (417.6+29) million THB by nine years period (2001-2009). See Appendix B for more details.

[41]This is computed by dividing the average of 49.62 million THB a year by the market capitalisation (at the end of 2008) of 449.96 million THB.

B). When considering the impact of accounting misstatements by type (fraud and errors), an average absolute value of the impact is approximately 684.98 million THB (£14.13 million) for fraud cases and 72.88 million THB (£1.5 million) for accounting error cases. Dividing each impact by total assets in the year prior to the misstatement year (following Hennes *et al.* 2008), on average the impact is 28.34 % for the fraud group and 5.76% for the accounting error group and they are statistically different at the 0.01 level, with a *p*-value of 0.0062 (one-tailed). The accounting misstatements due to fraud, therefore, have a greater impact on accounting items (and eventually the financial statement users) than do accounting errors. This finding is consistent with the U.S. sample in Hennes *et al.* (2008). Unfortunately, the SECT announcements do not provide consistent information on the magnitude of the misstatements, so this analysis is limited to only the cases where data are available (44 out of the 51 observations). The details on fraud and error cases were provided to increase the evidence on the Thailand country. These observations are examined in the aggregate in data analyses.

6.3 Determinants of the Causes of Accounting Misstatements

This section details the measures of the research interests for the causes of accounting misstatements in Thailand. It also includes discussion of the number of observations that is reduced due to a modelling constraint.

6.3.1 Multiple Logistic Regression Model

According to the conceptual framework (Chapter 5, Section 5.2) the dependent variable for the analysis of the determinants of accounting misstatements is a dichotomous variable of the incidence of accounting misstatements. Independent variables comprise three groups: ownership structure, large shareholders' incentives and corporate governance mechanisms. A number of control variables (i.e. firm size, age, and industry-effects) is also included into the analysis because, for example, Wang (2006) find a relation between firm age and earnings quality and accounting misstatements are found to most frequently occur in the computer, and the property and construction

industries in the U.S. and China, respectively (Chen *et al.* 2006; Dechow *et al.* 2011). Prior research has also found an influence of a firm itself on financial reporting (Lawrence *et al.* 2011; Lennox and Pittman 2010) and a variation in shareholder responses to auditing service after the 2001 Enron year, such as in the U.K. (Holland and Lane 2008). Consequently, there may be an unobserved firm effect and time effects in the Thai sample during 2001-2009. Standard errors are, therefore, clustered by firm and year dummies are included in the regression model (Petersen 2009).

Logistic regression model:

$$\begin{aligned} AM_{i,t} = {} & \alpha_0 + \beta_1 OWN_{i,t} + \beta_2 FAM_{i,t} + \beta_3 CROSS_{i,t} + \beta_4 LEV_{i,t} \\ & + \beta_5 ISSUE_{i,t} + \beta_6 NFCF_{i,t-1} + \beta_7 MB_{i,t} + \beta_8 REHAB_{i,t} \\ & + \beta_9 BIG_{i,t} + \beta_{10} AUDCHG_{i,t} + \beta_{11} DUAL_{i,t} + \beta_{12} LNSIZE_{i,t} \\ & + \beta_{13} AGE_{i,t} + \sum_{K=1}^{7} \beta_K IND_{i \in K,t} + \sum_{t=1}^{8} \beta_t YEAR_t + \varepsilon_{i,t} \end{aligned}$$

where:

t: The current fiscal year for firm *i*.

AM: The occurrence of accounting misstatements, measured by a dichotomous variable of 1 if the firm's financial reports for the current fiscal year contain at least one misstated accounting item; 0 otherwise.

OWN: A measure of ownership concentration, measured by a percentage of the shares held by the ultimate owner.

FAM: A measure of owner identity, measured by a dummy variable of family ownership, which equals 1 if the ultimate owner is a family; 0 otherwise.

CROSS: A measure of ownership arrangement, measured by a dummy variable of 1 if the firm's ownership is arranged in a form of pyramids, or cross-holdings or both; 0 otherwise.

LEV: An incentive to avoid debt covenant violation, measured by the ratio of total debt to total assets.

ISSUE: An incentive to minimise cost of capital, measured by a dummy variable of 1 if the firm issued securities during the fiscal year; 0 otherwise.

NFCF: An incentive to minimise cost of capital, measured by a dummy variable for negative free cash flow, which equals 1 if FCF < -0.5 [$FCF_t = (OCF_t - \text{Average Cap Exp}_{t-3 \text{ to } t-1})/CA_{t-1}$]; 0 otherwise.

where: OCF = The balance of cash flow from operations in cash flow statements.

Average Cap Exp = An average of capital expenditures from cash flow statements from year *t*-3 to *t*-1.

CA= The balance of current assets in balance sheet.

MB: An incentive to maintain capital market expectation, measured by a ratio of market value to book value of equity.

REHAB: An indication of financial distress and profitability regulation, measured by a dummy variable of 1 if the firm is under the rehabilitation plan; 0 otherwise.

BIG: A measure of audit quality, measured by types of audit firms, where equals 1 if the firm uses an audit service from a Big 4 audit firm; 0 otherwise.

AUDCHG: A measure of audit quality, measured by a change in an auditor, where equals 1 if the firm changes an audit firm during the current fiscal year; 0 otherwise.

DUAL: A measure of weak corporate governance, particularly in concentrated ownership firms, measured by a dummy variable of 1 if the chief executive officer also serves as chairman of the board; 0 otherwise.

LNSIZE: A control variable for size of the firm, measured by the natural logarithm of total assets.

AGE: A control variable for age of the firm, measured by the number of years since the firm was established.

IND: An array of seven industry dummies, where each firm falls into one of the seven categorises according to the categorisation of Stock Exchange of Thailand (Agro and Food, Consumer Products, Industrials, Property and Construction, Resources, Services, and Technology; Agro and Food industry dummy being arbitrarily omitted to avoid perfect multicollinearity).

YEAR: An array of eight fiscal year dummies 2002 to 2009; year 2002 dummy being arbitrarily omitted to avoid perfect multicollinearity.

ε: The regression residual.

6.3.2 Description of Variables

A description of the variables illustrated in the previous section is presented in Table 6.3. In addition, the expected signs of coefficients (directions of the alternative hypotheses from Chapter 5, Section 5.3) are included in this table.

Table 6.3: Variables for the Determinants of Accounting Misstatements

Proxy	Measure	Abbre-viation in Model	Calculation	Expected Sign
Dependent variable				
The incidence of accounting misstatements		AM	1 if financial reports contain at least one accounting misstatement; 0 otherwise	
Independent variables				
1. Ownership:				
1.1 Ownership concentration	Ownership of the ultimate owner	OWN	Percentage of shares held by the ultimate owner	+
		D_OWN	1 if ownership concentration > 25%; 0 otherwise	+
1.2 Owner identity	Family ownership	FAM	1 if the ultimate owner is a family; 0 otherwise	+
1.3 Ownership arrangement	The appearance of the an arrangement of pyramids and/or cross-holdings	CROSS	1 if the firm's ownership is arranged in a form of pyramids, or cross-holdings or both; 0 otherwise	+
2. Incentives:				
2.1 Debt covenant constraints	Leverage	LEV	Total debt to total assets	+
2.2 *Ex post* financing need	Securities issuance	ISSUE	1 if securities issued during the fiscal year; 0 otherwise	+
2.3 *Ex ante* financing need	Negative free cash flow	NFCF	1 if NFCF < -0.5 [NFCF = (cash flow from operations – average capital expenditure from year *t*-3 to *t*-1)/current assets in year *t*-1]; 0 otherwise	+

Proxy	Measure	Abbre-viation in Model	Calculation	Expected Sign
2.4 Capital market pressure	Market to book ratio	MB	Market value [a] to book value of common equity	+
2.5 Regulation effect	Rehabilitation period	REHAB	1 if a firm is under rehabilitation status; 0 otherwise	+/-
3. Monitoring:				
3.1 External monitor	The use of a Big 4 auditor	BIG	1 if a firm uses a Big 4 auditor; 0 otherwise	-
3.2 Possibility of detection	An audit firm change	AUDCHG	1 if there is an audit firm change in the current year; 0 otherwise	+/-
3.3 Internal monitor	CEO=COB	DUAL	1 if the chief executive officer (CEO) also serves as chairman of the board (COB); 0 otherwise	+
Control variables:				
1.Firm size	Size	LNSIZE	Natural logarithm of total assets	+/-
2.Firm age	Age	AGE	Years after establishment	+/-
3.Industry effect	Industry dummies	IND	Dummy variable	
4.Year effect	Fiscal year dummies	YEAR	Dummy variable	

[a] There were some firms whose securities were suspended from trading during rehabilitation periods, and as such none of these firms' market values are available. The market value of these cases was computed by using the latest firms' market value before the securities were suspended in order to maintain the observations of the treatment group. However, the research results for the antecedents of accounting misstatements are unchanged if the models exclude these observations.

It is noteworthy that there are two measures for the ownership concentration in Table 6.3: a continuous variable (OWN) and a dummy variable (D_OWN). The dummy variable of the ownership concentration (D_OWN) takes a value of 1 if the control rights of the ultimate owner exceed 25%. The 25% level is employed following the definition of the Stock Exchange of Thailand for controlling shareholders and under the Public Limited Companies Act B.E. 2535 (A.D. 1992), which states that a shareholder at this level of shareholdings has sufficient voting power to a call for an extraordinary general meeting (section 100) and perform certain legal activities, such as dismissing external auditors (section 164). It was also used in prior studies of Thai firms (e.g. Ananchotikul *et al.* 2010; Wiwattanakantang 2001). Therefore, the dummy variable of

D_OWN will also be tested in the analysis and a positive association between the variable and the likelihood of accounting misstatements is predicted.

6.3.3 The Final Sample for the Analysis of the Determinants of Accounting Misstatements

According to the multiple regression models shown in Section 6.3.1, the logistic regression model includes a set of year dummies. However, since there were no accounting misstatement cases in 2001 (see Table 6.2 Panel A), the analysis excludes the observations for 2001 (152 firm-years) to avoid the problem of perfect failure determination. Consequently, the final number of the observations for the study into the determinants of accounting misstatements (Section 6.4) is reduced from 2,503 firm-years (as shown in Table 6.1 Panel C) to 2,351 firm-years in the next section (51 misstatement firm-years and 2,300 non-misstatement firm-years).

6.4 Empirical Results

6.4.1 Descriptive Statistics

This section provides descriptive statistics (Table 6.4) for misstatement firm-years and non-misstatement firm-years from 2002 to 2009. Continuous and discrete variables are presented separately in Panel A and B, respectively. As described in Chapter 5, to reduce the effects of extreme outliers in statistical tests, continuous variables (i.e. LEV, MB and AGE) were winsorised at the 1st and 99th percentiles (one might notice that the maximum value of the LEV and MB variables for two groups are identical; this results from the winsorisation process). As for firm size (total assets), the data were transformed by taking the natural logarithm of total assets (LNSIZE). Except for the data on ownership concentration (OWN), those of other continuous variables appear not to be normally distributed (the tests for normality[42] rejected the null hypothesis that the

[42]Including the Skewness-Kurtosis, based on D'Agostino *et al*. (1990), Shapiro-Wilks, and the Shapiro-Francia tests. Graphical methods (e.g. box plot and histogram) were also employed to visually examine the distribution of the data.

data are normally distributed at the *p*-value < 0.05). Nevertheless, logistic regression does not assume normality and equal variance for the error term, whereas these assumptions are required for linear regression (Hair *et al.* 1998, pp. 239-325; Hosmer and Lemeshow 2000, pp. 6-7). In addition, the inaccuracy of this statistical inference is less problematic in large samples and the distribution of the error which follows a binomial distribution approximates a normal distribution for large samples (Menard 1995, pp. 72-73).

Table 6.4: Descriptive Statistics of Misstated Financial Reports and Non-Misstated Financial Reports

Panel A: Continuous Variables (N: 51 misstatement and 2,300 non-misstatement observations)

Continuous Variables (abbreviation)	Mean	Median	Standard Deviation	Min.	Max.	Differences in Mean (*t*-statistic)	Differences in Median (*z*-statistic)
Total assets-million THB (SIZE)							
Misstated	3442.43	1724.19	4311.27	35.09	18825.12	-8269.52	-456.80
Non-misstated	11711.95	2180.99	49372.58	57.68	1093526.00	(-6.929) ***	(-2.081)**
Total	11532.56	2175.45	48852.81	35.09	1093526.00		
Natural logarithm of total assets-million THB (LNSIZE)							
Misstated	7.399	7.453	1.350	3.558	9.843	-0.518	-0.235
Non-misstated	7.917	7.688	1.433	4.055	13.905	(-2.557) **	(-2.081)**
Total	7.906	7.685	1.433	3.558	13.905		
Ownership concentration (OWN)							
Misstated	40.680	38.720	18.569	4.130	93.830	-3.539	-4.885
Non-misstated	44.219	43.605	20.183	3.030	96.400	(-1.241)	(-1.349)
Total	44.142	43.420	20.152	3.030	96.400		
Total debt to total assets (LEV), winsorised							
Misstated	0.500	0.459	0.389	0.389	1.453	0.219	0.220
Non-misstated	0.281	0.239	0.263	0.000	1.453	(3.998) ***	(4.273)***
Total	0.286	0.245	0.268	0.000	1.453		
Market to book value (MB), winsorised							
Misstated	1.331	0.759	2.426	-2.162	8.846	-0.043	-0.223
Non-misstated	1.374	0.982	1.446	-2.162	8.846	(-0.124)	(-2.016)**
Total	1.373	0.979	1.473	-2.162	8.846		
Firm age-year (AGE), winsorised							
Misstated	24.490	22.000	13.086	3.000	64.000	-1.698	-2.000
Non-misstated	26.188	24.000	13.777	3.000	89.000	(-0.872)	(-0.924)
Total	26.151	24.000	13.761	3.000	89.000		

Table 6.4 (continued)

Panel B: Discrete Variables (N: 51 misstatement and 2,300 non-misstatement observations)

Discrete Variables (abbreviation)	Mean	Median	Standard Deviation	Differences between Two Proportions (Chi^2-statistic, df = 1)	
Dummy ownership concentration (D_OWN) = 1					
Misstated	0.804	1	0.401	0.007	
Non-misstated	0.797	1	0.402	(0.013)	
Total	0.798	1	0.402		
Family ownership (FAM) = 1					
Misstated	0.608	1	0.493	-0.014	
Non-misstated	0.622	1	0.485	(0.044)	
Total	0.622	1	0.485		
Pyramidal and cross-holding structure (CROSS) = 1					
Misstated	0.078	0	0.272	-0.109	
Non-misstated	0.187	0	0.390	(3.904)	**
Total	0.185	0	0.388		
Stock issuance (ISSUE) = 1					
Misstated	0.294	0	0.460	0.089	
Non-misstated	0.205	0	0.404	(2.428)	
Total	0.207	0	0.405		
Dummy negative free cash flow in prior year (NFCF) = 1					
Misstated	0.216	0	0.415	0.161	
Non-misstated	0.055	0	0.228	(23.539)	***
Total	0.058	0	0.234		
Rehabilitation stage (REHAB) = 1					
Misstated	0.235	0	0.428	0.196	
Non-misstated	0.039	0	0.194	(46.259)	***
Total	0.043	0	0.204		
Big 4 auditor (BIG) = 1					
Misstated	0.216	0	0.415	-0.313	
Non-misstated	0.529	1	0.499	(19.647)	***
Total	0.522	1	0.500		
Audit firm change (AUDCHG) = 1					
Misstated	0.333	0	0.476	0.216	
Non-misstated	0.117	0	0.321	(22.016)	***
Total	0.121	0	0.326		
Duality (DUAL) = 1					
Misstated	0.549	1	0.503	0.292	
Non-misstated	0.257	0	0.437	(21.942)	***
Total	0.263	0	0.441		

Table 6.4 reports descriptive statistics for the sample of 51 misstatement observations and 2,300 non-misstatement observations. The period of data analysis is restricted to 2002-2009 and the number of observations falls from 2,503 (Table 6.1) to 2,351 in this table because none of the accounting misstatement cases in year 2001 causes a perfect failure determination in a logistic regression analysis (see Section 6.3.3).

Note Table 6.4 (continued)
The continuous variables are presented in Panel A and in there t-tests are used to evaluate differences in means, while Wilcoxon rank-sum tests are used to evaluate differences in medians. Panel B indicates the proportions of discrete variables. Chi^2 tests are used to evaluate differences in the proportions. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively (two-tailed hypothesis testing of whether the difference is equal to zero).

In Panel A, Table 6.4, the average misstatement firm-year has: average total assets of 3,442 million THB, an average ownership concentration of 40.68%, a leverage ratio of 0.5, a market-to-book ratio of 1.331, and an average age of 24.49 years. For the same period, the average non-misstatement firm-year has total assets of 11,711 million THB, average ownership concentration of 44.22%, a leverage ratio of 0.281, a market-to-book ratio of 1.374, and an average age of 26.19 years. The average ownership concentration of 44.142% for the total sample is similar to the ownership concentration of 44.14% the percentage reported in Alba *et al*. (2003). To evaluate differences in means and medians, t-tests and Wilcoxon rank-sum tests were used, respectively. Where appropriate, t-tests were adjusted for unequal variances between the two samples.[43] Statistically significant differences appear in the LNSIZE and LEV variables at the 0.05 and 0.01 levels, respectively. Misstatement firms are significantly smaller and more highly levered than non-misstatement firms.

The Wilcoxon rank-sum test results are consistent with those of the t-tests. Misstating firms have a lower market to book ratio (MB); however only the difference in medians is statistically significant at the 5% level. The means and medians of OWN and AGE suggest that misstating firms have a lower ownership concentration and are younger than the non-misstatement firms; however, the differences are not statistically significant at the 5% level.

Table 6.4 Panel B describes the discrete variables. The proportions of firms having an ultimate owner with more than 25% of the total shares (D_OWN) between two groups are very close (80.4% for misstatement group and 79.7% for the non-misstatement group) and they are not statistically different at the 5% level. The mean level of family ownership (FAM) is 60.8% for misstatement firm-years and 62.2% for non-

[43]In this sample the SIZE, LEV and MB variable had an unequal variance in the two samples with *p*-values of <0.0001.

misstatement firm-years. An average of pyramidal and cross-holding structure is 7.8% in the misstatement sample, while at 18.7% it is higher in the non-misstatement group. The smaller proportion in the misstatement group is opposite to expectations because in the context of opportunism, pyramid and cross-holdings are likely to benefit a firm's ultimate owner to extract private benefits through a divergence between cash flow and control rights (Claessens *et al.* 2000; Morck *et al.* 2005). The incentive to minimise the cost of capital is, however, supported in this analysis. Both proportions of stock issuances (ISSUE) and negative free cash flow (NFCF) are higher for the misstatement observations than non-misstatement ones and the difference is significant at the 1% level for the NFCF measure.

Almost one quarter (23.5%) of the misstatement observations occur in the year when firms are under rehabilitation (REHAB). This proportion is significantly higher than the proportion of the rehabilitation status in the non-misstatement group (3.9%) at the 1% level. This result is in line with Tummanon (2005b), who found that the firms required to correct their accounting items appear the most frequently in the REHABCO sector. With regard to corporate governance mechanisms, the use of a Big 4 auditor covers 21.6% of the misstatement sample, but a (significantly) larger proportion (52.9%) of the control group. One-third of the misstatement group has had an audit firm change, while only 11.7% of the non-misstatement group has changed their audit firm. More than a half of the firms in the misstatement sample (54.9%) had a chief executive officer who also serves as chairman of the board, while the duality position occurs in only 25.7% of the firms in the non-misstatement group. This finding of the duality position is consistent with prior studies (e.g. Dechow *et al.* 1996). The proportions in the corporate governance variables (i.e. DUAL, BIG, and AUDCHG) are significantly different between two groups at the 1% level.

In summary, the univariate results show that accounting misstatements are more likely to occur in Thai firms with financial constraints (i.e. high leverage ratio, need external financing, and under rehabilitation) and in firms with weaker corporate governance (i.e. duality position, the use of local audit firms and change in auditors). These descriptive statistical results are consistent with both the results of prior research (e.g. Dechow *et*

al. 1996) and the research expectations. With regard to ownership structure, except for the pyramidal and cross-holding structure there is no systematic variation in the ownership measures between the two groups on a univariate basis.

6.4.2 Correlations

Table 6.5 presents the correlations among the variables for the misstatement and control observations. The table presents both Pearson's (below the diagonal) and Spearman's (above the diagonal) correlation coefficients. The significant levels of a hypothesis test (whether the coefficient is equal to zero) from the two methods are in accordance with one another, except for certain cases.[44] However, the coefficients of the contradictory cases are small. Menard (1995, p. 66) advises that a high correlation of 0.80 can pose a problem of multicollinearity in regression analysis. In the table, all correlation coefficients are well below 0.80. Even so, a multicollinearity test is considered when the regression assumptions are examined (see Appendix C). In the following discussion, the coefficients from Pearson's tests will be stated.

[44]These include: (i) the correlation coefficient of MB with the following variables where the coefficient does not statistically differ from zero in Pearson's test but it does in Spearman's test: MB and AM (-0.004, Pearson and -0.042, Spearman), MB and FAM (+0.002, Pearson and -0.055, Spearman), and MB and AUDCHG (-0.028, Pearson and -0.089, Spearman); (ii) the correlation coefficient of LEV and ISSUE does not statistically differ from zero in Pearson's test (the coefficient of +0.032, Pearson) but it does in Spearman's test (the coefficient of +0.065, Spearman); and (iii) the following correlations statistically differ from zero in Pearson's test but not in Spearman's test: LEV and BIG (-0.077, Pearson and -0.02, Spearman), AGE and BIG (+0.051, Pearson and <0.001, Spearman) and DUAL and LNSIZE (-0.053, Pearson and -0.031, Spearman). One reason for these differences possibly involves the non-normality of the data. There is one existing extreme outlier in the MB data (the maximum value of 8.8464; see Table 6.4 Panel A) and 108 of the 2,351 observations have a negative value of the MB. To test the robustness of the research results, the logistic regression model in the main analysis (Section 6.4.3) were reassessed by eliminating the observations having a negative value of MB, as in finance literature (e.g. in Garlappi *et al.* 2008). The results for the corporate governance mechanisms (BIG, AUDCHG and DUAL) remain significant at the 1% level, while the results for the incentives (LEV and NFCF) become insignificant at the 5% level (the *p*-value of LEV was 0.068 and the *p*-value of NFCF was 0.183).

Table 6.5: Correlation Matrix for the Combined Misstatement and Non-Misstatement Firm-Years

	AM	OWN	FAM	CROSS	LEV	ISSUE	NFCF	MB	REHAB	BIG	AUDCHG	DUAL	LNSIZE	AGE
AM		-0.028	-0.004	-0.041 **	0.088 ***	0.032	0.100 ***	-0.042 **	0.140 ***	-0.091 ***	0.097 ***	0.097 ***	-0.043 **	-0.019
OWN	-0.026		-0.183 ***	0.186 ***	-0.113 ***	-0.153 ***	-0.101 ***	0.031	-0.077 ***	0.021	-0.053 ***	-0.029	0.023	0.054 ***
FAM	-0.004	-0.184 ***		-0.174 ***	0.071 ***	0.006	-0.005	-0.055 ***	-0.028	-0.142 ***	0.007	0.068 ***	-0.125 ***	-0.070 ***
CROSS	-0.041 **	0.185 ***	-0.174 ***		-0.062 ***	-0.007	-0.011	0.132 ***	-0.021	0.084 ***	-0.016	-0.065 ***	0.108 ***	0.069 ***
LEV	0.119 ***	-0.105 ***	0.049 **	-0.064 ***		0.065 ***	0.129 ***	-0.085 ***	0.242 ***	-0.020	0.058 ***	-0.011	0.232 ***	-0.102 ***
ISSUE	0.032	-0.150 ***	0.006	-0.007	0.032		0.061 ***	0.156 ***	-0.016	0.082 ***	0.010	<0.0001	0.188 ***	-0.126 ***
NFCF	0.100 ***	-0.101 ***	-0.005	-0.011	0.121 ***	0.061 ***		-0.005	0.152 ***	-0.053 **	0.086 ***	-0.004	-0.032	-0.092 ***
MB	-0.004	0.008	0.002	0.086 ***	-0.092 ***	0.138 ***	0.025		-0.213 ***	0.159 ***	-0.089 ***	-0.053 **	0.173 ***	-0.170 ***
REHAB	0.140 ***	-0.076 ***	-0.028	-0.021	0.435 ***	-0.016	0.152 ***	-0.106 ***		-0.177 ***	0.126 ***	0.081 ***	-0.133 ***	0.066 ***
BIG	-0.091 ***	0.030	-0.142 ***	0.084 ***	-0.077 ***	0.082 ***	-0.053 **	0.066 ***	-0.177 ***		-0.164 ***	-0.088 ***	0.342 ***	<0.0001
AUDCHG	0.097 ***	-0.047 **	0.007	-0.016	0.083 ***	0.010	0.086 ***	-0.028	0.126 ***	-0.164 ***		-0.006	-0.096 ***	0.013
DUAL	0.097 ***	-0.022	0.068 ***	-0.065 ***	0.002	<0.0001	-0.004	-0.045 **	0.081 ***	-0.088 ***	-0.006		-0.031	-0.076 ***
LNSIZE	-0.053 **	0.035 *	-0.132 ***	0.127 ***	0.119 ***	0.204 ***	-0.039	0.114 ***	-0.137 ***	0.322 ***	-0.097 ***	-0.053 ***		-0.021
AGE	-0.018	0.089 ***	-0.077 ***	0.051 **	-0.043 **	-0.115 ***	-0.084 ***	-0.094 ***	0.041 **	0.051 **	0.008	-0.102 ***	0.027	

Table 6.5 reports the correlation coefficients for Pearson (below the diagonal) and Spearman (above the diagonal). All variables are defined in Table 6.3.
***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively (a two-tailed test of whether the correlation coefficient is equal to zero).

Within the first column the appearance of accounting misstatements (AM) is positively correlated with rehabilitation stage (REHAB), leverage ratio (LEV) and demand for external financing (NFCF) at the correlation coefficients of 14%, 12% and 10%, respectively. The incidence of accounting misstatements is also significantly correlated with the corporate governance variables. The existence of accounting misstatements (AM) is positively correlated with duality position (DUAL) and audit firm change (AUDCHG), and is negatively correlated with the use of Big 4 auditors (BIG). Their coefficients differ from zero at the 1% level. Although there is a negative correlation between the pyramidal and cross-holding arrangement (CROSS) and the occurrence of accounting misstatements, the coefficient correlation is low (4%). Neither ownership concentration (OWN) nor family ownership (FAM) is significantly correlated with the appearance of accounting misstatements.

Significant correlations among the independent variables are as follows. The ownership concentration (OWN) is positively correlated with firm age (AGE), consistent with the findings of Claessens *et al*. (2000). OWN is positively correlated with the pyramidal and cross-holding arrangement (CROSS) at the correlation coefficient of 18.5%, which is in accordance with the literature noting that the ultimate owners of Asian firms have a controlling power over the firm through the business group and the pyramidal and cross-holding chains (e.g. Claessens and Fan 2002; Morck *et al.* 2005).

As far as the financial characteristics are concerned, concentrated ownership firms (OWN) seem to have a healthier financial position (REHAB), a lower leverage ratio (LEV) and less demand for external funds (NFCF and ISSUE). Family firms (FAM) are less likely to use Big 4 auditors (correlation coefficient of -14% with BIG) and they are smaller (the coefficient of -13% with LNSIZE). LEV has a positive correlation coefficient of 43.5% with REHAB and a negative correlation coefficient of 9.2% with market to book ratio (MB). These correlations are persuasive because the highly levered firms are more likely to face liquidity problems and the financial constraint may ultimately lead them to rehabilitation status and because of the poor current financial market position, participants can heavily discount these firms' shares. The rehabilitation firms show more demand for external funding (with a positive correlation of 15.2%

between NFCF and REHAB). Firm size (LNSIZE) has a positive correlation coefficient of 20.4% with stock issuance (ISSUE), and 11.4% with the market to book ratio (MB), consistent with prior literature (e.g. Rajan and Zingales 1995) suggesting that larger firms release more information to the public than smaller firms do and that an information asymmetry cost is lower in large firms; consequently, larger firms are positively correlated with stock issuances.

With regard to corporate governance factors, firm size has a positive correlation coefficient of 32% with the use Big 4 auditors (BIG), consistent with prior research (e.g. Chi and Huang 2005; Fan and Wong 2005). Stock issuances (ISSUE) are positively correlated with the use of a Big 4 auditor (BIG), similar to previous studies (e.g. Fan and Wong 2005). A surprising result is the negative correlation (-17.4%) between family ownership (FAM) and the pyramidal and cross-holding arrangement (CROSS). Further investigation indicated that 56% of the firms with pyramids or cross-holdings are those firms whose ultimate owner is not a single family but multiple shareholders.

Although the results above may be indicative, they do not allow for potential conclusions for the determinants of accounting misstatements in Thai firms. The next subsection, therefore, reports a multivariate logistic regression analysis for the determinants of accounting misstatements in Thailand.

6.4.3 Multivariate Results

The analysis for the determinants of accounting misstatements employed the following logistic regression model (repeated for ease of reference below).

$$\begin{aligned} AM_{i,t} = {} & \alpha_0 + \beta_1 OWN_{i,t} + \beta_2 FAM_{i,t} + \beta_3 CROSS_{i,t} + \beta_4 LEV_{i,t} \\ & + \beta_5 ISSUE_{i,t} + \beta_6 NFCF_{i,t-1} + \beta_7 MB_{i,t} + \beta_8 REHAB_{i,t} \\ & + \beta_9 BIG_{i,t} + \beta_{10} AUDCHG_{i,t} + \beta_{11} DUAL_{i,t} + \beta_{12} LNSIZE_{i,t} \\ & + \beta_{13} AGE_{i,t} + \sum_{K=1}^{7} \beta_K IND_{i \in K,t} + \sum_{t=1}^{8} \beta_t YEAR_t + \varepsilon_{i,t} \end{aligned}$$

where t is the current fiscal year of firm i. All variables are defined in Table 6.3.

Table 6.6: Logistic Regressions Examining the Determinants of Accounting Misstatements in Thailand during 2002-2009

VARIABLES	Hypo-thesis (H)	Predicted Sign	Model 1		Model 2	
			Coefficient (*z*-statistic)	Odds Ratio	Coefficient (*z*-statistic)	Odds Ratio
OWN	1.1	+	0.0040	1.0040		
			(0.621)			
D_OWN		+			0.5931*	1.8096
					(1.660)	
FAM	1.2	+	-0.2395	0.7870	-0.1985	0.8199
			(-0.566)		(-0.466)	
CROSS	1.3	+	-0.1674	0.8459	-0.1888	0.8280
			(-0.268)		(-0.302)	
LEV [a]	2.1	+	1.4587**	4.3005	1.5492**	4.7078
			(2.320)		(2.366)	
ISSUE	2.2	+	0.5057	1.6581	0.5399	1.7158
			(1.403)		(1.494)	
NFCF	2.3	+	1.2328**	3.4307	1.1974**	3.3114
			(2.575)		(2.569)	
MB	2.4	+	0.1060	1.1119	0.0932	1.0977
			(1.039)		(0.938)	
REHAB	2.5	+/-	-0.1415	0.8680	-0.0962	0.9082
			(-0.211)		(-0.146)	
BIG	3.1	-	-1.1128**	0.3286	-1.0841**	0.3382
			(-2.285)		(-2.214)	
AUDCHG	3.2	+/-	0.8658**	2.3769	0.8738**	2.3960
			(2.331)		(2.335)	
DUAL	3.3	+	1.1317***	3.1008	1.1853***	3.2715
			(2.974)		(2.948)	
LNSIZE		+/-	-0.2211	0.8016	-0.2417	0.7853
			(-1.196)		(-1.317)	
AGE		+/-	0.0041	1.0041	0.0038	1.0038
			(0.235)		(0.216)	
Constant			-3.5303**	0.0293	-3.8969**	0.0203
			(-2.224)		(-2.395)	
Industry dummies			Included		Included	
Year dummies			Included		Included	
Observations			2351		2351	
McFadden's pseudo R^2			0.2960		0.3000	
Model chi-square			269.5		273.2	
Degrees of freedom			26		26	
p-value			<0.0001		<0.0001	
Number of clusters (firms)			387		387	

Table 6.6 presents logistic regression results for the determinants of accounting misstatements in the Thai sample. The dependent variable is a dichotomous variable of an occurrence of an accounting misstatement. All explanatory variables are defined in Table 6.3. Standard errors are robust by firm-level clustering. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively (a two-tailed test of whether the coefficient is equal to zero).

[a] If the data are not winsorised, the leverage ratio (LEV) becomes insignificant at the 5% level (*p*-value=0.956).

Table 6.6 presents the regression results for the determinants of accounting misstatements in Thailand. The first column refers back to the alternative hypotheses for the determinants of accounting misstatements in Thailand (see Section 5.3). The goodness of fit statistics is shown at the bottom of the table. Model 1 has a model Chi^2 of 269.5 and is statistically significant (*p*-value < 0.0001). Therefore, there is evidence to reject the null hypothesis that coefficients of the independent variables are equal to zero (Ho: $\beta_1 = \beta_2 = ... \beta_{26} = 0$) and conclude that information about the independent variables allow the model to make better predictions of P(Y=1).[45] The model Chi^2 of the other model in the same table is also statistically significant at the *p*-value < 0.0001.

In Model 1, the coefficients for LEV, NFCF, BIG, AUDCHG and DUAL, differ from zero at the 5% level and the signs of these coefficients are consistent with the expectations of this study. They indicate that an accounting misstatement is more likely to occur when a firm is close to the debt covenant violation (LEV), needs external financing (NFCF), changes auditor (AUDCHG) and has a duality position of the chief executive officer and chairman of the board (DUAL), but the likelihood of accounting misstatements reduces when the firm uses a Big 4 auditor (BIG).[46] The coefficients of OWN, FAM and CROSS do not statistically differ from zero at the 0.05 level.

[45]The diagnostic tests for this model are presented in Appendix C. The model meets all logistic regression assumptions except for the appearance of influential cases, which are all misstatement observations. Four extreme cases appear and result in large residuals. Excluding these four observations, however, does not change the significance of research results. In order to have the sample as close as the real population, these observations were maintained in the analysis.

[46]Since 1 January 2006 listed companies in the Stock Exchange of Thailand are required to rotate their audit partner every five years (section 5 (6) SECT 2005b) without the possibility of renewal before two years have passed from the previous engagement. The observations of auditor change in Thai listed firms since after 2006 may be caused by this regulation (although the regulation requires only the audit partner rotation). To ensure the robustness of the research results, the study reran the logistic regression on the observations during 2002-2005 (957 observations). The result of the audit firm change (AUDCHG) is still significant at the 0.05 level (*t*-statistic of 2.24). Other significant research results (i.e. LEV, NFCF, BIG and DUAL) remain unchanged, except for a slight change in coefficients.

Therefore, there are no significant relationships between the ownership proxies (i.e. OWN, FAM and CROSS) and the likelihood of accounting misstatements. The coefficients of growth opportunities (MB), rehabilitation status (REHAB), firm size (LNSIZE) and firm age (AGE) are not significantly associated with the likelihood of accounting misstatements. Consequently, the pressure from outside parties (i.e. the capital market pressure, MB, and profitability regulation, REHAB) are not as important as expected in the sample. In the descriptive statistics (Table 6.4), means of LNSIZE, CROSS, ISSUE and REHAB are statistically different between the two groups, but they are not significant antecedents in this multiple logistic regression analysis.[47] The significant result in the descriptive statistics for the rehabilitation status (REHAB) and the insignificant result of its coefficient in the multiple regression analysis may indicate that accounting misstatements are more likely to occur when firms are in this status, which is consistent with Tummanon (2005b), but being in such a status is not an important antecedent of the likelihood of accounting misstatements when other factors are controlled for. In regard to the MB variable, it is often not a significant determinant of financial misreporting in samples with more dispersed ownership (e.g. Burns and Kedia 2006; Burns *et al.* 2010). According to the odds ratio, the top three important antecedents of accounting misstatements in Thailand are the incentive to avoid debt covenant violation (LEV, odds ratio of 4.3), an *ex ante* financing need (NFCF, odds ratio of 3.43) and duality position (DUAL, odds ratio of 3.1). These determinants are also found in prior research into U.S. firms (Dechow *et al.* 1996).

In Model 2, the continuous variable of OWN is replaced by a discrete variable of ownership concentration (D_OWN). D_OWN is positively associated with accounting misstatements - the coefficient differs from zero at the 10% level. The sign and significance levels of other variables remain unchanged (only the coefficients have

[47]Regarding the REHAB measure, the proportion of REHAB is higher for the misstatement group in the descriptive statistics, but in this multiple regression analysis, the coefficient of REHAB has a negative sign (although the coefficient does not statistically differ from zero). This contradictory result concerns the researcher about a multicollinearity problem because REHAB is highly correlated with LEV (the correlation coefficient of 43.5% in Table 6.5). The researcher, therefore, reran the logistic regression analysis by excluding the LEV measure. With or without the LEV measure the coefficient of REHAB does not differ from zero at the 5% level in the multiple regression analyses. A diagnostic test in Appendix C neither signals the multicollinearity problem of the REHAB variable. Therefore, it is certain that there is no evidence to reject the null hypothesis that there is no association between rehabilitation status and the likelihood of accounting misstatements.

slightly changed). Therefore, the likelihood of accounting misstatement increases when the ultimate owner has control rights over 25%. This is in accordance with a warning by the Securities and Exchange Commission, Thailand (SECT 2005a) stating that investors must be aware of expropriation if a firm's ultimate owners hold more than 25% of the total shares. The odds ratio of 1.8 indicates that the odds of a likelihood of accounting misstatements are 80% higher that a firm with high ownership concentration (i.e. >25%) engages in financial misreporting when compared to a firm with low ownership concentration. This finding supports the hypothesis of an entrenchment effect and points to a non-linear relationship (which will be further examined in Section 6.5.2).

With regard to the industry and year dummy sets, none of the industry dummies are statistically associated with accounting misstatements (see details in Appendix C). Meanwhile, the dummy for 2004 is positively associated with the likelihood of accounting misstatements at the 1% level. This result is in line with Table 6.2 Panel A showing that the accounting misstatement cases most frequently appeared in 2004 and one possible reason involves a new audit team of market regulators.

Accordingly, a conclusion for the hypothesis testing is that there is evidence to reject five null hypotheses in the sample at the conventional 5% level. In other words, the alternative hypotheses for the debt covenant hypothesis (H2.1), an *ex ante* financing need (H2.3), a usage of a Big 4 auditor (H3.1), an audit firm change (H3.2) and a duality position (H3.3) are significant determinants of accounting misstatements in Thai firms.[48]

[48]A study by Ananchotikul *et al.*'s (2010) found that ROA and dividend payout ratio are significant and negatively associated with the likelihood of regulatory violation in Thailand. The measure of ROA has also found to be negatively associated with the likelihood of fraud in some prior studies (e.g. Brazel *et al.* 2009; Erickson *et al.* 2006; Perols and Lougee 2011). Consistent with the prior studies, if ROA (winsorised at the 1st and 99th percentiles) is included in the empirical model of this research, it is significantly associated with the likelihood of accounting misstatements (coefficient of -4.668; *z*-statistic of -3.62; *p*-value < 0.001) and the pseudo R^2 increases from 29.6% (Model 1 Table 6.6) to 32.04% ; however the coefficient of audit firm change (AUDCHG) becomes not significant (*z*-statistic of 1.65) at the 5% level and the coefficient of leverage ratio (LEV) is significant at the 10% level (*z*-statistic of 1.67). The ROA is highly correlated with LEV (coefficient of -29.65%) in the sample and this may cause the change of the result on LEV measure, similar to the problem occurred to the ROA and delisting pressure in Wang and Wu's (2011) sample. Some studies, on the other hand, have found a positive relationship between ROA and the likelihood of fraud (e.g. Summers and Sweeney 1998). There is no theory suggesting the relationship of ROA and accounts manipulation. In addition, there are particular studies (e.g. Thomsen and Pedersen 2000) examining the determinants of ROA including

This paragraph compares the research findings with the existing evidence in the literature. The evidence to support the entrenchment effects of controlling shareholders in this research is weak. None of the measures of ownership structures have a significant relationship with the likelihood of accounting misstatements significantly at the 5% level; only the coefficient of the dummy variable for ownership concentration differs from zero at the 10% level. Previous studies of Thai firms neither find an association of ownership concentration with the likelihood of regulatory violation (Ananchotikul *et al.* 2010) or with discretionary accruals (Pornupatham 2006). With regard to the incentives, accounting misstatements in Thailand are likely to occur if Thai firms wish to avoid debt covenant violations and minimise the cost of capital. These findings are consistent with those of prior research (e.g. Dechow *et al.* 1996; Firth *et al.* 2011). On the other hand, the incentive to maintain the capital market growth opportunity is not statistically significant for Thai firms. Even though the auditors in Thailand agree that the incentive to maintain the growth opportunity is the most important reason for Thai firms to manage earnings (within GAAP) (Pornupatham 2006), when measured by GAAP violation it is not of importance. The incentive to meet profitability regulation (as measured by a rehabilitation status) is not as significant as expected, while it is of significance in Chinese listed firms (Chen *et al.* 2001). Corporate governance mechanisms have an important impact on the likelihood of accounting misstatements in Thai firms. The weakness of internal corporate governance (i.e. firms whose chief executive officer and chairman of the board are the same individual) increases the likelihood of accounting misstatements, consistent with the finding in, for example, the U.S. firms (e.g. Dechow *et al.* 1996; Efendi *et al.* 2007). Big 4 auditors play an important role in reducing the likelihood of accounting misstatements, consistent with the roles of Big 4 auditors in some U.S. samples (Lennox and Pittman 2010) and the U.K. (Peasnell *et al.* 2001). An auditor change is strongly associated with the incidence of accounting misstatements.

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ownership structures and financial characteristics, which are the independent variables in this study. Due to the lack of theoretical support, ROA was excluded in this research.

Since the variables of auditors (BIG) and audit firm change (AUDCHG) are related, further investigation was conducted in order to understand and interpret how the audit quality in the first year of auditing varied between Big 4 and non-Big 4 auditors. Overall, in Table 6.6 Model 1 the odds ratio of BIG is 0.3286. This means that the clients of Big 4 audit firms are 67.24% less likely to see an occurrence of accounting misstatements. The odds ratio of 2.3769 for AUDCHG indicates that the probability that financial reports are misstated is 2.37 times more likely to occur in the first year of auditing when compared to non-first years. Further investigation embraces the probability of accounting misstatements, which is varied among Big 4 and non-Big 4 auditors, first-year and non-first years, while other variables are computed at the mean value.[49] The examination shows that the odds of accounting misstatements occurring for Big 4 auditors by the odds of a likelihood of accounting misstatements for the non-Big 4 auditors equals 0.3911 in the first year of audit engagement, while it equals 0.3386 in the non-first years. The higher proportion of the first year indicates an adverse effect of short-term audit tenure on financial reporting quality, consistent with Carcello and Nagy (2004) and Johnson *et al.* (2002). The proportion of 0.3911 which is less than 1 confirms that the odds of a likelihood of accounting misstatements is less likely to occur in Big 4 clients than non-Big 4 clients.

The thesis further tested whether the audit firm change is a part of the scheme of controlling shareholders (such as controlling shareholders of a misstating firm change their auditor in order to avoid being detected for their financial misreporting). Types of audit switch, guided by Lennox and Pittman (2010), were employed in this examination. During 2002-2009, 286 out of 2,351 firm-years (12.1%) were audited by new auditors (17 in the misstatement group and 268 in the non-misstatement group). The previous results in Table 6.4 Panel B show that the proportion of audit firm changes is significantly higher for the misstatement group (33.3%) than the non-misstatement group (11.7%) and there is a systematic variation in the auditor change between the samples. Following Lennox and Pittman (2010), audit firm changes were classified the into four groups: lateral switches (either one Big 4 firm to another or one non-Big 4 firm to another), upgrade (from a non-Big 4 firm to a Big 4 firm), and downgrade (from

[49]The interpretation is guided by Chen *et al.* (2003a).

a Big 4 firm to a non-Big 4 firm).[50] The lateral switch is higher in misstatement years (71%) than non-misstatement years (45%) and the proportions are statistically different ($Chi^2_{df=1}$ = 31.5713; *p*-value < 0.001). A similar examination was performed in the upgrade and downgrade categories; however, there are no systematic variations between the sample and the upgrade ($Chi^2_{df=1}$ = 1.855 *p*-value = 0.173) and between the sample and the downgrade ($Chi^2_{df=1}$ = 1.6593; *p*-value = 0.198).

The study continued examining the relation between the audit switch and the likelihood of accounting misstatements in a multivariate analysis. Further results are presented in Table 6.7.

The first model in Table 6.7 is the Model 2 in Table 6.6 included for comparison.[51] The second model in Table 6.7 is an analysis of the relationship between types of audit switch and the likelihood of accounting misstatement (the lateral switch from a Big 4 auditor to another Big 4 auditor is the baseline of the regression). An alternative hypothesis is that the misstatement firms are more likely to switch from a Big 4 to non-Big 4 (BIG_NON, downgrade), when compared with non-misstatement firm-years (e.g. the controlling shareholders of misstating firms change auditors in order to reduce the likelihood of detection of an accounting misstatement). A positive sign for the coefficient of BIG_NON is thus expected. The regression result shows a positive sign of the downgrade type (BIG_NON), but the coefficient does not statistically differ from zero at the 0.05 level (*p*-value= 0.824). Therefore, the research fails to reject the null

[50]As found in prior studies in Asia and Thailand, Big 4 audit firms play an important role in the monitoring system (e.g. Fan and Wong 2005; Pornupatham 2006). Also in this research, the use of a Big 4 audit firm is negatively associated with the occurrence of accounting misstatements. It is thus deemed that the Big 4 audit firms provide better audit quality and increase financial reporting quality (DeFond *et al.* 2000; DeFond and Jiambalvo 1993; Teoh and Wong 1993). Accordingly, a change from a non-Big 4 firm to a Big 4 firm is considered an upgrade. In contrast, a change from a Big 4 firm to a non-Big 4 firm was regarded as a downgrade. The hypothesis is that the upgrade signals an incentive of controlling shareholders to strengthen the monitoring system (i.e. they are governed by the auditors), while the downgrade shows a lower intention of controlling shareholders to provide high standard of corporate governance (i.e. they may govern the auditors).

[51]The dummy variable of ownership concentration exceeding 25% (D_OWN) is used here, rather than the continuous variable of OWN. According to Thai laws, an extraordinary general meeting can be held if a majority of shareholders (exceeding 25% of total outstanding shares) requests and such legal activities as dismissing an auditor can be done in this meeting. The research is hypothesising that controlling shareholders use their higher proportion of control rights to avoid the auditors' monitoring by changing the auditor. Therefore, a dummy variable of D_OWN is appropriate for use in this context.

hypothesis that there is no relationship between the downgrade and the appearance of accounting misstatements. Prior studies (e.g. Lennox and Pittman 2010) do not find evidence for this relationship.

Table 6.7: Logistic Regression Examining Types of Audit Firm Change

VARIABLES	(1) Table 6.6 Model 2 Coefficient (*z*-statistic)	(2) Audit Firm Change Coefficient (*z*-statistic)	(3) Audit Partner Change Coefficient (*z*-statistic)
AUDCHG	0.8738**		0.9152**
	(2.335)		(2.349)
BIG_NON		0.1628	
		(0.222)	
NON_NON		0.9959**	
		(2.102)	
NON_BIG		2.1657***	
		(2.942)	
PARTNER			0.2112
			(0.554)
D_OWN [a]	0.5931*	0.5502	0.5997*
	(1.660)	(1.587)	(1.677)
FAM	-0.1985	-0.2616	-0.1952
	(-0.466)	(-0.619)	(-0.459)
CROSS	-0.1888	-0.201	-0.1846
	(-0.302)	(-0.310)	(-0.295)
LEV	1.5492**	1.5155**	1.5299**
	(2.366)	(2.328)	(2.389)
ISSUE	0.5399	0.5389	0.5475
	(1.494)	(1.461)	(1.510)
NFCF	1.1974**	1.2048***	1.2007**
	(2.569)	(2.672)	(2.572)
MB	0.0932	0.0888	0.0923
	(0.938)	(0.898)	(0.930)
REHAB	-0.0962	-0.1154	-0.0854
	(-0.146)	(-0.175)	(-0.131)
BIG	-1.0841**	-1.2238**	-1.0873**
	(-2.214)	(-2.416)	(-2.224)
DUAL	1.1853***	1.1679***	1.1856***
	(2.948)	(2.912)	(2.955)
LNSIZE	-0.2417	-0.2244	-0.2433
	(-1.317)	(-1.266)	(-1.330)

VARIABLES	(1) Table 6.6 Model 2 Coefficient (*z*-statistic)	(2) Audit Firm Change Coefficient (*z*-statistic)	(3) Audit Partner Change Coefficient (*z*-statistic)
AGE	0.0038	0.0027	0.0035
	(0.216)	(0.146)	(0.203)
Constant	-3.8969**	-3.8687**	-3.9217**
	(-2.395)	(-2.423)	(-2.396)
Industry dummies	Included	Included	Included
Year dummies	Included	Included	Included
Observations	2,351	2,351	2,351
McFadden's pseudo R^2	0.300	0.307	0.300
Model chi-square	273.2	265.5	279
Degrees of freedom	26	28	27
p-value	<0.0001	<0.0001	<0.0001
Number of clusters (firms)	387	387	387

Table 6.7 presents logistic regression results for the examinations into types of audit firm change (Model 2) and an audit partner change (Model 3). Model 1 is from Table 6.6, Model 2. The dependent variable is a dichotomous variable of an occurrence of an accounting misstatement. BIG_NON is a dummy variable of 1 if a firm changes its auditor from a Big 4 firm to a non-Big 4 firm (downgrade); 0 otherwise. NON_NON is a dummy variable of 1 if a firm changes its auditor from a non-Big 4 firm to another (lateral switch); 0 otherwise. NON_BIG is a dummy variable of 1 if a firm changes its auditor from a non-Big 4 firm to one Big 4 audit firm (upgrade); 0 otherwise. PARTNER is a change in an audit partner from the current audit firm; 0 otherwise. All other variables are defined in Table 6.3. Standard errors are robust by firm-level clustering. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively (a two-tailed test of whether the coefficient is equal to zero).

[a] The dummy variable of ownership concentration exceeding 25% (D_OWN) is used here, rather than the continuous variable of OWN. An auditor change must be approved by stockholders in annual meetings. According to Thai laws, an extraordinary general meeting can be held if a majority of shareholders (exceeding 25% of total outstanding shares) requests and such legal activities as dismissing an auditor can be done in this meeting. The research is hypothesising that controlling shareholders use their higher proportion of control rights to avoid the auditors' monitoring by changing the auditor. Therefore, a dummy variable of D_OWN is appropriate for use in this context.

The second model also tests other types of audit switch. The statistically significant results appear in the coefficients of lateral switch (NON_NON) and upgrade (NON_BIG), which are different from zero at the 5% level. Both have a positive coefficient. For those firms that have used a non Big 4 audit firm, the likelihood of accounting misstatement increases when they change their auditor (no matter who is the new auditor). Since the likelihood increases even in the upgrade switch, it might imply an inherent risk that occurs in the first year of audit engagement, rather than an intention of controlling shareholders in changing the auditor. A possible reason for this involves the loss of important client-specific knowledge (e.g. Johnson *et al.* 2002; Livne and

Pettinicchio 2011; Stanley and Todd DeZoort 2007). If this is the case then a change in an audit partner from the same audit firm should have a different result on the likelihood of accounting misstatements.

The third model in Table 6.7 is then additionally presented to determine whether an audit partner change and an audit firm change are associated with the likelihood of accounting misstatements differently. If the audit risk occurs due to the loss of client-specific knowledge, a new audit partner from the same audit firm should be less concerned because the client-specific knowledge remains (e.g. prior working papers and some members of the audit team who have experience of auditing similar clients). Consequently, the coefficient of the relationship between an audit partner change (PARTNER) and the likelihood of accounting misstatements should be smaller than that of the audit firm change (AUDCHG) and the likelihood of accounting misstatement. In Model 3, an audit partner change is positively associated with the likelihood of accounting misstatement, and its effect on the likelihood (the coefficient of 0.2112) is smaller than an audit firm change (the coefficient of 0.9152). Nonetheless, the coefficient of PARTNER does not statistically differ from zero at the 0.05 level. Therefore, the propensity of an accounting misstatement increases when new auditor partners come from a new audit firm (which is consistent with the original result in the first model), but the propensity is not affected if new audit partners come from the same audit firm. Some previous studies (e.g. Bamber and Bamber 2009; Livne and Pettinicchio 2011) suggest that a change in audit partner can bring "fresh eyes" which helps to increase the auditor critical capacity. If that were so then a new audit partner change would be negatively associated with the likelihood of accounting misstatements; however, this is not found in the Thai sample.

To summarise, although an auditor change can signal an accounting misstatement, there is no significant evidence to support the view that controlling shareholders change auditors because they want to avoid being detected (i.e. the coefficient of downgrade is not significant). On the other hand, an auditor change is deemed to increase an audit risk to new auditors in their first year of audit. This result is consistent with prior studies (e.g. Carcello and Nagy 2004; Johnson *et al.* 2002) showing a negative relationship

between short-term audit tenure and quality of financial reports. An audit firm change is found to have a negative result on the quality of financial reports of Thai firms (i.e. the likelihood of accounting misstatements increases) but a change in audit partner alone does not.

One might question the relationship between audit opinion and the propensity for accounting misstatements. This study has excluded this aspect in the analysis because an audit opinion is an output from monitors, rather than a corporate governance mechanism in the monitoring process. It can be incorrectly expressed if an auditor is incompetent. Having investigated the audit reports for the 51 misstatement firm-years, this study has found that only 15 observations (29%) were detected and reported by the auditors in their audit reports. Six auditors were suspended by the Securities and Exchange Commission, Thailand due to their audit failure. Therefore, audit opinions tend not to be a reliable antecedent of accounting misstatements in Thailand. The research, nonetheless, tested the effect of audit opinions. A dummy variable is used, taking the value of 1 when the auditor has a modified audit opinion; 0 otherwise. The proportion of firms obtaining an audit report with a modified audit opinion is 43% for the misstatement group and 10.17% for the control group and they are statistically different at the *p*-value < 0.01. A regression result shows a positive association between the appearance of modified audit opinions and the occurrence of accounting misstatements at the 0.05 level [the coefficient of 1.4532, robust standard error of 0.539, and *p*-value of 0.007 (two-tailed)]. While this association importantly appears in Thai samples, it is not statistically significant in the U.S. samples (e.g. Skousen *et al.* 2008; Skousen and Wright 2006).

To summarise, this section has examined the determinants of accounting misstatements in Thai firms. Types of audit firm changes have also been assessed. The next section will present robustness tests for the research results.

6.5 Robustness Tests

6.5.1 Rare Events Logistic Regression

Since the proportion of the accounting misstatements cases (i.e. the event) to the non-accounting misstatements observations in this study is low at 2.07% (51/2,452), which is considered a rare event (King and Zeng 2001a, c), a rare events logistic regression was estimated to assess the robustness of the results. Such analysis is necessary because a traditional logit models underestimates the probability of an event, P(Y=1), and overestimates coefficients of explanatory variables in the rare event situation. The estimates from rare events logit models are less biased and have a smaller mean squared error (King and Zeng 2001c). The possibility of a Type I error can, therefore, decrease and the logistic regression analysis is robust. The results of rare events logit model are presented in Table 6.8.

Table 6.8: Rare Events Logit Model versus Traditional Logit Model

VARIABLES	Model 1		Model 2	
	Logit Coefficient (*z*-statistic)	Relogit Coefficient (*z*-statistic)	Logit Coefficient (*z*-statistic)	Relogit Coefficient (*z*-statistic)
OWN	0.0040	0.0041		
	(0.621)	(0.567)		
D_OWN			0.5931*	0.5181
			(1.660)	(1.285)
FAM	-0.2395	-0.2223	-0.1985	-0.1855
	(-0.566)	(-0.614)	(-0.466)	(-0.519)
CROSS	-0.1674	-0.0589	-0.1888	-0.0758
	(-0.268)	(-0.089)	(-0.302)	(-0.114)
LEV	1.4587**	1.4010**	1.5492**	1.4793***
	(2.320)	(2.560)	(2.366)	(2.632)
ISSUE	0.5057	0.5031	0.5399	0.5326
	(1.403)	(1.356)	(1.494)	(1.427)
NFCF	1.2328**	1.1690**	1.1974**	1.1353**
	(2.575)	(2.383)	(2.569)	(2.342)
MB	0.106	0.1102	0.0932	0.0985
	(1.039)	(1.239)	(0.938)	(1.135)
REHAB	-0.1415	-0.1212	-0.0962	-0.0837
	(-0.211)	(-0.196)	(-0.146)	(-0.133)
BIG	-1.1128**	-1.0393***	-1.0841**	-1.0139**

VARIABLES	Model 1		Model 2	
	Logit Coefficient (*z*-statistic)	Relogit Coefficient (*z*-statistic)	Logit Coefficient (*z*-statistic)	Relogit Coefficient (*z*-statistic)
	(-2.285)	(-2.638)	(-2.214)	(-2.561)
AUDCHG	0.8658**	0.8435**	0.8738**	0.8491**
	(2.331)	(2.388)	(2.335)	(2.378)
DUAL	1.1317***	1.0634***	1.1853***	1.1081***
	(2.974)	(3.363)	(2.948)	(3.343)
LNSIZE	-0.2211	-0.2112	-0.2417	-0.2287
	(-1.196)	(-1.346)	(-1.317)	(-1.470)
AGE	0.0041	0.0045	0.0038	0.004
	(0.235)	(0.278)	(0.216)	(0.242)
Constant	-3.5303**	-3.2735**	-3.8969**	-3.5626***
	(-2.224)	(-2.516)	(-2.395)	(-2.627)
Industry dummies	Included	Included	Included	Included
Year dummies	Included	Included	Included	Included
Observations	2,351	2,351	2,351	2,351
McFadden's pseudo R^2	0.296		0.300	
Model chi-square	269.5		273.2	
Degrees of freedom	26	26	26	26
p-value	<0.0001		<0.0001	
Number of clusters (firms)	387		387	

Table 6.8 compares the logistic regression results from traditional logit models with those of rare events logit models. The dependent variable is a dichotomous variable of the occurrence of an accounting misstatement. All explanatory variables are defined in Table 6.3. In the traditional logit models, standard errors are robust by firm-level clustering. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively (a two-tailed test of whether the coefficient is equal to zero).

Model 1 compares the results from traditional logit model with those of a rare events logit model. Despite the slight changes in the magnitude of the coefficients and a change in the significance level of BIG variable, the main inferences remain unchanged after the correction. Except for the MB and AGE variables, the coefficients of explanatory variables in the rare events logit model become smaller and the constant is larger, which are in line with King and Zeng's (2001c) arguments. Similar to the results in Table 6.6, the likelihood of accounting misstatements increases when a firm has a high leverage ratio (LEV), has a negative free cash flow (NFCF), has an audit firm change (AUDCHG) and has the chief executive officer serving as chairman of the board (DUAL), while the likelihood can be reduced if the firm uses a Big 4 auditor (BIG).

Model 2 compares the two models when the dummy variable of D_OWN is employed. The coefficient of D_OWN becomes insignificant at the 10% level in the rare events logit model, while other antecedents (i.e. LEV, NFCF, BIG, AUDCHG and DUAL) remain of significance. Therefore, there is weak evidence of the association between the ownership concentration and the likelihood of accounting misstatements in the Thai sample.

6.5.2 Non-Linearity of Ownership Concentration

Prior studies have suggested that the relationship between ownership concentration and financial reporting quality is non-linear. Anderson *et al.* (2003) found a curvilinear relation between the ownership concentration and financial reporting quality (assessed by a cost of debt). In Thailand, accounting conservatism varies with ranges of the ownership concentration (Boonlert-U-Thai and Kuntisook 2009). This study has, therefore, tested these issues by: firstly, adding a square term of the ownership concentration (OWN^2) into the model; and secondly, by replacing the continuous variable of OWN with a set of dummy variables (i.e. OWN>25-50%, OWN>50-75%, and OWN>75%) for levels of the concentration. The regression results are presented in Table 6.9.

Table 6.9: Additional Tests for Ownership Concentration

	Ownership Concentration		
	(1) Table 6.6 Model 1	(2) Curvilinear Relationship	(3) Ranges of Concentration
VARIABLES	Coefficient (*z*-statistic)	Coefficient (*z*-statistic)	Coefficient (*z*-statistic)
OWN	0.004	0.0517	
	(0.621)	(1.246)	
OWN^2		-0.0005	
		(-1.129)	
OWN>25-50%			0.8083**
			(2.043)
OWN>50-75%			0.2395
			(0.578)
OWN>75%			-0.441

	Ownership Concentration		
	(1)	(2)	(3)
	Table 6.6 Model 1	Curvilinear Relationship	Ranges of Concentration
	Coefficient	Coefficient	Coefficient
VARIABLES	(*z*-statistic)	(*z*-statistic)	(*z*-statistic)
			(-0.428)
FAM	-0.2395	-0.2354	-0.2463
	(-0.566)	(-0.560)	(-0.572)
CROSS	-0.1674	-0.204	-0.1758
	(-0.268)	(-0.327)	(-0.292)
LEV	1.4587**	1.4944**	1.5208**
	(2.320)	(2.371)	(2.268)
ISSUE	0.5057	0.5563	0.532
	(1.403)	(1.487)	(1.474)
NFCF	1.2328**	1.1876**	1.0663**
	(2.575)	(2.481)	(2.185)
MB	0.106	0.0938	0.0859
	(1.039)	(0.922)	(0.870)
REHAB	-0.1415	-0.1452	-0.1169
	(-0.211)	(-0.215)	(-0.177)
BIG	-1.1128**	-1.1004**	-1.1008**
	(-2.285)	(-2.303)	(-2.193)
AUDCHG	0.8658**	0.9189**	0.8843**
	(2.331)	(2.441)	(2.335)
DUAL	1.1317***	1.1654***	1.1673***
	(2.974)	(2.942)	(2.804)
LNSIZE	-0.2211	-0.2451	-0.2424
	(-1.196)	(-1.320)	(-1.321)
AGE	0.0041	0.0037	0.0004
	(0.235)	(0.208)	(0.019)
Constant	-3.5303**	-4.3797**	-3.7621**
	(-2.224)	(-2.459)	(-2.318)
Industry dummies	Included	Included	Included
Year dummies	Included	Included	Included
Observations	2,351	2,351	2,351
McFadden's pseudo R^2	0.296	0.300	0.307
Model chi-square	269.5	255.7	260.4
Degrees of freedom	26	27	28
p-value	<0.0001	<0.0001	<0.0001
Number of clusters (firms)	387	387	387

Table 6.9 examines whether there is a non-linear relationship between ownership concentration and the likelihood of accounting misstatements. The dependent variable is a dichotomous variable of an occurrence of an accounting misstatement. OWN is the percentage of shares held by the ultimate owner. OWN^2 is a square term of OWN. OWN>25-50% is a dummy variable taking the value of 1 if

	Ownership Concentration		
	(1) Table 6.6 Model 1 Coefficient (*z*-statistic)	(2) Curvilinear Relationship Coefficient (*z*-statistic)	(3) Ranges of Concentration Coefficient (*z*-statistic)
VARIABLES			

OWN is between 25-50%; 0 otherwise. OWN>50-75% is a dummy variable taking the value of 1 if OWN equals to or higher than 50% but less than 75%; 0 otherwise. OWN>75% is a dummy variable taking the value of 1 if OWN is equal to or higher than 75%; 0 otherwise. The ownership concentration under or equal to 25% is the baseline of Model 3. All other variables are defined in Table 6.3. Standard errors are robust by firm-level clustering. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively (a two-tailed test of whether the coefficient is equal to zero).

In Model 2 the coefficient of the square term (OWN^2) is not significant at the 5% level (the coefficient of -0.0005, and robust *z*-statistic of -1.129). Neither is the OWN variable significant. In Model 3, signs of the coefficients for OWN>25-50% and OWN>50-75% are positive, while the sign of the OWN>75% coefficient is negative but their coefficients are not significant at the 0.05 level. The coefficient of OWN>25-50% statistically differs from zero at the 5% level. Therefore, there is no evidence to support the non-linearity. The significant effect of the OWN>25-50% on the likelihood of accounting misstatements confirms the influence of the ownership concentration above 25% (the result of D_OWN measure in Section 6.4.3). The significant antecedents of accounting misstatements in Thailand (i.e. LEV, NFCF, BIG, AUDCHG and DUAL) remain unchanged. Consequently, the research results in the previous section seem robust, while there is no significant evidence to support the non-linear influence of ownership concentration on the likelihood of accounting misstatements in Thailand.

To conclude, the financial incentives and the weaknesses of corporate governance mechanisms are important determinants of accounting misstatements in Thailand, while the ownership structure is not.

6.6 Summary

This chapter has presented the main results for the models of determinants of accounting misstatements in Thai companies. The main findings are as follows. There is

no strong evidence to indicate that the controlling shareholders exploit their control rights or complex structure to expropriate outside investors' benefits. However, the expropriation may occur when the proportion of the control rights that the ultimate owner holds is above 25%. The incentives of Thai firms to misstate financial reports include the closeness to debt covenant violation and the minimisation of the cost of capital. On the other hand, the pressures from outside parties, such as equity investors' expectation and profitability regulation, are not important determinants of accounting misstatements in the Thai listed companies. Corporate governance mechanisms have an important effect on the appearance of financial misreporting. The likelihood of accounting misstatements has been shown to increase when the chief executive officer is also chairman of the board and the auditors are newly appointed, but the likelihood reduces when a firm uses a Big 4 auditor. Although the audit switch has an impact on the propensity of an accounting misstatement, there is no significant evidence to state that the controlling shareholders govern the auditors. The audit risk of auditors in their first year of audit tends to occur due to an inherent risk (such as a loss of client-specific knowledge).

The research findings contribute to the literature on the antecedents of financial misreporting for firms in concentrated ownership systems. Firstly, the significant effects of the corporate governance and debt-related incentives are in accordance with the characteristics of the firms in these systems, where financial systems are primarily based on debt and corporate governance is relatively weak (La Porta *et al.* 1997; Rajan and Zingales 1995; Salacuse 2006; Shleifer and Vishny 1997). The important factors that have been found in this study are similar to those of the studies in dispersed ownership firms (e.g. Dechow *et al.* 1996). This consistency, therefore, supports the validity of agency problems that can occur when monitoring activities are weak (Jensen and Meckling 1976; Jiambalvo 1996). Secondly, although the controlling shareholders are suspected of exploiting the high proportion of voting rights, there is no significant evidence to support this argument in cases where accounting misstatements occur and firms have changed their auditors.

The next chapter will assess the economic consequences of accounting misstatements in Thailand.

CHAPTER SEVEN

ANALYSIS OF THE CONSEQUENCES OF ACCOUNTING MISSTATEMENTS IN THAILAND

7.1 Introduction

The previous chapter presented the empirical results for the antecedents of accounting misstatements in Thailand. They include an incentive to avoid debt covenant violations, an incentive to minimise the cost of capital, and the weaknesses of corporate governance mechanisms. Ownership concentration does not significantly affect the incidence of accounting misstatements in Thai firms; however, the likelihood of an accounting misstatement increases when ultimate owners hold controlling rights of more than 25%. The investigation in this chapter will extend the research by examining the economic consequences for misstating firms after their accounting misstatements have been detected and revealed.

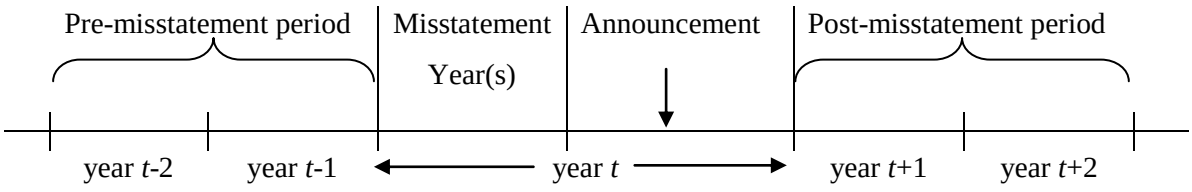
An accounting misstatement signals a low quality financial reporting process. Prior empirical research has found an adverse effect of the announcement of accounting misstatement on the misstating firm's cost of capital (Graham *et al.* 2008; Hribar and Jenkins 2004). If this is the case then the amount of external funds that misstating firms receive after the announcement should be smaller than the amount in a typical period. This chapter will, therefore, examine the dynamics of capital from external financing activities for the misstating firms around the misstatement year. As set out in Hypothesis 4 (see Chapter 5 Section 5.3.4), a smaller amount of external funds in the post-announcement period is expected.

This chapter has five sections, the first of which is this introduction. Section Two discusses the research sample for the analysis of economic consequences. Section Three describes the method of analysis and the definitions of the variables. Sections Four and Five, which are the two last sections, describe the empirical results of the financing activities for the misstating firms after the announcement of accounting misstatements

has been made, which will be compared to the financing activities which has occurred in other periods.

7.2 The Final Sample for the Analysis of the Consequences of Accounting Misstatements

As stated in Chapter 5, this study hypothesises that an announcement of accounting misstatements is likely to have an adverse effect on the external financing activity of misstating firms in the years *t*+1 and *t*+2. This study will, therefore, focus on the external financing activity that has occurred to the misstating firms in these two years, which will then be compared with the other years. Recall the timeline for the period of accounting misstatement, as previously shown in Figure 5.2 (which is repeated below):



Timeline

The accounting misstatement observations in Chapter 6 are the fiscal years of financial reports that contain at least one accounting misstatement (they are year *t* in the timeline). In this chapter, since the interest is in the announcement, the year *t* will range since the misstatement years until the accounting misstatement has been detected and revealed. The financing activities that occur in the first two fiscal years after the revelation of misstatements (year *t*+1 and *t*+2) are of interest.

Because years *t*+1 and *t*+2 are the focus of attention in this study, misstating firms need to have subsequent financial reports at least one year after the announcement (year *t*+1). This requirement means that three misstating firms with eight firm-year observations are lost because these firms were involved in a litigation processes since the revelation of the accounting misstatements and they did not prepare their financial reports

properly. The final sample, consequently, reduced from 2,503 firm-years (see Table 6.1 Panel C) to 2,495 firm-years, 175 of which were observations in the misstatement periods that this research will shed light on. The details are shown in Table 7.1.

Table 7.1: The Final Sample for the Analysis of Economic Consequences Imposed on Thai Firms during 2001-2009

Panel A: Total Observations

Total Sample	Number of Firms	Number of Firm-years	Misstatement Periods (*t*-2 to *t*+2)	Regular Periods
Misstating firms	30[52]	238	175	63
Non-misstating firms	355	2,257	-	2,257
	385	2,495	175	2,320

Panel B: Observations Around the Misstatement Year

	Misstatement Periods					Total
	t-2	*t*-1	*t*	*t*+1	*t*+2	
Misstatement	22	29	66	30	28	175

Table 7.1 reports the final observations for the examination of economic consequences of an accounting misstatement. The number of observations reduces from 2,503 firm-years (see Table 6.1 Panel C) to 2,495 firm-years. The reason for this is explained in the Section.

Panel A shows the total of 2,495 observations. They are composed of 30 misstating firms with 238 firm-years and 355 non-misstating firms with 2,257 firm-years. Of the 238 firm-years of the misstating firms, 175 firm-years were the financial reports around the misstatement year (ranging from *t*-2 to *t*+2). The rest of 2,320 firm-years are considered to be the control group. The firm-years of the control group are sometimes

[52]As suggested by Roberts and Sufi (2009), each misstatement-year observation should not experience another misstatement in the 12 quarter window (i.e. 3 years) surrounding the event in order to clearly identify the effect of the original accounting misstatement. In the research sample there is only one firm (i.e. Nippon Pack Plc, see Appendix B) which experienced two misstatements and the second misstatement occurred three years after the first. Therefore, the sample is qualified in the light of Roberts and Sufi's (2009) advice. There are many firms that have more than one year of misstated financial reports (i.e. CIRKIT, DTM, PICNIC, POWER, ABICO, NFC), but these fiscal years are adjacent and only one time of the misstatement year window (year *t*) was counted.

referred to as ‘regular periods’ in this research. It is noteworthy that the analysis period in this Chapter ranges from 2001 to 2009, while it was 2002-2009 in the analysis of the determinants in the previous chapter. This has been done for two reasons. Firstly, the analysis in Chapter 6 was limited to the problem of perfect failure determination and the 2001 observations were excluded (see Chapter 6, Section 6.3.3). Secondly, one of the investigations into the economic consequences in this chapter involves the flows of capital in the years before the misstatement year. The earliest year when accounting misstatement occurred is 2002 (see Table 6.2 Panel A), so the observations for the year 2001 are necessarily included.

The 175 observations involving misstatements are separately presented by periods in Panel B. There are two points that need to be clarified for the number of observations in Panel B. First, there are 30 misstating firms generating 44 misstated firm-years of financial reports (44 out of 51 of the sample in Chapter 6). As stated earlier, period *t* starts from the misstatement year and lasts until the year when accounting misstatements were revealed (see the timeline above). Therefore, the number of firm-years during the year *t* is 66 firm-years. Secondly, the number of observations in year *t*-1 is 29 rather than 30 because one firm misstated its financing reports in the first year of trading in the stock exchange and, therefore, the datum of its market value in year *t*-1 was unavailable. This firm was not eliminated from this study because a purpose of the main analysis is to assess the economic consequences in the post-announcement period.

7.3 The Assessment of Economic Consequences of Accounting Misstatements

This section discusses an empirical model used to assess the impact of an announcement of accounting misstatements on the external financing activities of misstating firms (Hypothesis 4 of the research described in Section 5.3).

7.3.1 Multiple Linear Regression Model

This thesis assesses economic consequences imposed on misstating firms; particular interest is given to subsequent amounts of external financing activities after the announcement of accounting misstatements.

The determinants of agency problems were examined in the previous chapter. This chapter will assess how incentive conflicts between controlling shareholders and outside investors (presumed to occur when an accounting misstatement occurs and is detected) affect external financing activities of the misstating firms. The research design and theoretical background of the analysis in this chapter follows Roberts and Sufi (2009), who assess the corporate financial policies on net debt issuance activities after firms violate debt covenants. According to *the Framework for the Preparation and Presentation of Financial Statements* (IASB 2010b), the objectives of financial reports are to provide useful information regarding corporate financial position and performance and to assess management's stewardship. It is affirmed that financial reports are important to equity investors (Francis *et al.* 2004) and creditors (Holder-Webb and Sharma 2010). Investors are usually aware of an inherent risk of opportunistic financial reporting (Bardos *et al.* 2011; Teoh *et al.* 1998). They discount this risk at a certain level of cost of capital and impose debt covenants to mitigate agency conflicts (Jensen and Meckling 1976).

When investors perceive that the financial reports are misstated (i.e. accounting items are not correctly presented) they are more concerned with the integrity of the firm's financial reporting, which may be reflected in a higher rate of cost of equity (Hribar and Jenkins 2004), tightened debt covenants and a higher rate of interest (Graham *et al.* 2008). Consequently, it can be seen that the quality of financial reports has an influence on the decisions of investors, who react negatively to low quality financial reports. An announcement of accounting misstatements should have an impact on the decisions of capital providers. The economic aspect of the capital supplied by the investors will be examined in this thesis.

This research maintains two assumptions for the examination into the supplied capital. First, the demand for external funds is assumed fixed and fulfilled by the supply from investors in the same year, but the net amount is allowed to vary. To predict the demand of funds, this research uses an empirical model introduced by Almeida and Campello (2010). The net amount of supplied capital is a product of the fixed demand of funds and the discount rate required through cost of capital. Since this research does not measure the cost of capital due to data limitations, a second assumption needs to be made. This relies on the empirical findings of Hribar and Jenkins (2004) and Graham *et al.* (2008) affirming that the cost of capital imposed on restating firms is higher for the post-announcement period than other periods. When the fixed demand for funds (1st assumption) is discounted by the higher discount rate in the post-announcement period (2nd assumption), the net amount of capital that misstating firms receive should be lower for the post-announcement period than regular periods. Data for non-misstating firms (i.e. 2,257 firm-years) are also included in the analysis in order to increase the power of the test.[53]

An empirical model by Almeida and Campello (2010) was selected for forecasting the external financing needed by a firm in a year. All of the explanatory variables in their model are regarded as control variables in this research. A dummy variable of the announcement is thus added into the model in order to measure the effect of the announcement on the misstating firm's financing activity in the post-announcement period (i.e. years t+1 and t+2). This dummy variable is compared with the other firm-years that have not experienced an announcement. The empirical model of Almeida and Campello (2010) was selected for use in this study for two important reasons. Firstly, their model focuses on two financing choices (i.e. debt and equity) and the measures for financing alternatives are the amount of net proceeds and net borrowing from the statement of cash flows. All these items are in accordance with this study's interest and the prior studies examining a firm's financing need (e.g. Seifert and Gonenc 2010). The data are also available for the Thai samples. Secondly, there is consistency between the

[53]If the analysis includes only misstating firms, then the null hypothesis (Hypothesis 4, Chapter 5) on the adverse effect of the announcement can be rejected at the 0.10 level; however, the parameter estimates are likely to be less reliable because the sample size is 238 observations while the model has 24 explanatory variables.

determinants of capital structure choices in the body of literature (e.g. Rajan and Zingales 1995; Titman and Wessels 1988) and those in Almeida and Campello (2010), which include: the firm's internal wealth, growth opportunity, current capital structure and firm size. Using the Almeida and Campello (2010) model allows the researcher to specify a firm's external financing need (which is assumed to be fixed) and analyses whether the net amount of capital a misstating firm gets in the post-announcement period is shifted by an announcement of accounting misstatements.

Consequently, the empirical model of this research comprises these following variables. The treatment variable is a dummy variable of 1 for the first two fiscal years after an announcement of accounting misstatements (year t+1 and t+2) in order to assess whether the announcement has affected the external financing activities of misstating firms for those two years. The determinants of demand for external financing, suggested by Almeida and Campello (2010), include internal wealth, existing debt, share performance and firm size (i.e. variables of OCF, CASH, INV, PPE, LEVC, Q and LNSALES). In addition, two extra variables to control for the cost of debt (INT) and investment demand (INVEST) are added. As in Roberts and Sufi (2009), the cost of debt is regarded in the model in order to control for the potential affect of the cost of debt on the amount of external financing. Since the data of actual interest rates are unavailable in Thai samples, this study uses the average interest rate (INT) instead. This is the proportion of interest expenses to the average of total debt, following the example of Francis *et al.* (2005). With regard to the investment demand, suppose two firms have the same size, same levels of internal funds, and the same growth opportunities. The demand for external funds between the two firms may be unequal if one firm does not need to invest in any property (e.g. machines) while the other does. Therefore, the investment demand can vary the amount of external funds needed. The calculation of investment demand follows the example of a number of prior studies (e.g. Chen *et al.* 2009; Kedia and Philippon 2009), the net capital expenditures scaled by the beginning of period net property, plant and equipment. Similar to the logistic regression model for the determinants in Chapter 6, this linear regression model for the economic consequence controls for fixed effects of firm-level character (industry dummies and clustered robust standard errors) and time effects (year dummies).

Linear regression model:

$$\begin{aligned}\mathrm{EXFIN}_{i,t} = {} & \alpha_0 + \beta_1 \mathrm{AFTER}_{\tau(i)<t<\tau(i)+2} + \beta_2 \mathrm{OCF}_{i,t} + \beta_3 \mathrm{CASH}_{i,t-1} + \beta_4 \mathrm{INV}_{i,t-1} + \beta_5 \mathrm{PPE}_{i,t-1} \\ & + \beta_6 \mathrm{LEVC}_{i,t-1} + \beta_7 \mathrm{Q}_{i,t} + \beta_8 \mathrm{LNSALES}_{i,t} + \beta_9 \mathrm{INT}_{i,t} + \beta_{10} \mathrm{INVEST}_{i,t} \\ & + \sum_{K=1}^{7} \beta_K \mathrm{IND}_{i \in K,\, t} + \sum_{t=1}^{9} \beta_t \mathrm{YEAR}_t + \varepsilon_{i,t}\end{aligned}$$

where

τ (i): The misstatement year for firm i

t: The current fiscal year for firm i.

EXFIN: The flow of external funds flown into the firm described in annual cash flow statements divided by total assets.

AFTER: The measure for a consequence of an announcement of accounting misstatements in the post-announcement period. It is a dummy variable, taking the value of 1 for the first two fiscal years after the announcement (t+1 and t+2).

OCF: The availability of internal funds in terms of profitability, measured by the amount of cash flow from operations in cash flow statements to total assets.

CASH: The availability of internal funds in terms of liquid assets, measured by the beginning balance of cash and cash equivalence to total assets.

INV: The availability of internal funds in terms of liquid assets, measured by the beginning balance of accounts receivables and inventories to total assets.

PPE: The availability of the assets for collateral, measured by beginning balance of gross property, plant, and equipment to total assets.

LEVC: The capital structure, measured by the (corrected) amount of total debt to total assets.

Q: Growth opportunities of the firm, calculated from market value of total assets to book value of the assets; where market value =[(total assets + market capitalisation - common equity – deferred tax)/total assets].

LNSALES: A control variable for firm size, measured by a natural logarithm of sales in income statements.

INT: Cost of debt, measured by the ratio of annual interest expenses to the average total debt.

INVEST: Capital investment demand, scaled by beginning of period net property, plant and equipment; where capital investment demand = capital expenditure-proceeds from sales of property, plant and equipment.

IND: An array of seven industry dummies, where each firm falls into one of the seven categories of the Stock Exchange of Thailand (Agro and Food, Consumer Products, Industrials, Property and Construction, Resources, Services, and Technology; Agro and Food industry dummy being arbitrarily omitted to avoid perfect multicollinearity).

YEAR: An array of nine fiscal year dummies 2001 to 2009; year 2001 dummy being arbitrarily omitted to avoid perfect multicollinearity.

ε: The regression residual.

7.3.2 Description of Variables

This subsection (Table 7.2) presents again the description of the variables used in the analysis of whether an announcement of accounting misstatements affects the flow of capital from external financing in the post-announcement period. All numerical data for the analysis in this chapter were corrected numbers (i.e. the numbers after restatement for the accounting items that have been misstated).

Table 7.2: The Variables for Examining Consequences of Accounting Misstatements

Proxy	Measure	Abbre-viation in Model	Calculation	Expected Sign
Dependent variable				
The magnitude of external financing activity [a]		PROCEED	Total net proceeds from share issuances and repurchases disclosed in cash flow statements divided by total assets	
		STDEBT	Net short-term debt borrowing and repayment disclosed in cash flow statements divided by total assets	
		LTDEBT	Net long-term debt borrowing and repayment disclosed in cash flow statements divided by total assets	
		DEBT	The net total capital from borrowing activity (STDEBT+ LTDEBT)	
		EXFIN	The summation of all external financing activities (PROCEED+ DEBT)	
Treatment variable				
The event period when an accounting misstatement occurs	The pre-misstatement period	BEFORE	1 for the two fiscal years before the misstatement year (years *t*-1 and *t*-2)	
	The misstatement year	DURING	1 for the misstatement year lasting until the announcement year (year *t*)	
	The post-misstatement period	AFTER	1 for the first two fiscal years after the announcement year (years *t*+1 and *t*+2)	-
Control variables				
1. Internal wealth	Cash flow from operations	OCF	Operating cash flow to total assets	-
	Pre-existing cash	CASH	Beginning cash and cash equivalence to total assets	-
	Pre-existing other working capital	INV	Beginning accounts receivables and inventories to total assets	-
	Collateral	PPE	Beginning gross property, plant and equipment to total assets	+
2. Capital structure	Pre-existing leverage ratio	LEVC	Beginning total debt to total assets	-
3. Investment opportunity	Market value of total assets	Q	Market value of total assets to book value of assets; where market value = (total assets + market capitalisation [b] - common equity – deferred tax)/total assets	+
4. Size	Size effect	LNSALES [c]	Natural logarithm of total sales	+

Proxy	Measure	Abbre-viation in Model	Calculation	Expected Sign
5. Cost of debt	Interest rate	INT	Interest expense to the average total debt	-
6.Investment demand	Capital investment	INVEST	Capital investment, scaled by beginning of period net property, plant and equipment; where capital investment = capital expenditure-proceeds from sales of property, plant and equipment	+
7. Industry effect	Industry dummies	IND	Dummy variable	
8. Year effect	Year dummies	YEAR	Dummy variable	

[a] The research results are unchanged if the denominator is lagged total assets (used in Roberts and Sufi (2009)) rather than time *t* total assets.

[b] Some firms were suspended from trading during a rehabilitation period and, consequently, their market values were unavailable during this time. This study, therefore, uses the firms' last market value before the suspension in order to maintain the observations of the treatment group. However, the result for the effect of the announcement is the same if the model excludes these observations.

[c] In Chapter 6 the firm size (LNSIZE) was measured as the natural logarithm of total assets (LNTA). An unreported model was estimated if the LNTA was used. The goodness of fit is actually better: the adjust R^2 increases from 48.9% (when the natural logarithm of sales, LNSALES, was used) to 49.1%; the coefficient of LNTA is significant at a smaller *p*-value of <0.001, while the *p*-value of LNSALES is 0.002; and, other parameter estimates are not sensitive to the choice between LNTA or LNSALES as an indicator for size. Nevertheless, the research maintains the measure of LNSALES for comparability with prior studies.

7.4 Empirical Results

This section contains the empirical results of the data analysis of an economic consequence of an announcement of accounting misstatements. This analysis was conducted in four steps (presented in four subsections), which are: exploration of the location and central tendency of data, examine correlations among variables, descriptive statistics for the dynamics of net capital around the misstatement year, and a multivariate regression analysis of whether an announcement of accounting misstatements affects the flow of capital.

7.4.1 Summary Statistics

The summary statistics of financing activities of all samples are illustrated in Table 7.3. The statistics for dependent variables are presented in Panel A, while those of control variables are in Panel B. In order to show the movements of accounts, the observations around the misstatement year are separately presented by period (i.e. *t*-2, *t*-1, *t*, *t*+1 and *t*+2). The regular period refers to the financial reports that do not fall into any of the five misstatement periods. Except for sales (which was transformed using the logarithm function), all continuous variables are winsorised at the 1st and 99th percentiles.

Panel A, Table 7.3 describes the descriptive statistics of dependent variables. In regular periods, average net proceeds (PROCEED) from share issuances are approximately 1.2% of total annual assets. The average of net proceeds for misstating firms gradually increases from 3% in year *t*-2 to 3.9% in year *t*. However, after announcing an accounting misstatement, the amount of net proceeds for the misstating firms falls to 0.4% in year *t*-1. In the same vein, an average amount of external funds from short-term borrowing activity (STDEBT) is higher for the misstating firms during the pre-announcement periods (0.5%-2%) than an average of the regular periods (0.4%). With regard to long-term debt (LTDEBT), on average, the amount of debt repayment is higher than the amount of new borrowing and, therefore, the external funds from long-term debt becomes negative. The negative balance on net long-term debt is higher for the misstatement periods (a range of -0.9% to -2.2%) than regular periods (-0.4%). In total, the average external funds (EXFIN) for the misstating firms are higher than the average regular periods in the pre-announcement period and lower in the post-announcement period.

Table 7.3: Summary Statistics of Variables

Panel A: Dependent Variables

Variable [a]	Statistics	Regular Periods (n=2320)	Misstatement Periods					Total (n=2495)
			t-2 (n=22)	*t*-1 (n=29)	*t* (n=66)	*t*+1 (n=30)	*t*+2 (n=28)	
Net Proceeds (PROCEED)	Mean	0.012	0.030	0.033	0.039	0.004	0.014	0.013
	Median	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	SD	0.047	0.075	0.091	0.089	0.017	0.063	0.050
	Min	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Max	0.338	0.224	0.338	0.338	0.094	0.330	0.338
Net Short-Term Debt (STDEBT)	Mean	0.004	0.005	0.007	0.020	-0.004	0.001	0.004
	Median	0.000	0.000	0.000	0.001	-0.001	0.000	0.000
	SD	0.069	0.032	0.063	0.059	0.041	0.038	0.068
	Min	-0.224	-0.076	-0.179	-0.095	-0.121	-0.058	-0.224
	Max	0.234	0.100	0.234	0.203	0.090	0.101	0.234
Net Long-Term Debt (LTDEBT)	Mean	-0.004	-0.012	-0.018	-0.009	-0.022	-0.018	-0.005
	Median	0.000	-0.007	-0.001	-0.003	-0.010	-0.016	0.000
	SD	0.059	0.052	0.075	0.085	0.071	0.050	0.060
	Min	-0.209	-0.144	-0.209	-0.209	-0.209	-0.096	-0.209
	Max	0.222	0.153	0.182	0.222	0.160	0.129	0.222
Total External Funds (EXFIN)	Mean	0.013	0.023	0.032	0.052	-0.023	-0.003	0.014
	Median	0.000	0.000	0.002	0.011	-0.023	-0.019	0.000
	SD	0.101	0.085	0.127	0.118	0.071	0.091	0.101
	Min	-0.241	-0.088	-0.184	-0.103	-0.220	-0.126	-0.241
	Max	0.397	0.263	0.397	0.397	0.197	0.397	0.397

Table 7.3 continued)

Panel B: Independent Variables

Variable [a]	Statistics	Regular Periods (n=2320)	Misstatement Period					Total (n=2495)
			t-2 (n=22)	*t*-1 (n=29)	*t* (n=66)	*t*+1 (n=30)	*t*+2 (n=28)	
Operating Cash Flow (OCF)	Mean	0.084	0.054	0.051	0.017	0.052	0.032	0.081
	Median	0.085	0.025	0.052	0.035	0.053	0.038	0.081
	SD	0.115	0.103	0.102	0.095	0.081	0.114	0.115
	Min	-0.265	-0.116	-0.265	-0.265	-0.119	-0.265	-0.265
	Max	0.449	0.257	0.257	0.227	0.288	0.292	0.449
Beginning Cash (CASH)	Mean	0.095	0.048	0.070	0.086	0.065	0.073	0.094
	Median	0.056	0.013	0.018	0.026	0.022	0.039	0.054
	SD	0.106	0.077	0.089	0.121	0.093	0.093	0.105
	Min	0.000	0.001	0.000	0.000	0.000	0.000	0.000
	Max	0.493	0.271	0.332	0.493	0.367	0.320	0.493
Beginning Receivables and Inventories (INV)	Mean	0.349	0.344	0.340	0.300	0.287	0.291	0.346
	Median	0.336	0.360	0.321	0.258	0.266	0.312	0.333
	SD	0.216	0.190	0.215	0.190	0.169	0.155	0.214
	Min	0.002	0.025	0.020	0.015	0.005	0.002	0.002
	Max	0.862	0.766	0.772	0.801	0.605	0.543	0.862
Beginning Property, Plant, and Equipment (PPE)	Mean	0.412	0.442	0.451	0.450	0.492	0.439	0.415
	Median	0.406	0.441	0.457	0.454	0.507	0.468	0.412
	SD	0.228	0.249	0.261	0.250	0.239	0.242	0.229
	Min	0.015	0.044	0.015	0.015	0.076	0.015	0.015
	Max	0.916	0.916	0.906	0.916	0.897	0.916	0.916
Tobin's Q (Q)	Mean	1.219	1.379	1.628	1.476	1.343	1.549	1.237
	Median	1.022	1.090	1.108	1.091	0.984	0.952	1.023
	SD	0.715	0.988	1.213	1.086	0.883	1.440	0.753
	Min	0.410	0.649	0.673	0.424	0.606	0.577	0.410
	Max	5.396	5.396	5.396	4.763	4.958	5.396	5.396
Beginning Leverage Ratio (LEVC)	Mean	0.279	0.597	0.605	0.545	0.512	0.473	0.298
	Median	0.244	0.584	0.526	0.465	0.426	0.381	0.258
	SD	0.250	0.415	0.414	0.402	0.419	0.484	0.274
	Min	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Max	1.453	1.453	1.453	1.453	1.453	1.453	1.453

Table 7.3 Panel B (continued)

Variable [a]	Statistics	Regular Periods (n=2320)	Misstatement Periods *t*-2 (n=22)	*t*-1 (n=29)	*t* (n=66)	*t*+1 (n=30)	*t*+2 (n=28)	Total (n=2495)
Sales (SIZE)	Mean	12,166	2,436	2,694	3,393	3,695	3,321	11,537
	Median	2,049	1,097	1,637	1,368	1,445	968	2,009
	SD	$75.5*10^3$	2874.17	3001.82	4443.01	4946.18	5006.90	$72.9*10^3$
	Min	3.89	31.76	23.81	37.85	17.33	70.07	3.89
	Max	$2*10^6$	9,814	12,212	20,180	19,150	21,013	$2*10^6$
Natural Log Sales (LNSALES)	Mean	7.701	6.807	7.072	7.252	7.311	7.232	7.664
	Median	7.625	6.987	7.401	7.221	7.276	6.875	7.605
	SD	1.577	1.742	1.608	1.476	1.564	1.382	1.579
	Min	1.358	3.458	3.170	3.634	2.852	4.249	1.358
	Max	14.509	9.192	9.410	9.912	9.860	9.953	14.509
Average Interest Rate (INT)	Mean	0.059	0.065	0.066	0.053	0.055	0.066	0.059
	Median	0.050	0.053	0.046	0.051	0.051	0.057	0.050
	SD	0.064	0.048	0.063	0.040	0.041	0.085	0.063
	Min	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Max	0.480	0.174	0.237	0.202	0.206	0.480	0.480
Investment Demand (INVEST)	Mean	0.165	0.083	0.148	0.166	0.055	0.069	0.162
	Median	0.100	0.039	0.043	0.058	0.020	0.027	0.095
	SD	0.226	0.139	0.297	0.299	0.129	0.274	0.229
	Min	-0.245	-0.052	-0.185	-0.245	0.245	-0.245	-0.245
	Max	1.387	0.583	1.387	1.387	0.420	1.387	1.387

Table 7.3 reports descriptive statistics of the variables for the examination into the consequences of accounting misstatements. Panel A comprises summary statistics of the external financing activity measures, while Panel B illustrates those of the explanatory variables. All variables are defined in Table 7.2. The descriptive statistics are presented by relevant period of the misstatements.

[a] Except for sales, all values are reported after being winsorised. Some maximum numbers across the periods might therefore be identical, such as the maximum for LEVC because of the winsorisation. The data for sales (the measure of firm size) were transformed using the natural logarithm function.

Panel B in Table 7.3 comprises the summary statistics for control variables. Regarding internal wealth (i.e. OCF, CASH, and INV), misstating firms have a lower balance of an average internal wealth along the five-period window. In contrast, they have a higher average amount of tangible assets (PPE). On average, the market value of assets (Tobin's Q) is higher for misstating firms. The leverage ratios (LEVC) for the misstatement periods' firms are double that of the control group. However, after the

announcement, the leverage ratio of misstating firms has gradually reduced from 0.545 in year *t* to 0.473 in year *t*-2. This decline is consistent with that of the U.S. sample when debt covenant violations are revealed (Roberts and Sufi 2009). The misstating firms are smaller than the control group, when measured by sales (SALES).

The average interest rate (INT) is higher for the misstating firms in the pre-announcement periods but it becomes the lowest in the misstatement year. This incident appears to confirm the findings in Chapter 6 where one important incentive of Thai firms is to minimise cost of capital (and misstating firms obtain this benefit in the misstatement year). The investment demand (INVEST) of misstating firms fluctuates. Before the misstatement year, the average investment is lower than that of the control group, but it is increased and close to an average for the control group in the misstatement year. However, soon after announcing accounting misstatements, the investment demand for misstating firms suddenly reduces. This reduction is in line with Kedia and Philippon (2009), who find a decline in growth rate of capital expenditures in misstating firms after the announcement of restatements.

7.4.2 Correlations

Both Spearman's (above the diagonal) and Pearson's (below the diagonal) correlation coefficients are presented in Table 7.4. The greatest correlation coefficient is the correlation of INV and PPE (-61.4%, Pearson and -58.6%, Spearman). Most of the results for significance levels from Pearson's and Spearman's tests are in line, except for some cases (e.g. the correlations of PROCEED and CASH, STDEBT and INT, and LTDEBT and PPE). A major difference in the two tests appears in a positive correlation between INT and LEVC (3.2%, Pearson and 24.7%, Spearman) and a positive correlation between LNSALES and Q (2.1%, Pearson and 17.9%, Spearman). This can be caused by extreme outliers. A diagnostic test of multicollinearity assumption and robust regression analysis will be conducted after the multivariate regression results (Section 7.4.4) are reported. Since the variables are the ratio type of data, the analysis is primarily restricted to the parametric test. The following description employs the correlation coefficients from Pearson's approach.

Table 7.4: Correlation Matrix for the Financial Characteristics of Misstating and Non-Misstating Firms

	PROCEED	STDEBT	LTDEBT	AFTER	OCF	CASH	INV	PPE	LEVC	Q	INT	INVEST	LNSALES
PROCEED		0.023	0.034 *	-0.026	-0.123 ***	0.059 ***	-0.002	-0.089 ***	0.101 ***	0.184 ***	-0.003	0.150 ***	0.151 ***
STDEBT	-0.039 *		-0.062 ***	-0.032	-0.348 ***	0.023	-0.018	0.006	-0.047 **	0.055 ***	-0.017	0.174 ***	0.031
LTDEBT	0.040 **	-0.092 ***		-0.057 ***	-0.082 ***	0.138 ***	0.038 *	-0.082 ***	-0.258 ***	0.075 ***	-0.208 ***	0.338 ***	0.039 *
AFTER	-0.014	-0.013	-0.039 *		-0.064 ***	-0.056 ***	-0.037 *	0.035 *	0.067 ***	-0.002	0.022	-0.114 ***	-0.035 *
OCF	-0.223 ***	-0.411 ***	-0.147 ***	-0.053 ***		0.138 ***	-0.118 ***	0.149 ***	-0.222 ***	0.176 ***	-0.091 ***	0.189 ***	0.175 ***
CASH	0.002	-0.008	0.051 **	-0.367 *	0.097 ***		-0.172 ***	-0.228 ***	-0.535 ***	0.122 ***	-0.154 ***	0.242 ***	0.070 ***
INV	-0.014	-0.015	0.013	-0.041 **	-0.106 ***	-0.222 ***		-0.586 ***	0.043 **	-0.131 ***	-0.022	0.064 ***	0.064 ***
PPE	-0.060 ***	< -.0001	-0.023	0.035 *	0.131 ***	-0.259 ***	-0.614 ***		0.166 ***	0.019	0.053 ***	-0.186 ***	-0.058 ***
LEVC	0.071 ***	-0.049 **	-0.149 ***	0.110 ***	-0.177 ***	-0.428 ***	0.010	0.165 ***		0.090 ***	0.247 ***	-0.228 ***	0.157 ***
Q	0.175 ***	0.023	0.020	0.042 **	0.087 ***	0.152 ***	-0.142 ***	0.012	0.149 ***		-0.046 **	0.195 ***	0.179 ***
INT	0.027	-0.049 **	-0.078 ***	0.004	-0.028	-0.041 **	-0.048 **	0.024	0.032	0.006		-0.149 ***	-0.004
INVEST	0.145 ***	0.136 ***	0.323 ***	-0.068 ***	0.072 ***	0.232 ***	0.054 ***	-0.220 ***	-0.170 ***	0.121 ***	-0.049 **		0.234 ***
LNSALES	-0.114 ***	0.036 *	0.052 ***	-0.038 *	0.191 ***	-0.060 ***	0.051 **	-0.052 ***	0.056 ***	0.021	-0.056 ***	0.121 ***	

Table 7.4 reports the correlation coefficients for Pearson (below the diagonal) and Spearman (above the diagonal). All variables are defined in Table 7.2.
***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively (a two-tailed test of whether the correlation coefficient is equal to zero).

According to the correlation coefficients in Table 7.4, all financing activities (PROCEED, STDEBT and LTDEBT) are negatively correlated with the post-announcement period (AFTER) and the correlation coefficient between LTDEBT and AFTER differs from zero at the 10% significance level. This is in line with the movements of funds across the periods in Table 7.3 Panel A. The post-announcement (AFTER) is negatively correlated with operating cash flow (OCF) and positively correlated with leverage ratio (LEVC). These correlations indicate that a financial constraint has occurred to the misstating firms after the announcement, which is consistent with prior studies (e.g. Chen *et al.* 2009). The post period is negatively correlated with investment demand (INVEST), which is similar to prior research (i.e. Kedia and Philippon 2009).

All financing activities (PROCEED, STDEBT, and LTDEBT) are negatively correlated with cash flow from operations (OCF). The negative correlation between STDEBT and OCF is the highest (41%) among the three types of funds. This result is consistent with the pecking order theory (Myers and Majluf 1984) which recommends that there is a negative relationship between profitability and external financing. On the other hand, except for the positive correlation of 5.1% between LTDEBT and CASH, the correlations between the three financing activities and the beginning balance of liquidity assets (CASH and INV) are not statistically correlated.

The leverage ratio (LEVC) at the beginning of the year is positively correlated with share issuance activity (PROCEED), but it is negatively correlated with borrowing activities (STDEBT and LTDEBT). This can occur because highly levered firms have already committed to the maintenance of high debt repayments and high covenants; therefore, they are less likely to be able to borrow more and they shift instead to share issuance. The leverage ratio is also negatively correlated with the beginning cash balance (coefficient of -42.8%). This high coefficient may reveal a financial constraint in highly-levered firms. Firms with high growth opportunities (Q) are highly correlated with the net proceeds (coefficient of 17.5%), but they are not statistically correlated with borrowing. On the other hand, the average interest rate (INT) is negatively correlated with borrowing, but is not correlated with share issuance. These two

contrasting relationships can be possible. A firm with growth opportunities may prefer to issue shares because the higher firm value results in greater amount of proceeds (e.g. Rajan and Zingales 1995). Meanwhile, a firm charged a high cost of debt can decide to not borrow, or they can borrow lower amounts of net funds.

Investment demand (INVEST) is positively correlated with all financing choices and the highest correlation coefficient is tied with long-term borrowing (LTDEBT) (32.3%). This result is consistent with prior research (e.g. Titman and Wessels 1988). It is reasonable to suppose that the investment demand (INVEST) is positively correlated with the amount of brought forward CASH (coefficient of 23.2% - the higher the cash is, the higher investment demand can be). Investment demand falls when a company is highly levered (LEVC) (correlation coefficient of -17%). Firm size (LNSALES) is positively correlated with borrowing and this result is consistent with the previous literature (e.g. Rajan and Zingales 1995; Wiwattanakantang 1999). However, firm size is negatively correlated with the net proceeds (though it is positive in the Spearman's test). This finding is in contrast to the previous literature (i.e. Smith 1977). Overall, therefore, with the exception of the negative correlation between firm size and equity issuance, all correlations appear to be in the predicted direction.

7.4.3 Dynamics of the Flow of Capital

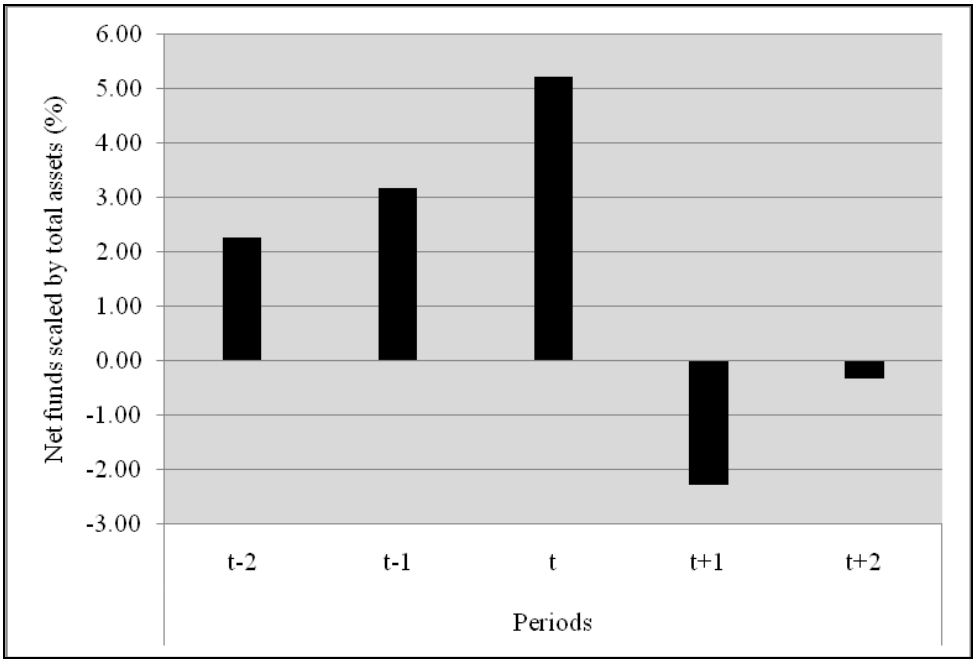
This section of the chapter will explore the dynamics of net capital from external financing activities around the misstatement year, and it will then compare these with the average regular periods (i.e. the observations of non-misstating firms and the observations of the misstating firms not falling into the five periods of the misstatement window).[54] The analysis here comprises graphical analysis and comparisons of two means.

[54]If the observations of the misstating firms that fall outside the five period window are excluded from the control group, the research results for this and the next subsections are unchanged. The average external financing funds (EXFIN) for the regular periods slightly increased from 0.0131 to 0.0135. The coefficient of the AFTER variable in Section 7.4.4 changed from -0.0231 to -0.0238 and it differs from zero at the 5% level (*p*-value=0.03 for a two-tailed test).

a) Graphical analysis

The bar graph in Figure 7.1 helps understand the dynamics of financing activities for misstating firms. The vertical axis is the average amount of net capital inflow from all financing alternatives, scaled by total assets. The horizontal axis represents the event periods.

Figure 7.1: Total External Funds of the Sample of Misstating Firms



Mean	Regular	Misstatement Periods				
	Periods	*t*-2	*t*-1	*t*	*t*+1	*t*+2
(% of total assets)	(n=2320)	(n=22)	(n=29)	(n=66)	(n=30)	(n=28)
EXFIN	1.31	2.26	3.18	5.22	-2.29	-0.34

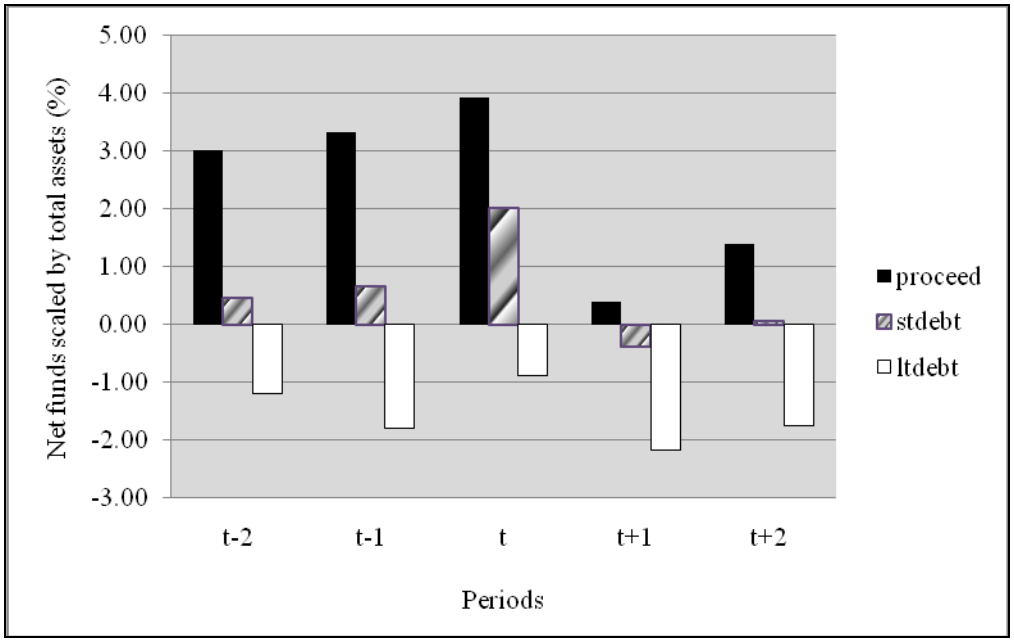
The table shows an average EXFIN, a summation of funds from stock issuance and borrowing for a year disclosed in cash flow statements divided by total assets, by period. The numbers are as same as those numbers shown in Table 7.3, but the numbers were rounded off in Table 7.3.

In regular periods, control firm-years have an average annual net capital inflow about 1.31% of total assets. For misstating firms, an average net cash inflow gradually increases from 2.26 % of the total assets in year *t*-2 to 5.22% in year *t*, which is higher than the average regular periods. The highest net capital inflow for the misstating firms is in year *t*. Misstating firms experience a sharp decrease in the net capital inflow immediately following the announcement. The financing ability falls from a positive of 5.22 % of total assets to a negative of 2.29% in year *t*+1 and, therefore, the

announcement is associated with an approximate change in net capital flow of about 7.51% of corporate total assets in one year. The adverse effect lasts until year *t*+2. Even though the adverse impact seems relieved in year *t*+2, the balance is still negative and is lower than the average regular periods.

In summary, according to Figure 7.1 an ability of a misstating firm to get new finance tends to be constrained after the revelation of accounting misstatements. At the very least, the amount of capital inflow from share issuance and borrowing is less than the amount of cash outflow (e.g. debt repayment and repurchase treasury stocks).

Figure 7.2: Total External Funds by Type and Period



Mean	Regular	Misstatement Periods				
	Periods	*t*-2	*t*-1	*t*	*t*+1	*t*+2
(% of total assets)	(n=2320)	(n=22)	(n=29)	(n=66)	(n=30)	(n=28)
PROCEED	1.21	3.01	3.34	3.93	0.40	1.39
STDEBT	0.37	0.45	0.67	2.01	-0.38	0.06
LTDEBT	-0.39	-1.20	-1.79	-0.89	-2.19	-1.76

The table specifically shows means of external funds by alternative and by period. PROCEED is a ratio of net proceeds from share issuance described in cash flow statements divided by total assets. STDEBT is a ratio of net cash flow from short-term borrowing activity shown in cash flow statements divided by total assets. LTDEBT is a ratio of net cash flow from long-term borrowing activity shown in cash flow statements divided by total assets. The numbers are as same as those numbers in Table 7.3, but the numbers were rounded off in Table 7.3.

Figure 7.2 shows more detail for the flow of capital by type of financing. In regular periods the magnitude of net short-term borrowing (0.37%, STDEBT) nearly equals an average of net long-term debt (0.39%, LTDEBT), but the balance of LTDEBT is negative. Share issuance tends to be an important source of funds that increases liquidity to a firm. On average, a firm receives net capital from share issuance of approximately 1.21% of total assets per year. Particularly focusing on misstating firms (Figure 7.2), there is an increase in the amount of net proceeds before the misstatement year (years *t*-2 to *t*), as well as an increase in financing need for long-term debt repayment. Although there is a large negative amount of long-term borrowing year *t*-1, the misstating firms earn a larger amount of capital from share issuance. The financial status of misstating firms appears to be the best in the misstatement year when they have the highest amount of capital inflow from share issuance and short-term borrowing and the lowest amount of cash outflow for long-term debt repayment.

Suddenly after the annoucement of accounting misstatement (year *t*+1), however, the highest quickly become the lowest. There is a sharp drop in net proceeds from share issuance, from 3.93% to 0.40% of total assets. Also both short-term and long-term alternatives remain negative. The amount raised from borrowing is smaller than the amount available for repayment. Year *t*+1 tends to be a difficult time for misstating firms since the capital inflow from equity reduces and the borrowing capability is constrained. Although in the following year the situation lessens in terms of share issuance, the long-term debt repayment is still large. To sum up, the flow of capital during the post-announcement period: the net capital outflow for external financing activities is about 4.33 (0.38+2.19+1.76) percent of corporate total assets, while the net cash inflow is 1.85 (0.04+1.39+0.06) percent of total assets. Unless they have enormous internal wealth, misstating firms are inclined to be financially constrained after the annoucement of accounting misstatements. This result is in line with those of previous studies (e.g. Chen *et al.* 2009).

Although Figure 7.1 and Figure 7.2 show the differences in financing activities around the event period as compared with regular periods, these differences may not be

statistically significant. Therefore, the next subsection tests whether these differences differ from zero.

b) Mean difference between groups

Results of a stastistical t-test for a difference in means between regular periods and the event period is reported in Table 7.5 below.

Table 7.5: Mean Differences in Financing Activities between Regular and Misstatement Periods

Periods	REGULAR	BEFORE	DURING	AFTER
		t-2 to *t*-1	*t*	*t*+1 to *t*+2
Statistics	Mean	Mean (*t*-statistic)	Mean (*t*-statistic)	Mean (*t*-statistic)
EXFIN	0.0131	0.0278	0.0522	-0.0135
		(1.0342)	(3.0967)***	(-2.4413)**
PROCEED	0.0121	0.0320	0.0393	0.0087
		(1.6890)*	(2.4709)**	(0.5408)
STDEBT	0.0038	0.0058	0.0201	-0.0017
		(0.2761)	(1.9190)*	(-1.02)
LTDEBT	-0.0039	-0.0154	-0.0089	-0.0198
		(-1.3716)	(-0.4815)	(-2.0249)**
Observations	n=2,320	n=51	n=66	n=58

Table 7.5 compares means of financing activities for the misstatement periods (BEFORE, DURING and AFTER) with those of regular periods. T-tests are used to evaluate differences in means. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively (a two-tail test of whether the difference in means equals to zero). All variables are defined in Table 7.2.

In Table7.5, the observations during year *t*-1 and *t*-2 were combined into a group of the observations before the misstatement year (BEFORE) and the observations during year *t*+1 and *t*+2 were combined into a group of the observations after the misstatement year (AFTER).[55] The observations during the misstatement year were named DURING. The alternative hypothesis for the t-tests in Table 7.5 is that the difference in means of net capital for regular periods and a misstatement period differs from zero.

[55]Besides being consistent with previous studies, the combination is beneficial to the statistical analysis because the number of observations in year *t*-2 and *t*+2 is small (<30).

As presented in Table 7.5, results of the t-tests are as follows. Firstly, the total amount of external funds (EXFIN) for the two years before the misstatement (0.0278) is higher than that of the average regular periods (0.0131), but it is not statistically different at the 0.05 level. By type of financing activity, the average net proceeds (PROCEED) is higher for misstating firms (0.0320) than regular periods (0.0121), but the difference is significant at the 10% level (two-tailed). The net capital inflows from borrowing (STDEBT and LTDEBT) between the two groups are not statistically different. Therefore, before the misstatement year there is no significant difference in the flow of capital of the misstating firms and the control group at the 5% level.

Secondly, during the misstatement year (the DURING column) an average amount of total capital (EXFIN) for the misstating firms is 5.22% of total assets. This is higher than that of the average regular periods by 3.91% (5.22-1.31%) and the difference is statistically signficant at the 0.05 level. Specifically, the amounts of funds from share issuance (PROCEED) and short-term borrowing (STDEBT) for the misstating firms are significantly higher than those of the average regular periods at the 0.05 and 0.10 level, resepectively. The long-term debt is not statistically significant, however. Consequently, misstating firms receive a greater amount of capital inflow than the control group does in the misstatement year and this amount comes from share issuance activity.

Thirdly, there seems to be a penalty from capital providers after the annoucement of accounting misstatements. The total amount of capital inflow to total assets (EXFIN) is lower for the misstating firms (-0.0135, AFTER versus +0.0131, REGULAR), and the difference differs from zero at the 0.05 level (*t*-statistic of -2.4413). Specifically, the significiant reduction of the capital is caused by a sharp decrease in long-term borrowing (*t*-statistic of -2.0249).

A reason for the decrease in net long-term debt may be explained by the incentive involved in debt covenant violations. An incentive to avoid debt covenants is one of the causes of accounting misstatements in Thailand (see Chapter 6). When the misreporting is revealed, the existing creditors tend to scrutinise the finanical reports. If they find that

the firms actually violate the covenants then they can use their acceleration rights, demand immediate repayment, and refuse further credit. Meanwhile, the possibility to obtain finance from a new creditor is unlikely because the firm has just restated their financial reports. The existing evidence in the previous literature shows that borrowers rarely switch lenders and are unable to obtain more favourable financing from alternative sources after a covenant violation (Roberts and Sufi 2009). Consequently, the amount of long-term borrowing in years t+1 and t+2 can become extremely negative, as shown in the sample statistics above.

In summary, before the misstatement year there is no significant difference in the financing activities between the misstating firms and other firms in the Thai capital market. During the misstatement year the misstating firms have an exceptional ability to get external financing (particularly from share issuance). After the revealation of misstatements there is an ecomomic cost imposed on the misstating firms, which can be measured by the flow of capital from external financing activities.

The analyses in this section, however, are based on the difference in means between two periods; none of the other factors involving financing activities is considered. The next section (i.e. Section 7.4.4) will assess the impact of an announcement on the flow of capital for misstating firms in the first two years after the announcement in a form of multivariate regression analysis. Section 7.5 will re-examine the economic benefits and costs of accounting misstatements after controlling for other factors.

7.4.4 Multivariate Analysis

This section assesses the economic effect of an announcement of accounting misstatement on external financing activity as measured by the flow of capital scaled by total assets. A linear regression model for the analysis, which has previously presented in Section 7.3.1, is repeated.

Linear regression model:

$$\begin{aligned}EXFIN_{i,t} = {} & \alpha_0 + \beta_1 AFTER_{\tau(i)<t<\tau(i)+2} + \beta_2 OCF_{i,t} + \beta_3 CASH_{i,t-1} + \beta_4 INV_{i,t-1} + \beta_5 PPE_{i,t-1} \\ & + \beta_6 LEVC_{i,t-1} + \beta_7 Q_{i,t} + \beta_8 LNSALES_{i,t} + \beta_9 INT_{i,t} + \beta_{10} INVEST_{i,t} \\ & + \sum_{K=1}^{7} \beta_K IND_{i \in K,\, t} + \sum_{t=1}^{9} \beta_t YEAR_t + \varepsilon_{i,t}\end{aligned}$$

where τ (i) is the misstatement year for firm i and t is the current fiscal year for firm i. All variables are defined in Table 7.2.

The coefficient of AFTER is of interest. Creditors and equity holders are concerned about firms' credibility and the reliability of their financial reporting process after an announcement of accounting misstatements and, therefore, the cost of capital required is higher (Graham *et al.* 2008; Hribar and Jenkins 2004). Consequently, this study predicts that the flow of capital that the misstating firms receive after the announcement is likely to be smaller than that of the other years (Hypothesis 4, Chapter 5). A dummy variable is thus employed to measure the effect of the announcement, which equals 1 for the first two fiscal years after the announcement (AFTER) and its coefficient is expected to be negative. The control variables are: firstly, seven determinants of the magnitude of external funds examined by Almeida and Campello (2010); secondly, two extra empirical factors added by the research (i.e. an average interest rate and investment demand); and thirdly, seven industry dummies and nine year dummies. The standard errors are adjusted for firm-level clustering.

Table 7.6 shows the regression results for the impact of misstatement announcements on external financing activities.

Table 7.6: Linear Regression Analysis for the Effect of an Announcement of Accounting Misstatements on the Flow of Capital

	Hypo thesis	Expected Sign	Model 1 Coefficient (*t*-statistic)	Model 2 Coefficient (*t*-statistic)	Model 3 Coefficient (*t*-statistic)	Model 4 Coefficient (*t*-statistic)
Dependent			EXFIN	EXFIN	PROCEED	DEBT
Constant			-0.0019	-0.0020	0.0362***	-0.0406***
			(-0.113)	(-0.114)	(2.916)	(-2.710)
AFTER [a]	4	-	-0.0231**			
			(-2.267)			
FIRST		-		-0.0256**	-0.0118**	-0.0111
				(-2.108)	(-2.509)	(-0.911)
SECOND		-		-0.0205	-0.0048	-0.0112
				(-1.541)	(-0.540)	(-0.835)
OCF		-	-0.5319***	-0.5318***	-0.0905***	-0.4258***
			(-20.598)	(-20.580)	(-6.134)	(-13.803)
CASH		-	-0.1097***	-0.1097***	-0.0368**	-0.0636***
			(-4.243)	(-4.239)	(-2.039)	(-2.945)
INV		-	-0.0044	-0.0044	-0.0163*	0.0105
			(-0.344)	(-0.342)	(-1.752)	(0.892)
PPE		+	0.0421***	0.0421***	-0.0186*	0.0623***
			(3.114)	(3.116)	(-1.916)	(4.920)
LEVC		-	-0.0802***	-0.0802***	0.0035	-0.0839***
			(-8.248)	(-8.242)	(0.528)	(-8.364)
Q		+	0.0258***	0.0258***	0.0108***	0.0106**
			(7.036)	(7.028)	(3.775)	(2.469)
LNSALES		+	0.0038***	0.0038***	-0.0031***	0.0074***
			(3.108)	(3.107)	(-3.786)	(5.856)
INT		-	-0.0866**	-0.0867**	0.0197	-0.1137***
			(-2.528)	(-2.528)	(0.846)	(-3.333)
INVEST		+	0.1632***	0.1632***	0.0326***	0.1304***
			(12.419)	(12.415)	(3.680)	(9.500)
Industry dummies			Included	Included	Included	Included
Year dummies			Included	Included	Included	Included
Observations			2,495	2,495	2,495	2,495
Adjusted R^2			0.489	0.489	0.119	0.404
F-test statistic			39.64	38.18	4.497	18.49
Model degrees of freedom			24	25	25	25
Residual degrees of freedom			384	384	384	384
p-value for F-test			<0.0001	<0.0001	<0.0001	<0.0001
Number of clusters (firms)			385	385	385	385

Table 7.6 presents regression results for the analysis whether an announcement of an accounting misstatement is negatively associated with external financing activities of misstating firms in years *t*+1

and *t*+2 (Hypothesis 4 set out in Chapter 5), after controlled for other factors. EXFIN is a summation of net proceeds from stock issuance and net debt from borrowing for the year disclosed in cash flow statements divided by total assets. PROCEED is a ratio of net proceeds from share issuance described in cash flow statements divided by total assets. DEBT is a ratio of net cash flow from borrowing activity shown in cash flow statements divided by total assets. AFTER is a dummy variable taking the value of 1 for the two firm-years after the announcement year (*t*+1 and *t*+2); 0 otherwise. FIRST is a dummy variable taking the value of 1 for the first firm-year after the announcement year (*t*+1); 0 otherwise. SECOND is a dummy variable taking the value of 1 for the second firm-year after the announcement year (*t*+2); 0 otherwise. All other variables are defined in Table 7.2. Standard errors are robust by firm-level clustering. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively (a two-tailed test of whether the coefficient is equal to zero).

[a] If all the continuous variables are not winsorised, the significance level of an announcement of accounting misstatements (the AFTER variable) changes from the 5% level to the 10% level (*p*-value=0.063), and the control variables, except for the beginning of receivables and inventory (INV), are not significant at the 5% level.

In Model 1, the coefficient of AFTER is as negative as expected and it differs from zero at the 0.05 level. Diagnostic tests for regression assumptions and robust regression analysis (presented in Appendix D) indicate the goodness of fit of the model.[56] Therefore, the capital inflow that occurred to the misstating firms reduces for the first two firm-years after the announcement than in the other firm-years. The next paragraph presents an interpretation from the regression.

In a regular period, a firm has an average net capital outflow from external financing of approximately 0.19% of total assets a year (e.g. the net capital outflow for debt repayment is higher than the net capital inflow from share issuance and borrowing). When a firm announces an accounting misstatement (or it is revealed), the average net capital outflow increases to 2.5% (0.19+2.31) of total assets. Internal funds tend to be used for this outflow of capital. Unfortunately, the existing internal funds of the misstating firms are deemed to be poor. As reported in the summary statistics of Table 7.3, the internal wealth (i.e. OCF, CASH and INV) is lower for the misstating firms than the average control firm-years along the misstatement periods (year *t*-2 to year *t*+2). Therefore, the misstating firms seem to be financially constrained. This result is

[56]As reported in Appendix D, since a diagnostic test of the normality of the residuals shows some extreme outliers, robust regression models were employed to check the research results in the presence of outliers. The coefficient of AFTER is -0.0213 in the M-estimator (Huber 1981) approach and is -0.0234 in the MM-estimator (Yohai 1987) approach. The original coefficient of – 0.0231 in the Model 1 of Table 7.6 is close to the coefficient in the MM estimator, which is a recommended approach for robust regression (Verardi and Croux 2009). The research result is, therefore, robust to outliers/non-normality.

consistent with the results which are to be found in the previous literature (e.g. Chen *et al.* 2009).

Model 2 shows the results by year. The coefficient of the first year dummy (FIRST) is statistically significant at the 0.05 level, but the coefficient of the second year dummy (SECOND) is not. These indicate that there is a sharp decrease in capital inflow by 2.56% of total assets immediately after the announcement (year *t*+1). In year *t*+2, although the decrease remains (a decrease of 2.05%), it does not result in a statistically significant difference in means of the net capital for the misstating firms and the control firms. The research also examined the effect on year *t*+3, but the coefficient of the third year dummy is not significant at the 0.05 level (*p*-value of 0.138). Therefore, there is unlikely to be a long term effect for an announcement of accountings misstatements.

Models 3 and 4 illustrate the effect on two choices of external financing. In Model 3 the announcement has a significant impact on the net proceeds from share issuance, particularly during the first year. The amount of net proceeds reduces by a magnitude of 1.18% of total assets for misstating firms. The net capital from borrowing activity also reduces in Model 4 (1.11% in the first year and 1.12% in the second year); however, the coefficients do not statistically differ from zero (*t*-statistic = -0.911 for FIRST and -0.835 for SECOND). Referring to the determinants of accounting misstatements in Thailand (Chapter 6), an antecedent of important incentive for Thai firms to misstate financial reports is to avoid debt covenant violation. It implies that firms are afraid of the cost of violation (e.g. the lenders' demand for immediate repayment or a higher cost of debt for future credit) and that they decide to mislead the lenders. However, in Model 4 the reaction from lenders, measured by the flow of incoming capital, seems unaffected by the announcement of accounting misstatements.[57] The antecedent and consequence seem to be conflict (if the debt covenant violation is costly as the firms expect, creditors should react negatively to the misstating firms and that the amount of incoming capital should be significantly reduced) in the multiple regression analysis. One explanation for

[57]In a simple regression analysis where AFTER, industry dummies, and year dummies are the explanatory variables, the relationship between net debt (DEBT) and AFTER is statistically significant at the *p*-value of 0.001 (the coefficient of -0.02389 and *t*-statistic of -3.38). However, the coefficient is not significant when the analysis controls for other factors.

this is that the creditors take no action after perceiving the misstatements; for example, in the U.S. sample (Roberts and Sufi 2009) 62.6% of creditors grant waivers to the borrowers after the covenant violations. Alternatively, the misstating firms borrow from other lenders. Further examination into the lender parties, details of debt contracts and defaults is, however, difficult for this thesis because of data unavailability.

The results regarding the control variables are consistent with prior research. The internal wealth (OCF and CASH) is significantly negatively associated with the external financing; this result is consistent with the pecking order theory (Myers 1984; Myers and Majluf 1984). However, the beginning balance of receivables and inventories (INV) has no significant relationship with the external financing in the Thai sample at the 0.05 level. The high amount of existing tangible assets (PPE) allows firms to raise more external financing, particularly a borrowing activity (Model 4). A pre-existing high leverage ratio (LEVC) impedes a firm in borrowing (Model 4), but does not affect share issuance (Model 3). A firm with a higher investment opportunity (Q) earns a higher amount of external finance. Specifically, the market-to-book value of assets (Q) is positively associated with both share issuance (Model 3) and borrowing activity (Model 4). This relationship is in contrast to the results that have been found in the previous literature; for example, Myers (1977) and Rajan and Zingales (1995) both found that Q is positively associated with equity choice but negatively associated with debt choice. This contrast might arise because the financial system of Thai firms are bank-oriented (Alba *et al.* 2003) and equity is issued only when firms have no more debt capacity (Wiwattanakantang 1999). A firm may take the opportunity of having high market-to-book value of assets (an implication of high expected future cash flows) to get a lower cost of debt from banks and, therefore, the Q measure can be positively associated with borrowing activity.

Firm size (LNSALES) is positively associated with the net amount of external financing (Models 1 and 2) and borrowing activity (Model 4); however firm size is negatively associated with share issuance (Model 3), which is in contrast with both the expectations of this study and with the previous literature (e.g. Rajan and Zingales 1995). Because size is based on the level of sales, it may indicate the amount of

internally generated funds (i.e. the more the amount of sales is, the more generated cash flow comes in, as in Table 7.4, firm size is +19% correlated with the operating cash flows). Accordingly, larger Thai firms may find it unnecessary to issue shares and so the negative relationship between size and external financing appears. Nevertheless, the effect of firm size on financial policy is still ambiguous in previous empirical studies (Rajan and Zingales 1995).

The average interest rate (INT) is negatively associated with the net capital that is raised from borrowing. This is rational: the interest rate is the cost of debt, and so the higher an interest rate is then the lower the amount of debt a firm can raise will be. In contrast, although the interest rate is positively associated with the net proceeds from share issuance, the coefficient is not significant. These results imply that when the cost of debt is high a firm may shift from borrowing to equity issuance (e.g. the information asymmetry costs which are charged by equity investors is lower than cost of debt quoted by lenders), but the cost of debt does not directly affect the amount of proceeds from share issuance. The investment demand (INVEST) is strongly associated with the external financing, and this result is consistent with the previous literature (e.g. Titman and Wessels 1988).[58]

In summary, the regression results support an alternative hypothesis (Hypothesis 4, Chapter 5) that there is a negative relationship between an announcement of accounting misstatements and external financing activity of misstating firms in years *t*+1 and *t*+2. After the model has controlled for certain financial characteristics, the announcement of

[58]This thesis accepts that the cost of debt is somehow integrated in the amount of net capital (EXFIN) because the underlying assumption presumes that the higher cost of capital results in a lower net capital when the demand of funds is fixed. However, when considered separately, the interest rate is a significant determinant of borrowing activities (Model 4) but not of stock issuance activities (Model 3). This should allow this research to assure that this interest rate can be used to control the decision on the external financing activity choices. Having the interest rate included increases the power of the regression model and, therefore, it allows the research to assure the research result on the AFTER variable. Without adding the interest rate in the regression model, the coefficient of AFTER is still significant (the coefficient changes from -0.02314 to -0.02311 and the *p*-value changes from 0.024 to 0.027). In the same vein, if the model contains only the empirical variables that were suggested by Almeida and Campello (2010) (i.e. the interest rate and investment demand measures are excluded), the coefficient of AFTER is significant at the *p*-value of 0.006 but the adjust R^2 reduces from 48.9% (Model 1, Table 7.6) to 37.19%.

accounting misstatement has an impact on a decrease in capital inflow for the misstating firms in the first two years after the announcement. The decrease is about 2.13% of total assets below the mean of regular periods. The reduction is seen most emphatically in the proceeds from share issuance and the reduction is greater in the first year than in the second year after the announcement.[59]

This section has assessed an economic cost of an announcement of accounting misstatements on the flow of capital. The next section is an empirical study into both the economic cost and benefit of an accounting misstatement.

7.5 Economic Costs and Benefits of Accounting Misstatements

This section aims to include both an economic benefit and cost of an accounting misstatement into one model. As discussed in Chapter 3, positive accounting researchers (e.g. Dechow *et al.* 1996; Rezaee 2005) believe that there is a cost-benefit trade-off in financial reporting decision but the empirical evidence is limited (Dechow *et al.* 2010; Wahlen 2004). The research extends the literature in terms of the net capital from external financing activities. The amount of capital occurred in misstating firms around the misstatement periods was observed.

According to the analysis in the dynamics of capital of misstating firms in Section 7.4.3, the average capital flow (EXFIN) of misstating firms is significantly higher than that of the control group in the misstatement year (year *t*). This may signal a benefit of

[59]One might argue that the smaller amount of capital in year *t*+1 may occur because misstating firms have had a great amount of cash from "stockpiling" at a lower cost of capital during the misstatement year (year *t*) and that they do not need funds in year *t*+1. This situation can happen; however, after observing the internal wealth and investing activities of the misstating firms, the researcher does not see so. Assuming that the misstating firms use incoming cash flow for investing in property, the amount of capital (EXFIN, net capital to total assets) and the investing activity (capital expenditure minus disposal, divided by total assets) in year *t* and *t*+1 are observed. On average (see Table 7.3), the misstating firms earned the capital (EXFIN) 5.2% of total assets in year *t* and used it almost in the same amount (5.15% of total assets) for investment (untabulated). The beginning balance of internal wealth (CASH and INV) in year *t*+1 (35.2% of total assets) is lower than that of year *t* (38.6% of total assets) (See Table 7.3 Panel B). Therefore, it does not seem that the internal wealth of the misstating firms is high enough that they do not need external funding in year *t*+1. Consequently, the research finding on the adverse effect of the misstatement announcement is reliable.

financial misreporting in the misstatement year. A dummy variable (DURING) is then added into the multivariate regression model in the previous section to assess whether the flow of capital in the misstatement year is higher than that of the other years, *ceteris paribus.* It is a proxy for an economic benefit from financial misreporting.

With regard to economic costs, the dummy of AFTER is still retained to measure the effect of announcement on external financing in the first two years after the announcement. Having both the benefit and the cost of an accounting misstatement in one model may enable us to understand a cost-benefit trade-off in financial misreporting decision. The model is as follows.

Linear regression model:

$$\begin{aligned} EXFIN_{i,t} = {} & \alpha_0 + \lambda_1 DURING_{t \in \tau(i)} + \beta_1 AFTER_{\tau(i)<t<\tau(i)+2} + \beta_2 OCF_{i,t} + \beta_3 CASH_{i,t-1} \\ & + \beta_4 INV_{i,t-1} + \beta_5 PPE_{i,t-} + \beta_6 LEVC_{i,t-1} + \beta_7 Q_{i,t} + \beta_8 LNSALES_{i,t} \\ & + \beta_9 INT_{i,t} + \beta_{10} INVEST_{i,t} + \sum_{K=1}^{7} \beta_K IND_{i \in K,t} + \sum_{t=1}^{9} \beta_t YEAR_t + \varepsilon_{i,t} \end{aligned}$$

where τ (i) is the misstatement year for firm i and t is the current fiscal year. All variables are defined in Table 7.2. This model is similar to the multivariate linear regression model in the previous section, but it has the dummy variable of DURING added. The coefficient of DURING is expected to be positive, while the coefficient of AFTER is expected to be negative.

It is worth noting that the inclusion of the two dummies (DURING and AFTER) does not differ from the model used in the study by Roberts and Sufi (2009). However, their interpretation in the model does not examine trading-off costs and benefits; they aim instead to show the change in the magnitude of net debt issuance in the quarter of violation and eight quarters afterwards.

Table 7.7: Linear Regression Analysis for Economic Benefits and Costs of an Accounting Misstatement, Measured by the Flow of Net Capital

	Expected Sign	Model 1 coefficient (*t*-statistics)	Model 2 coefficient (*t*-statistics)	Model 3 coefficient (*t*-statistics)	Model 4 coefficient (*t*-statistics)
Dependent		EXFIN	EXFIN	PROCEED	DEBT
Constant		-0.00246	-0.00248	0.0356***	-0.0405***
		(-0.143)	(-0.144)	(2.837)	(-2.687)
DURING	+	0.01334	0.01333	0.0136	-0.0005
		(1.342)	(1.340)	(1.386)	(-0.041)
AFTER	-	-0.02230**			
		(-2.157)			
FIRST	-		-0.02467**	-0.0108**	-0.0111
			(-2.006)	(-2.256)	(-0.892)
SECOND	-		-0.01976	-0.0041	-0.0112
			(-1.479)	(-0.464)	(-0.837)
OCF	-	-0.53084***	-0.53078***	-0.0894***	-0.4258***
		(-20.443)	(-20.425)	(-6.003)	(-13.821)
CASH	-	-0.11044***	-0.11039***	-0.0375**	-0.0636***
		(-4.282)	(-4.279)	(-2.109)	(-2.951)
INV	-	-0.00368	-0.00366	-0.0156	0.0105
		(-0.286)	(-0.284)	(-1.637)	(0.878)
PPE	+	0.04229***	0.04232***	-0.0184*	0.0623***
		(3.123)	(3.125)	(-1.878)	(4.908)
LEVC	-	-0.08148***	-0.08145***	0.0022	-0.0838***
		(-8.429)	(-8.423)	(0.352)	(-8.515)
Q	+	0.02573***	0.02572***	0.0108***	0.0106**
		(7.014)	(7.007)	(3.736)	(2.475)
LNSALES	+	0.00385***	0.00385***	-0.0030***	0.0074***
		(3.157)	(3.155)	(-3.625)	(5.825)
INT	-	-0.08690**	-0.08697**	0.0194	-0.1137***
		(-2.542)	(-2.542)	(0.833)	(-3.334)
INVEST	+	0.16313***	0.16313***	0.0325***	0.1304***
		(12.447)	(12.444)	(3.691)	(9.498)
Industry dummies		Included	Included	Included	Included
Year dummies		Included	Included	Included	Included
Observations		2,495	2,495	2,495	2,495
Adjusted R^2		0.489	0.489	0.129	0.403
Statistics for F-test		37.98	36.62	4.268	17.1
Model degrees of freedom		25	26	26	26
Residual degrees of freedom		384	384	384	384
p-value for F-test		<0.0001	<0.0001	<0.0001	<0.0001
Number of clusters (firms)		385	385	385	385

Table 7.7 presents regression results for the analysis whether an accounting misstatement has an economic benefit to the misstating firms in the misstatement year and has an economic cost to the misstating firms in years *t*+1 and *t*+2, after controlled for other factors. The dependent variable is EXFIN, a summation of net proceeds from stock issuance and net debt from borrowing for the year disclosed in cash flow statements divided by total assets. PROCEED is a ratio of net proceeds from share issuance described in cash flow statements divided by total assets. DEBT is a ratio of net cash flow from borrowing activity shown in cash flow statements divided by total assets. DURING is a dummy variable taking the value of 1 for the misstatement year (*t*); 0 otherwise. AFTER is a dummy variable taking the value of 1 for the two firm-years after the announcement year (*t*+1 and *t*+2); 0 otherwise. FIRST is a dummy variable taking the value of 1 for the first firm-year after the announcement year (*t*+1); 0 otherwise. SECOND is a dummy variable taking the value of 1 for the second firm-year after the announcement year (*t*+2); 0 otherwise. All other variables are defined in Table 7.2. Standard errors are robust by firm-level clustering. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively (a two-tailed test of whether the coefficient is equal to zero).

Table 7.7 shows the regression results for the empirical model of economic costs and benefits of accounting misstatements. In Model 1, the coefficient of 0.01334 is positive as expected; the flow of capital is higher for the misstating firms than the average regular periods; however, the robust standard error is large and, therefore, the coefficient is not statistically significant at the 0.05 level (*t*-statistic=1.342). Consequently, there is no evidence to support an empirical prediction that accounting misstatements provide economic benefits to the misstating firms in terms of a greater magnitude of capital inflow in the misstatement year. On the other hand, the coefficient of AFTER (-0.0223) differs from zero at the 0.05 level. After the announcement of accounting misstatement goes public, the flow of capital that the misstating firms receive is lower than the mean of the control group. The evidence of the economic cost imposed to the misstating firms remains and is consistent with the previous section. When combined with the constant term, the flow of capital from external financing activities reduces from 1.088 (-0.246+1.334) percent of total assets during the misstatement year preceding the announcement to -2.476 (-0.246-2.23) percent of total assets for the first two years after the announcement, a decline of 3.564 percent in total. The coefficients of control variables in all models are very similar to those in Table 7.6.

Model 2 details the economic cost by year. Although the coefficient of the first year (-0.02467) is significant at the 0.05 level, the coefficient of the second year (-0.01976) is not. This indicates that the penalty is strong in the first year after the announcement and it seems to last by two years. This result coincides with the presentation of comparative

financial statements. The restated item(s) is the beginning balance of the next year financial reports. Its appearance might not attract investors' attention.

Models 3 and 4 show the economic effect of an accounting misstatement on share issuance activity and borrowing activity, respectively. The coefficient of economic benefit (i.e. DURING) is still not significant in both models. Consequently, there is no significant evidence to support an economic benefit of an accounting misstatement in the misstatement year when assessed by the flow of capital. On the other hand, the misstating firms are punished by equity investors in the first year after the announcement of accounting misstatements, as shown by the significant negative coefficient of FIRST in Model 3. There is no significant evidence to support an economic cost for borrowing activity (Model 4). The results on the economic costs by type of external financing activity and by year are in line with those in Table 7.6, Models 3 and 4.

In conclusion, in the Thai capital market environment, there is no evidence of an economic benefit of financial misreporting when measured by the flow of capital from external financing activities, but there is strong evidence of an economic cost imposed on the misstating firms, particularly from equity investors.

The reason for the insignificant result for an economic benefit in the misstatement year might be found in the determinants of accounting misstatements in the Thai sample. As in Chapter 6, Thai companies appear to misstate their financial reports because they wanted to avoid debt covenant violation and minimise the cost of capital; however, both measures are *ex ante* indicators. The leverage ratio indicates the closeness to a debt covenant violation, not a default.[60] As seen in this chapter, an impact of an announcement of accounting misstatements on the creditors' reactions has not been of significance. In the same vein, the incentive to minimise the cost of capital is supported by the indicator of *ex ante* negative free cash flow (NFCF), but not by the *ex post* share issuance (ISSUE). The indicator of the *ex ante* NFCF from the previous year financial

[60]This can be considered a limitation of the leverage ratio in measuring the debt covenant violation (Dichev and Skinner 2002).

status (year *t*-1) might not be strong enough to influence a significant increase in the flow of capital in the following year (year *t*), after controlled for other factors. Even elsewhere, when an incentive to minimise cost of capital is confirmed for seasoned equity issuers (such as through income-increasing accruals) an economic benefit from earning manipulation is not assured because the pre-offering manipulation is predictable and the analysts and investors adjust the firm's returns in the following year after the offerings (Rangan 1998; Teoh *et al.* 1998).

In addition, the misstatements in Thailand occur due to weak corporate governance mechanisms (i.e. duality position, audit firm change, and the use of a Big 4 auditor). Although these factors absolutely impact on the quality of the financial reports, they might not be powerful enough to result in the economic scale of external financing.[61] This proposed empirical model may function more efficiently if all of the determinants relate to the benefits governing external financing.

7.6 Summary

The results in this chapter provide evidence of an economic cost that is imposed on misstating firms, as measured by the flow of capital. The secondary data analysis shows a sharp drop of external funds following an announcement of accounting misstatements. The adverse effect is clearly seen in the net proceeds from share issuance and in the first year after the announcement. These findings extend the literature; i.e., the average cost of capital increases for misstating firms after the announcement (e.g. Graham *et al.* 2005; Hribar and Jenkins 2004) and as such the amount of capital that the misstating firms attain is smaller in the post-announcement period than other periods. The misstating firms are, therefore, likely to be financially constrained, which is consistent

[61]There is some evidence showing an impact of corporate governance on creditors' decisions (Chang *et al.* 2009; Holder-Webb and Sharma 2010; Mansi *et al.* 2004) and an effect of the divergence between cash flow and control rights on equity investors' decisions (Giannetti and Simonov 2006). However, in a context when low financial reporting quality exists neither the corporate governance variables (i.e. BIG, DUAL and AUDCHG) nor the ownership structure variables (OWN, FAM and CROSS) are statistically associated with the capital providers' decisions when measured by the flow of capital (EXFIN).

with Chen *et al.*(2009). In addition, it can be seen in the analysis that the flow of capital for the misstating firms significantly increases during the misstatement year. This can signal a benefit from the financial misreporting; however, the evidence is weak in the statistical view.

The result of an economic cost of an accounting misstatement represents an important contribution to the literature. Referring to the empirical model of external financing need by Almeida and Campello (2010); the results in this chapter provide an extension to their model in that besides the financial characteristics, quality of financial reports also affects a firm's external financing activities. The literature is seeking an explanation of how financial reporting influences a firm's decision regarding the type of financing choices (Armstrong *et al.* 2010, p. 214). This research shows that the low quality of financial reports has an adverse effect on external financing activities (measured by the magnitude of incoming capital) and the impact is greater for equity issuance than debt choice in the Thai samples.

The next chapter will summarise the research results for the determinants (the previous chapter) and economic consequences of accounting misstatements in Thailand (this chapter). In addition, certain limitations of the research and avenues for future research will be discussed.

CHAPTER EIGHT

DISCUSSION AND CONCLUSIONS

8.1 Introduction

This chapter summarises the main contributions of the thesis and discusses their implications. Section Two illustrates the key findings derived from the data analysis in Chapters 6 and 7. The contribution of the research is also discussed in Section Two. In Section Three, the empirical findings are set out against the background of agency theory, which is a fundamental theory in this research and is used to explain the phenomenon of accounting misstatements. Section Four describes some limitations of the research and makes a number of recommendations for future research.

8.2 Key Findings and Research Contributions

As described in the earlier chapters, this research aimed to explore and discover the determinants and economic consequences of accounting misstatements in Thailand. In addition to extending prior findings on accounting misstatements beyond developed markets in general, the research findings contribute to the literature on financial reporting in concentrated ownership systems. The following section summarises the key research results, ordered according to the research questions, and discusses their implications and contributions to the literature.

8.2.1 The Occurrence of Accounting Misstatements in Thailand

This research has documented accounting misstatement cases in Thailand, which is an example of a concentrated ownership system. The sample comprised 51 misstatement observations, compared with 2,452 non-misstatement observations during 2001-2009 in the Stock Exchange of Thailand. Coffee (2006) proposes that firms in concentrated

ownership systems are less likely to restate their financial reports when an error is found because the legal protection and enforcement action is low and corporate governance is less effective. His proposition, however, has rarely been examined because the reports for accounting misstatements (or accounting restatements) in concentrated ownership samples are rarely available. This thesis has been able to provide this information and fill this gap in the literature. Approximately, 0.27%[62] of the financial reports annually released in the capital market of Thailand contain accounting misstatement items. This proportion is lower than that of other countries, such as 0.34-0.47% a year in U.S. capital markets (Beneish 1997; Burns and Kedia 2006). The smaller fraction in Thailand is, therefore, in line with Coffee's (2006) viewpoint.

8.2.2 The Determinants of Accounting Misstatements in Thailand

With reference to the theoretical framework of the occurrence of accounting manipulation (Jiambalvo 1996) and the importance of the ownership structure (Bebchuk and Hamdani 2009; Coffee 2006), the determinants of accounting misstatements in Thailand were categorised into three perspectives: the dominant shareholders' incentives, the functions of corporate governance mechanisms, and the influence of the concentrated ownership structure. The research results are summarised and discussed as follows.

a) The Incentives of Controlling Shareholders

Thai firms are more likely to misstate financial reports when they are close to a violation of debt covenants (as measured by the leverage ratio) and when they need external financing (as measured by negative free cash flow). On the other hand, neither an incentive to maintain the firm's value (as measured by the market-to-book ratio) nor a rehabilitation status (which is a proxy for profitability regulation and financial distress) is an important antecedent for the financial misreporting decision. There are two additional points on these findings that will be discussed in light of their significance and contribution to the literature:

[62] A ratio of 51 misstatement firm-years to 2,452 non-misstatement firm-years, which is then divided by nine years of the research period (2001-2009).

Firstly, the results of the incentives are contrary to the incentives for earnings management (within GAAP) in the study by Pornupatham (2006), which found that the auditors in Thailand disagree that the debt covenant hypothesis (Watts and Zimmerman 1986) is an important factor that enables Thai firms to manage their earnings. On the other hand, they agree that firms are more likely to manage earnings because the firms want to meet the market's expectation. Additionally, the leverage ratio in Pornupatham's (2006) sample is negatively associated with the magnitude of discretionary accruals, while the ratio is positively associated with the likelihood of accounting misstatements in this study. These conflict relationships also appear in Larcker *et al.* (2007) who found in their study that the debt-related incentive (a ratio of debt to market value of equity) is negatively associated with abnormal accruals in the U.S. firms (like Pornupatham (2006)), but it is positively associated with the likelihood of accounting restatements (like this research). These empirical findings might provide an insight to us. It may be the case that earnings management (within GAAP) occurs when firms want to please capital market participants (Graham *et al.* 2005; Leuz *et al.* 2003). However, earnings management may be unnecessary for highly levered firms because their firm's value is highly discounted by investors and this makes it difficult for them to maintain their expected value. In this case, earnings management is unnecessary and, therefore, the negative relationship appears. In contrast, the current cost of capital for highly-levered firms is already high (Maksimovic and Titman 1991), so they can be less concerned about the future costs (e.g. the costs occurred after accounts manipulation is revealed). It is thus highly possible for highly levered firms to engage in accounting misstatements, as shown by the positive relationship. The finding in this study supports the proposition by Maksimovic and Titman (1991) that highly-levered firms are more likely to commit fraud.

Secondly, the significant result on the debt-related incentive coincides with the institutional settings of the country and the concentrated ownership systems. The financial system of concentrated ownership firms (including Thai firms) is primarily based on debt more often than equity (Coffee 2006; Rajan and Zingales 1995) and, therefore, the firms are likely to be much more constrained by debt covenants.

Consequently, the likelihood that a firm can violate the debt covenants increases. To avoid the violation accounts manipulation can be used. When compared with the dispersed ownership systems, the debt-related incentive (measured by the leverage ratio) is an important antecedent in Thai firms (an example of a concentrated ownership system), but it is still inconclusive for dispersed ownership samples (Beneish 1997; Dechow *et al.* 2011; Dechow *et al.* 1996). This can happen because the financial system of dispersed ownership firms is primarily based on capital markets. The research thus contributes to the literature on how accounting quality plays a role in debt contracting (Armstrong *et al.* 2010) and in the environment of debt orientation, the debt covenant hypothesis (Watts and Zimmerman 1986) is strongly supported.

b) Corporate Governance Mechanisms

There is evidence of weaker corporate governance in misstating firms and this contributes to the literature on the relationship between corporate governance and earnings manipulation in an Asian context, as raised by Brown *et al.* (2011). Previous studies have shown that corporate governance in concentrated ownership systems is weaker than dispersed ownership systems, but very few of them have assessed how such a weakness of the corporate governance in firms with concentrated ownership is associated with the incidence of accounting misstatements.

Firms in less developed countries (including Thailand) have less incentive to improve their governance because the adoption of better governance mechanisms is expensive (Doidge *et al.* 2007). In Thailand, the adoption of corporate governance depends on a cost-benefit perspective (Kouwenberg 2010) and there is not substantial variation in the corporate governance policy among firms (Doidge *et al.* 2007; Kouwenberg 2010). This research complements these prior studies in that although the previous studies have found little variation in the corporate governance policy among Thai firms, there is an appearance of weaker corporate governance in misstating firms which results in lower quality financial reports. All three corporate governance proxies in this research (i.e. the duality position of the chief executive officer and chairman of the board, the use of a Big 4 firm and an audit firm change) are significantly associated with accounting misstatements in Thailand. The details and discussions for each proxy are separately

presented next. The findings on the subject of corporate governance can extend our knowledge on the relationship between corporate governance and the financial reporting quality in Asian countries, which is still limited in literature (Brown *et al.* 2011, pp. 147-153).

Firstly, the significant effect of the duality position on the likelihood of accounting misstatements is found in this research (which is an example of a concentrated ownership system) and it also appears in samples of diffused ownership firms (e.g. Dechow *et al.* 1996; Larcker *et al.* 2007; Peasnell *et al.* 2001; Skousen *et al.* 2008). Therefore, this evidence can serve as a reference point for policy makers to encourage firms to segregate the duties between the managers and monitors. A recent study has also shown that when the chief executive officer is involved in the board selection process (in addition to their role as chairman of the board) the effectiveness of the board is eliminated and the board has no influence on the control for financial reporting quality (Carcello *et al.* 2011).

Secondly, regarding the use of Big 4 auditors, while the literature (particularly the studies into dispersed ownership firms) questions the role of Big 4 auditors in detecting accounting errors (Dechow *et al.* 2010), the evidence from firms in the concentrated ownership environment supports the important role of Big 4 auditors in detecting accounting misstatements. Therefore, in line with the previous studies (e.g. Fan and Wong 2005), the Big 4 auditors have been shown in this study to considerably influence financial reporting quality in the East Asia region.

Thirdly, when a firm changes its auditor, there is an increasing likelihood that the financial reports in that fiscal year will not be fairly presented. This research has found a positive relationship between an audit firm change and the likelihood of accounting misstatements. A further investigation into types of audit firm change and the likelihood of accounting misstatements reveals that an increase in the likelihood of accounting misstatements in the first year of audit engagement tends to involve an inherent risk of short-term audit tenure (e.g. a loss of client-specific knowledge), rather than a scheme of controlling shareholders in concealing their financial misreporting. Although a

change in audit firm increases the likelihood of accounting misstatements, a change in audit partner does not. The findings in Thailand support the literature on the question of an adverse effect of a short-term audit tenure (e.g. less than three years) on the quality of financial reports (Carcello and Nagy 2004; Johnson *et al.* 2002). This evidence can be beneficial to regulators who are deciding whether they should regulate a mandatory audit firm rotation or not. Based on the research results, a mandatory audit firm rotation is unlikely to be beneficial because auditors may lack client-specific knowledge and there is an increasing propensity of auditors to fail to detect accounting misstatements. On the other hand, a mandatory audit partner change can be made possible because the financial reporting quality (as measured by the likelihood of accounting misstatements) is not affected by an audit partner change.

c) The Influence of Concentrated Ownership Structures

There is weak evidence to show an entrenchment effect of the controlling shareholders in the financial misreporting context. Since accounts manipulation is considered to be an indicator of opportunistic financial misreporting, the research expected to find evidence showing an expropriation of controlling shareholders through the characteristics of concentrated ownership structure (i.e. ownership concentration, family ownership, and an appearance of pyramidal and cross-holding structure). However, none of the ownership measures are statistically associated with the likelihood of accounting misstatements. Only when the controlling shareholders own a share ownership more than 25%, then the likelihood of accounting misstatements significantly increases at the significance of 10% level. Since after the prior research highlighted the relationship between the ownership structure and the reported earnings quality (e.g. Fan and Wong 2002), many empirical studies (including this study and Chen *et al.* (2006)) have expected to find the relationship between the ownership structure and the low quality of financial reports (i.e. GAAP violation), but the expectation was not supported by the empirical work. When Leuz *et al*. (2003) did not find a relationship between ownership concentration and earnings management in their cross-country sample, they queried that it might appear in a firm-level sample; however, this study did not find a relationship between the ownership concentration and the likelihood of accounting misstatements even when using a firm-level sample. One explanation for this is that

although the controlling shareholders intentionally deliver misstated financial reports, the reports will be audited by auditors and approved by the board of directors before being released. Therefore, whether they can detect the misstatements eventually depends on the effectiveness and competence of the monitors. Taken together with the other determinants of accounting misstatements (as discussed above), it can be concluded that although the controlling shareholders can influence the corporate governance policy (such as the election of chairman of the board and a change in auditors) through their large control rights, their controlling rights do not directly affect an appearance of accounting misstatements. The appearance instead depends on their incentives and the effectiveness of corporate governance mechanisms.

At this point, it may be useful to use the results of this research to improve financial reporting quality in Thailand and other countries where the country institutions are similar. For example, lenders should be specifically aware of the quality of financial reports in debt-based countries and in firms with weak corporate governance. Additionally, the significant result of the influence of the 25% threshold on the ownership concentration and the incentives of the financial statement preparers extend the argument by Ball *et al*. (2003), who posit that in four East Asian countries (i.e. Hong Kong, Malaysia, Singapore and Thailand) financial reporting quality depends on the financial statements preparers' incentives rather than accounting standards. This study reveals two of those incentives (i.e. to avoid debt covenant violations and to minimise cost of capital). The accounting standards are currently principles-based (Ball 2006), so that incentives of the preparers (who usually are the controlling shareholders in East Asia) are crucial and should be given attention by the stakeholders. There is also a policy implication of the research results for regulators. According to the found determinants of accounting misstatements in Thailand, monitoring activities are important and might be improved later (such as segregation of duties between CEO and chairman of the board, and the enhancement of audit quality for local audit firms).

8.2.3 The Consequences of Accounting Misstatements in Thailand

This research has assessed the economic consequences of accounting misstatements to firms. After being controlled for certain factors that potentially impact the external financing activity, the regression analysis reveals an adverse effect of an announcement of accounting misstatements on the external financing activity for misstating firms. The misstating firms obtain a lower amount of incoming capital, a reduction of 2.31% of total assets when compared with the mean of non-misstating firms, for the first two years after the announcement. The adverse effect is greater in the first year than in the second year for the post-announcement period. The economic consequence on the external financing activity supports and extends the prior studies (Chen *et al.* 2009; Graham *et al.* 2008; Hribar and Jenkins 2004). This insight can inform the literature of how accounting quality influences the capital providers' decision in the contracting process (Armstrong *et al.* 2010; Dechow *et al.* 2010; DeFond 2010). The capital providers limit their investment in firms that have ever experienced accounting misstatements and accounting allegations.

When its impact on the sources of funds is measured separately, an announcement of an accounting misstatement affects the amount of capital from share issuances. In Thailand sample, the decreased incoming funds are more apparently seen in the share issuance activity than in the borrowing choice. The negative reaction from equity investors is in agreement with prior studies in Thailand that have used a different methodology (Phunnarungsi 2010; Tummanon 2005a) who find significant negative abnormal share returns in firms with an accounting allegation. Regarding the reaction from lenders, the announcement of accounting misstatements does not significantly impact the amount of funds provided by them. One possible reason for this involves private debt financing, which is frequently used by Thai firms. Charumilind *et al.* (2006) found that personal connections between Thai firms and banks benefit those firms who can obtain long-term debt from banks on favourable terms. The country's richest families in their sample (Charumilind *et al.* 2006, p. 194) are the same families who are the firms' ultimate owners in this research. It is, therefore, possible that the ultimate owners of the sample chose to raise funds from private sources (i.e. banks) and that they are less likely to be

concerned with lenders' reactions.[63] It also appears in the U.S. samples that firms with low quality financial reports have shifted to a private debt alternative (Bharath *et al.* 2008; Chen *et al.* 2009). Collectively, the cost of equity tends to be higher than the cost of debt when a firm financially misreports. This is consistent with the pecking order theory (Myers 1984; Myers and Majluf 1984), which suggests that equity holders are more aware of the credibility of financial reporting because they have fewer opportunities to scrutinise the financial reports than the lenders.

In addition to the above findings that address the research questions (see Chapter 1), this research has also proposed an empirical model to present both the determinants and economic consequences of an accounting misstatement in order to extend our knowledge of a cost-benefit trade-off in the financial reporting process. In the descriptive statistics analysis the economic benefits significantly appear in misstating firms (i.e. the misstating firms receive a greater amount of capital in the years preceding the misstatement announcement). This study then added both the economic costs and benefits into a multiple regression model by using the flow of capital as a measure. However, the cost-benefit perspective is not supported by the regression results after being controlled for relevant factors (i.e. the economic costs appear significant but the economic benefits do not). One possible reason for these results is that investors are aware of an inherent risk of financial reporting (such as earnings management (Teoh *et al.* 1998) and accounting restatements (Bardos *et al.* 2011)) and as such they already require rates of returns covering such a risk; therefore, any economic benefit that a firm gains in the misstatement year does not significantly appear. On the other hand, they severely punish the misstating firm for lack of financial reporting integrity. For instance, existing creditors demand immediate repayment (Roberts and Sufi 2009), while analysts and equity investors reassess management credibility and earnings quality (e.g. Firth *et al.* 2011). New capital providers also question the reliability of the misstating firm's financial reports, so they are more concerned about future investments, such as whether to invest or not, or whether to require a higher rate of returns (e.g. Chen *et al.* 2009; Graham *et al.* 2008). Therefore, the misstating firms

[63]The thesis cannot investigate into the choices of public debt and private debt because data were unavailable publicly. The examination was therefore conducted on the total amount of debt.

experience a financial difficulty in the post-announcement period. The regression results on the insignificant appearance of economic benefits and the significant economic costs provide an insight to companies that they should prepare high quality of financial reports (e.g. establishing effective corporate governance mechanisms to monitor the financial reporting process); otherwise, they will face an enormous cost if their financial reports are later restated. This instance shows us a significance of monitoring systems, which is in line with the theory of the firm and agency theory (Jensen and Meckling 1976). The next section links the research findings to the principal theory of the research (i.e. agency theory).

8.3 Verification of Agency Theory

The research conclusions from the previous section have affirmed the validity of agency theory. As discussed in Chapter 2, and emphasised in Chapter 5, a taxonomy of the theory of a firm and agency theory (Jensen and Meckling 1976) is used by this research to explain the phenomenon of accounting misstatements in concentrated ownership systems. The research findings support the views of the theory as follows.

Firstly, the principal-principal agent conflict exists in concentrated ownership firms. In the case of Thailand, pre-existing creditors and new capital providers are more likely to be misled by their clients' financial reports, particularly when the clients are close to debt covenant violations and when firms need external financing.

Secondly, agency theory points out that opportunistic behaviour occurs when monitoring activities are weak. Although there is no strong evidence of an entrenchment effect through the concentrated ownership structure in the Thai sample, the monitoring mechanisms that the controlling shareholders of misstating firms have provided are weak and as such the likelihood of accounting statements increases. Likewise, the weak monitoring activities increase the likelihood of accounting misstatements in dispersed ownership systems. Therefore, the monitoring activities stated in agency theory are important and they are applicable in both systems of the ownership structure. They

might even more concern firms with concentrated ownership because the corporate governance of these firms is relatively weaker than that of widely held firms (Salacuse 2006).

Thirdly, capital providers significantly reduce their investment when a firm's accounting misstatements are revealed (i.e. the reduction in net capital from external financing activities); this is particularly true of equity investors. This evidence supports the utility-maximisation of the equity investors in the post-announcement period. At the same time, the misstating firms confront a negative result from the inaccuracy of financial reporting; however, they maximised their profits in the misstatement year (such as from the reduced monitoring costs and/or from the benefits that they mislead creditors and prospective investors). One limitation of this research is to explain the utility-maximisation assumption of the creditors in the post-announcement period. Although they were misled by their clients, their reactions (as measured by the amount of debt offered in the post-announcement period) did not appear significant. The researcher cannot further investigate into this circumstance due to data limitations. This, therefore, opens up avenues for future research. The next section acknowledges the research limitations and suggests avenues for future research.

8.4 Limitations and Avenues for Future Research

Although this research was conducted on a rigorous and systematic basis, like any research, it suffers from a number of limitations. A significant amount of effort was placed on ensuring that the objectives of the study were met and the research questions were answered. This section describes the research limitations and makes some recommendations for future research.

Firstly, as recently discussed in the previous section this study has found an adverse effect of the misstatement announcements on the capital from share issuances but not from borrowing, even though an incentive of the misstatements relates to lenders. It is possible that the misstating firms decided not to raise funds from capital markets and

instead borrowed directly from banks. If that is the case then the amount of net proceeds is drastically reduced, while the amount from borrowing cannot be affected. Further research using alternative methodologies could examine the occurrence of the borrowing activities (such as whether new loans are supplied by existing lenders or new lenders, or if the new loans are raised from public debt or private debt). In addition, in reference to the assessment of economic consequences (see Chapter 7); this research assumed that the demand for external financing of a firm was fulfilled by capital providers in the same year. There can be a case made that a misstating firm desired some external funds but were unable to raise them from any sources, as Chen *et al*. (2009) pointed out, or that a firm may actually prefer share issuances but because of a higher cost of equity it instead shifts to a borrowing choice. Since the data was unavailable publicly this research was restricted to answer these arguments.

Secondly, it still opens for future research to extend our knowledge on the cost-benefit trade-off in the financial reporting process. This study and other researchers (e.g. Dechow *et al.* 1996; Rezaee 2005) believe that there is a cost-benefit trade-off in a decision to violate or not violate GAAP. However, this research has weak evidence to support the economic benefits of GAAP violation, while the economic costs are affirmed. Future research may extend this issue by using other economic measures or other research methodologies; more instances can be found in Wahlen (2004).

Thirdly, the sample selection criterion covered only non-financial public firms and firms having fiscal years ended 31 December. In addition, the sample was restricted to those firms with data available. While the data captures the determinants and economic consequences of accounting misstatements for a large sample of firms in Thailand, it may not be representative of the average of the whole population of Thai listed firms.

Fourthly, like most prior studies (e.g. Dechow *et al.* 2011; Dechow *et al.* 1996), this research did not distinguish accounting errors from fraudulent financial reporting. A further study might be able to do so, but researchers must be circumspect on the criteria used to differentiate them. There is a possible result on the causes of accounting misstatements if a distinction is made. For instance, both incentives and weak corporate

governance are likely to be important for a fraudulent group but the incentives may not be essential for the error group because the accounting errors are unintentional. Also, capital providers may react differently to the misstatements due to fraud and accounting errors; for example, a pioneering study by Hennes *et al.* (2008) discovered that errors and fraud affect management turnover differently. These issues might also be of interest for future research.

REFERENCES

Abidin, S., Beattie, V. and Goodacre, A. 2010. Audit Market Structure, Fees and Choice in a Period of Structural Change: Evidence from the UK – 1998–2003. *The British Accounting Review* 42(3), pp. 187-206.

Agrawal, A. and Chadha, S. 2005. Corporate Governance and Accounting Scandals. *Journal of Law & Economics* 48(2), pp. 371-406.

Agrawal, A., Jaffe, J. F. and Karpoff, J. M. 1999. Management Turnover and Governance Changes Following the Revelation of Fraud. *Journal of Law & Economics* 42(1), pp. 309-342.

AICPA, American Institute of Certified Public Accountants. 1997. *Consideration of Fraud in a Financial Statement Audit*. *Statement on Auditing Standards No.82*. New York: AICPA.

AICPA, American Institute of Certified Public Accountants. 2002. *Consideration of Fraud in a Financial Statement Audit*. *Statement on Auditing Standards No.99*. New York: AICPA.

Alba, P., Claessens, S. and Djankov, S. 2003. Thailand's Corporate Financing and Governance Structure. *Policy Research Working Paper* [Online]. Available at: http://elibrary.worldbank.org/content/workingpaper/10.1596/1813-9450-2003 [Accessed: 24 February 2010].

Almeida, H. and Campello, M. 2010. Financing Frictions and the Substitution between Internal and External Funds. *Journal of Financial & Quantitative Analysis* 45(3), pp. 589-622.

Ananchotikul, N., Kouwenberg, R. R. and Phunnarungsi, V. 2010. Do Firms Decouple Corporate Governance Policy and Practice? *SSRN eLibrary* [Online]. Available at: http://ssrn.com/paper=1083404 [Accessed: 14 March 2011].

Anderson, R. C., Mansi, S. A. and Reeb, D. M. 2003. Founding Family Ownership and the Agency Cost of Debt. *Journal of Financial Economics* 68(2), pp. 263-285.

Anderson, R. C., Mansi, S. A. and Reeb, D. M. 2004. Board Characteristics, Accounting Report Integrity, and the Cost of Debt. *Journal of Accounting and Economics* 37(3), pp. 315-342.

Armstrong, C. S., Guay, W. R. and Weber, J. P. 2010. The Role of Information and Financial Reporting in Corporate Governance and Debt Contracting. *Journal of Accounting and Economics* 50(2-3), pp. 179-234.

Arthaud-Day, M. L., Certo, S. T., Dalton, C. M. D. and Dalton, D. R. 2006. A Changing of the Guard: Executive and Director Turnover Following Corporate Financial Restatements. *Academy of Management Journal* 49(6), pp. 1119-1136.

Ball, R. 1972. Changes in Accounting Techniques and Stock Prices. *Journal of Accounting Research* 10(3), pp. 1-38.

Ball, R. 2006. International Financial Reporting Standards (IFRS): Pros and Cons for Investors. *Accounting and Business Research* 36(Special Issue), pp. 5-27.

Ball, R. and Brown, P. 1968. An Empirical Evaluation of Accounting Income Numbers. *Journal of Accounting Research* 6(2), pp. 159-178.

Ball, R., Jayaraman, S. and Shivakumar, L. 2012. Audited Financial Reporting and Voluntary Disclosure as Complements: A Test of the Confirmation Hypothesis. *Journal of Accounting and Economics* 53(1–2), pp. 136-166.

Ball, R., Robin, A. and Wu, J. S. 2003. Incentives Versus Standards: Properties of Accounting Income in Four East Asian Countries. *Journal of Accounting and Economics* 36(1-3), pp. 235-270.

Ball, R. and Shivakumar, L. 2006. The Role of Accruals in Asymmetrically Timely Gain and Loss Recognition. *Journal of Accounting Research* 44(2), pp. 207-242.

Bamber, L. S. and Bamber, E. M. 2009. Discussion of "Mandatory Audit-Partner Rotation, Audit Quality and Market Perception: Evidence from Taiwan". *Contemporary Accounting Research* 26(2), pp. 393-402.

Bardos, K. S., Golec, J. and Harding, J. P. 2011. Do Investors See through Mistakes in Reported Earnings? *Journal of Financial & Quantitative Analysis* 46(6), pp. 1917-1946.

Barniv, R. R. and Cao, J. 2009. Does Information Uncertainty Affect Investors' Responses to Analysts' Forecast Revisions? An Investigation of Accounting Restatements. *Journal of Accounting and Public Policy* 28(4), pp. 328-348.

Barth, M. E., Elliott, J. A. and Finn, M. W. 1999. Market Rewards Associated with Patterns of Increasing Earnings. *Journal of Accounting Research* 37(2), pp. 387-413.

Basu, S. 1997. The Conservatism Principle and the Asymmetric Timeliness of Earnings. *Journal of Accounting and Economics* 24(1), pp. 3-37.

Beasley, M. S. 1996. An Empirical Analysis of the Relation between the Board of Director Composition and Financial Statement Fraud. *Accounting Review* 71(4), pp. 443-465.

Beattie, V., Goodacre, A. and Fearnley, S. 2003. And Then There Were Four: A Study of UK Audit Market Concentration - Causes, Consequences and the Scope for Market Adjustment. *Journal of Financial Regulation and Compliance* 11(3), pp. 250-265.

Bebchuk, L. A. and Hamdani, A. 2009. The Elusive Quest for Global Governance Standards. *University of Pennsylvania Law Review* [Online] 157(5). Available at: http://heinonline.org/HOL/Page?handle=hein.journals/pnlr157&div=32&g_sent=1&collection=journals [Accessed: 23 September 2011].

Bebchuk, L. A. and Weisbach, M. S. 2010. The State of Corporate Governance Research. *Review of Financial Studies* 23(3), pp. 939-961.

Becker, C. L., Defond, M. L., Jiambalvo, J. and Subramanyam, K. R. 1998. The Effect of Audit Quality on Earnings Management. *Contemporary Accounting Research* 15(1), pp. 1-24.

Beneish, M. D. 1997. Detecting GAAP Violation: Implications for Assessing Earnings Management among Firms with Extreme Financial Performance. *Journal of Accounting & Public Policy* 16(3), pp. 271-309.

Beneish, M. D. 1999a. The Detection of Earnings Manipulation. *Financial Analysts Journal* 55(5), pp. 24-36.

Beneish, M. D. 1999b. Incentives and Penalties Related to Earnings Overstatements That Violate GAAP. *Accounting Review* 74(4), pp. 425-457.

Benston, G. J., Bromwich, M. and Wagenhofer, A. 2006. Principles- Versus Rules-Based Accounting Standards: The FASB's Standard Setting Strategy. *Abacus* 42(2), pp. 165-188.

Berle, A. A. and Means, G. C. 1932. *The Modern Corporation & Private Property*. New Jersey: Transaction Publishers.

Bharath, S. T., Sunder, J. and Sunder, S. V. 2008. Accounting Quality and Debt Contracting. *Accounting Review* 83(1), pp. 1-28.

Bonner, S. E., Palmrose, Z.-V. and Young, S. M. 1998. Fraud Type and Auditor Litigation: An Analysis of SEC Accounting and Auditing Enforcement Releases. *Accounting Review* 73(4), pp. 503-532.

Boonlert-U-Thai, K. and Kuntisook, K. 2009. Accounting Conservatism and Controlling Shareholder Characteristics: Empirical Evidence from Thailand. *Working Paper* [Online]. Available at: http://161.200.66.3/files/Paper_2009_CAFS_Boonlert_U_Thai_Kuntisook.pdf [Accessed: 1 April 2010].

Boonlert-U-Thai, K., Meek, G. K. and Nabar, S. 2006. Earnings Attributes and Investor-Protection: International Evidence. *The International Journal of Accounting* 41(4), pp. 327-357.

BOT, Bank of Thailand. 2011. *SET & External Stock Market Indices*.[Online] Available at: http://www.bot.or.th/English/Statistics/FinancialMarkets/CapitalMarket/Pages/StatCapitalMarket.aspx [Accessed:26 March 2011].

Boubakri, N. and Ghouma, H. 2010. Control/Ownership Structure, Creditor Rights Protection, and the Cost of Debt Financing: International Evidence. *Journal of Banking & Finance* 34(10), pp. 2481-2499.

Bowen, R. M., Rajgopal, S. and Venkatachalam, M. 2008. Accounting Discretion, Corporate Governance, and Firm Performance. *Contemporary Accounting Research* 25(2), pp. 310-405.

Brazel, J. F., Jones, K. L. and Zimbelman, M. F. 2009. Using Nonfinancial Measures to Assess Fraud Risk. *Journal of Accounting Research* 47(5), pp. 1135-1166.

Bricker, R. and Chandar, N. 2000. Where Berle and Means Went Wrong: A Reassessment of Capital Market Agency and Financial Reporting. *Accounting, Organizations and Society* 25(6), pp. 529-554.

Brown, P., Beekes, W. and Verhoeven, P. 2011. Corporate Governance, Accounting and Finance: A Review. *Accounting & Finance* 51(1), pp. 96-172.

Bryman, A. 1988. *Quantity and Quality in Social Research*. London: Routledge.

Bryman, A. and Bell, E. 2007. *Business Research Methods*. 2nd ed. Oxford: Oxford University Press.

Burgstahler, D. and Dichev, I. 1997. Earnings Management to Avoid Earnings Decreases and Losses. *Journal of Accounting and Economics* 24(1), pp. 99-126.

Burns, N. and Kedia, S. 2006. The Impact of Performance-Based Compensation on Misreporting. *Journal of Financial Economics* 79(1), pp. 35-67.

Burns, N., Kedia, S. and Lipson, M. 2010. Institutional Ownership and Monitoring: Evidence from Financial Misreporting. *Journal of Corporate Finance* 16(4), pp. 443-455.

Carcello, J. V. and Nagy, A. L. 2004. Audit Firm Tenure and Fraudulent Financial Reporting. *Auditing* 23(2), pp. 57-71.

Carcello, J. V., Neal, T. L., Palmrose, Z.-V. and Scholz, S. 2011. CEO Involvement in Selecting Board Members, Audit Committee Effectiveness, and Restatements. *Contemporary Accounting Research* 28(2), pp. 396-430.

Chang, X., Dasgupta, S. and Hilary, G. 2009. The Effect of Auditor Quality on Financing Decisions. *Accounting Review* 84(4), pp. 1085-1117.

Charoenwong, C. and Jiraporn, P. 2009. Earnings Management to Exceed Thresholds: Evidence from Singapore and Thailand. *Journal of Multinational Financial Management* 19(3), pp. 221-236.

Charumilind, C., Kali, R. and Wiwattanakantang, Y. 2006. Connected Lending: Thailand before the Financial Crisis. *The Journal of Business* 79(1), pp. 181-217.

Chen, C. J. P., Chen, S. and Su, X. 2001. Profitability Regulation, Earnings Management, and Modified Audit Opinions: Evidence from China. *Auditing* 20(2), pp. 9-30.

Chen, C. Y., Lin, C. J. and Lin, Y. C. 2008. Audit Partner Tenure, Audit Firm Tenure, and Discretionary Accruals: Does Long Auditor Tenure Impair Earnings Quality? *Contemporary Accounting Research* 25(2), pp. 415-445.

Chen, G., Firth, M., Gao, D. N. and Rui, O. M. 2006. Ownership Structure, Corporate Governance, and Fraud: Evidence from China. *Journal of Corporate Finance* 12(3), pp. 424-448.

Chen, X., Cheng, Q. and Lo, A. K. 2009. The Consequences of Aggressive Financial Reporting: The Case of External Financing. *SSRN eLibrary* [Online]. Available at: [Accessed: 28 October 2010].

Chen, X., Ender, P. B., Mitchell, M. and Wells, C. 2003a. *Logistic Regression with Stata*. UCLA: Academic Technology Services, Statistical Consulting Group. [Online]. Available at: http://www.ats.ucla.edu/stat/stata/webbooks/logistic/ [Accessed: 23 May 2011].

Chen, X., Ender, P. B., Mitchell, M. and Wells, C. 2003b. *Regression with Stata*. UCLA: Academic Technology Services, Statistical Consulting Group. [Online]. Available at: http://www.ats.ucla.edu/stat/stata/webbooks/reg/ [Accessed: 21 June 2011].

Chi, W. and Huang, H. 2005. Discretionary Accruals, Audit-Firm Tenure and Audit-Partner Tenure: Empirical Evidence from Taiwan. *Journal of Contemporary Accounting & Economics* 1(1), pp. 65-92.

Choi, M. S. and Zéghal, D. 1999. The Effect of Accounting Firm Mergers on International Markets for Accounting Services. *Journal of International Accounting, Auditing and Taxation* 8(1), pp. 1-22.

Christensen, G. 1992. Sensitive Information: Collecting Data on Livestock and Informal Credit. In: Devereux, S. and Hoddinott, J. eds. *Fieldwork in Developing Countries*. London: Harvester Wheatsheaf, pp. 124-137.

Chua, W. F. 1986. Radical Developments in Accounting Thought. *Accounting Review* 61(4), pp. 601-631.

Chuanrommanee, W. and Swierczek, F. W. 2007. Corporate Governance in ASEAN Financial Corporations: Reality or Illusion? *Corporate Governance: An International Review* 15(2), pp. 272-283.

Ciccone, S. J. and Etebari, A. 2004. Analyst Earnings Forecast Trends in Pacific Rim Countries. *Managerial Finance* 30(7), pp. 19-35.

Claessens, S., Djankov, S., Fan, J. P. H. and Lang, L. H. P. 2002. The Disentangling the Incentive and Entrenchment Effects of Large Shareholdings. *The Journal of Finance* 57(6), pp. 2741-2771.

Claessens, S., Djankov, S. and Lang, L. H. P. 2000. The Separation of Ownership and Control in East Asian Corporations. *Journal of Financial Economics* 58(1-2), pp. 81-112.

Claessens, S. and Fan, J. P. H. 2002. Corporate Governance in Asia: A Survey. *International Review of Finance* 3(2), pp. 71-103.

Coffee, J. C. 2001. The Acquiescent Gatekeeper: Reputational Intermediaries, Auditor Independence the Governance of Accounting. *Working Paper No.191 Columbia Law School Center for Law and Economic Studies* [Online]. Available at: http://www.law.columbia.edu/center_program/law_economics/wp_listing_1/wp_listing/191-200#6959 [Accessed: 26 April 2011].

Coffee, J. C. 2006. A Theory of Corporate Scandals: Why the United States and Europe Differ. In: Norton, J.J. and Rickford, J. and Kleineman, J. eds. *Corporate Governance Post-Enron: Comparative and International Perspectives*. London: British Institute of International and Comparative Law, pp. 3-21.

Cohen, J., Krishnamoorthy, G. and Wright, A. 2004. The Corporate Governance Mosaic and Financial Reporting Quality. *Journal of Accounting Literature* 23, pp. 87-152.

Cohen, J., Krishnamoorthy, G. and Wright, A. 2010. Corporate Governance in the Post-Sarbanes-Oxley Era: Auditors' Experiences. *Contemporary Accounting Research* 27(3), pp. 751-786.

Cohen, J., Krisnamoorthy, G. and Wright, A. M. 2002. Corporate Governance and the Audit Process. *Contemporary Accounting Research* 19(4), pp. 573-594.

Connelly, B. L., Certo, S. T., Ireland, R. D. and Reutzel, C. R. 2011. Signaling Theory: A Review and Assessment. *Journal of Management* 37(1), pp. 39-67.

Cram, D. P., Karan, V. and Stuart, I. 2009. Three Threats to Validity of Choice-Based and Matched-Sample Studies in Accounting Research. *Contemporary Accounting Research* 26(2), pp. 477-516.

Creswell, J. W. 2009. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. 3rd ed. London: SAGE.

D'Agostino, R. B., Belanger, A. and JR.D'Agostino, R. B. 1990. A Suggestion for Using Powerful and Informative Tests of Normality. *American Statistician* 44(4), pp. 316-321.

DeAngelo, H., DeAngelo, L. and Skinner, D. J. 1994. Accounting Choice in Troubled Companies. *Journal of Accounting and Economics* 17(1-2), pp. 113-143.

Dechow, P. M. and Dichev, I. D. 2002. The Quality of Accruals and Earnings: The Role of Accrual Estimation Errors. *Accounting Review* 77(4), pp. 35-59.

Dechow, P. M., Ge, W., Larson, C. R. and Sloan, R. G. 2011. Predicting Material Accounting Misstatements. *Contemporary Accounting Research* 28(1), pp. 17-82.

Dechow, P. M., Ge, W. and Schrand, C. M. 2010. Understanding Earnings Quality: A Review of the Proxies, Their Determinants and Their Consequences. *Journal of Accounting and Economics* 50(2-3), pp. 344-401.

Dechow, P. M. and Skinner, D. J. 2000. Earnings Management: Reconciling the Views of Accounting Academics, Practitioners, and Regulators. *Accounting Horizons* 14(2), pp. 235-250.

Dechow, P. M., Sloan, R. G. and Sweeney, A. P. 1995. Detecting Earnings Management. *Accounting Review* 70(2), pp. 193-225.

Dechow, P. M., Sloan, R. G. and Sweeney, A. P. 1996. Causes and Consequences of Earnings Manipulation: An Analysis of Firms Subject to Enforcement Actions by the SEC. *Contemporary Accounting Research* 13(1), pp. 1-36.

DeFond, M. L. 2010. Earnings Quality Research: Advances, Challenges and Future Research. *Journal of Accounting and Economics* 50(2-3), pp. 402-409.

DeFond, M. L., Francis, J. R. and Wong, T. J. 2000. Auditor Industry Specialization and Market Segmentation: Evidence from Hong Kong. *Auditing* 19(1), pp. 49-66.

DeFond, M. L. and Jiambalvo, J. 1991. Incidence and Circumstances of Accounting Errors. *Accounting Review* 66(3), pp. 643-655.

DeFond, M. L. and Jiambalvo, J. 1993. Factors Related to Auditor-Client Disagreements over Income-Increasing Accounting Methods. *Contemporary Accounting Research* 9(2), pp. 415-431.

DeFond, M. L. and Jiambalvo, J. 1994. Debt Covenant Violation and Manipulation of Accruals. *Journal of Accounting and Economics* 17(1-2), pp. 145-176.

Degeorge, F., Patel, J. and Zeckhauser, R. 1999. Earnings Management to Exceed Thresholds. *The Journal of Business* 72(1), pp. 1-33.

Desai, H., Hogan, C. E. and Wilkins, M. S. 2006. The Reputational Penalty for Aggressive Accounting: Earnings Restatements and Management Turnover. *Accounting Review* 81(1), pp. 83-112.

Dhnadirek, R. and Tang, J. 2003. Corporate Governance Problems in Thailand: Is Ownership Concentration the Cause? *Asia Pacific Business Review* 10(2), pp. 121-138.

Dichev, I. D. and Skinner, D. J. 2002. Large-Sample Evidence on the Debt Covenant Hypothesis. *Journal of Accounting Research* 40(4), pp. 1091-1123.

Dietrich, J. R. 1984. Discussion of Methodological Issues Related to the Estimation of Financial Distress Prediction Models. *Journal of Accounting Research* 22, pp. 83-86.

Doidge, C., Andrew Karolyi, G. and Stulz, R. M. 2007. Why Do Countries Matter So Much for Corporate Governance? *Journal of Financial Economics* 86(1), pp. 1-39.

Efendi, J., Srivastava, A. and Swanson, E. P. 2007. Why Do Corporate Managers Misstate Financial Statements? The Role of Option Compensation and Other Factors. *Journal of Financial Economics* 85(3), pp. 667-708.

Erickson, M., Hanlon, M. and Maydew, E. L. 2006. Is There a Link between Executive Equity Incentives and Accounting Fraud? *Journal of Accounting Research* 44(1), pp. 113-143.

Ettredge, M., Scholz, S., Smith, K. R. and Lili, S. 2010. How Do Restatements Begin? Evidence of Earnings Management Preceding Restated Financial Reports. *Journal of Business Finance & Accounting* 37(3-4), pp. 332-355.

Fama, E. F. 1980. Agency Problems and the Theory of the Firm. *Journal of Political Economy* 88(2), pp. 288-307.

Fama, E. F. and Jensen, M. C. 1983. Separation of Ownership and Control. *Journal of Law & Economics* 26(2), pp. 301-325.

Fan, J. P. H. and Wong, T. J. 2002. Corporate Ownership Structure and the Informativeness of Accounting Earnings in East Asia. *Journal of Accounting and Economics* 33(3), pp. 401-425.

Fan, J. P. H. and Wong, T. J. 2005. Do External Auditors Perform a Corporate Governance Role in Emerging Markets? Evidence from East Asia. *Journal of Accounting Research* 43(1), pp. 35-72.

Farber, D. B. 2005. Restoring Trust after Fraud: Does Corporate Governance Matter? *Accounting Review* 80(2), pp. 539-561.

Feroz, E. H., Kyungjoo, P. and Pastena, V. S. 1991. The Financial and Market Effects of the SEC's Accounting and Auditing Enforcement Releases. *Journal of Accounting Research* 29(3), pp. 107-142.

Fields, T. D., Lys, T. Z. and Vincent, L. 2001. Empirical Research on Accounting Choice. *Journal of Accounting and Economics* 31(1-3), pp. 255-307.

Filatotchev, I., Lien, Y.-C. and Piesse, J. 2005. Corporate Governance and Performance in Publicly Listed, Family-Controlled Firms: Evidence from Taiwan. *Asia Pacific Journal of Management* 22(3), pp. 257-283.

Filatotchev, I., Zhang, X. and Piesse, J. 2011. Multiple Agency Perspective, Family Control, and Private Information Abuse in an Emerging Economy. *Asia Pacific Journal of Management* 28(1), pp. 69-93.

Firth, M., Rui, O. M. and Wu, W. 2011. Cooking the Books: Recipes and Costs of Falsified Financial Statements in China. *Journal of Corporate Finance* 17(2), pp. 371-390.

Francis, J. 2001. Discussion of Empirical Research on Accounting Choice. *Journal of Accounting and Economics* 31(1-3), pp. 309-319.

Francis, J., LaFond, R., Olsson, P. and Schipper, K. 2005. The Market Pricing of Accruals Quality. *Journal of Accounting and Economics* 39(2), pp. 295-327.

Francis, J., LaFond, R., Olsson, P. M. and Schipper, K. 2004. Costs of Equity and Earnings Attributes. *Accounting Review* 79(4), pp. 967-1010.

Francis, J. R. 2011. A Framework for Understanding and Researching Audit Quality. *Auditing* 30(2), pp. 125-152.

Garlappi, L., Shu, T. and Yan, H. 2008. Default Risk, Shareholder Advantage, and Stock Returns. *Review of Financial Studies* 21(6), pp. 2743-2778.

Giannetti, M. and Simonov, A. 2006. Which Investors Fear Expropriation? Evidence from Investors' Portfolio Choices. *The Journal of Finance* 61(3), pp. 1507-1547.

Gibson, M. S. 2003. Is Corporate Governance Ineffective in Emerging Markets? *Journal of Financial & Quantitative Analysis* 38(1), pp. 231-250.

Gleason, C. A., Jenkins, N. T. and Johnson, W. B. 2008. The Contagion Effects of Accounting Restatements. *Accounting Review* 83(1), pp. 83-110.

Graham, J. R., Harvey, C. R. and Rajgopal, S. 2005. The Economic Implications of Corporate Financial Reporting. *Journal of Accounting and Economics* 40(1-3), pp. 3-73.

Graham, J. R., Li, S. and Qiu, J. 2008. Corporate Misreporting and Bank Loan Contracting. *Journal of Financial Economics* 89(1), pp. 44-61.

Guay, W. 2006. Discussion of the Role of Accruals in Asymmetrically Timely Gain and Loss Recognition. *Journal of Accounting Research* 44(2), pp. 243-255.

Guay, W. R. 2008. Discussion of "Accounting Discretion, Corporate Governance, and Firm Performance". *Contemporary Accounting Research* 25(2), pp. 407-413.

Guay, W. R., Kothari, S. P. and Watts, R. L. 1996. A Market-Based Evaluation of Discretionary Accrual Models. *Journal of Accounting Research* 34(3), pp. 83-105.

Guba, E. G. and Lincoln, Y. S. 1994. Competing Paradigms in Qualitative Research. In: Denzin, N.K. and Lincoln, Y.S. eds. *The Handbook of Qualitative Research*. 1st ed. London: Sage, pp. 105-117.

Hair, J. F., Anderson, R. E., Tatham, R. L. and Black, W. C. 1998. *Multivariate Data Analysis*. 5th ed. New Jersey: Prentice Hall.

Hasnan, S., Rahman, R. A. and Mahenthrian, S. 2008. Management Predisposition, Motive, Opportunity, and Earnings Management for Fraudulent Financial Reporting in Malaysia. *SSRN eLibrary* [Online]. Available at: http://ssrn.com/paper=1321455 [Accessed: 18 February 2011].

Healy, P. M. 1985. The Effect of Bonus Schemes on Accounting Decisions. *Journal of Accounting and Economics* 7(1-3), pp. 85-107.

Healy, P. M. and Wahlen, J. M. 1999. A Review of the Earnings Management Literature and Its Implications for Standard Setting. *Accounting Horizons* 13(4), pp. 365-383.

Hennes, K. M., Leone, A. J. and Miller, B. P. 2008. The Importance of Distinguishing Errors from Irregularities in Restatement Research: The Case of Restatements and CEO/CFO Turnover. *Accounting Review* 83(6), pp. 1487-1519.

Herrmann, D. R., Pornupatham, S. and Vichitsarawong, T. 2008. The Impact of the Asian Financial Crisis on Auditors' Conservatism. *Journal of International Accounting Research* 7(2), pp. 43-63.

Holder-Webb, L. and Sharma, D. S. 2010. The Effect of Governance on Credit Decisions and Perceptions of Reporting Reliability. *Behavioral Research in Accounting* 22(1), pp. 1-20.

Holderness, C. G. 2009. The Myth of Diffuse Ownership in the United States. *Review of Financial Studies* 22(4), pp. 1377-1408.

Holland, K. M. and Lane, J. 2008. Perceived Auditor Independence and Audit Firm Fees. *SSRN eLibrary* [Online]. Available at: http://ssrn.com/paper=1333191 [Accessed: 14 October 2011].

Hosmer, D. W. and Lemeshow, S. 2000. *Applied Logistic Regression*. 2nd ed. New York: Wiley.

Hovakimian, A., Opler, T. and Titman, S. 2001. The Debt-Equity Choice. *Journal of Financial & Quantitative Analysis* 36(1), pp. 1-24.

Hribar, P. and Jenkins, N. T. 2004. The Effect of Accounting Restatements on Earnings Revisions and the Estimated Cost of Capital. *Review of Accounting Studies* 9(2), pp. 337-356.

Huber, P. J. 1981. *Robust Statistics*. New York: Wiley.

IAASB, International Auditing and Assurance Standards Board. 2006. *The Auditor's Responsibility to Consider Fraud in an Audit of Financial Instruments*. *ISA 240 (Redrafted)*. New York: IFAC.

IASB, International Accounting Standards Board. 2003. *Presentation of Financial Statements*. *IAS 1*. London: IASCF.

IASB, International Accounting Standards Board. 2008. *Consolidated and Separate Financial Statements*. *IAS 27*. London: IASCF.

IASB, International Accounting Standards Board. 2010a. *Accounting Policies, Changes in Accounting Estimates and Errors*. *IAS 8*. London: IASCF.

IASB, International Accounting Standards Board. 2010b. *Framework for the Preparation and Presentation of Financial Statements*. London: IASCF.

Jensen, M. C. 1993. The Modern Industrial Revolution, Exit, and the Failure of Internal Control Systems. *The Journal of Finance* 48(3), pp. 831-880.

Jensen, M. C. and Meckling, W. H. 1976. Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. *Journal of Financial Economics* 3(4), pp. 305-360.

Jiambalvo, J. 1996. Discussion of "Causes and Consequences of Earnings Manipulation: An Analysis of Firms Subject to Enforcement Actions by the SEC". *Contemporary Accounting Research* 13(1), pp. 37-47.

Johnson, S., Boone, P., Breach, A. and Friedman, E. 2000. Corporate Governance in the Asian Financial Crisis. *Journal of Financial Economics* 58(1-2), pp. 141-186.

Johnson, V. E., Khurana, I. K. and Reynolds, J. K. 2002. Audit-Firm Tenure and the Quality of Financial Reports. *Contemporary Accounting Research* 19(4), pp. 637-660.

Jones, J. J. 1991. Earnings Management During Import Relief Investigations. *Journal of Accounting Research* 29(2), pp. 193-228.

Kaplan, S. N. and Zingales, L. 1997. Do Investment-Cash Flow Sensitivities Provide Useful Measures of Financing Constraints? *Quarterly Journal of Economics* 112(1), pp. 169-215.

Karpoff, J. M., Lee, D. S. and Martin, G. S. 2008. The Cost to Firms of Cooking the Books. *Journal of Financial & Quantitative Analysis* 43(3), pp. 581-611.

Kasznik, R. 2004. Discussion of "the Effect of Accounting Restatements on Earnings Revisions and the Estimated Cost of Capital". *Review of Accounting Studies* 9(2), pp. 357-367.

Kedia, S. and Philippon, T. 2009. The Economics of Fraudulent Accounting. *Review of Financial Studies* 22(6), pp. 2169-2199.

Kellogg, R. L. 1984. Accounting Activities, Security Prices, and Class Action Lawsuits. *Journal of Accounting and Economics* 6(3), pp. 185-204.

Kezdi, G. 2003. Robust Standard Error Estimation in Fixed-Effects Panel Models. *SSRN eLibrary* [Online]. Available at: http://ssrn.com/paper=596988 [Accessed: 28 May 2012].

Khurana, I. K. and Raman, K. K. 2004. Are Big Four Audits in ASEAN Countries of Higher Quality Than Non-Big Four Audits? *Asia-Pacific Journal of Accounting and Economics* 11(2), pp. 139-165.

King, G. and Zeng, L. 2001a. Explaining Rare Events in International Relations. *International Organization* 55(3), pp. 693-715.

King, G. and Zeng, L. 2001b. Improving Forecasts of State Failure. *World Politics* 53(4), pp. 623-658.

King, G. and Zeng, L. 2001c. Logistic Regression in Rare Events Data. *Political Analysis* 9(2), pp. 137-163.

Kinney, W. R. and McDaniel, L. S. 1989. Characteristics of Firms Correcting Previously Reported Quarterly Earnings. *Journal of Accounting and Economics* 11(1), pp. 71-93.

Kouwenberg, R. R. 2010. An Investigation of the Corporate Governance of Thai Listed Firms During the Period 2000-2008. [Online]. Available at: http://www.set.or.th/setresearch/files/cmresearch/2010.02_CMRI_Working_Paper.pdf [Accessed: 16 July 2010].

La Porta, R., Lopez-de-Silanes, F. and Shleifer, A. 1999. Corporate Ownership around the World. *The Journal of Finance* 54(2), pp. 471-517.

La Porta, R., Lopez-De-Silanes, F., Shleifer, A. and Vishny, R. W. 1997. Legal Determinants of External Finance. *The Journal of Finance* 52(3), pp. 1131-1150.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. and Vishny, R. W. 1998. Law and Finance. *Journal of Political Economy* 106(6), pp. 1113-1155.

Lafuente, E., Bayo-Moriones, A. and García-Cestona, M. 2010. ISO-9000 Certification and Ownership Structure: Effects Upon Firm Performance. *British Journal of Management* 21(3), pp. 649-665.

Larcker, D. F., Richardson, S. A. and Tuna, İ. 2007. Corporate Governance, Accounting Outcomes, and Organizational Performance. *Accounting Review* 82(4), pp. 963-1008.

Lawrence, A., Minutti-Meza, M. and Ping, Z. 2011. Can Big 4 Versus Non-Big 4 Differences in Audit-Quality Proxies Be Attributed to Client Characteristics? *Accounting Review* 86(1), pp. 259-286.

Lee, T. A., Ingram, R. W. and Howard, T. P. 1999. The Difference between Earnings and Operating Cash Flow as an Indicator of Financial Reporting Fraud. *Contemporary Accounting Research* 16(4), pp. 749-786.

Lemmon, M. L. and Lins, K. V. 2003. Ownership Structure, Corporate Governance, and Firm Value: Evidence from the East Asian Financial Crisis. *The Journal of Finance* 58(4), pp. 1445-1468.

Lennox, C. and Pittman, J. A. 2010. Big Five Audits and Accounting Fraud. *Contemporary Accounting Research* 27(1), pp. 209-247.

Leuz, C., Nanda, D. and Wysocki, P. D. 2003. Earnings Management and Investor Protection: An International Comparison. *Journal of Financial Economics* 69(3), pp. 505-527.

Livne, G. and McNichols, M. 2009. An Empirical Investigation of the True and Fair Override in the United Kingdom. *Journal of Business Finance & Accounting* 36(1-2), pp. 1-30.

Livne, G. and Pettinicchio, A. 2011. Do Mandatory Firm Rotations Improve Reporting Quality More Than Mandatory Partner Rotations? In: *Accounting and Finance Section Seminar at Cardiff Business School.* Cardiff, 25 May 2011.

Loebbecke, J. K., Eining, M. M. and Willingham, J. J. 1989. Auditors' Experience with Material Irregularities: Frequency, Nature, and Detectability. *Auditing* 9(1), pp. 1-28.

Maksimovic, V. and Titman, S. 1991. Financial Policy and Reputation for Product Quality. *Review of Financial Studies* 4(1), pp. 175-200.

Mansi, S. A., Maxwell, W. F. and Miller, D. P. 2004. Does Auditor Quality and Tenure Matter to Investors? Evidence from the Bond Market. *Journal of Accounting Research* 42(4), pp. 755-793.

Matichon. 2005. Threatening Secretary-General SEC Due to Conflicts of Interests. *Matichon*. 5 September 2005. p. 20. (In Thai).

McNichols, M. F. 2002. Discussion of the Quality of Accruals and Earnings: The Role of Accrual Estimation Errors. *Accounting Review* 77(4), pp. 61-69.

Menard, S. 1995. *Applied Logistic Regression Analysis*. London: SAGE.

Mitton, T. 2002. A Cross-Firm Analysis of the Impact of Corporate Governance on the East Asian Financial Crisis. *Journal of Financial Economics* 64(2), pp. 215-241.

Montreevat, S. 2007. Thailand's Financial and Corporate Sector Reforms and Consequences. *Regional Outlook*, pp. 133-136.

Moore, M. L. 1973. Management Changes and Discretionary Accounting Decisions. *Journal of Accounting Research* 11(1), pp. 100-107.

Morck, R., Wolfenzon, D. and Bernard, Y. 2005. Corporate Governance, Economic Entrenchment, and Growth. *Journal of Economic Literature* 43(3), pp. 655-720.

Mulford, C. W. and Comiskey, E. E. 2002. *The Financial Numbers Game: Detecting Creative Accounting Practices*. New York: Wiley.

Myers, J. N., Myers, L. A., Palmrose, Z.-V. and Scholz, S. 2005. The Length of Auditor-Client Relationships and Financial Statement Restatements. *Working Paper* [Online]. Available at: http://acctwkshop.cox.smu.edu/acctwkshop/W20052006/mmps.pdf [Accessed: 24 February 2012].

Myers, S. C. 1977. Determinants of Corporate Borrowing. *Journal of Financial Economics* 5(2), pp. 147-175.

Myers, S. C. 1984. The Capital Structure Puzzle. *The Journal of Finance* 39(3), pp. 575-592.

Myers, S. C. and Majluf, N. S. 1984. Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have. *Journal of Financial Economics* 13(2), pp. 187-221.

Narasimhan, R. and Chung, S. 1998. Auditor Concentration of Listed Public Companies on International Stock Exchanges. *Journal of International Financial Management & Accounting* 9(3), pp. 201-215.

Nikolaev, V. V. 2010. Debt Covenants and Accounting Conservatism. *Journal of Accounting Research* 48(1), pp. 51-89.

Nikomborirak, D. 2001. An Assessment of the Role of Board of Directors in Building Good Governance: The Case of Thailand. *TDRI Quarterly Review* 16(3), pp. 14-21.

Palmrose, Z.-V., Richardson, V. J. and Scholz, S. 2004. Determinants of Market Reactions to Restatement Announcements. *Journal of Accounting and Economics* 37(1), pp. 59-89.

Palmrose, Z.-V. and Scholz, S. 2004. The Circumstances and Legal Consequences of Non-GAAP Reporting: Evidence from Restatements. *Contemporary Accounting Research* 21(1), pp. 139-180.

Peasnell, K. V., Pope, P. F. and Young, S. 2001. The Characteristics of Firms Subject to Adverse Rulings by the Financial Reporting Review Panel. *Accounting and Business Research* 31(4), pp. 291-311.

Peng, M. W. and Jiang, Y. 2010. Institutions Behind Family Ownership and Control in Large Firms. *Journal of Management Studies* 47(2), pp. 253-273.

Perols, J. 2011. Financial Statement Fraud Detection: An Analysis of Statistical and Machine Learning Algorithms. *Auditing* 30(2), pp. 19-50.

Perols, J. L. and Lougee, B. A. 2011. The Relation between Earnings Management and Financial Statement Fraud. *Advances in Accounting* 27(1), pp. 39-53.

Persons, O. 2006. The Effects of Fraud and Lawsuit Revelation on U.S. Executive Turnover and Compensation. *Journal of Business Ethics* 64(4), pp. 405-419.

Petersen, M. A. 2009. Estimating Standard Errors in Finance Panel Data Sets: Comparing Approaches. *Review of Financial Studies* 22(1), pp. 435-480.

Phunnarungsi, V. 2010. Corporate Governance, Violations and Market Reactions. [Online]. Available at: http://www.set.or.th/setresearch/files/cmresearch/2010.03_CMRI_Working_Paper.pdf [Accessed: 22 March 2011].

Pornupatham, S. 2006. *An Empirical Examination of Earnings Management, Audit Quality and Corporate Governance in Thailand: Perceptions of Auditors and Audit Committee Members.* PhD Thesis, Cardiff University.

Rahman, A., Yammeesri, J. and Perera, H. 2010. Financial Reporting Quality in International Settings: A Comparative Study of the USA, Japan, Thailand, France and Germany. *The International Journal of Accounting* 45(1), pp. 1-34.

Rajan, R. G. and Zingales, L. 1995. What Do We Know About Capital Structure? Some Evidence from International Data. *The Journal of Finance* 50(5), pp. 1421-1460.

Rajan, R. G. and Zingales, L. 1998. Which Capitalism? Lessons Form the East Asian Crisis. *Journal of Applied Corporate Finance* 11(3), pp. 40-48.

Rangan, S. 1998. Earnings Management and the Performance of Seasoned Equity Offerings. *Journal of Financial Economics* 50(1), pp. 101-122.

Revsine, L., Collins, D. W. and Johnson, W. B. 2002. *Financial Reporting & Analysis*. 2nd ed. New Jersey: Prentice Hall.

Rezaee, Z. 2005. Causes, Consequences, and Deterence of Financial Statement Fraud. *Critical Perspectives on Accounting* 16(3), pp. 277-298.

Richardson, S. A. 2005. Discussion of Consequences of Financial Reporting Failure for Outside Directors: Evidence from Accounting Restatements and Audit Committee Members. *Journal of Accounting Research* 43(2), pp. 335-342.

Roberts, M. R. and Sufi, A. 2009. Control Rights and Capital Structure: An Empirical Investigation. *The Journal of Finance* 64(4), pp. 1657-1695.

Ryan, B., Scapens, R. W. and Theobald, M. 2002. *Research Method and Methodology in Finance and Accounting*. 2nd ed. London: Thomson Learning.

Salacuse, J. W. 2006. The Cultural Roots of Corporate Governance. In: Norton, J.J. and Rickford, J. and Kleineman, J. eds. *Corporate Governance Post-Enron: Comparatives and Internaltional Perspectives*. London: British Institute of International and Comparative Law, pp. 432-464.

Saleh, N. M. and Ahmed, K. 2005. Earnings Management of Distressed Firms During Debt Renegotiation. *Accounting and Business Research* 35(1), pp. 69-86.

Saunders, M., Lewis, P. and Thornhill, A. 2007. *Research Methods for Business Students*. 4th ed. Harlow: Financial Times Prentice Hall.

Scott, W. R. 2004. Institutional Theory: Contributing to a Theoretical Research Program. In: Smith, K.G. and Hitt, M.A. eds. *Great Minds in Management : The Process of Theory Development*. Oxford: Oxford University Press, pp. 460-484.

SECT, The Securities and Exchange Commission, Thailand. 1992. *The Security and Exchange Acts B.E.2535*.[Online] Available at: http://www.sec.or.th/laws_notification/Content_0000000179.jsp?categoryID=CAT0000015&lang=en.

SECT, The Securities and Exchange Commission, Thailand. 2004. *The Preparation of Consolidated Financial Statements No.SEC.Or.Chor.6/2547*.[Online] Available at: http://www.sec.or.th/infocenter/th/accountant/final-hearing.pdf. [Accessed:6 May 2011]. (In Thai).

SECT, The Securities and Exchange Commission, Thailand. 2005a. *Report on the Observance of Standards and Codes (ROSC): Corporate Governance Country Assessment*.[Online] Available at: http://www.worldbank.org/ifa/rosc_cg_tha.pdf [Accessed:31 March 2011].

SECT, The Securities and Exchange Commission, Thailand. 2005b. *Rules, Conditions and Procedures for Financial Reports and Disclosures of Listed Companies.Kor.Jor.39/2548*. [Online] Available at: http://capital.sec.or.th/webapp//nrs/data/3707s.pdf [Accessed:26 May 2011]. (In Thai).

SECT, The Securities and Exchange Commission, Thailand. 2008. *Guidance on Preparing Consolidated Financial Statements.No.SEC.Chor. 29/2551*. [Online] Available at: http://www.sec.or.th/infocenter/th/accountant/sab29-2551.pdf. [Accessed:6 May 2011]. (In Thai).

SECT, The Securities and Exchange Commission, Thailand. 2011. *List of Auditors Approved by the Office of the SEC*.[Online] Available at: http://www.sec.or.th/infocenter/report/Content_0000000236.jsp?categoryID=CAT0000005&lang=en [Accessed:31 March 2011].

Seifert, B. and Gonenc, H. 2010. Pecking Order Behavior in Emerging Markets. *Journal of International Financial Management & Accounting* 21(1), pp. 1-31.

SET, The Stock Exchange of Thailand. 2000a. *Best Practice Guidelines for Audit Committee*.[Online] Available at: http://www.set.or.th/dat/content/rule/en/BorJorRor2500_EN.pdf [Accessed:12 March 2011].

SET, The Stock Exchange of Thailand. 2000b. *Re: Listed Companies Required to Appoint Audit Committee. Bor.Jor./Phor.14-00*.[Online] Available at: http://www.set.or.th/en/regulations/rules/delisting_files/BorJorPhor1400_EN.pdf [Accessed:12 March 2011].

SET, The Stock Exchange of Thailand. 2003. *Best Practices for Shareholders* [Online] Available at: http://www.set.or.th/en/regulations/cg/files/best_practice.pdf [Accessed:12 March 2011].

SET, The Stock Exchange of Thailand. 2009. *Annual Report 2009*.[Online] Available at: http://www.set.or.th/en/about/annual/annual_p1.html [Accessed:26 March 2011].

Setia-Atmaja, L., Haman, J. and Tanewski, G. 2011. The Role of Board Independence in Mitigating Agency Problem II in Australian Family Firms. *The British Accounting Review* 43(3), pp. 230-246.

Sharma, V. D. 2004. Board of Director Characteristics, Institutional Ownership, and Fraud: Evidence from Australia. *Auditing* 23(2), pp. 107-119.

Shleifer, A. and Vishny, R. W. 1997. A Survey of Corporate Governance. *The Journal of Finance* 52(2), pp. 737-783.

Sjorberg, E. 1967. *Ethics, Politics, and Social Research*. London: Routledge and K. Paul.

Skinner, D. J. and Sloan, R. G. 2002. Earnings Surprises, Growth Expectations, and Stock Returns or Don't Let an Earnings Torpedo Sink Your Portfolio. *Review of Accounting Studies* 7(2-3), pp. 289-312.

Skousen, C. J., Smith, K. R. and Wright, C. J. 2008. Detecting and Predicting Financial Statement Fraud: The Effectiveness of the Fraud Triangle and SAS No. 99. *SSRN eLibrary* [Online]. Available at: http://ssrn.com/paper=1295494 [Accessed: 9 February 2010].

Skousen, C. J. and Wright, C. J. 2006. Contemporaneous Risk Factors and the Prediction of Financial Statement Fraud. *SSRN eLibrary* [Online]. Available at: http://ssrn.com/paper=938736 [Accessed: 9 February 2010].

Smaili, N. and Labelle, R. 2009. Preventing and Detecting Accounting Irregularities: The Role of Corporate Governance. *SSRN eLibrary* [Online]. Available at: http://ssrn.com/paper=1324143 [Accessed: 10 October 2010].

Smith, C. W. 1977. Alternative Methods for Raising Capital : Rights Versus Underwritten Offerings. *Journal of Financial Economics* 5(3), pp. 273-307.

Spence, M. 1973. Job Market Signaling. *Quarterly Journal of Economics* 87(3), pp. 355-374.

Spence, M. 2002. Signaling in Retrospect and the Informational Structure of Markets. *American Economic Review* 92(3), pp. 434-459.

Srinivasan, S. 2005. Consequences of Financial Reporting Failure for Outside Directors: Evidence from Accounting Restatements and Audit Committee Members. *Journal of Accounting Research* 43(2), pp. 291-334.

Stanley, J. D. and Todd DeZoort, F. 2007. Audit Firm Tenure and Financial Restatements: An Analysis of Industry Specialization and Fee Effects. *Journal of Accounting and Public Policy* 26(2), pp. 131-159.

Stock, J. H. and Watson, M. W. 2008. Heteroskedasticity-Robust Standard Errors for Fixed Effects Panel Data Regression. *Econometrica* 76(1), pp. 155-174.

Stolowy, H. and Breton, G. 2004. Accounts Manipulation: A Literature Review and Proposed Conceptual Framework. *Review of Accounting & Finance* 3(1), pp. 5-66.

Suchman, M. C. 1995. Managing Legitimacy: Strategic and Institutional Approaches. *Academy of Management Review* 20(3), pp. 571-610.

Summers, S. L. and Sweeney, J. T. 1998. Fraudulently Misstated Financial Statements and Insider Trading: An Empirical Analysis. *Accounting Review* 73(1), pp. 131-146.

Sweeney, A. P. 1994. Debt-Covenant Violations and Managers' Accounting Responses. *Journal of Accounting and Economics* 17(3), pp. 281-308.

Talha, M., Sallehhuddin, A. and Masuod, M. S. 2009. Corporate Governance and Directors' Remuneration in Selected ASEAN Countries. *The Journal of Applied Business Research* 25(2), pp. 31-39.

Tengamnuay, K. and Stapleton, P. 2009. The Role of the Audit Committee in Thailand: A Mature Monitoring Mechanism or an Evolving Process? *Journal of Management & Governance* 13(3), pp. 131-161.

Teoh, S. H., Welch, I. and Wong, T. J. 1998. Earnings Management and the Underperformance of Seasoned Equity Offerings. *Journal of Financial Economics* 50(1), pp. 63-99.

Teoh, S. H. and Wong, T. J. 1993. Perceived Auditor Quality and the Earnings Response Coefficient. *Accounting Review* 68(2), pp. 346-366.

Thomsen, S. and Pedersen, T. 2000. Ownership Structure and Economic Performance in the Largest European Companies. *Strategic Management Journal* 21(6), pp. 689-705.

Titman, S. and Wessels, R. 1988. The Determinants of Capital Structure Choice. *The Journal of Finance* 43(1), pp. 1-19.

Tomz, M., King, G. and Zeng, L. 2003. Relogit: Rare Events Logistic Regression. *Journal of Statistical Software* 8(2).

Tummanon, V. 2005a. A Study of Firms Required by the SEC, Thailand to Correct Financial Statements and/or Provide a Special Audit: 2002-2005. Unpublished Paper. (In Thai).

Tummanon, V. 2005b. A Study of Firms Required by the SEC, Thailand to Correct Financial Statements and/or Provide a Special Audit: 2003-2005. *Chulalongkorn Business Review* 104, pp. 1-20. (In Thai).

Verardi, V. and Croux, C. 2009. Robust Regression in Stata. *The Stata Journal* [Online] 9(3). Available at: https://lirias.kuleuven.be/bitstream/123456789/202142/1/KBI_0823.pdf [Accessed: 24 October 2011].

Vichitsarawong, T., Eng, L. L. and Meek, G. K. 2010. The Impact of the Asian Financial Crisis on Conservatism and Timeliness of Earnings: Evidence from Hong Kong, Malaysia, Singapore, and Thailand. *Journal of International Financial Management & Accounting* 21(1), pp. 32-61.

Viverito, J. 1998. Corporate Governance in the Kingdom of Thailand. *Malaysian Journal of Economic Studies* 35(1-2), pp. 231-245.

Wahlen, J. M. 2004. Discussion of "the Circumstances and Legal Consequences of Non-GAAP Reporting: Evidence from Restatements". *Contemporary Accounting Research* 21(1), pp. 181-190.

Wang, D. 2006. Founding Family Ownership and Earnings Quality. *Journal of Accounting Research* 44(3), pp. 619-656.

Wang, X. and Wu, M. 2011. The Quality of Financial Reporting in China: An Examination from an Accounting Restatement Perspective. *China Journal of Accounting Research* 4(4), pp. 167-196.

Watts, R. L. and Zimmerman, J. L. 1986. *Positive Accounting Theory*. New Jersey: Prentice-Hall.

Weisbach, M. S. 1988. Outside Directors and CEO Turnover. *Journal of Financial Economics* 20, pp. 431-460.

White, S. 2004. Stakeholders, Structure and the Failure of Corporate Governance Reform Initiatives in Post-Crisis Thailand. *Asia Pacific Journal of Management* 21(1), pp. 103-122.

Whited, T. M. and Wu, G. 2006. Financial Constraints Risk. *Review of Financial Studies* 19(2), pp. 531-559.

Wilson, W. M. 2008. An Empirical Analysis of the Decline in the Information Content of Earnings Following Restatements. *Accounting Review* 83(2), pp. 519-548.

Wiwattanakantang, Y. 1999. An Empirical Study on the Determinants of the Capital Structure of Thai Firms. *Pacific-Basin Finance Journal* 7(3-4), pp. 371-403.

Wiwattanakantang, Y. 2001. Controlling Shareholders and Corporate Value: Evidence from Thailand. *Pacific-Basin Finance Journal* 9(4), pp. 323-362.

Wooldridge, J. M. 2006. *Introductory Econometrics: A Modern Approach*. 3rd ed. Ohio: Thomson Higher Education.

Yohai, V. J. 1987. High Breakdown-Point and High Efficiency Robust Estimates for Regression. *The Annals of Statistics* 15(2), pp. 642-656.

Young, M. N., Peng, M. W., Ahlstrom, D., Bruton, G. D. and Jiang, Y. 2008. Corporate Governance in Emerging Economies: A Review of the Principal–Principal Perspective. *Journal of Management Studies* 45(1), pp. 196-220.

Young, S. 1999. Systematic Measurement Error in the Estimation of Discretionary Accruals: An Evaluation of Alternative Modelling Procedures. *Journal of Business Finance & Accounting* 26(7-8), pp. 833-862.

Zhang, Y. and Wiersema, M. F. 2009. Stock Market Reaction to CEO Certification: The Signaling Role of CEO Background. *Strategic Management Journal* 30(7), pp. 693-710.

Zmijewski, M. E. 1984. Methodological Issues Related to the Estimation of Financial Distress Prediction Models. *Journal of Accounting Research* 22(Supplement), pp. 59-82.

APPENDICES

Appendix A: Collection Approach for Ownership Data

The method to gather the data for the ownership proxy is similar to that used by the prior studies (e.g. Dhnadirek and Tang 2003; Wiwattanakantang 2001), and is as follows:

1. SETSMART database provides the information on shareholders with shareholdings of at least 0.5%.
2. The ultimate owner of each firm was identified and categorised into one of four groups.

   The researcher followed Wiwattanakantang (2001) in categorising the owner identity as:

   2.1 Individual or family;

   2.2 Foreign investors;

   2.3 Thai government; and,

   2.4 More than one ultimate owner (such as two founder families).
3. Identifying the ultimate owner was not difficult because most Thai firms are family-run firms, and the family members are usually both the management and the shareholders. The last names of controlling shareholders were compared with the last name of directors and/or the management. The potential ultimate owner was then checked by a summation of his/her shareholdings. The shareholders who have the same last name were grouped together as a family.
4. If a shareholder is a private company, a further investigation was performed into the list of shareholders of this private company. The list of shareholders was shown in Bor.Or.Jor.5 form, which was requested by the Department of Business Development, Ministry of Commerce. Further investigation was performed until the researcher could identify the ultimate owner.
5. Annual reports or company websites were used, where necessary, as supplementary sources of the ownership information.
6. The percentage of shares owned by the ultimate owner was identified. All the shares owned by members of the same family were included as one unit of owner. The research could include all the shares held by relatives of in-laws of

the family if this information was disclosed in Form 56-1. If not, then the percentage of shareholdings could be underestimated.

7. The percentage of shareholdings in this study is voting rights and not cash-flow rights. This research project could not gather the data until it had satisfactorily received the number of cash-flow rights because of a time limit and the large sample size (388 firms with nine fiscal years). Instead, the research used a dummy variable of 1 if the firm has an ownership arrangement of pyramids and/or cross-holdings; 0 otherwise. Some prior studies also employed this dummy measure (e.g. Filatotchev *et al.* 2005; Wiwattanakantang 2001).

Appendix B: Research Sample

This appendix illustrates details of the sample and an approximate amount of the impact of accounting misstatements on accounting items.

Part A: The Accounting Misstatements That Have Been Found By the Securities and Exchange Commission, Thailand (SECT)

An allegation that is later announced as a violation of the Securities and Exchange Act section 312 is considered fraud; otherwise, it is assumed to be an accounting error. There are 18 misstating firms with 34 misstated firm-years for the determinant part, and 15 misstating firms for the consequence part (DAIDO, SECC, and ROYNET missing).

Firm	Company Name (Symbol)	Type	Year	Impact	Amount (million THB)	% of Total Assets in year *t*-1	Details of Accounting Misstatements
1	Roynet Plc (ROYNET)	Fraud	2002	-earnings	9.217	% 16.60	Personal expenses of the board of director of 2.58 and 8.38 million THB in 2003 and 2002, respectively.
		Fraud	2003	-earnings	7.05	12.70	Missing fixed assets of 4.47 million THB in 2003.
2	Daidomon Group Plc (DAIDO)	Fraud	2002	-earnings	21	2.29	Revenue recognition. Capitalised expense as assets.
		Fraud	2003		Not specified	-	Forfeited documents and many items of assets lack of documents support.
3	Circuit Electronics Industries Plc (CIRKIT)	Fraud	2003 2004 2005	-earnings	3,440	65.87	Failed to book adequate allowance for bad debt of international debtors and the auditor is limited to audit these receivables.
4	Bangkok Steel Industry Plc (BSI)	Fraud	2002	-investment -earnings	4,393.28 9.08	29.14 0.06	Had a scheme to transfer wealth from the parent company to subsidiaries, which are majority owned by three executives.
5	Datamat Plc (DTM)	Error	2002 2004	-earnings	21.4 (2004)	5.48	Failed to book adequate allowance for bad debt of international debtors and the auditor is limited to audit these receivables.
6	Capital Engineering Network Plc (CEN)	Fraud	2004		80.1	13.17	Three officers colluded in misappropriating 80.1 million THB from Rayong Wire Industries, an Eastern Wire subsidiary, through a contract for advanced procurement of raw materials with Union Gas and Chemicals Co., Ltd. in 2004, and made false representation of accounting information.

Firm	Company Name (Symbol)	Type	Year	Impact	Amount (million THB)	% of Total Assets in year *t*-1	Details of Accounting Misstatements
		Fraud	2005		500	82.18	The managing director of CEN misappropriated 500 million THB from the company through a loan to Siam General Factoring Plc. (SGF) in 2005.
7	TCJ Asia Plc (TCJ)	Error	2004	-revenue and expense	149.61	20.36	Incorrectly recorded goodwill from acquiring a subsidiary.
8	Loxley Plc (LOXLEY)	Error	2003	-earnings	67.4	0.70	Incorrectly realised gain on disposal of investments of 85.7 million THB.
9	Kuang Pei San Food Products Plc (POMPUI)	Error	2004	-earnings	567	45.27	Inadequately reserved allowance for doubtful account of a receivable who is a subsidiary. Total debt is 730.3 million THB and set for allowance at 163.3 million THB, while the receivable has deficit shareholders' equity. Thus, the company was required to record the whole amount of debt loss.
10	Krisdamahanakorn Plc (KMC)	Error	2004	-earnings	64.63	1.01	Inappropriately recognised unpaid sales as revenue (revenues of 103.21 million THB and costs of goods sold of 38.58 million THB).
11	Thai Film Industries Plc (TFI)	Error	2004	-earnings	Not specified	-	Required to consolidate a subsidiary, which had been sold since 2001, the amount of 1,891 million THB, and recorded as long term receivables. The buyer was unable to pay and tends not to be able to pay. Moreover, the company still had a decision power over the buyer and the subsidiary. Therefore, this subsidiary should be included in consolidated financial statements.
12	Picnic Corporation Plc (PICNIC)	Fraud	2004 2005	-earnings	528.63 (2004) 267.39 (2005)	11.77 5.95	1. Fictitious revenue of 178 million THB. 2. Unreasonably high transfer price to related parties for sales of 322 million THB in 2004 and 210 million THB in 2005. 3. Failed to test impairment of goodwill for two subsidiaries.
13	Power-P Plc (POWER)	Fraud	2004	-earnings	29.6	25.12	Fictitious revenues.
		Fraud	2005	-revenues	22.4	19.01	Fictitious revenues.
		Fraud	2006	-earnings	102.41	86.91	Counterfeiting documents to overstate assets and failed to test impairment of assets.

Firm	Company Name (Symbol)	Type	Year	Impact	Amount (million THB)	% of Total Assets in year *t*-1	Details of Accounting Misstatements
14	Nippon Pack (Thailand) Plc (NIPPON)	Error	2004 2005	+earnings	1.36(2004) 1.17(2005)	0.26 0.22	Reclassified good returns for the sales in 2004 and 2005, which the company has later recorded in the 2nd quarter of 2009.
		Error	2005	-earnings	66.59	12.51	Failed to prepare the consolidated statements of the two companies. Although the percentages of holdings is less than 50% (18.18% and 0.00%) but the company has a control power over those companies. The company also corrected the errors of inventory evaluation and impairment of assets in this year.
		Fraud	2008 2009		179.6	26.03	The ex-CEO colluded in misappropriating 179.6 million THB.
15	ABICO Holding Plc (ABICO)	Error	2004 2005 2006	-earnings	19(2004) 277(2005) 384.4(2006)	1.83 26.64 36.96	Failed to prepare the consolidated statements of the two companies. Although the percentage of holdings is less than 50% (49%) but the company has a control power over such company.
16	Tongkah Habour Plc (THL)	Error	2006	-earnings	4.027	0.29	1.Underrecorded expense for production sharing to the Government, in violation of the agreement. 2.Failed to disclose loan prepayment 11.6 million THB as a subsequent event.
17	Yarnapund Plc (YNP)	Error	2008	-earnings	61.88	0.52	Incorrectly recorded land filling and compaction payments into cost of building and infrastructure and that had been depreciated during 2006-2008. Until the detection of error, the company recorded the expense back to revenue amounting of 34.97 million THB. The restatement included impairment costs of such assets for 34.22 million THB and reduced depreciation expense of 7.31 million THB.
18	S.E.C. Auto Sales and Services Plc (SECC)	Fraud	2006 2007 2008	Assets	Not specified	-	Forfeited documents of inventory purchasing. Overstating many items of assets and no documents support.

Part B: The Accounting Misstatements Found By the Companies

There are 15 misstating firms with 17 misstated firm-years for the determinant part; 15 firms for the consequence part.

Firm	Company Name (Symbol)	Type	Year	Impact	Amount (million THB)	% of Total Assets in year *t*-1	Details of Accounting Misstatements
1	Chai Watana Tannery Group Public Company Limited (CWT)	Error	2004	- earnings	81.867	% 3.64	Incorrectly prepared consolidated subsidiaries, goodwill and earnings, which all were overstated for years. Correcting it this year with beginning retained earnings of 2005.
2	Hana Microelectronics Public Company Limited (HANA)	Error	2004	- earnings	15.844	0.19	Overstated sales in 2002-2004.
3	Home Product Centre Public Company Limited (HMPRO)	Error	2006	- earnings	8.1	0.09	Overstated purchase discount in year 2005, resulting an understated cost of goods sold and overstated earnings.
4	Living Land Capital Public Company Limited (LL)	Error	2004	- earnings	1.5	0.24	Reduced the idle capacity cost from cost of goods sold (61.295 million THB).
5	Yuasa Battery (Thailand) Public Company Limited (YUASA)	Error	2004	- earnings	83.9	6.81	Due to acct software change, inventory and cost of goods sold were incorrectly computed (2004).
		Error	2006	+ earnings	17.022	1.28	Incorrectly recorded actual costs of inventory.
6	NFC Fertilizer Public Company Limited (NFC)	Error	2004	- earnings	22	0.19	Understated depreciation expenses.
		Error	2005	- earnings	155	1.33	Understated contingency liability.
7	Quality Construction Products Public Company Limited (QCON)	Error	2004	- earnings	6.86	0.48	Understated repair expense in year 2004, realised in 2005.
8	SP Suzuki Public Company Limited (SPSU)	Error	2005	- earnings	2.24	0.06	Incorrectly recorded depreciation expenses for previous years.
9	Thai Textile Industry Public Company Limited (TTI)	Error	2005	+ earnings	10.5	0.31	Incorrectly recorded repair and maintenance as expense rather than property, plant and equipment.
10	Wattana Karnpaet Public Company Limited (NEW)	Error	2005	+ earnings	5.89	1.61	Overstated accrued medical expenses.
11	Malee Sampran Public Company Limited (MALEE)	Error	2006	- earnings	0.86	0.04	Found in 2007 that it incorrectly recognised operating lease as finance lease, so reverse asset, liability and depreciation expenses, as well as record the rent.
12	AJ Plast Public Company Limited (AJ)	Error	2004	+ earnings	9.44	0.44	Corrected operating lease to finance lease.
13	Thai Nam Plastic Plc (TNPC)	Error	2006	+ equity	42.44	2.84	Adjusted gain on assets sold to related parties.

Firm	Company Name (Symbol)	Type	Year	Impact	Amount (million THB)	% of Total Assets in year *t*-1	Details of Accounting Misstatements
14	Universal Starch Public Company Limited (USC)	Error	2006	- earnings	25.71	0.68	1. Did not test an impairment of long term investment for previous periods. 2. Did not record sales of land help for development in the prior year.
15	United Flour Mill Public Company Limited (UFM)	Error	2005	+ unrealised gain on investment	11.857	0.40	Did not adjust revaluation surplus on investments (equity).

A Summary Table for the Average Impact Value of Accounting Misstatements

By source of data	Amount (million THB)	% of total assets in year *t*-1
1. Initiated by the SECT (Panel A)	417.6 (£8.84 million)	20.33
2. Initiated by the company (Panel B)	29.0 (£0.60 million)	1.21
Total	446.6 (£9.44 million)	
By type of accounting misstatements (The third column of the Table)	**Amount (million THB)**	**% of total assets in year *t*-1**
1. Fraud (n=14 firms)	684.98 (£14.13 million)	28.34
2. Error (n=30 firms)	72.88 (£1.50 million)	5.76
T-test for a difference in means (unequal variance), *p*-value (one-tailed)= 0.0062		

Note: Follow Hennes *et al.* (2008), magnitudes of misstatements were computed as a proportion of total assets in year *t*-1.

Appendix C: Logistic Regression Diagnostics

The following tests of the diagnostics are guided by Hosmer and Lemeshow (2000, pp. 143-186) and the web book of UCLA Academic Technology Services (Chen *et al.* 2003a). The tests were run on Stata software. All variables are defined in Table 6.3.

The main model of the research is Model 1 in Table 6.6, which is as follows.

Table 6.6

VARIABLES	Model 1 coefficient (*z*-statistic)
OWN	0.0040
	(0.621)
FAM	-0.2395
	(-0.566)
CROSS	-0.1674
	(-0.268)
LEV	1.4587**
	(2.320)
ISSUE	0.5057
	(1.403)
NFCF	1.2328***
	(2.575)
MB	0.1060
	(1.039)
REHAB	-0.1415
	(-0.211)
BIG	-1.1128**
	(-2.285)
AUDCHG	0.8658**
	(2.331)
DUAL	1.1317***
	(2.974)
LNSIZE	-0.2211
	(-1.196)
AGE	0.0041
	(0.235)
Consumer products	-1.6824
	(-1.269)
Industrials	0.6984
	(1.258)
Property & construction	-0.3055
	(-0.513)

	Table 6.6 Model 1 coefficient
VARIABLES	(*z*-statistic)
Resources	0.1838
	(0.188)
Service	-1.0386
	(-1.527)
Technology	0.7006
	(1.229)
2003	-0.1717
	(-0.292)
2004	1.6523***
	(2.783)
2005	0.7846
	(1.279)
2006	0.3657
	(0.557)
2007	-2.0169*
	(-1.736)
2008	-0.8158
	(-1.115)
2009	-2.0175*
	(-1.771)
Constant	-3.5303**
	(-2.224)
Observations	2,351
McFadden's pseudo R^2	0.296
Model chi-square	269.5
Degree of freedom	26
Significance level of the model	<0.0001
Log-likelihood	-173
Restricted (Slopes=0) Log-likelihood	-246
Number of clusters (firms)	387

i) The model has robust standard errors clustered by firm (i.e. accounts for the possible correlation between observations of the same firm in different years).
ii) Agro & Food industry is the base for industry dummies and year 2002 is the base for year dummies.
iii) Robust *z*-statistics in parentheses (firm-level clustering).
iv) Significance level *** $p<0.01$, ** $p<0.05$, * $p<0.1$ (two-tailed).
v) All variables are defined in Table 6.3.

Diagnostic tests were run on this main model and results are as follows.

1. Goodness-of-Fit

1.1 The Hosmer and Lemeshow's goodness-of-fit test

Logistic model for AM, goodness-of-fit test
(Table collapsed on quantiles of estimated probabilities)

Group	Prob	Obs_1	Exp_1	Obs_0	Exp_0	Total
1	0.0004	0	0.1	236	235.9	236
2	0.0010	0	0.2	235	234.8	235
3	0.0017	1	0.3	234	234.7	235
4	0.0029	1	0.5	234	234.5	235
5	0.0046	0	0.9	235	234.1	235
6	0.0074	2	1.4	233	233.6	235
7	0.0122	0	2.3	235	232.7	235
8	0.0212	5	3.8	230	231.2	235
9	0.0482	8	7.5	227	227.5	235
10	0.8315	34	34.1	201	200.9	235

Number of observations	=	2351
Number of groups	=	10
Hosmer-Lemeshow chi^2(df=8)	=	6.05
Prob > chi^2	=	0.6414

As in the output shown above, the fitted values are divided into 10 groups. The Hosmer-Lemeshow chi^2 is 6.05, df=8. The *p*-value of Chi^2 statistic is 0.6414, which is larger than the 0.05 significance level. Therefore, there is no evidence to reject the null hypothesis that the model fits the data well.

1.2 Classification Tables

The fitted logistic regression is summarised via a classification table. The following classification table shows the classification at a cutpoint of 0.5.

- Cutoff (0.5)

  Logistic model for AM

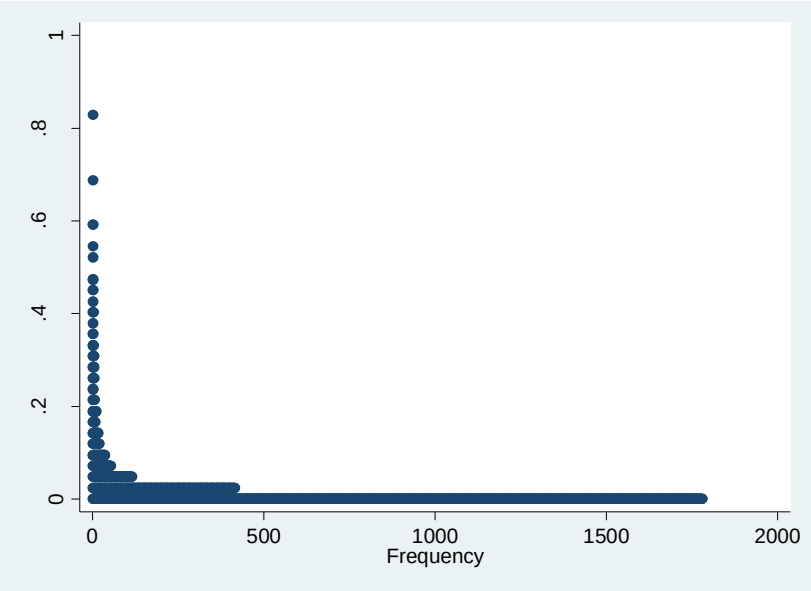
	-------- True --------		
Classified	D	~D	Total
+	3	3	6
-	48	2297	2345
Total	51	2300	2351

Classified + if predicted Pr(D) >= .5
True D defined as AM != 0

Sensitivity	Pr(+| D)	5.88%
Specificity	Pr(-|~D)	99.87%
Positive predictive value	Pr(D| +)	50.00%
Negative predictive value	Pr(~D| -)	97.95%
False + rate for true ~D	Pr(+|~D)	0.13%
False - rate for true D	Pr(-| D)	94.12%
False + rate for classified +	Pr(~D| +)	50.00%
False - rate for classified -	Pr(D| -)	2.05%
Correctly classified		97.83%

At the cutpoint of 0.5 the overall rate of correct classification is 97.83% [(3+2297)/2351], with 99.87% (2297/2300) of the non-misstatement group (specificity) and only 5.88% (3/51) of the misstatement group (sensitivity) being correctly classified. However, it is likely that the model can predict the non-misstatement group better than the misstatement group. This may be caused by the rare events sample. King and Zeng (2001a, c) state that a bias of parameter estimation by rare events is that the probability of the event (Y=1) is underestimated, and hence the probability of control group (Y=0) is overestimated.

A graph showing the predicted probability (fitted value) from the model is presented below in order to understand more on the probability of the model's fitted values.



As expected, there is a large portion of the fitted value equalling and close to zero. The cutpoint for this study tends to be a very small number. A further test on the classification was performed. Since the proportion of the misstatements to the non-misstatements is about 2% (51/2351) in the research population. The researcher reran the test by a trial of the 0.02 cutpoint. The classification has been changed as in the table below.

- Cutoff (0.02)

  Logistic model for AM

	-------- True --------		
Classified	D	~D	Total
+	42	459	501
-	9	1841	1850
Total	51	2300	2351

Classified + if predicted Pr(D) >= .02
True D defined as AM != 0

Sensitivity	Pr(+| D)	82.35%
Specificity	Pr(-|~D)	80.04%
Positive predictive value	Pr(D| +)	8.38%
Negative predictive value	Pr(~D| -)	99.51%
False + rate for true ~D	Pr(+|~D)	19.96%
False - rate for true D	Pr(-| D)	17.65%
False + rate for classified +	Pr(~D| +)	91.62%
False - rate for classified -	Pr(D| -)	0.49%
Correctly classified		80.09%

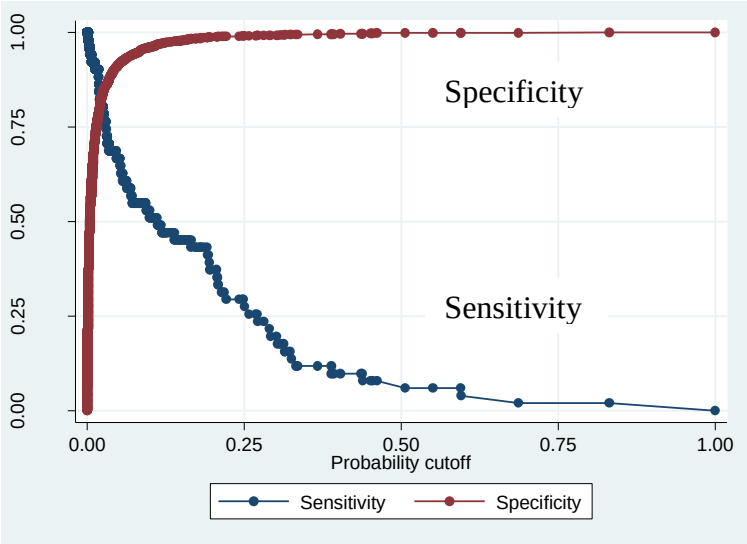
The overall rate of correct classification is 80.09% [(42+1841)/2351], with 80.04% (1841/2300) of the non-misstatement group (specificity) and 82.35% (42/51) of the misstatement group (sensitivity) being correctly classified. The classification on the misstatement group is better in this scenario. Nevertheless, the cutpoint of 2% is very low and may be unusual when compared with the cutpoint of 50% that is commonly used.

Another tool of the consideration for classification is the discrimination, given by the area under the ROC (Receiver Operating Characteristic) curve.

1.3 The ROC Curve

The Receiver Operating Characteristic (ROC) curve plots the probability of detecting true signal (sensitivity) and false signal (1-sensitivity) for an entire range of possible cutpoints. The area under the ROC curve, which ranges from zero to one, provides a measure of the model's ability to discriminate between those subjects who experience the outcome of interest versus those who do not.

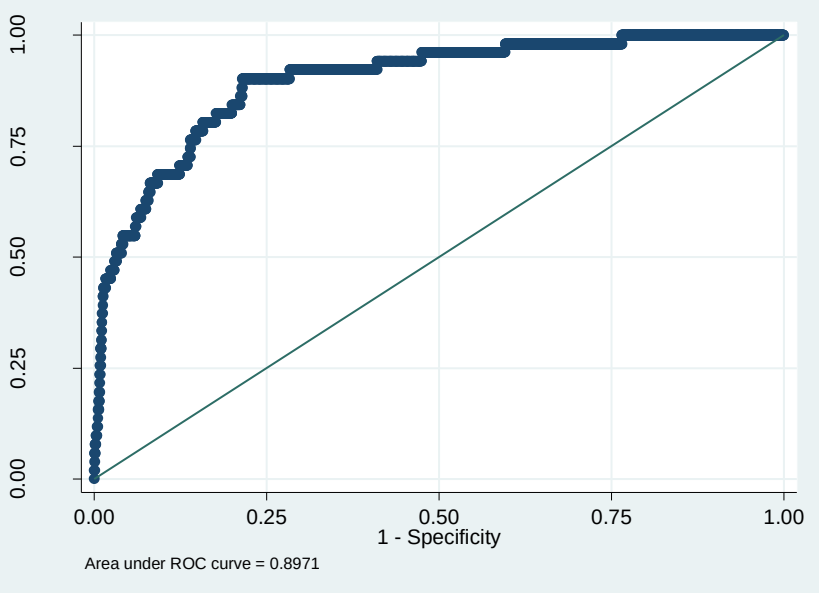
From the graph below, the cutpoint shows the optimal choice that maximises both sensitivity and specificity. In this sample, the cutpoint is close to the 0.02, which is close to the classification table in the previous subsection, where at the cutpoint of .02 the sensitivity is about 82.35%, while the specificity is about 80.04%. They are close to each other and close to the scale on Y-axis.



The next figure presents the ROC indicating a plot of sensitivity versus 1-specificity.

Logistic model for y

number of observations = 2351
area under ROC curve = 0.8971



The area under curve provides a measure of discrimination which is the likelihood that the firm who has a misstatement will have a higher Pr(Y=1) than a firm who has no misstatements. The area under the ROC curve is 0.8971, which is considered an outstanding discrimination power of the model (Hosmer and Lemeshow 2000, p. 162).

Overall, despite the limitation of the small unusual number of the cutpoint the model tends to fit the data well, based on the Hosmer and Lemeshow's goodness-of-fit test, the calibration (classification tables) and discrimination (the ROC curve). Therefore, the research results from this model can be said to be reliable. The issue of the low cut-off probability (i.e. 0.02) is not a great concern for this research project because the research aims to conduct hypothesis testing rather than develop a prediction model. On the other hand, the coefficients of parameters are concerned. To reduce the bias of parameters caused by the rare events population, a rare event logistic regression has been employed to robust the research results. The research results (i.e. significant

explanatory variables) (Section 6.5.1) do not differ between the traditional logit model and the rare event logit model.

2. Specification Error

A **linktest** (in Stata), can be used to detect a specification error (e.g. the dependent variable is a linear combination of the independent variables, or the model includes all the relevant variables). The **linktest** uses the linear predicted value (_hat) and linear predicted value squared (_hatsq) as the predictors to rebuild the model. The variable _hat should be a significant predictor since it is the predicted value from the model. On the other hand, if the model is properly specified, the variable _hatsq should not have much predictive power. If the _hatsq is significant, it usually means that the model has either omitted relevant variable(s). The output from the **linktest** command is presented below.

Logistic regression — Number of obs = 2351
LR $chi^2(2)$ = 145.59
Prob > chi^2 = 0.0000
Log likelihood = -173.0182 — Pseudo R^2 = 0.2961

AM	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
_hat	.9939702	.2799513	3.55	0.000	.4452758	1.542665
_hatsq	-.0010668	.0464132	-0.02	0.982	-.092035	.0899015
_cons	-.0058458	.3917683	-0.01	0.988	-.7736975	.7620058

The variable _hat is significant at the 0.01 level. It confirms that the study has chosen meaningful independent variables. On the other hand, the _hatsq is not significant. Therefore, the **linktest** is not significant. There is no specification error. The logit model is, thus, properly specified and the coefficients are not biased by the misspecification. The coefficients of the explanatory variables in the model are robust and enable to indicate the antecedents of accounting misstatements.

3. Multicollinearity

The VIF and tolerance level are presented as follows.

Variable	VIF	SQRT VIF	Tolerance	R- Squared
OWN	1.16	1.08	0.8642	0.1358
FAM	1.13	1.07	0.8816	0.1184
CROSS	1.14	1.07	0.8753	0.1247
LEV	1.37	1.17	0.7304	0.2696
ISSUE	1.13	1.06	0.8829	0.1171
NFCF	1.07	1.03	0.9347	0.0653
MB	1.14	1.07	0.8784	0.1216
REHAB	1.37	1.17	0.7296	0.2704
BIG	1.25	1.12	0.7980	0.2020
AUDCHG	1.05	1.03	0.9505	0.0495
DUAL	1.05	1.03	0.9492	0.0508
LNSIZE	1.44	1.20	0.6950	0.3050
AGE	1.14	1.07	0.8800	0.1200
IND2	1.85	1.36	0.5410	0.4590
IND3	2.13	1.46	0.4694	0.5306
IND4	2.10	1.45	0.4754	0.5246
IND5	1.60	1.26	0.6254	0.3746
IND6	2.36	1.54	0.4238	0.5762
IND7	1.70	1.30	0.5887	0.4113
2003	1.98	1.41	0.5041	0.4959
2004	1.99	1.41	0.5025	0.4975
2005	2.11	1.45	0.4749	0.5251
2006	2.24	1.50	0.4463	0.5537
2007	2.35	1.53	0.4250	0.5750
2008	2.38	1.54	0.4205	0.5795
2009	2.43	1.56	0.4107	0.5893
Mean VIF	1.64			

As a rule of thumb, a tolerance of 0.1 or less (equivalently VIF of 10 or greater) is a cause for concern (Chen *et al.* 2003a). In this study, there are no variables having a tolerance close to 1 [ranging from 0.4107 (YEAR2009) to 0.9505 (AUDCHG)] and the VIFs are less than 3. Therefore, there is no concern of the multicollinearity problem in this study. In addition, a multicollinearity test was performed with other models in Tables 6.7 and 6.9 and no concern of this assumption has been found (all VIFs are less than 3).

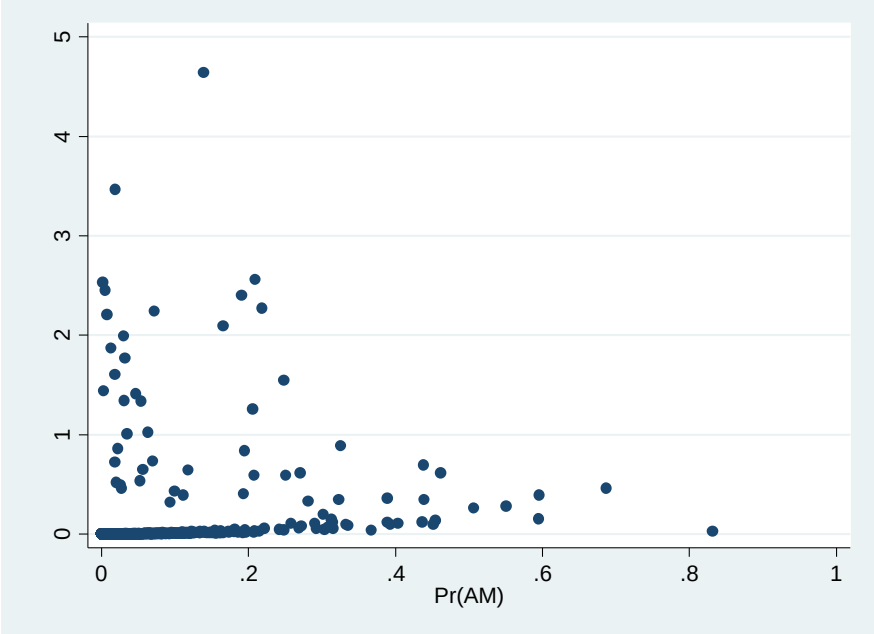
4. Influential Observations

The following tests seem to show that the model contains influential observations. However, all of the influential cases are those misstatement observations that could not be excluded in the analysis.

Three statistics (i.e. Pregibon leverage, Pearson residuals, and deviance residual) are considered to be the three basic building blocks for logistic regression diagnostics for the influential observations.

Pregibon Leverage

Pregibon's dbeta provides a summary of information of how much impact of each observation has on parameter estimates.



From their experience Hosmer and Lemeshow (2000, p. 180) suggest that the influence diagnostic occurs when the dbeta is larger than 1.0. In this study, there are 22 observations where the dbeta is above 1.0 (as listed below).

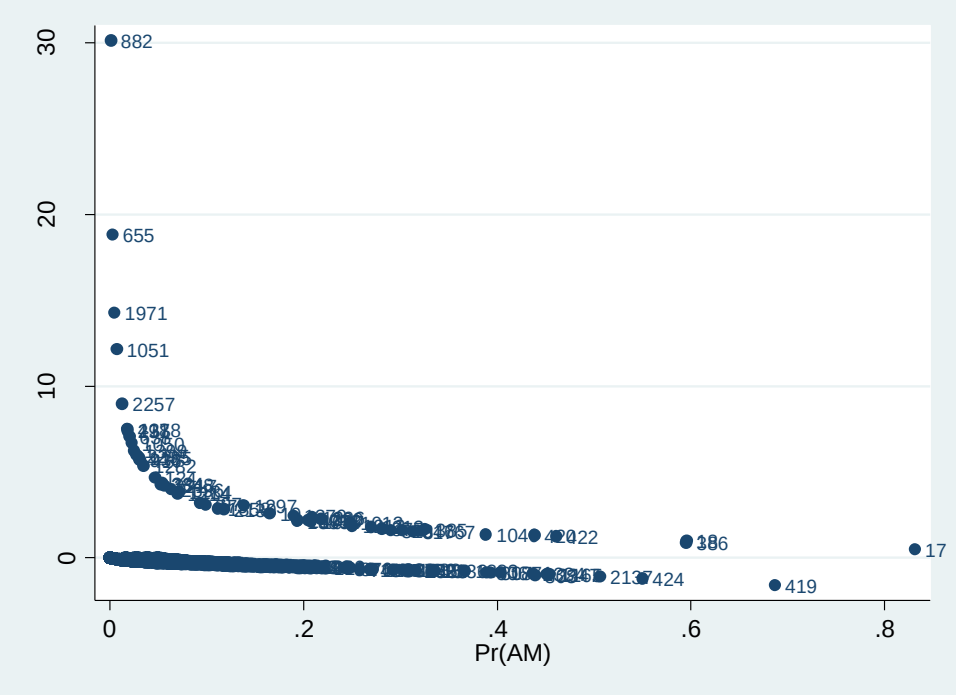
No.	ID	ENTITY NAME	YEAR	AM	FITTED VALUE
1	19	Abico Holdings Public Company Limited	2006	1	.164923
2	124	BANGKOK STEEL INDUSTRY	2002	1	.0464899
3	290	Capital Engineering Network Public Company	2004	1	.2181844
4	384	Circuit Electronics Industries Plc	2003	1	.0536908
5	417	Daidomon Group Public Company Limited	2002	1	.0318497
6	418	Daidomon Group Public Company Limited	2003	1	.0180656
7	655	Home Product Centre Public Company Limited	2006	1	.0028302
8	882	Loxley Public Company Limited	2003	1	.0011029
9	936	Malee Sampran Public Company Limited	2006	1	.030497
10	1012	NFC Fertilizer Public Company Limited	2004	1	.2481143
11	1013	NFC Fertilizer Public Company Limited	2005	1	.2051501
12	1051	Nippon Pack (Thailand) Plc	2009	1	.0068237
13	1184	Picnic Corporation Public Company Limited	2004	1	.07164
14	1185	Picnic Corporation Public Company Limited	2005	1	.0301598

No.	ID	ENTITY NAME	YEAR	AM	FITTED VALUE
15	1282	Quality Construction Products Plc	2004	1	.0347191
16	1296	ROYNET PUBLIC COMPANY LIMITED	2002	1	.2090188
17	1297	ROYNET PUBLIC COMPANY LIMITED	2003	1	.1386107
18	1378	S. E. C. Auto Sales & Services Plc	2007	1	.0185959
19	1379	S. E. C. Auto Sales & Services Plc	2008	1	.1901832
20	1971	Thai Textile Industry Public Company Limited	2005	1	.0049392
21	2257	Universal Starch Public Company Limited	2006	1	.0125342
22	2336	Yarnapund Public Company Limited	2008	1	.0630815

All these observations are the misstatement cases (22 out of 51 observations).

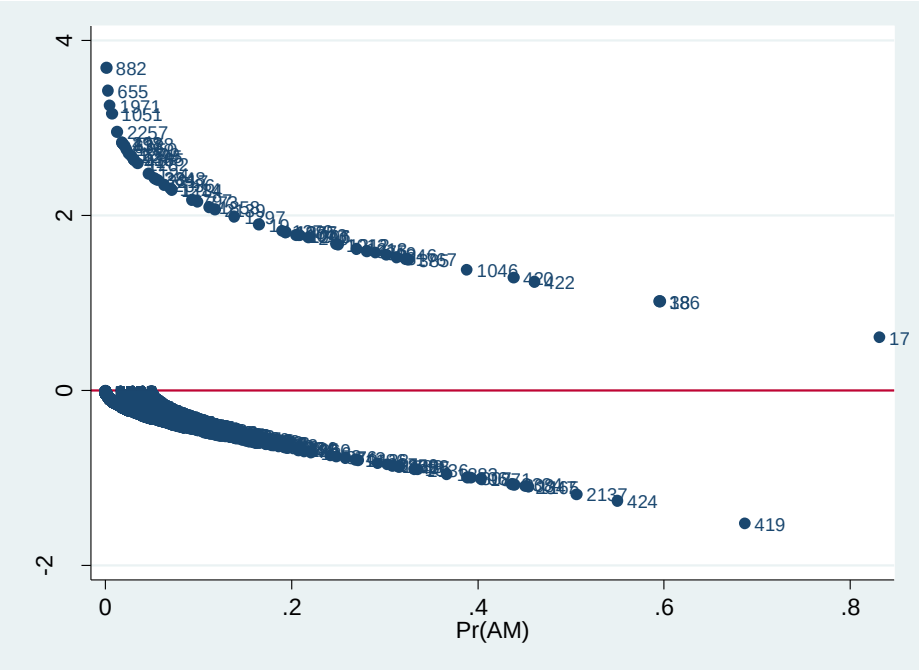
Pearson Residuals

Pearson residuals measure the relative deviations between the observed and fitted values.



Deviance Residual

Deviance residual measures the disagreement between the maxima of the observed and the fitted log likelihood functions.



Both the graphs of Pearson residuals and deviance residual show a number of extreme values: the absolute value of the Pearson residual and deviance residual exceeds 2 (Menard 1995, p. 74). The following table presents a list of the deviance residual data points that exceeds 2.

No.	ID	ENTITY NAME	YEAR	AM	FITTED VALUE
1	19	Abico Holdings Public Company Limited	2006	1	.164923
2	124	BANGKOK STEEL INDUSTRY	2002	1	.0464899
3	290	Capital Engineering Network Plc	2004	1	.2181844
4	291	Capital Engineering Network Plc	2005	1	.0182257
5	384	Circuit Electronics Industries Plc	2003	1	.0536908
6	417	Daidomon Group Public Company Limited	2002	1	.0318497
7	418	Daidomon Group Public Company Limited	2003	1	.0180656
8	638	Hana Microelectronics Public Company Limited	2004	1	.0199622
9	655	Home Product Centre Public Company Limited	2006	1	.0028302
10	773	Krisdamahanakorn Public Company Limited	2004	1	.098835
11	797	Kuang PEI San Food Products Plc	2004	1	.0930785
12	882	Loxley Public Company Limited	2003	1	.0011029
13	936	Malee Sampran Public Company Limited	2006	1	.030497
14	1012	NFC Fertilizer Public Company Limited	2004	1	.2481143
15	1013	NFC Fertilizer Public Company Limited	2005	1	.2051501
16	1047	Nippon Pack (Thailand) Plc	2005	1	.2076402
17	1050	Nippon Pack (Thailand) Plc	2008	1	.0223466
18	1051	Nippon Pack (Thailand) Plc	2009	1	.0068237
19	1184	Picnic Corporation Public Company Limited	2004	1	.07164
20	1185	Picnic Corporation Public Company Limited	2005	1	.0301598
21	1214	Power-P Public Company Limited	2006	1	.069678
22	1282	Quality Construction Products Plc	2004	1	.0347191
23	1296	ROYNET PUBLIC COMPANY LIMITED	2002	1	.2090188

No.	ID	ENTITY NAME	YEAR	AM	FITTED VALUE
24	1297	ROYNET PUBLIC COMPANY LIMITED	2003	1	.1386107
25	1377	S. E. C. Auto Sales & Services Plc	2006	1	.1943456
26	1378	S. E. C. Auto Sales & Services Plc	2007	1	.0185959
27	1379	S. E. C. Auto Sales & Services Plc	2008	1	.1901832
28	1399	SP Suzuki Public Company Limited	2005	1	.0253309
29	1858	Thai Film Industries Public Company Limited	2004	1	.1115907
30	1885	Thai Nam Plastic Public Company Limited	2006	1	.1934553
31	1971	Thai Textile Industry Public Company Limited	2005	1	.0049392
32	2139	Tongkah Harbour Public Company Limited	2006	1	.1174594
33	2217	United Flour Mill Public Company Limited	2005	1	.0559798
34	2257	Universal Starch Public Company Limited	2006	1	.0125342
35	2295	Wattana Karnpaet Public Company Limited	2005	1	.0275648
36	2336	Yarnapund Public Company Limited	2008	1	.0630815
37	2500	Yuasa Battery (Thailand) Company Limited	2006	1	.0526025

In line with the Pregibon leverage, all above listed cases are the misstatement observations.

Of all above 37 cases there are four cases (the below table) that are obviously seen in the Pearson's residual graph. They are significantly far away from others (the Pearson's residual values exceed 10).

No.	ID	ENTITY NAME	YEAR	AM	FITTED VALUE
1	655	Home Product Centre Public Company Limited	2006	1	.0028302
2	882	Loxley Public Company Limited	2003	1	.0011029
3	1051	Nippon Pack (Thailand) Public Company Limited	2009	1	.0068237
4	1971	Thai Textile Industry Public Company Limited	2005	1	.0049392

A reason for the large residuals is that the estimated probability for these cases is less than 0.01, while they actually have a probability of 1. The researcher has rerun the logistic regression model by excluding these four observations. The regression results are presented in the second column compared to the original model in the first column.

VARIABLES	(1) Table 6.6 Model 1 coefficient (*z*-statistic)	(2) Excluded 4 extreme cases coefficient (*z*-statistic)
OWN	0.004	0.0078
	(0.621)	(1.202)
FAM	-0.2395	-0.1782
	(-0.566)	(-0.385)
CROSS	-0.1674	-0.0099
	(-0.268)	(-0.015)
LEV	1.4587**	1.7319***
	(2.320)	(2.708)
ISSUE	0.5057	0.7124*
	(1.403)	(1.846)
NFCF	1.2328**	1.4537***
	(2.575)	(2.831)
MB	0.106	0.1191
	(1.039)	(1.087)
REHAB	-0.1415	-0.3111
	(-0.211)	(-0.427)
BIG	-1.1128**	-1.0247*
	(-2.285)	(-1.957)
AUDCHG	0.8658**	1.0244**
	(2.331)	(2.496)
DUAL	1.1317***	1.2677***
	(2.974)	(3.070)
LNSIZE	-0.2211	-0.3469*
	(-1.196)	(-1.774)
AGE	0.0041	0.0001
	(0.235)	(0.007)
Consumer products	-1.6824	
	(-1.269)	
Industrials	0.6984	0.7086
	(1.258)	(1.231)
Property & construction	-0.3055	-0.315
	(-0.513)	(-0.524)
Resources	0.1838	0.2954
	(0.188)	(0.291)
Service	-1.0386	-1.8161**
	(-1.527)	(-2.081)
Technology	0.7006	0.7005
	(1.229)	(1.195)

VARIABLES	(1) Table 6.6 Model 1 coefficient (*z*-statistic)	(2) Excluded 4 extreme cases coefficient (*z*-statistic)
2003	-0.1717	-0.467
	(-0.292)	(-0.737)
2004	1.6523***	1.8056***
	(2.783)	(2.776)
2005	0.7846	0.767
	(1.279)	(1.147)
2006	0.3657	0.3223
	(0.557)	(0.443)
2007	-2.0169*	-1.9724*
	(-1.736)	(-1.655)
2008	-0.8158	-0.754
	(-1.115)	(-0.980)
2009	-2.0175*	
	(-1.771)	
Constant	-3.5303**	-3.0794*
	(-2.224)	(-1.932)
Observations	2,351	1,749
McFadden's pseudo R^2	0.296	0.323
Model chi-square	269.5	242.2
Significance level of the model	<0.0001	<0.0001
Degree of freedom	26	24
Log-likelihood	-173	-146.4
Restricted (Slopes=0) Log-likelihood	-245.8	-216.3
Number of clusters (firms)	387	333

Model 1 is the original model from Table 6.6. Model 2 excludes the four extreme outliers. Note that in model 2, the variables of consumer products industry and year 2009 were omitted because there is none of a misstatement sample in such industry and year (predicting failure perfectly). The dependent variable is a dichotomous variable of an occurrence of an accounting misstatement. All variables are defined in Table 6.3. Standard errors are robust by firm-level clustering. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively (a two-tailed test of whether the coefficient is equal to zero).

Compared between the model excluded four extreme outliers (Model 2) with the original model, coefficients for the main model (i.e. LEV, NFCF, AUDCHG and DUAL) are slightly larger and some of them (i.e. LEV and NFCF) are significant at a lower significant level. However, the coefficient of BIG is smaller and becomes significant at the 0.10 level. On the other hand, some variables (i.e. LNSIZE and

ISSUE) are significant at the 10% level in the new model. Except for the result of BIG variable, the coefficients and significance levels in the main research model (Table 6.6 Model 1) are deemed to be more conservative. Consequently, a concern about the bias of coefficients is relieved and the research results are reliable. The study decided to maintain the entire sample for the analysis.

5. Summary

According to the tests of diagnostics, the model is properly specified. There is an appearance of influential observations in the diagnostic tests. However, an exclusion of these cases did not change the research results. Therefore, the model is properly specified for examining the cuases of accounting misstatements in Thailand. Moreover, to reduce the bias on the coefficients due to the rare event proportion, rare events logistic regression model by King and Zeng (2001c) was also employed to robust the research results (Section 6.5.1).

Appendix D: Linear Regression Diagnostics

The following tests are performed to test the regression assumptions, guided by the web book of UCLA Academic Technology Services (Chen *et al.* 2003b). All variables in this appendix are defined in Table 7.2.

The main model of the research for assessing economic consequences of accounting misstatements (Table 7.6 Model 1) is as follows.

Table 7.6

VARIABLES	Model 1 coefficient (*t*-statistic)
AFTER	-0.0231**
	(-2.267)
OCF	-0.5319***
	(-20.598)
CASH	-0.1097***
	(-4.243)
INV	-0.0044
	(-0.344)
PPE	0.0421***
	(3.114)
LEVC	-0.0802***
	(-8.248)
Q	0.0258***
	(7.036)
LNSALES	0.0038***
	(3.108)
INT	-0.0866**
	(-2.528)
INVEST	0.1632***
	(12.419)
Consumer products	-0.0181***
	(-2.909)
Industrials	-0.0093*
	(-1.719)
Property & construction	-0.0048
	(-0.807)
Resources	0.0205*
	(1.660)

Table 7.6

VARIABLES	Model 1 coefficient (*t*-statistic)
Service	-0.0016
	(-0.294)
Technology	-0.0105
	(-1.457)
2002	0.0022
	(0.273)
2003	0.0076
	(0.961)
2004	0.0051
	(0.576)
2005	0.008
	(0.992)
2006	0.0011
	(0.150)
2007	-0.0104
	(-1.360)
2008	0.0077
	(1.042)
2009	-0.0107
	(-1.339)
Constant	-0.0019
	(-0.113)
Observations	2,495
Adjusted R^2	0.489
R^2	0.494
Statistics for F-test	39.64
p-value for F-test	<0.0001
Model degrees of freedom	24
Residual degrees of freedom	384
Number of clusters (firms)	385

i) Robust *t*-statistics in parentheses (firm-level clustering).
ii) Significance level *** $p<0.01$, ** $p<0.05$, * $p<0.1$ (two-tailed).
iii) Agro & food industry and year 2001 are bases for industry dummies and year dummies in the regression, respectively.
iv) All variables are defined in Table 7.2.

The diagnostics tests were run on the main model above. The examination was run on Stata software.

1. Model Specification

Linktest, provided by Stata, was used to detect a model specification error. The output of the linktest is as follows:

Source	SS	df	MS	Number of obs = 2495 F(2, 2492) = 1217.06 Prob > F = 0.0000 R-squared = 0.4941 Adj R-squared = 0.4937 Root MSE = .07202
Model	12.6267708	2	6.31338542	
Residual	12.9270439	2492	.005187417	
Total	25.5538147	2494	.010246117	

EXFIN	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
_hat	.9961472	.0227578	43.77	0.000	.951521	1.040773
_hatsq	.0506728	.1360901	0.37	0.710	-.2161886	.3175341
_cons	-.0002129	.0015762	-0.14	0.893	-.0033037	.0028778

The variable _hat is significant at the 0.01 level, while the _hatsq is not significant. Therefore, the model contains certain meaningful independent variables that are capable of predicting the dependent variable.

Another test for the model specification is an omitted-variable test (**ovtest** in Stata). This test regresses on the independent variables and also the second, third and fourth powers of predicted y (after standardising ŷ to have mean 0 and variance 1). The result is as follows.

```
Ramsey RESET test using powers of the fitted values of EXFIN
      Ho:  model has no omitted variables
                 F(3, 2467) =      14.17
                   Prob > F =      0.0000
```

Although the **linktest** shows that the model is properly specified, the *p*-value of the F-test for **ovtest** is small enough to reject the null hypothesis. Based on the latter test, the model has some omitted variables. The study assigned some interaction terms; i.e. LEVC*OCF, LEVC*INT, LEVC*CASH, LEVC*INV, following the variable specification in Roberts and Sufi (2009). The results are shown below:

	Table 7.6 Model 1	Including Interaction Terms
	coefficient	coefficient
VARIABLES	(*t*-statistic)	(*t*-statistic)
AFTER	-0.0231**	-0.0217**
	(-2.267)	(-2.478)
LEVC*OCF		-0.5379***
		(-6.598)
LEVC*INT		-0.1463
		(-1.148)
LEVC*CASH		0.0487
		(0.307)
LEVC*INV		0.032
		(1.083)
OCF	-0.5319***	-0.3847***
	(-20.598)	(-12.845)
CASH	-0.1097***	-0.1313***
	(-4.243)	(-4.606)
INV	-0.0044	-0.0184
	(-0.344)	(-1.241)
PPE	0.0421***	0.0407***
	(3.114)	(3.112)
LEVC	-0.0802***	-0.0511***
	(-8.248)	(-3.356)
Q	0.0258***	0.0207***
	(7.036)	(5.709)
LNSALES	0.0038***	0.0041***
	(3.108)	(2.995)
INT	-0.0866**	-0.0607*
	(-2.528)	(-1.910)
INVEST	0.1632***	0.1644***
	(12.419)	(12.844)
Consumer products	-0.0181***	-0.0163***
	(-2.909)	(-2.705)
Industrials	-0.0093*	-0.0059
	(-1.719)	(-1.144)
Property & construction	-0.0048	-0.002
	(-0.807)	(-0.345)
Resources	0.0205*	0.0261**
	(1.660)	(2.176)
Service	-0.0016	0.0016
	(-0.294)	(0.294)
Technology	-0.0105	-0.0092
	(-1.457)	(-1.263)

	Table 7.6 Model 1	Including Interaction Terms
	coefficient	coefficient
VARIABLES	(*t*-statistic)	(*t*-statistic)
2002	0.0022	-0.001
	(0.273)	(-0.104)
2003	0.0076	0.0087
	(0.961)	(0.970)
2004	0.0051	0.0052
	(0.576)	(0.546)
2005	0.008	0.0075
	(0.992)	(0.837)
2006	0.0011	0.0001
	(0.150)	(0.019)
2007	-0.0104	-0.012
	(-1.360)	(-1.399)
2008	0.0077	0.006
	(1.042)	(0.740)
2009	-0.0107	-0.0114
	(-1.339)	(-1.322)
Constant	-0.0019	-0.006
	(-0.113)	(-0.359)
Observations	2,495	2,495
Adjusted R^2	0.489	0.517
R^2	0.494	0.522
Statistics for F-test	39.64	45.28
p-value for F-test	<0.0001	<0.0001
Model degrees of freedom	24	28
Residual degrees of freedom	384	384
Number of clusters (firms)	385	385

Model 1 is the original model from Table 7.6. Model 2 includes some interaction terms. The dependent variable is the net capital from external financing activities. All variables are defined in Table 7.2. Standard errors are robust by firm-level clustering. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively (a two-tailed test of whether the coefficient is equal to zero). Agro & food industry and year 2001 are the baseline for industry dummies and year dummies in the regression, respectively.

Link test for the model included interaction terms

Source	SS	df	MS	Number of obs = 2495 F(2, 2492) = 1368.95 Prob > F = 0.0000 R-squared = 0.5235 Adj R-squared = 0.5231 Root MSE = .0699
Model	13.3776608	2	6.68883038	
Residual	12.1761539	2492	.004886097	
Total	25.5538147	2494	.010246117	

EXFIN	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
_hat	.9806338	.0203903	48.09	0.000	.9406502	1.020618
_hatsq	.320345	.1163886	2.75	0.006	.0921167	.5485733
_cons	-.0015067	.0015257	-0.99	0.323	-.0044984	.0014851

Omitted-variable test for the model included interaction terms

Ramsey RESET test using powers of the fitted values of EXFIN
Ho: model has no omitted variables
F(3, 2463) = 17.39
Prob > F = <0.0001

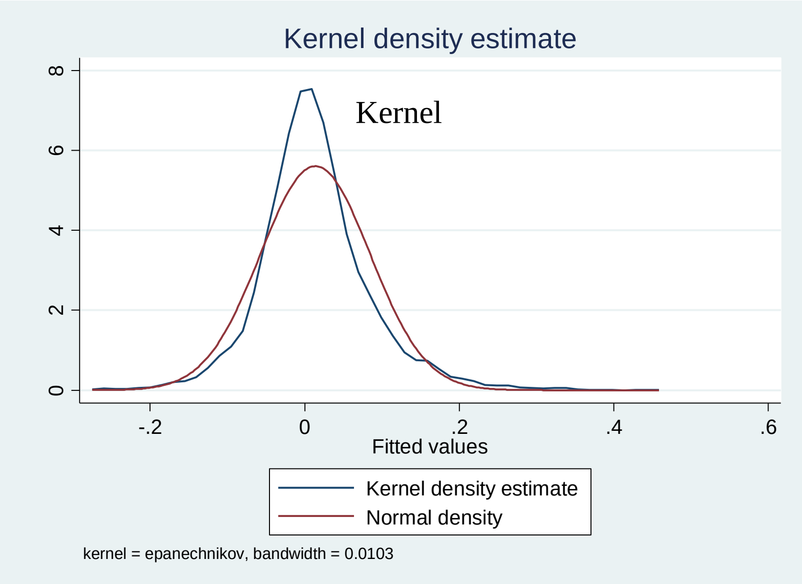
In the new model, which was included interaction terms, the coefficient of AFTER is still significant at the 5% level. As for the interaction terms, only the coefficient of LEVC*OCF is statistically significant at the *p*-value < 0.01. The adjusted R^2 increases from 48.9% to 51.7%. However, both the linktest and omitted-variable test show a problem of model specification. Therefore, the model included the interaction terms cannot be used.

Despite a change in the research results that might have occurred if other variables are included in the model, the original model is deemed to be satisfactory at least for two reasons. Firstly, the original model was built by covering all aspects of capital structure proxies suggested by prior studies (e.g. Almeida and Campello 2010; Hovakimian *et al.* 2001; Rajan and Zingales 1995; Titman and Wessels 1988). Secondly, the regression results from the original model provide an answer for the research question (Hypothesis 4, see Chapter 5). Therefore, the research maintains the main model.

2. Checking the Normality of Residuals

Many tests have been performed to check the normality of residuals.

The first test is a kernel density plot.



The second test is an inter-quartile range (IQR) test. Severe outliers consist of those points that are either 3 inter-quartile-ranges below the first quartile or 3 inter-quartile-ranges above the third quartile. The presence of any severe outliers should be sufficient evidence to reject normality at a 5% significance level. The result of this sample is as below:

mean= .0138	std.dev.= .0712	(n= 2495)
median= .0081	pseudo std.dev.= .0545	(IQR= .0735)
10 trim= .0104		

	low	high
inner fences	-.1371	.1568
# mild outliers	33	79
% mild outliers	1.32%	3.17%
outer fences	-.2473	.2669
# severe outliers	4	14
% severe outliers	0.16%	0.56%

There are extreme outliers appearing in the residuals.

Thirdly, a Shapiro-Wilk normality test was prepared.

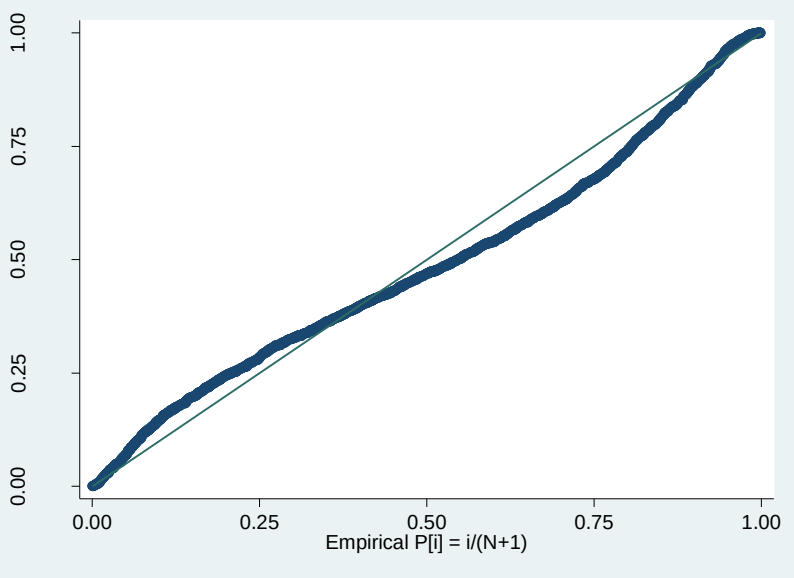
Shapiro-Wilk test for normal data

Variable	Obs	W	V	z	Prob>z
r	2495	0.95788	61.065	10.543	0.00000

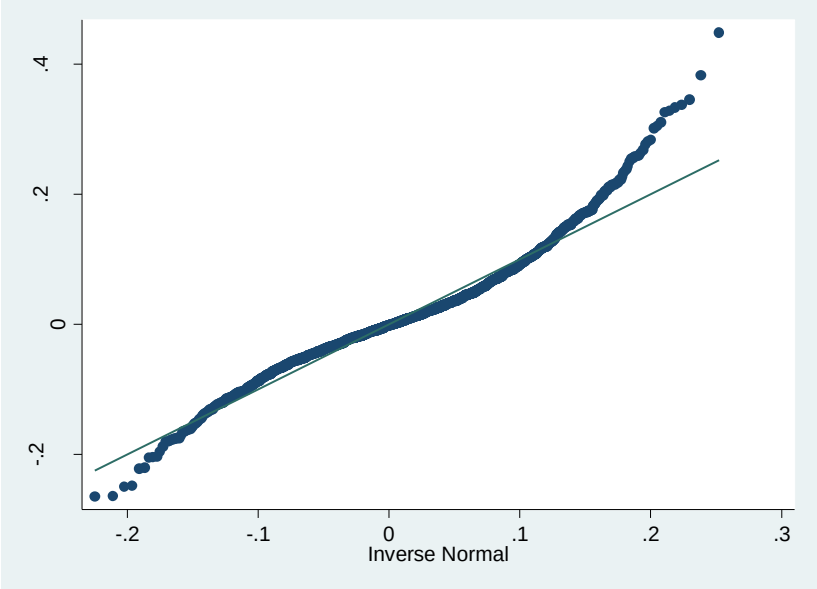
The null hypothesis of the data are normally distributed is rejected at the *p*-value < 0.05. Therefore, the residuals are not normally distributed.

Fourthly, a standardised normal probability (pnorm) plot and a plot for the quantiles of a variable against the quantiles of a normal distribution (qnorm) were also drawn. The pnorm plot is sensitive to non-normality in the middle range of data and qnorm is sensitive to non-normality near the tails.

pnorm plot



qnorm plot



As the graphs show, the results from pnorm plot show indications of non-normality while the qnorm command shows a deviation from normal at the tails, particular in the upper tail.

All the four tests in this section appear to indicate that the residuals are not close to a normal distribution and one cause is likely to concern outliers. To increase robustness of the research results, the research followed Verardi and Croux's (2009) suggestion. Huber's (1981) monotonic M-estimator (**rreg** in Stata) and Yohai's (1987) high breakdown point MM-estimator (**mmregress** in Stata) are employed. The regression results are presented as follows.

	(1)	(2)	(3)
	Table 7.6 Model 1	M-Estimator	MM-Estimator
	(OLS)	**(rreg)**	**(mmregress)**
	Coefficient	Coefficient	Coefficient
VARIABLES	(*t*-statistic)	(*t*-statistic)	(*t*-statistic)
AFTER	-0.0231**	-0.0213***	-0.0234***
	(-2.267)	(-2.650)	(-2.821)
OCF	-0.5319***	-0.5898***	-0.6124***
	(-20.598)	(-52.558)	(-20.371)
CASH	-0.1097***	-0.0789***	-0.0580***
	(-4.243)	(-5.196)	(-3.035)
INV	-0.0044	0.0023	0.0077
	(-0.344)	(0.262)	(0.893)
PPE	0.0421***	0.0551***	0.0548***
	(3.114)	(6.838)	(6.243)
LEVC	-0.0802***	-0.0896***	-0.0900***
	(-8.248)	(-17.272)	(-12.119)
Q	0.0258***	0.0315***	0.0363***
	(7.036)	(18.262)	(6.903)
LNSALES	0.0038***	0.0034***	0.0029***
	(3.108)	(4.200)	(2.900)
INT	-0.0866**	-0.0572***	-0.0571**
	(-2.528)	(-2.831)	(-2.013)
INVEST	0.1632***	0.1911***	0.2035***
	(12.419)	(34.603)	(11.679)
ind2	-0.0181***	-0.0166***	-0.0129***
	(-2.909)	(-3.367)	(-3.090)
ind3	-0.0093*	-0.0105**	-0.0069
	(-1.719)	(-2.437)	(-1.599)

	(1) Table 7.6 Model 1 **(OLS)** Coefficient (*t*-statistic)	(2) M-Estimator **(rreg)** Coefficient (*t*-statistic)	(3) MM-Estimator **(mmregress)** Coefficient (*t*-statistic)
VARIABLES			
ind4	-0.0048	-0.0124***	-0.0123**
	(-0.807)	(-2.754)	(-2.521)
ind5	0.0205*	0.0110*	0.0012
	(1.660)	(1.796)	(0.160)
ind6	-0.0016	-0.0031	-0.0028
	(-0.294)	(-0.709)	(-0.684)
ind7	-0.0105	-0.0169***	-0.0155***
	(-1.457)	(-3.276)	(-2.639)
year2	0.0022	0.0055	0.0072
	(0.273)	(0.842)	(1.074)
year3	0.0076	0.003	-0.0021
	(0.961)	(0.455)	(-0.329)
year4	0.0051	0.0051	0.0024
	(0.576)	(0.786)	(0.406)
year5	0.008	0.0089	0.0036
	(0.992)	(1.409)	(0.568)
year6	0.0011	0.0033	0.004
	(0.150)	(0.544)	(0.640)
year7	-0.0104	-0.0013	-0.0006
	(-1.360)	(-0.219)	(-0.099)
year8	0.0077	0.0130**	0.0096*
	(1.042)	(2.157)	(1.714)
year9	-0.0107	-0.0014	-0.0044
	(-1.339)	(-0.240)	(-0.747)
Constant	-0.0019	-0.0189	-0.0242**
	(-0.113)	(-1.595)	(-1.965)
Observations	2,495	2,495	2,495
R^2	0.494	0.343	
Adjusted R^2	0.489		

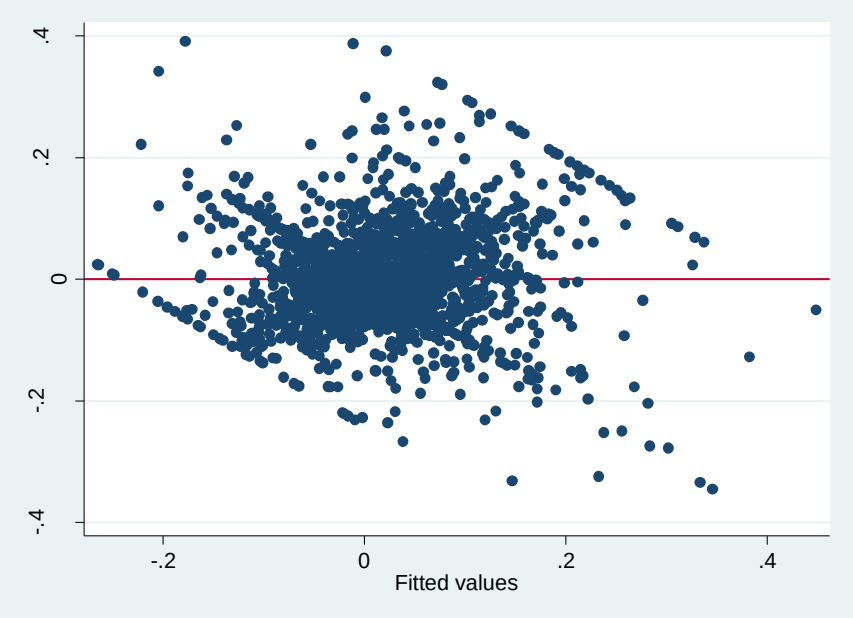
Model 1 is the original model from Table 7.6. Models 2 and 3 are robust regression models. Standard errors in Model 1 are clustered by firm. The efficiency of the MM-estimator in Model 3 takes a default value of 70%, following Verardi and Croux (2009). The dependent variable is the net capital from external financing activities. All variables are defined in Table 7.2. Agro & food industry and year 2001 are the baseline for industry dummies and year dummies in the regression, respectively. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively (a two-tailed test of whether the coefficient is equal to zero).

[a] The R^2 for the robust regression model was calculated based on the **rregfit** command in order to get a correct R^2 as noted in ULCA Academic Technical Services: http://www.ats.ucla.edu/stat/stata/faq/rregr2.htm (accessed 24 October 2011).

It can be seen in the robust regression models (Models 2 and 3) that the main research result was unchanged. The coefficient of the experimental variable (AFTER) remains significant at the *p*-value < 0.01. The coefficient has slightly changed from -0.0231 in the OLS regression to -0.213 in the M-estimator model and to -0.0234 in the MM-estimator model. Significance levels for the control variables in Models 2 and 3 are also similar to the original model. Only few differences among the models appear in the industry and year dummies. Consequently, the research result on the adverse effect of an announcement of accounting misstatements is affirmed by the robust regression.

3. Checking Homoscedasticity of Residuals

The researcher has made standard errors robust by firm-level clustering and controlled time effects by using year dummies, following a suggestion by Petersen (2009). Therefore, the independence assumption of errors is alleviated. A graphical method, as shown below, is used to plot the residuals versus fitted (predicted) values.



There seems to be none of any pattern of heteroscedasticity. The data points were limited in two rims because of the winsorisation on the data. Therefore, a concern that the variance of residuals is not constant is relieved.

4. Checking for Multicollinearity

The variance inflation factor (VIF) measures the impact of collinearity among the variables.

Variable	VIF	1/VIF
AFTER	1.05	0.948616
OCF	1.19	0.839620
CASH	1.85	0.540610
INV	2.44	0.409728
PPE	2.46	0.406461
LEVC	1.46	0.685518
Q	1.22	0.819311
LNSALES	1.21	0.829334
INT	1.17	0.854561
INVEST	1.15	0.866242
ind2	1.81	0.552732
ind3	2.08	0.481017
ind4	2.05	0.487444
ind5	1.45	0.691202
ind6	2.50	0.399585
ind7	1.70	0.589138
year2	2.32	0.431044
year3	2.61	0.382795
year4	2.68	0.372747
year5	2.86	0.349906
year6	3.03	0.330130
year7	3.22	0.310773
year8	3.21	0.311951
year9	3.32	0.300800
Mean VIF	2.09	

As a rule of thumb, a variable whose VIF values are greater than 10 may merit further investigation (Chen *et al.* 2003b). In this study, none of any VIF values are greater than 10. Therefore, there is no problem of multicollinearity. In addition, a multicollinearity test was performed with other models in Table 7.7 and no concern of this assumption has been found (all VIFs are less than 4).

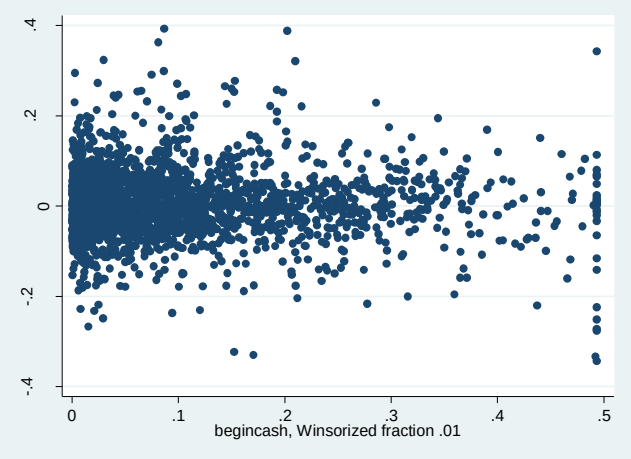
5. Checking Linearity

Checking the linearity assumption is not so straightforward in the case of multiple regressions. The most straightforward thing to do is to plot the standardised residuals against each of the predictor variables in the regression model. There is a problem of

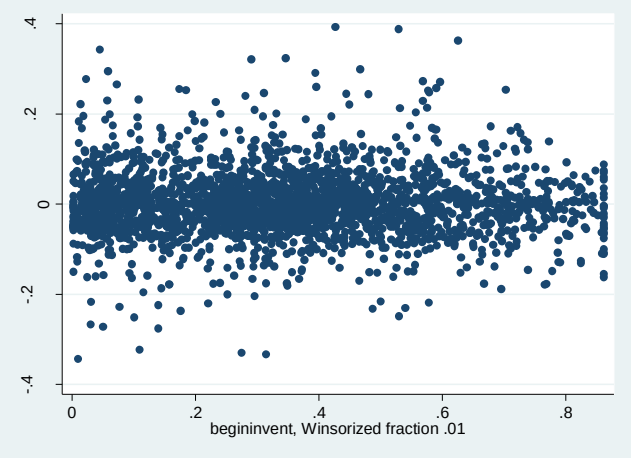
nonlinearity if there is a clear nonlinear pattern. The following pictures show scatter diagrams between the residuals (r) and independent variables.

Scatter r and OCF

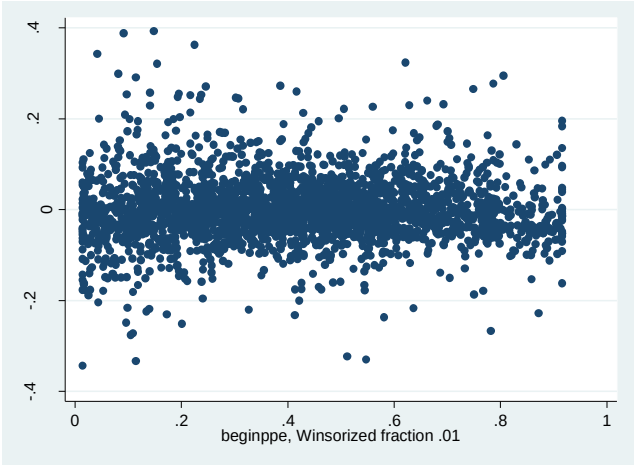
Scatter r and CASH



Scatter r and INV

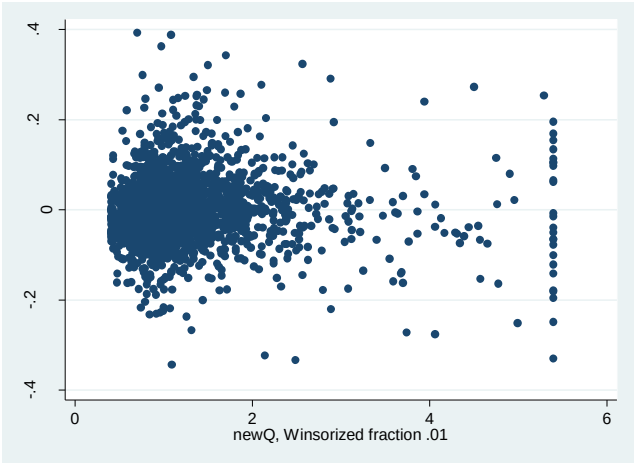


Scatter r and PPE

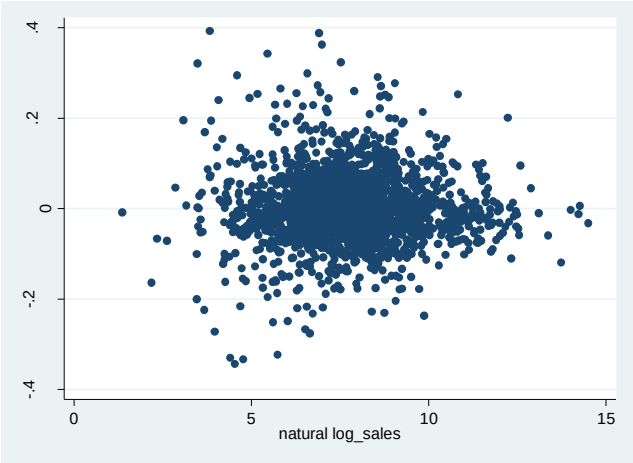


Scatter r and LEVC

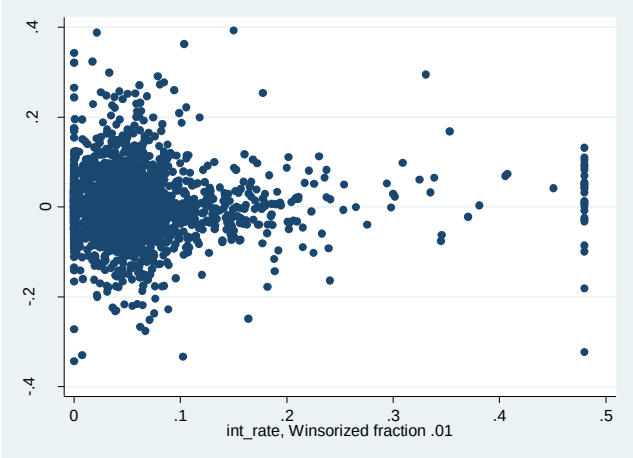
Scatter r and Q



Scatter r and LNSALES



Scatter r and INT



Scatter r and INVEST

According to the graphs, there is unlikely to be a nonlinearity problem between the residuals and independent variables.

6. Summary

Despite a diagnostic of model specification shown by an omitted-variable test (**ovtest**), the OLS regression model for analysing an economic consequence of an accounting of accounting misstatements (Table 7.6) meets the regression assumptions. Regarding the normal distribution of residuals and severe outliers, the research results were rechecked with a robust regression in order to reduce a bias of coefficient. The significance of the experimental variable (AFTER coefficient) remains unchanged.

Attached
Approval Form
For
The Questions on
Audit Procedures of
The Securities and Exchange
Commission, Thailand

25

CARDIFF BUSINESS SCHOOL ETHICAL APPROVAL FORM: PHD THESIS RESEARCH

(For guidance on how to complete this form, please see http://www.cf.ac.uk/carbs/research/ethics.html)

For Office Use: Ref **Meeting**

Does your research involve human participants? **Yes** ☒ **No** ☐
If you have answered 'No' to this question you do not need to complete the rest of this form, otherwise please proceed to the next question

Does your research have any involvement with the NHS? **Yes** ☐ **No** ☒
If you have answered **Yes** to this question, then your project should firstly be submitted to the NHS National Research Ethics Service. Online applications are available on http://www.nres.npsa.nhs.uk/applicants/ . It could be that you may have to deal directly with the NHS Ethics Service and bypass the Business School's Research Ethics Committee.

Name of Student: Suneerat Wuttichindanon

Student Number: 0225802

Section: CARBS Accounting and Finance

Email: WuttichindanonS@cardiff.ac.uk

APPLICATION APPROVED
RESEARCH ETHICS COMMITTEE
CARDIFF BUSINESS SCHOOL
CARDIFF UNIVERSITY

Names of Supervisors:
1. Dr. Mark Clatworthy
2. Professor Roy Chandler
3. Dr. Svetlana Taylor

Supervisors' Email Addresses:
1. Dr. Mark Clatworthy clatworthyma@cardiff.ac.uk
2. Professor Roy Chandler chandler@cardiff.ac.uk
3. Dr. Svetlana Taylor miras@cardiff.ac.uk

Title of Thesis: Causes and Consequences of Accounting Misstatements in Thailand

Start and Estimated End Date of Research: October, 2008 – October 2011

Aim of the research

To discover the determinants of accounting misstatements in Thailand and to examine the economic consequences of the misstatements once they have been detected.

1. Describe the Methodology to be applied in the research

The study mainly employs quantitative secondary data from corporate financial reports. Data are collected from commercial databases, annual reports, and companies' websites. However, because the dependent variable - the likelihood of accounting misstatements - is based on the Securities Exchange Commission, Thailand (SEC)'s enforcement actions, a comprehensive understanding of the SEC's investigation and publication processes is necessary. Therefore, interviews of members of the SEC's authorities will be undertaken to enhance the understanding and to confirm the reliability of the data used to define the main variable of interest (i.e., the presence and nature of accounting misstatements).

Semi-structured interviews will be undertaken. Respondents will be contacted in advance and be informed of the purpose of the study in order to ask for their consent. The respondents will remain anonymous throughout the research process and all data will remain confidential.

The questions that will be asked are attached to the form (see Appendix 1).

2. *Describe the participant sample who will be contacted for this Research Project. You need to consider the number of participants, their age, gender, recruitment methods and exclusion/inclusion criteria*

The interviewees will be authorities of the SEC, Thailand. There will be no age and gender restrictions. The selection criteria are based on their involvement with the investigation and announcement processes.

3. *Describe the consent and participant information arrangements you will make, as well as the methods of debriefing. If you are conducting interviews, you must attach a copy of the consent form you will be using.*

The respondents will be kept anonymous. A consent form (see Appendix 2) will be given to the respondents when conducting the interview. The consent form states that all respondents have the right to withdraw from the interview at any time and their name and other personal information will be kept anonymous. Debriefing will be provided upon their request.

4. *Please make a clear and concise statement of the ethical considerations raised by the research and how you intend to deal with them throughout the duration of the project*

The main ethical issues are informed consent and data confidentiality. The main issue is related to the work processes of the respondents which may lead to conflict or misunderstanding. Therefore, as a researcher, I will carefully protect the information provided by respondents such as their name and treat them as anonymous instead. Audio recordings will be used for the research. The respondents will be informed and asked for the consent to record the conversation. They have right to refuse the record as request and notes will taken instead.

Participation in this study is voluntary and refusal to participate will involve no penalty. The respondents are free to withdraw consent and discontinue participation in this project at any time without prejudice or penalty. They are also free to refuse to answer any question the researcher might ask.

PLEASE NOTE that you should include a copy of your questionnaire

NB: Copies of your signed and approved Research Ethics Application Form together with accompanying documentation must be bound into your Dissertation or Thesis.

5. ***Please complete the following in relation to your research:***

		Yes	No	n/a
(a)	Will you describe the main details of the research process to participants in advance, so that they are informed about what to expect?	☒	☐	☐
(b)	Will you tell participants that their participation is voluntary?	☒	☐	☐
(c)	Will you obtain written consent for participation?	☒	☐	☐
(d)	Will you tell participants that they may withdraw from the research at any time and for any reason?	☒	☐	☐
(e)	If you are using a questionnaire, will you give participants the option of omitting questions they do not want to answer?	☐	☐	☒
(f)	Will you tell participants that their data will be treated with full confidentiality and that, if published, it will not be identifiable as theirs?	☒	☐	☐
(g)	Will you offer to send participants findings from the research (e.g. copies of publications arising from the research)?	☒	☐	☐

PLEASE NOTE:
If you have ticked **No** to any of 5(a) to 5(g), please give an explanation on a separate sheet.
(Note: N/A = not applicable)
There is an obligation on the lead researcher to bring to the attention of Cardiff Business School Ethics Committee any issues with ethical implications not clearly covered by the above checklist.

Two copies of this form (and attachments) should be submitted to Ms Lainey Clayton, Room F09, Cardiff Business School.

Signed Suneerat Wuttichindanon

Print Name
Miss Suneerat Wuttichindanon

Date 26/5/10

SUPERVISOR'S DECLARATION

As the supervisor for this research I confirm that I believe that all research ethical issues have been dealt with in accordanc with University policy and the research ethics guidelines of the relevant professional organisation.

Signed M. A. Clatworthy (Primary supervisor)

Print Name
Dr.Mark Clatworthy MARK CLATWORTHY

Date 26/5/10

STATEMENT OF ETHICAL APPROVAL

This project has been considered using agreed School procedures and is now approved.

PUBLICATION APPROVED
RESEARCH ETHICS COMMITTEE
CARDIFF BUSINESS SCHOOL
CARDIFF UNIVERSITY

Signed T. W. Entwistle. (Chair, School Research Ethics Committee)

Print Name TOM ENTWISTLE.

Date 22 June 2010.

Appendix 1

Questions

1. Could you tell me about the investigation process for the review of listed companies' financial reports?

2. Do you review **all** financial reports or select a sample of firms?
   If a sample of reports is selected, what are criteria?

3. Please describe the publication process once a misstatement is detected?

4. How long does the SEC allow companies to correct their reports?

   a. What happens if the company cannot meet the deadline?
   b. What percentage of companies normally meets the deadline?

5. Is the SEC website data a complete and accurate record of **all** cases of misstatements? If not, what are the discrepancies and how can a complete set of records be obtained?

Appendix 2

CARDIFF BUSINESS SCHOOL
RESEARCH ETHICS

Consent Form - Confidential data

This research aims to discover the determinants of accounting misstatements in Thailand and economic consequences after the misstatements are detected by the Securities Exchange Commission, Thailand (SEC). The sample comprises listed companies in Thailand that are subject to enforcement actions by the SEC to correct their financial reports or that are filed complaints against the companies and/or their related officers. They are gathered from the 'News' section of the SEC's website. The main data used in the research will be collected from public sources (e.g. company annual reports, websites) and commercial databases (i.e. Thomson One Banker, SETSMART). The research will contribute to the literature in the area of the causes of accounting misstatements (i.e. managers' incentives, accounting techniques and corporate governance mechanisms) of listed companies in Thailand, where prior literature has usually found that the concentration of family ownership is high and legal protection for minority shareholders are low. The secondary data will be supplemented by interview data, which will be used to ensure that the secondary data obtained from the SEC website are reliable, complete and properly interpreted.

I understand that my participation in this project will involve face-to-face interviews about investigations and announcement processes of my review on listed companies' financial reports and will require approximately one hour of my time.

I understand that participation in this study is entirely voluntary and that I can withdraw from the study at any time without giving a reason.

I understand that I am free to ask any questions at any time. If for any reason I experience discomfort during participation in this project, I am free to withdraw or discuss my concerns with the supervisor of the dissertation at Cardiff University - Dr. Mark Clatworthy, clatworthyma@cardiff.ac.uk.

I understand that the information provided by me will be held confidentially, such that only the researcher and supervisor can trace this information back to me individually. The information will be retained for up to 2 years and will then be deleted/destroyed. I understand that I can ask for the information I provide to be deleted/destroyed at any time and, in accordance with the United Kingdom Data Protection Act, I can have access to the information at any time.

I also understand that at the end of the study I will be provided with additional information and feedback about the purpose of the study, if I request such information from the student researcher.

I, _____(*NAME*) consent to participate in the study conducted by *Miss Suneerat Wuttichindanon, WuttichindanonS@cardiff.ac.uk, PhD student* of Cardiff Business School, Cardiff University, under the supervision of *Dr. Mark Clatworthy, clatworthyma@cardiff.ac.uk*

Signed:

Date: